GULF of ALASKA

Navy Training Activities

FINAL ENVIRONMENTAL IMPACT STATEMENT/
OVERSEAS ENVIRONMENTAL IMPACT STATEMENT

March 2011
Final EIS/OEIS
Volume Two

Gulf of Alaska Navy Training Activities Preliminary Final Environmental Impact Statement/ Overseas Environmental Impact Statement

Commander, U.S. Pacific Fleet
Environmental - N01CE1
250 Makalapa Dr., Bldg 251
Pearl Harbor, HI 96860-3131

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Appendix A

Federal Register Notices

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Inquiries regarding field Service Record Books/Officer Qualification Records of current members should be addressed to the Commanding Officer of the Marine Corps unit to which they are attached.

Official mailing addresses are published in the Standard Navy Distribution List that is available at *http://doni.daps.dla.mil/sndl.aspx*.

Requests should contain the member's full name, Social Security Number (SSN) (and/or enlisted or officer service number), rank/rate, approximate dates of service, address, and signature of the requester. Transfer or Discharge (DD Form 214), discharge certificate, driver's license, or other data sufficient to ensure that the member is the subject of the record.

Current members (active and reserve) and former members may visit any of the above activities for review of records. Proof of identification will be required and may consist of an individual's active, reserve, or retired identification card, Armed Forces Report of.

RECORD ACCESS PROCEDURES:

Individuals seeking access to records about themselves contained in this system of records should address written requests to the following officials:

Inquiries regarding permanent Official Military Personnel File records of all active duty and reserve members, former members discharged, deceased, or retired after 31 December 1997 should be addressed to the Commandant of the Marine Corps (Code MMSB), Headquarters, U.S. Marine Corps, 2008 Elliot Road, Quantico, VA 22134–5030.

Inquiries regarding field Service Record Books/Officer Qualification Records of reserve members serving in the Individual Ready Reserve should be addressed to the Commanding General, Marine Corps Mobilization Command, 15303 Andrews Road, Kansas City, MO 64147–1207.

Inquiries regarding Official Military Personnel File records of former members discharged, deceased, or retired before 1 January 1998 should be addressed to the Director, National Personnel Records Center, Military Personnel Records, 9700 Page Avenue, St. Louis, MO 63132–5100.

Veterans and relatives of deceased veterans may obtain information on how to obtain copies of records from the National Personnel Records Center Web site at *http://www.archives.gov/st-louis/military-personnel/index.html*.

Inquiries regarding field Service Record Books/Officer Qualification Records of current members should be addressed to the Commanding Officer of the Marine Corps unit to which they are attached.

Official mailing addresses are published in the Standard Navy Distribution List that is available at *http://doni.daps.dla.mil/sndl.aspx*.

Requests should contain the member's full name, Social Security Number (SSN) (and/or enlisted or officer service number), rank/rate, approximate dates of service, address, and signature of the requester.

Current members (active and reserve) and former members may visit any of the above activities for review of records. Proof of identification will be required and may consist of an individual's active, reserve, or retired identification card, Armed Forces Report of Transfer or Discharge (DD Form 214), discharge certificate, driver's license, or other data sufficient to ensure that the member is the subject of the record.

CONTESTING RECORD PROCEDURES:

The USMC rules for contesting contents and appealing initial agency determinations are published in Secretary of the Navy Instruction 5211.5; Marine Corps Order P5211.2; 32 CFR part 701; or may be obtained from the system manager.

RECORD SOURCE CATEGORIES:

Staff agencies and subdivisions of Headquarters, U.S. Marine Corps; Marine Corps commands and organizations; other agencies of federal, state, and local government; medical reports; correspondence from financial and other commercial enterprises; correspondence and records of educational institutions; correspondence of private citizens addressed directly to the Marine Corps or via the U.S. Congress and other agencies; investigations to determine suitability for enlistment, security clearances, and special assignments; investigations related to disciplinary proceedings; and the individual of the record.

EXEMPTIONS CLAIMED FOR THE SYSTEM:

None.

[FR Doc. E8–5349 Filed 3–14–08; 8:45 am]

BILLING CODE 5001–06–P

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Intent To Prepare an Environmental Impact Statement and Overseas Environmental Impact Statement for Navy Training Activities in the Gulf of Alaska

AGENCY: Department of the Navy, DoD.

ACTION: Notice.

SUMMARY: Pursuant to section 102(2)(c) of the National Environmental Policy Act of 1969 (NEPA) as implemented by the Council on Environmental Quality regulations (40 CFR Parts 1500–1508), and Executive Order 12114 (Environmental Effects Abroad of Major Federal Actions), the Department of the Navy (Navy) announces its intent to prepare an Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) to evaluate the potential environmental effects of conducting Navy training in and around the Gulf of Alaska (GOA), including participation in large-scale Joint exercises, to support Fleet training exercise requirements. The Navy will invite the U.S. Fish and Wildlife Service and National Marine Fisheries Service to be cooperating agencies in preparation of this EIS/OEIS.

DATES AND ADDRESSES: Three public scoping meetings will be held to receive oral and/or written comments on environmental concerns that should be addressed in the EIS/OEIS. Each of the three scoping meetings will consist of an informal, open house session with information stations staffed by Navy representatives. The public scoping meetings will be held at the following dates, times, and locations:

1. Tuesday, April 1, 2008, 6 p.m. to 9 p.m., at Kodiak Best Western, 236 W. Rezanof Drive, Kodiak, AK 99615,
2. Wednesday, April 2, 2008, 6 p.m. to 9 p.m., at Kincaid Outdoor Center, North Assembly Room, 9401 W. Raspberry Road, Anchorage, AK 99502,
3. Thursday, April 3, 2008, 6 p.m. to 9 p.m., at Mt. Eccles Elementary School, 200 Adams Street, Cordova, AK 99574.

Details of the meeting locations and times will be announced in local newspapers. Additional information concerning meeting times will be available on the EIS/OEIS Web page located at: *http://www.GulfofAlaskaNavyEIS.com*.

FOR FURTHER INFORMATION CONTACT: Mrs. Amy Burt, Naval Facilities Engineering Command, Northwest, 1101 Tautog Circle Suite 203, Silverdale, Washington 98315–1101, Attn: GOA Navy Training Activities EIS/OEIS Project Manager, Code EV1.AB, telephone number: 360–396–0924.

SUPPLEMENTARY INFORMATION: The proposed EIS/OEIS analyzes potential environmental effects of Navy training activities that will take place in and around the Gulf of Alaska and those aircraft events that originate in the maritime exercise area (MEA) and extend over established inland Alaska military operating areas. Navy training activities primarily take place in, or originate from, the MEA. The MEA provides approximately 42,000 nm^2 (144,056 km^2) of air and surface/subsurface ocean operating area and overlying airspace.

The MEA is a polygon that is oriented from northwest to southeast, approximately 300 nm in length by 150 nm in width, situated south of Prince William Sound and east of Kodiak Island, Alaska. The EIS/OEIS study area includes Gulf of Alaska ocean area within approximately 200 km from the MEA and the waters within this boundary up to the coastline. Military operations also occur over established land-based Military Operating Areas maintained by the Air Force in Alaska.

These Alaska training areas are used to conduct Navy training, including participating in large-scale Joint training exercises such as the annual Northern Edge exercise, involving military hardware, personnel, tactics, munitions, explosives, and electronic combat. Alaska is an ideal location to support naval and joint operational readiness by providing the maritime component to a ''geographically realistic'' range for U.S. Pacific Command (PACOM) and U.S. Northern Command (NORTHCOM) scenario-based training.

The purpose of the Proposed Action is to: (1) Support PACOM and NORTHCOM training requirements; (2) achieve and maintain Fleet readiness using these Alaska training areas to support and conduct current, emerging, and future training activities; (3) accommodate new training requirements associated with the introduction of new weapons and systems to the Fleet; and (4) support civilian authorities in homeland defense training exercises.

The need for the Proposed Action is to: (1) Maintain current levels of military readiness; (2) accommodate future increases in training activities to support Fleet exercise requirements in the Alaska training areas; (3) support the acquisition and implementation into the Fleet of advanced military technology; and (4) maintain the long-term viability of the Alaska training areas as a Navy training area while protecting human health and the environment, and enhancing the quality and the capabilities of the training area, including safety.

The No Action Alternative is the continuation of current training levels, with one carrier strike group per exercise, to exclude the use of mid-frequency active sonar (MFAS). Alternative 1 consists of an increase in the number of training activities from baseline levels, to include the use of MFAS, plus training associated with the introduction of new weapon systems, vessels, and aircraft into the Fleet. Alternative 2 consists of all elements of Alternative 1, plus the addition of a second summertime carrier strike group exercise each year, to include the use of MFAS.

Environmental issues that will be addressed in the EIS/OEIS include but are not limited to the following: Air quality; airspace; biological resources, including threatened and endangered species; cultural resources; geology and soils; hazardous materials and waste; health and safety; noise; socioeconomics; transportation and water resources.

The Navy is initiating the scoping process to identify community concerns and local issues that will be addressed in the EIS/OEIS. Federal, state, and local agencies, Alaska Native Federally-Recognized Tribes, the public, and interested persons are encouraged to provide oral and/or written comments to the Navy to identify specific environmental issues or topics of environmental concern that the commenter believes the Navy should consider. All comments, written or provided orally at the scoping meetings, will receive the same consideration during EIS/OEIS preparation.

Written comments on the scope of the EIS/OEIS should be postmarked no later than April 30, 2008. Comments may be mailed to: Mrs. Amy Burt, Naval Facilities Engineering Command, Northwest, 1101 Tautog Circle, Suite 203, Silverdale, Washington 98315–1101, Attn: GOA Navy Training Activities EIS/OEIS Project Manager, Code EV1.AB. Comments can also be submitted via the EIS/OEIS Web page located at *http://www.GulfofAlaskaNavyEIS.com.*

Dated: March 11, 2008.

T.M. Cruz,

Lieutenant, Judge Advocate General's Corps, U.S. Navy, Federal Register Liaison Officer.

[FR Doc. E8–5316 Filed 3–14–08; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF ENERGY

Agency Information Collection Extension

AGENCY: U.S. Department of Energy.

ACTION: Notice and Request for Comments.

SUMMARY: The Department of Energy (DOE), pursuant to the Paperwork Reduction Act of 1995, intends to extend for three years, an information collection package with the Office of Management and Budget (OMB) concerning *Collection of Human Resource information from major DOE contractors for contract management, administration, and cost control.* Comments are invited on:

(a) Whether the extended collection of information is necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility;

(b) The accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;

(c) Ways to enhance the quality, utility, and clarity of the information to be collected; and

(d) Ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology.

DATES: Comments regarding this proposed information collection must be received on or before May 16, 2008. If you anticipate difficulty in submitting comments within that period, contact the person listed below as soon as possible.

ADDRESSES: Written comments may be sent to: Robert M. Myers, U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585–1615, 202–287–1584, or by fax at 202–287–1656 or by e-mail at *robert.myers@hq.doe.gov.*

FOR FURTHER INFORMATION CONTACT: Requests for additional information or copies of the information collection instrument and instructions should be directed to Robert Myers at the address listed above.

SUPPLEMENTARY INFORMATION: This package contains:

(1) *OMB No.* 1910–0600;

(2) *Package Title:* Industrial Relations;

(3) *Type of Review:* Renewal;

(4) *Purpose:* This information is required for management oversight for the Department of Energy's Facilities Management Contractors and to ensure that the programmatic and

Approximately 400 Acres, Currently Operated by Los Angeles Harbor Department (LAHD), Located along the West Side of Los Angeles Harbor's Main Channel, from the Vincent Thomas Bridge to Cabrillo Beach, US Army Section 10 and 404 and Section 103 Marine Protection, Research, and Sanctuaries Act Permits, (MPRSA) City of Los Angeles, CA.

Summary: EPA continues to have concerns about the unavoidable air quality impacts to environmental justice communities.

EIS No. 20090335, ERP No. F–AFS–K65341–AZ, Black River Exchange Project, Proposal to Exchange Federal and Non-Federal Lands, Apache-Sitgreaves National Forests, Apache County, AZ.

Summary: EPA does not object to the proposed project.

EIS No. 20090347, ERP No. F–AFS–J65512–MT, Butte Lookout Project, Proposed Timber Harvest, Prescribed Burning, Road Work and Management Activities, Missoula Ranger District, Lola National Forest, Missoula County, MT.

Summary: EPA continues to have environmental concerns because significant portions of the proposed rehabilitative and restorative work are not currently funded. EPA encouraged timely funding of the remainder of the proposed rehabilitative and restorative work.

EIS No. 20090351, ERP No. F–AFS–J65503–WY, Thunder Basin National Grassland Prairie Dog Management Strategy, Land and Resource Management Plan Amendment #3, Proposes to Implement a Site-Specific Strategy to Manage Black Trailed Prairie Dog, Douglas Ranger District, Medicine Bow-Routt National Forests and Thunder Basin National Grassland, Campbell, Converse, Niobrara and Weston Counties, WY.

Summary: EPA continues to have environmental concerns About impacts to black-footed ferret habitat.

EIS No. 20090354, ERP No. F–USN–K11023–00, West Coast Basing of the MV–22 Determining Basing Location(s) and Providing Efficient Training Operations, CA, AZ.

Summary: EPA expressed environmental concerns about project-related noise impacts.

EIS No. 20090355, ERP No. F–AFS–K65361–CA, Thom-Seider Vegetation Management and Fuels Reduction Project, To Respond to the Increasing Density and Fuels Hazard Evident along the Klamath River between Hamburg and Happy Camp, Klamath National Forest, Siskiyou County, CA.

Summary: EPA does not object to the proposed project.

EIS No. 20090357, ERP No. F–NPS–H65028–MO, Jefferson National Expansion Memorial, General Management Plan, Implementation, St. Louis, MO.

Summary: EPA does not object to the proposed project.

EIS No. 20090359, ERP No. F–FHW–H40194–MO, MO–63 Corridor Improvement Project, To Correct Roadway Deficiencies, Reduce Congestion and Provide Continuity along the MO–63 Corridor on the Existing Roadway and on New Location, Osage, Maries and Phelps Counties, MO.

Summary: EPA continues to have environmental concerns about stream and wetland impacts, and requested additional mitigation.

EIS No. 20090361, ERP No. F–NOA–A91073–00, Programmatic—Toward an Ecosystem Approach for the Western Pacific Region: From Species-Based Fishery Management Plans to Place-Based Fishery Ecosystem Plans, Bottomfish and Seamount Groundfish, Coral Reef Ecosystems, Crustaceans, Precious Corals, Pelagics, Implementation, American Samoa, Commonwealth of the Northern Mariana Islands, Hawaii, U.S. Pacific Remote Island Area.

Summary: No formal comment letter sent to the preparing agency.

Dated: December 12, 2009.

Robert W. Hargrove,

Director, NEPA Compliance Division, Office of Federal Activities.

[FR Doc. E9–29561 Filed 12–10–09; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[ER–FRL–8986–4]

Environmental Impacts Statements; Notice of Availability

Responsible Agency: Office of Federal Activities, General Information (202) 564–1399 or *http://www.epa.gov/compliance/nepa/.*

Weekly receipt of Environmental Impact Statements.

Filed 11/30/2009 Through 12/04/2009.

Pursuant to 40 CFR 1506.9.

EIS No. 20090413, Final EIS, USFS, NV, Martin Basin Rangeland Project, Reauthorizing Grazing on Eight Existing Cattle and Horse Allotments: Bradshaw, Buffalo, Buttermilk, Granite Peak, Indian, Martin Basin, Rebel Creek, and West Side Flat Creek, Santa Rosa Ranger District, Humboldt-Toiyabe National Forest, NV, Wait Period Ends: 01/11/2010, Contact: Vernon Keller 775–355–5056.

EIS No. 20090414, Draft EIS, USFS, UT, Tropic to Hatch 138kV Transmission Line Project, Proposing Construction of a new 138 kV transmission Line that would replace some or all the existing 69 kV Transmission Line, Applications for Special-Use Permits and/or Right-of-Way Grants, Grand Staircase-Escalante National Monument Management Plan Amendment, Garfield County, UT, Comment Period Ends: 03/10/2010, Contact: Susan Baughman 435–865–3703.

EIS No. 20090415, Final EIS, FHWA, MI, Detroit Intermodal Freight Terminal (DIFT) Project, Proposes Improvement to Intermodal Freight Terminals in Wayne and Oakland Counties, MI, Wait Period Ends: 01/11/2010, Contact: David T. Williams 517–702–1820.

EIS No. 20090416, Final EIS, USMC, NC, U.S. Marine Corps Grow the Force at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point, To Provide the Infrastructure to Support the Permanent Increases at these three Installation, US Army Corps Section 404 and 10 Permits, City of Jacksonville, NC, Wait Period Ends: 01/11/2010, Contact: Michael H. Jones 757–322–4942.

EIS No. 20090417, Final EIS, NOAA, 00, Comprehensive Ecosystem-Base Amendment 1 (CE–BA 1) for the South Atlantic Region, Implementation, Wait Period Ends: 01/11/2010, Contact: Roy E. Crabtree, PhD 727–824–5305

EIS No. 20090418, Draft EIS, USACE, NC, The Town of Nags Head Beach Nourishment Project, Propose to Utilize a Self-Contained Hooper Dredge and Other Feasible Dredging Equipment during a Proposed Construction Window from April through September, Dare County, NC, Comment Period Ends: 01/25/2010, Contact: Raleigh Bland 910–251–4564.

EIS No. 20090419, Draft EIS, USACE, MN, U.S. Steel Keetac Taconite Mine Expansion Project, Propose to Restart an Idled Production Line and Expand Contiguous Sections of the Open Pit Iron Ore Mine, located near Keewatin, Itasca and St. Louis Counties, MN, Comment Period Ends: 01/27/2010, Contact: Ralph Augustin 651–290–5378.

EIS No. 20090420, Final EIS, FHWA, IN, I–69 Evansville to Indianapolis, Indiana Project, Section 3, Washington to Crane NSWC (US 50 to US 231), Daviess, Greene, Knox and Martin Counties, IN, Wait Period Ends: 01/11/2010, Contact: Janice Osadczuk 317–226–7486.

EIS No. 20090421, Draft Supplement, NRC, WY, Moore Ranch In-Situ Uranium Recovery (ISR) Project, Proposal to Construct, Operate, Conduct Aquifer Restoration, and Decommission an In-Situ Recovery (ISR) Facility, NUREG–1910, Campbell County, WY, Comment Period Ends: 02/01/2010, Contact: Behram Shroff 301–415–0666.

EIS No. 20090422, Final EIS, BR, KS, Equus Beds Aquifer Storage Recharge and Recovery Project, To Provide Municipal and Industrial (M&I) Water to City and Surrounding Region, Equus Beds Division, Wichita Project, Kansas, Harvey, Sedgwick, and Reno Counties, KS, Wait Period Ends: 01/11/2010, Contact: Charles F. Webster 405–470–4831.

EIS No. 20090423, Second Draft Supplement, NRC, WY, Nichols Ranch In-Situ Uranium Recovery (ISR) Project, Proposal to Construct, Operate, Conduct Aquifer Restoration, and Decommission and In-Situ Recovery Uranium Milling Facility, Campbell and Johnson Counties, WY, Comment Period Ends: 02/01/2010, Contact: Irene Yu 301–415–1951.

EIS No. 20090424, Draft EIS, USN, AK, Gulf of Alaska Navy Training Activities, Proposal to Support and Conduct Current, Emering, and Future Training Activities, Implementation, Gulf of Alaska, AK, Comment Period Ends: 01/25/2010, Contact: Amy Burt 360–396–9024.

EIS No. 20090425, Third Draft Supplement, NRC, WY, Lost Creek In-Situ Uranium Recovery (ISR) Project, Proposal to Construct, Operate, Conduit Aquifer Restoration, and Decommission an In-Situ Recovery (ISR) Uranium Milling Facility, Sweetwater County, WY, Comment Period Ends: 02/01/2010, Contact: Alan B. Bjornsen 301–415–1195.

EIS No. 20090426, Draft EIS, FRA, VA, Richmond and the Hampton Roads Passenger Rail Project, Proposed Higher Speed Intercity Passenger Rail, VA, Comment Period Ends: 01/25/2010, Contact: John Winkle 202–493–6067.

EIS No. 20090427, Final EIS, NPS, MN, Disposition of Bureau of Mines Property, Twin Cities Research Center Main Campus, Implementation, Hennepin County, MN, Wait Period Ends: 01/11/2010, Contact: Steven P. Johnson 651–290–3030 Ext. 223.

Amended Notices

EIS No. 20090312, Draft EIS, USACE, OH, Cleveland Harbor Dredged Material Management Plan, Operations and Maintenance, Cuyahoga County, OH, Comment Period Ends: 02/01/2010, Contact: Frank O'Connor 716–879–4131. Revision to FR Notice Published 09/11/2009: Extending Comment Period from 12/07/2009 to 02/01/2010.

EIS No. 20090394, Draft EIS, USN, GU, Guam and Commonwealth of the Northern Mariana Islands (CNMI) Military Relocation, Proposed Relocating Marines from Okinawa, Visiting Aircraft Carrier Berthing, and Army Air and Missile Defense Task Force, Implementation, GU, Comment Period Ends: 02/17/2010, Contact: Kyle Fujimoto 808–472–1442. Revision to FR Notice Published 11/20/2009: Disregard the FR Notice of 11/28/2009: Correction to Comment Period from 01/04/2010 to 02/17/2010.

Dated: 12/08/2009.

Robert W. Hargrove,

Director, NEPA Compliance Division, Office of Federal Activities.

[FR Doc. E9–29562 Filed 12–10–09; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[FRL–9090–1]

Issuance of a Final NPDES General Permit (GP) for Offshore Seafood Processors Discharging in Federal Waters Off the Alaska Shore (Permit Number AKG–524–000)

AGENCY: Environmental Protection Agency (EPA).

ACTION: Issuance of Final NPDES General Permit.

SUMMARY: On September 26, 2008, the Director, Office of Water and Watersheds, EPA Region 10, proposed to issue a general permit to cover offshore seafood processors discharging seafood processing waste off the shore of Alaska. During the 76-day comment period, EPA received comments from 11 people and has prepared a Response to Comments document to explain changes made in the permit and reasons for not making changes that were requested.

DATES: The permit will become effective March 1, 2010 and will expire February 28, 2015. The permit issuance date is December 28, 2009.

ADDRESSES: Copies of the General Permit and the Response to Comments may be requested from Audrey Washington, EPA Region 10, 1200 Sixth Avenue, Suite 900, OWW–130, Seattle, WA 98101–3140, by phone at (206) 553–0523, or by e-mail: *washington.audrey@epa.gov.*

FOR FURTHER INFORMATION CONTACT: Copies of the general permit and response to comments are available on the EPA Region 10 Web site at *http://yosemite.epa.gov/R10/WATER.NSF/NPDES+Permits/General+NPDES+Permits.*

SUPPLEMENTARY INFORMATION

A. Endangered Species Act

Section 7 of the Endangered Species Act requires EPA to consult with the U.S. Fish and Wildlife Service and National Marine Fisheries Service regarding the potential effects that an action may have on listed endangered or threatened species or their critical habitat. To address these ESA requirements, and in support of EPA's informal consultation with the Services, a Biological Evaluation (BE) was prepared to analyze these potential effects. The results of the BE concluded that discharges from Offshore Seafood Processing facilities will either have no effect or are not likely to adversely affect threatened or endangered species, their critical habitat, or essential fish habitat in the vicinity of the discharge. After reviewing the BE and permit the Services concurred with EPA's findings.

B. Executive Order 12866

The Office of Management and Budget has exempted this action from the review requirements of Executive Order 12866 pursuant to Section 6 of that order.

C. Paperwork Reduction Act

The information collection requirements of this permit were previously approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* and assigned OMB control numbers 2040–0086 (NPDES permit application) and 2040–0004 (discharge monitoring reports).

D. Unfunded Mandates Reform Act

Section 201 of the Unfunded Mandates Reform Act (UMRA), Public Law 104–4, generally requires federal agencies to assess the effects of their ''regulatory actions'' (defined to be the same as ''rules'' subject to the RFA) on tribal, state, and local governments and the private sector. However, general currently developed. The project proposes to develop approximately 1,870 acres, and set aside 1,274 acres of wetland preserve/open space. The proposed action includes approximately 584 acres of commercial uses associated with the adjacent Mather Airport, 201 acres of commercial, 84 acres of aggregate extraction, 598 acres of university village/residential, 102 acres of parks and recreation, 274 acres for a regional sports park, and 27.4 acres for utilities and infrastructure. Approximately 124 acres of waters of the United States have been identified in the proposed project area, including 69.8 acres of vernal wetlands (pools and swales), 27.3 acres of depressional seasonal wetlands, 1.9 acres of ditches, 5.7 acres of lake/pond and 19.1 acres of other waters of the United States. The applicant has applied for permits to fill 35.39 acres of these waters. The approximately 1,274 acre open space and wetland preserve would contain approximately 47.3 acres of waters not directly impacted by the project. In addition, approximately 4.9 acres of wetlands at the west end of the Mather Airport runway would be avoided and placed under some type of protective agreement, but not a conservation easement.

The EIS will include an evaluation of a reasonable range of alternatives. Currently, at least four alternatives are expected to be analyzed in detail: (1) The no action alternative (no permit issued), (2) the applicant's preferred project (proposed action), (3) an offsite alternative, and (4) a reduced development footprint alternative. The no action alternative assumes limited development would occur in the Mather Specific Plan area with all waters of the United States avoided. The off-site alternative assumes the proposed project would be developed at a different but suitably-sized site in the region. A reduced development footprint alternative will have a smaller development footprint than the applicant's preferred project with less direct impacts to waters of the United States.

The Corps' scoping process for the EIS includes a public involvement program with several opportunities to provide oral and written comments. In addition to public meetings and notifications in the **Federal Register**, the Corps will issue public notices when the draft and final EISs are available. Affected Federal, State, and local agencies, Native American tribes, and other interested organizations and parties are invited to participate.

Potentially significant issues to be analyzed in the EIS include, but are not limited to: Hydrology, water supply, water quality, cultural resources, biological resources, traffic and transportation, and air quality.

The Corps is the lead agency for preparation of the EIS under the requirements of the National Environmental Policy Act (NEPA). The Corps will coordinate with the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service and Central Valley Regional Water Quality Control Board.

Other environmental review and consultation requirements for the proposed action include the need for the applicant to obtain water quality certification under Section 401 of the Clean Water Act from the Central Valley Regional Water Quality Control Board. In addition, because the proposed project may affect federally-listed endangered species, the Corps will formally consult with the U.S. Fish and Wildlife Service in accordance with Section 7 of the federal Endangered Species Act. The Corps will also be consulting with the State Historic Preservation Officer under Section 106 of the National Historic Preservation Act concerning properties listed, or potentially eligible for listing, on the National Register of Historic Places.

One public scoping meeting for the EIS will be held on January 6, from 4 p.m. to 7 p.m. Conference Room 170 located at 10545 Armstrong Avenue, Mather CA, 95655. Interested parties can provide oral and written comments at the meeting. Interested parties may also submit written comments on this notice. Scoping comments should be submitted before January 31, 2010, but may be submitted at any time prior to publication of the Draft EIS.

Interested parties may register for the Corps' public notice email notification lists at: *http://www.spk.usace.army.mil/organizations/cespk-co/regulatory/pnlist.html.*

Dated: November 30, 2009.

Thomas C. Chapman,

Colonel, Corps of Engineers, District Engineer.

[FR Doc. E9–29603 Filed 12–10–09; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Public Hearings for the Draft Environmental Impact Statement/ Overseas Environmental Impact Statement for the Gulf of Alaska Navy Training Activities

AGENCY: Department of the Navy, DoD.

ACTION: Notice.

SUMMARY: Pursuant to section 102(2)(c) of the National Environmental Policy Act (NEPA); the Council on Environmental Quality Regulations for implementing the procedural provisions of NEPA (Title 40 Code of Federal Regulations Parts 1500–1508); and Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, the Department of the Navy (Navy) has prepared and filed with the U.S. Environmental Protection Agency a Draft Environmental Impact Statement/ Overseas Environmental Impact Statement (EIS/OEIS) for public release on December 11, 2009. The National Marine Fisheries Service (NMFS) is a Cooperating Agency for the EIS/OEIS.

The Draft EIS/OEIS evaluates the potential environmental effects of the Proposed Action from Navy training activities conducted in the Gulf of Alaska and Alaska's inland training areas, collectively referred to as the Alaska Training Areas (ATA). The Draft EIS/OEIS addresses ongoing and proposed military training activities, as well as proposed force structure changes and the introduction of new weapons and systems to the Fleet. The Proposed Action serves to achieve and maintain Fleet readiness using the ATA to support and conduct current, emerging, and future training activities. A Notice of Intent for this Draft EIS/OEIS was published in the **Federal Register** on March 17, 2008 (73 FR 14237).

The Navy will conduct five public hearings to receive oral and written comments on the Draft EIS/OEIS. Federal, State, and local agencies, elected officials, and other interested individuals and organizations are invited to be present or represented at the public hearings. This notice announces the dates and locations of the public hearings for this Draft EIS/OEIS.

An open house session will precede the scheduled public hearing at each of the locations listed below, and will allow individuals to review the information presented in the Draft EIS/OEIS. Navy representatives will be available during the open house sessions to clarify information related to the Draft EIS/OEIS.

Dates and Addresses: Five public hearings will be held in Alaska to receive oral and written comments on the Draft EIS/OEIS. All meetings will start with an open house session from 5 p.m. to 7 p.m., followed by a presentation and formal public comment period from 7 p.m. to 8:30 p.m. Public hearings will be held on the following dates and at the following locations:

1. Thursday, January 7, 2010, at Kodiak High School Cafeteria, 722 Mill Bay Road, Kodiak, Alaska;

2. Friday, January 8, 2010, at Fairview Recreation Center Main Gymnasium, 1121 E. 10th Avenue, Anchorage, Alaska;

3. Saturday, January 9, 2010, at West Homer Elementary School Gymnasium, 995 Soundview Avenue, Homer, Alaska;

4. Monday, January 11, 2010, at Juneau Arts and Culture Center Main Hall, 350 Whittier Street, Juneau, Alaska;

5. Tuesday, February 12, 2010, at Orca Adventure Lodge Meeting Room & Café, 2500 Orca Road, Cordova, Alaska.

FOR FURTHER INFORMATION CONTACT: Naval Facilities Engineering Command Northwest, Attention: Mrs. Amy Burt, Gulf of Alaska Navy Training Activities EIS/OEIS Project Manager, 1101 Tautog Circle, Suite 203, Silverdale, WA 98315–1101; or *http://www.GulfofAlaskaNavyEIS.com.*

SUPPLEMENTARY INFORMATION: Air and sea training activities are conducted within the Gulf of Alaska Temporary Maritime Activities Area (TMAA) which is part of the ATA. The land, air, and sea components of the ATA provide the space and resources needed to realistically train Navy Sailors to achieve and maintain Fleet readiness. Navy air and sea training activities originate from Navy ships located within the TMAA. The TMAA is situated south of Prince William Sound and east of Kodiak Island and includes 42,146 square nautical miles of airspace, sea space, and undersea space. The Navy also conducts activities in established U.S. Air Force and U.S. Army inland training areas, which include more than 65,000 square miles of airspace and land area. The ATA serve as the principal training venue for annual joint training exercises, which can involve forces from the U.S. Navy, Air Force, Army, Coast Guard, and local, state, and nongovernmental agencies. The ATA are used for training activities including operating aircraft, ships, and submarines; conducting training against moving ships and aircraft; practicing aerial surveillance; and detecting and locating submarines.

The purpose of the Navy's Proposed Action is to: Achieve and maintain Fleet readiness using the ATA to support and conduct current, emerging, and future training activities.

The need for the Proposed Action is to: (1) Maintain current levels of military readiness by training in the ATA; (2) accommodate future increases in levels of training activities in the ATA; (3) adequately support the training need for new aircraft, ships, submarines, and weapons systems; (4) identify shortfalls in training, particularly training instrumentation, and address through enhancements; (5) maintain the long-term viability of the ATA as a Navy training area while protecting human health and the environment, and enhancing the quality, capabilities, and safety of the training area; and (6) be able to bring U.S. Army, Navy, Air Force, and Coast Guard assets together into one geographic area for joint training.

Under the No Action Alternative, training activities within the ATA would continue at current levels over a maximum time frame of 14 days. This alternative includes one annual Carrier Strike Group training exercise and excludes the use of mid-frequency active sonar. Alternative 1 proposes an increase in the number of training activities from current levels as necessary to support Fleet exercise requirements over a maximum time frame of 21 days in the summer months (April—October), to include the use of active sonar; and accommodates training enhancement instrumentation, including the use of a Portable Undersea Tracking Range, and force structure changes associated with the introduction of new weapon systems, vessels, and aircraft into the Fleet. Alternative 2, the Preferred Alternative, consists of all elements of Alternative 1. In addition, Alternative 2 includes an increase in the number of training activities over Alternative 1 levels by conducting a second annual Carrier Strike Group training exercise, which could also last up to 21 days in the summer months, and conducting a Sinking Exercise during each summertime exercise (a maximum of two).

The Draft EIS/OEIS addresses potential environmental impacts on multiple resources, including but not limited to: Air quality; water resources; biological resources; cultural resources; socioeconomics; and public health and safety.

No significant impacts are identified for most resources within the ATA that cannot be mitigated. The results of the analysis indicate, however, that while there is the possibility for physiological effects and altered behavior from sound in the water from active sonar and explosives, no mortality to marine mammals is anticipated. Furthermore, the estimation of sound exposures does not consider the Navy's use of protective measures, which would reduce the likelihood of exposures at the highest sound levels. The Navy has requested from NMFS a Letter of Authorization (LOA) in accordance with the Marine Mammal Protection Act to authorize the incidental take of marine mammals that may result from the implementation of the activities analyzed in the Gulf of Alaska Navy Training Activities Draft EIS/OEIS.

In accordance with Section 7 of the Endangered Species Act, the Navy is consulting with NMFS and U.S. Fish and Wildlife Service (USFWS) for potential impacts to federally listed species. Navy analysis has indicated that under the Clean Air Act requirements, while emissions over current levels may occur, these emissions would not exceed air quality standards, and under the Clean Water Act there would be no significant impacts to water quality. Analysis under the National Historic Preservation Act, in addition to other applicable laws and regulations, indicates that no significant impacts to cultural resources would occur if the Proposed Action or alternatives were implemented. Implementation of the Proposed Action or alternatives would not result in a significant adverse effect on the population of a migratory bird and fish species.

The decision to be made by the Navy is to determine which of the alternatives analyzed in the EIS/OEIS best meet the operational needs of the Navy given that all reasonably foreseeable environmental impacts have been considered.

The Draft EIS/OEIS was distributed to Federal, State, and local agencies, elected officials, and other interested individuals and organizations. The public comment period will end on January 25, 2010. Copies of the Draft EIS/OEIS are available for public review at the following libraries: Z.J. Loussac Library, Government Documents, 3600 Denali Street, Anchorage, AK; Alaska State Library, Government Documents, 333 Willoughby Avenue, 8th Floor, Juneau, AK; A. Holmes Johnson Memorial Library, 319 Lower Mill Bay Road, Kodiak, AK; University of Alaska Fairbanks, Rasmussen Library, Government Documents, 310 Tanana Loop, Fairbanks, AK; Cordova Public Library, 622 First Street, Cordova, AK; Copper Valley Community Library, Mile 186 Glenn Highway, Glennallen, AK; Seward Community Library, 238 5th Avenue, Seward, AK; Homer Public Library, 500 Hazel Avenue, Homer, AK.

The Gulf of Alaska Navy Training Activities Draft EIS/OEIS is also available for electronic public viewing at: *http://www.GulfofAlaskaNavyEIS.com.* A paper copy of the Executive Summary or a single CD with the Draft EIS/OEIS will be made available upon written request by contacting Naval Facilities Engineering Command Northwest, Attention: Mrs. Amy Burt, Gulf of Alaska Navy Training Activities EIS/OEIS Project Manager, 1101 Tautog Circle, Suite 203, Silverdale, WA 98315–1101.

Federal, State, and local agencies, elected officials, and interested individuals and organizations are invited to be present or represented at the public hearing. Written comments can also be submitted during the open house sessions preceding the public hearings.

Oral statements will be heard and transcribed by a stenographer; however, to ensure the accuracy of the record, all statements should be submitted in writing. All statements, both oral and written, will become part of the public record on the Draft EIS/OEIS and will be responded to in the Final EIS/OEIS. Equal weight will be given to both oral and written statements. In the interest of available time, and to ensure all who wish to give an oral statement have the opportunity to do so, each speaker's comments will be limited to three (3) minutes. If you have prepared a written statement, you may read it out loud if you can do so within the three minute time limit, or you may turn it in at the public hearing or mail the statement to Naval Facilities Engineering Command Northwest, Attention: Mrs. Amy Burt, Gulf of Alaska Navy Training Activities EIS/OEIS Project Manager, 1101 Tautog Circle, Suite 203, Silverdale, WA 98315–1101. In addition, comments may be submitted online at *http://www.GulfofAlaskNavyEIS.com* during the comment period. All written comments must be postmarked by January 25, 2010, to ensure they become part of the official record. All comments will be addressed in the Final EIS/OEIS.

Dated: December 7, 2009.

A.M. Vallandingham,

Lieutenant Commander, Office of the Judge Advocate General, U.S. Navy, Federal Register Liaison Officer.

[FR Doc. E9–29565 Filed 12–10–09; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF DEFENSE

Defense Acquisition Regulations System

Waiver of 10 U.S.C. 2534 for Certain Defense Items Produced in the United Kingdom

AGENCY: Defense Acquisition Regulations System, Department of Defense (DoD).

ACTION: Notice of waiver of 10 U.S.C. 2534 for certain defense items produced in the United Kingdom.

SUMMARY: The Under Secretary of Defense (Acquisition, Technology, and Logistics) is waiving the limitation of 10 U.S.C. 2534 for certain defense items produced in the United Kingdom (UK). 10 U.S.C. 2534 limits DoD procurement of certain items to sources in the national technology and industrial base. The waiver will permit procurement of enumerated items from sources in the UK, unless otherwise restricted by statute.

DATES: *Effective Date:* This waiver is effective for one year, beginning December 28, 2009.

FOR FURTHER INFORMATION CONTACT: Ms. Patricia Foley, OUSD(AT&L), Office of the Director of Defense Procurement and Acquisition Policy, Contract Policy and International Contracting, Room 5E621, 3060 Defense Pentagon, Washington, DC 20301–3060, telephone (703) 693–1145.

SUPPLEMENTARY INFORMATION: Subsection (a) of 10 U.S.C. 2534 provides that the Secretary of Defense may procure the items listed in that subsection only if the manufacturer of the item is part of the national technology and industrial base. Subsection (i) of 10 U.S.C. 2534 authorizes the Secretary of Defense to exercise the waiver authority in subsection (d), on the basis of the applicability of paragraph (2) or (3) of that subsection, only if the waiver is made for a particular item listed in subsection (a) and for a particular foreign country. Subsection (d) authorizes a waiver if the Secretary determines that application of the limitation ''would impede the reciprocal procurement of defense items under a memorandum of understanding providing for reciprocal procurement of defense items'' and if he determines that ''that country does not discriminate against defense items produced in the United States to a greater degree than the United States discriminates against defense items produced in that country.'' The Secretary of Defense has delegated the waiver authority of 10 U.S.C. 2534(d) to the Under Secretary of Defense (Acquisition, Technology, and Logistics).

DoD has had a Reciprocal Defense Procurement Memorandum of Understanding (MOU) with the UK since 1975, most recently renewed on December 16, 2004.

The Under Secretary of Defense (Acquisition, Technology, and Logistics) finds that the UK does not discriminate against defense items produced in the United States to a greater degree than the United States discriminates against defense items produced in the UK, and also finds that application of the limitation in 10 U.S.C. 2534 against defense items produced in the UK would impede the reciprocal procurement of defense items under the MOU.

Under the authority of 10 U.S.C. 2534, the Under Secretary of Defense (Acquisition, Technology, and Logistics) has determined that application of the limitation of 10 U.S.C. 2534(a) to the procurement of any defense item produced in the UK that is listed below would impede the reciprocal procurement of defense items under the MOU with the UK.

On the basis of the foregoing, the Under Secretary of Defense (Acquisition, Technology, and Logistics) is waiving the limitation in 10 U.S.C. 2534(a) for procurements of any defense item listed below that is produced in the UK. This waiver applies only to the limitations in 10 U.S.C. 2534(a). It does not apply to any other limitation, including section 8018 of the DoD Appropriations Act for Fiscal Year 2009 (Pub. L. 110–329). This waiver applies to procurements under solicitations issued during the period from December 28, 2009, to December 27, 2010 Similar waivers have been granted since 1998, most recently in 2008 (73 FR 73257, December 2, 2008).

List of Items to Which This Waiver Applies

1. Air circuit breakers.
2. Welded shipboard anchor and mooring chain with a diameter of four inches or less.
3. Gyrocompasses.
4. Electronic navigation chart systems.
5. Steering controls.
6. Pumps.
7. Propulsion and machinery control systems.
8. Totally enclosed lifeboats.

Amy G. Williams,

Editor, Defense Acquisition Regulations System.

[FR Doc. E9–29568 Filed 12–10–09; 8:45 am]

BILLING CODE 5001–08–P

the northern section of the Bay where pinniped and cetacean species are more abundant. Based on these previous NEPA analyses and the analysis contained within this notice, NMFS has determined that issuance of a one-year IHA to Caltrans for the taking, by Level B harassment only, incidental to the Antioch Bridge Seismic Retrofit project does not have the potential to result in any significant changes to the human environment. Therefore, the issuance of an IHA to Caltrans for the specified activity falls under the category of those actions which can be categorically excluded from the need to prepare an Environmental Assessment or Environmental Impact Statement.

Dated: December 14, 2009.

Helen M. Golde,

Deputy Director, Office of Protected Resources, National Marine Fisheries Service.

[FR Doc. E9–30179 Filed 12–18–09; 8:45 am]

BILLING CODE 3510–22–S

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Public Hearings for the Draft Environmental Impact Statement/Overseas Environmental Impact Statement for the Gulf of Alaska Navy Training Activities; Correction

AGENCY: Department of Navy, DoD.

ACTION: Notice; correction.

SUMMARY: The Department of the Navy published a document in the **Federal Register** (74 FR 65761) of December 11, 2009, concerning public hearings on a Draft Environmental Impact Statement/Overseas Environmental Impact Statement for the Gulf of Alaska Navy Training Activities. The document contained an incorrect date.

FOR FURTHER INFORMATION CONTACT: Naval Facilities Engineering Command Northwest, Attention: Mrs. Amy Burt, Gulf of Alaska Navy Training Activities EIS/OEIS Project Manager, 1101 Tautog Circle, Suite 203, Silverdale, WA 98315–1101; or *http://www.GulfofAlaskaNavyEIS.com.*

Correction

In the **Federal Register** (74 FR 65761) of December 11, 2009, on page 65762, in the first column, correct the fifth paragraph to read:

5. Tuesday, January 12, 2010, at Orca Adventure Lodge Meeting Room & Café, 2500 Orca Road, Cordova, Alaska.

Dated: December 15, 2009.

T. M. Cruz,

Lieutenant Commander, Office of the Judge Advocate General, U.S. Navy, Alternate Federal Register Liaison Officer.

[FR Doc. E9–30318 Filed 12–18–09; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF EDUCATION

Notice of Proposed Information Collection Requests

AGENCY: Department of Education.

SUMMARY: The Acting Director, Information Collection Clearance Division, Regulatory Information Management Services, Office of Management, invites comments on the proposed information collection requests as required by the Paperwork Reduction Act of 1995.

DATES: Interested persons are invited to submit comments on or before February 19, 2010.

SUPPLEMENTARY INFORMATION: Section 3506 of the Paperwork Reduction Act of 1995 (44 U.S.C. Chapter 35) requires that the Office of Management and Budget (OMB) provide interested Federal agencies and the public an early opportunity to comment on information collection requests. OMB may amend or waive the requirement for public consultation to the extent that public participation in the approval process would defeat the purpose of the information collection, violate State or Federal law, or substantially interfere with any agency's ability to perform its statutory obligations. The Acting Director, Information Collection Clearance Division, Regulatory Information Management Services, Office of Management, publishes that notice containing proposed information collection requests prior to submission of these requests to OMB. Each proposed information collection, grouped by office, contains the following: (1) Type of review requested, *e.g.* new, revision, extension, existing or reinstatement; (2) Title; (3) Summary of the collection; (4) Description of the need for, and proposed use of, the information; (5) Respondents and frequency of collection; and (6) Reporting and/or Recordkeeping burden. OMB invites public comment.

The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology.

Dated: December 15, 2009.

James Hyler,

Acting Director, Information Collection Clearance Division, Regulatory Information Management Services, Office of Management.

Office of Postsecondary Education

Type of Review: New.

Title: IEPS Fulbright-Hays Group Projects Abroad Customer Surveys.

Frequency: On occasion.

Affected Public: Individuals or households.

Reporting and Recordkeeping Hour Burden:

Responses: 1,829.

Burden Hours: 809.

Abstract: The purpose of this evaluation is to assess the impact of the Group Projects Abroad (GPA) program in enhancing the foreign language capacity of the United States. Three surveys will be conducted: a survey of GPA Project Directors; a survey of 2002–2008 GPA alumni; and a survey of 2009 alumni. Results from the three surveys will inform the writing of a final report determining the impact of the GPA program.

Requests for copies of the proposed information collection request may be accessed from *http://edicsweb.ed.gov*, by selecting the ''Browse Pending Collections'' link and by clicking on link number 4182. When you access the information collection, click on ''Download Attachments'' to view. Written requests for information should be addressed to U.S. Department of Education, 400 Maryland Avenue, SW., LBJ, Washington, DC 20202–4537. Requests may also be electronically mailed to *ICDocketMgr@ed.gov* or faxed to 202–401–0920. Please specify the complete title of the information collection when making your request.

Comments regarding burden and/or the collection activity requirements should be electronically mailed to *ICDocketMgr@ed.gov* 202–401–0526. Individuals who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1–800–877–8339.

[FR Doc. E9–30276 Filed 12–18–09; 8:45 am]

BILLING CODE 4000–01–P

Appendix B

Cooperating Agency Correspondence

TABLE OF CONTENTS

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DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON, DC 20350-2000

IN REPLY REFER TO

5090
Ser N456E/8U158107
31 March 2008

Dr. James W. Balsiger
Assistant Administrator, Acting
National Oceanic and Atmospheric
Administration (NOAA) Fisheries
1315 East West Highway
Silver Spring, MD 20910

Dear Dr. Balsiger:

In accordance with the National Environmental Policy Act (NEPA) and Executive Order 12114, the Department of the Navy (Navy) is preparing an Environmental Impact Statement/ Overseas Environmental Impact Statement (EIS/OEIS) to evaluate potential environmental effects of conducting Navy training in and around the Gulf of Alaska (GOA). In order to adequately evaluate the potential environmental effects of the proposed action, Navy and the National Marine Fisheries Service need to work together on acoustic effects to marine species protected under the Marine Mammal Protection Act (MMPA) and the Endangered Species Act. To assist in this effort and in accordance with 40 CFR Part 1501 and the Council on Environmental Quality Cooperating Agency guidance issued on January 30, 2002, Navy requests NMFS serve as a cooperating agency for the development of the GOA EIS/OEIS.

The No Action Alternative is the continuation of training activities associated with large-scale joint training events in the GOA. Two action alternatives are proposed to accomplish the proposed action. Alternative (1) consists of an increase in the number of training activities from levels described in the No Action Alternative, along with force structure changes associated with the introduction of new weapon systems, vessels, and aircraft into the Fleet. Alternative (2) consists of all elements of Alternative (1) plus the addition of a second summertime carrier strike group exercise in the GOA each year.

The purpose of the proposed action is to:

- Support U.S. Pacific Command (PACOM) and U.S. Northern Command (NORTHCOM) training requirements;

- Achieve and maintain Fleet readiness using the GOA to support and conduct current, emerging, and future training activities;
- Accommodate new training requirements associated with the introduction of new weapons and systems to the Fleet; and
- Support civilian authorities in homeland defense training exercises.

The EIS/OEIS will address reasonably foreseeable activities in the particular geographical areas affected by the No Action Alternative and action alternatives. This EIS/OEIS will analyze the effects of sound in the water on marine mammals in the areas of the GOA where activities occur. In addition, other environmental resource areas that will be addressed as applicable in the EIS/OEIS include, but are not limited to: air quality; airspace; biological resources, including threatened and endangered species; cultural resources; geology and soils; hazardous materials and waste; health and safety; noise; socioeconomics; transportation; and water resources.

As the lead agency, the Navy will be responsible for preparing the EIS/OEIS which includes, but is not limited to the following:

- Gathering all necessary background information and preparing the EIS/OEIS and all necessary permit applications associated with acoustic issues on the GOA study area.
- Working with NMFS personnel to determine the method of estimating potential effects to protected marine species, including threatened and endangered species.
- Determining the scope of the EIS/OEIS, including the alternatives evaluated.
- Circulating the appropriate NEPA documentation to the general public and any other interested parties.
- Scheduling and supervising meetings held in support of the NEPA process and compiling any comments received.
- Maintaining an administrative record and responding to any Freedom of Information Act requests relating to the EIS/OEIS.

As a cooperating agency, the Navy requests NMFS support the Navy in the following manner:

- Providing timely comments after the Agency Information Meeting (which will be held at the onset of the EIS/OEIS process) and on working drafts of the EIS/OEIS documents. The Navy requests that comments on draft EIS/OEIS documents be provided within 30 calendar days.

- Responding to Navy requests for information in a timely manner.

- Coordinating, to the maximum extent practicable, any public comment periods that are necessary in the MMPA permitting process with the Navy's NEPA public comment periods.

- Participating, as necessary, in meetings hosted by the Navy for discussion of EIS/OEIS-related issues.

- Adhering to the overall schedule as set forth by the Navy.

- Providing a formal, written response to this request.

The Navy views this agreement as important to the successful completion of the NEPA process for the GOA EIS/OEIS. It is the Navy's goal to complete the analysis as expeditiously as possible, while using best scientific information available. NOAA Fisheries assistance will be invaluable in that endeavor.

My point of contact for this action is Ms. Karen M. Foskey, (703) 602-2859, email: Karen.Foskey@navy.mil.

Sincerely,

L. RICE
Read Admiral, U.S. Navy
Director, Environmental Readiness
Division (OPNAV N45)

Copy to:
Deputy Assistant Secretary of the Navy (Environment)
Office of Assistant General Counsel (Installation & Environment)

Commander, U.S. Pacific Fleet (N01CE, N7)
Commander, U.S. Fleet Forces Command (N73, N77)
Commander, Naval Installations Command (N45)
Commander, Navy Region Northwest (N40)
Commander, Naval Facilities Engineering Command, Northwest (N45)

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR. HAWAII 96860-3131

IN REPLY REFER TO:
5090
Ser N01CE1/0379
4 Apr 08

Mr. Tom Melius
Regional Director
U.S. Fish & Wildlife Service – Alaska Region
1011 East Tudor Road
Anchorage, Alaska 99503

Dear Mr. Melius:

SUBJECT: GULF OF ALASKA ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT FOR NAVY TRAINING ACTIVITIES

In accordance with the Council on Environmental Quality regulations implementing the National Environmental Policy Act, the Department of the Navy (Navy) requests that the U.S. Fish & Wildlife Service serve as a cooperating agency for the development of the Gulf of Alaska (GOA) Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS).

This EIS/OEIS will evaluate several alternatives based on intensity and frequency of training within an identified geographic area.

The proposed action will allow the Navy to:

- Maintain baseline training activities at current levels;
- Increase training activities from current levels to support future Fleet exercise requirements;
- Accommodate new training requirements associated with the introduction of new weapons and systems to the Fleet; and
- Support civilian authorities in homeland defense training exercises.

The EIS/OEIS will address reasonably foreseeable activities in the particular geographical areas affected by the alternatives and analyze the potential effects of additional training activities. Areas of analysis will the potential effects of sound in the water on marine mammals in the areas of the GOA where training activities occur. Other environmental resource areas that will be addressed include, but are not limited to: air quality; airspace; biological resources, including threatened and endangered species; historic and cultural resources; water resources; geology; hazardous materials and waste; health and safety; noise; socioeconomics; transportation; fishing; and recreation.

As the lead agency, the Navy will prepare the EIS/OEIS that includes but is not limited to the following:

- Gathering all necessary background information and preparing the EIS/OEIS.

  Working with U.S. Fish & Wildlife Service personnel to evaluate potential impacts of changes and enhancements on wildlife refuges, critical habitat, and wildlife resources including threatened and endangered species.

- Identifying the scope of the EIS/OEIS, including the alternatives evaluated.

- Circulating the appropriate NEPA documentation to the general public and any other interested parties.

- Scheduling and supervising meetings held in support of the NEPA process, and compiling any comments received.

- Maintaining an administrative record and responding to any Freedom of Information Act requests relating to the EIS/OEIS.

As a cooperating agency, the Navy requests the U.S. Fish & Wildlife Service support the Navy by:

  Providing timely comments throughout the EIS process, to include, on working drafts of the EIS/OEIS documents. The Navy requests that comments on draft EIS/OEIS documents be provided within 30 calendar days.

- Responding to Navy requests for information. Timely U.S. Fish & Wildlife Service input will be critical to meeting our planned schedule.

- Participating, as necessary, in meetings hosted by the Navy for discussion of EIS/OEIS related issues including the preparation of the draft EIS/OEIS and responses to comments.

- Adhering to the overall schedule as set forth by the Navy.

The Navy views your participation as a cooperating agency important to the successful completion of the NEPA process for the Gulf of Alaska EIS/OEIS. It is the Navy's goal to complete the analysis as expeditiously as possible, while using best scientific information available. USFWS assistance will be invaluable in that endeavor.

Navy's timelines for the completion of this EIS/OEIS are aggressive. The schedule calls for the draft EIS/OEIS and public Hearings in Mid 2009, release of the final EIS/OEIS in early 2010 and a record of decision in Mid 2010.

My point of contact for this action is Ms. Carolyn L. Winters, (360) 315-5092, email: carolyn.winters@navy.mil.

Sincerely,

J. P. RIOS
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

Copy to:
Chief of Naval Operations (N45)
Commander, U.S. Fleet Forces Command (N73, N77)
Commander, U.S. Pacific Fleet (N7)
Commander, Naval Installations Command (N45)
Commander, Navy Region Northwest (N4, N40)
Commander, Naval Facilities Engineering Command, Northwest (EV1)

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON, DC 20350-2000

IN REPLY REFER TO

5090
Ser N456M/8U158134
21 April 2008

Mr. P. Michael Payne
Division Chief
Permits, Conservation, and Education Division
National Marine Fisheries Service (NMFS)
National Oceanic and Atmospheric Administration
B-SSMC3, Room 13821
1315 East-West Highway
Silver Springs, MD 20910

Dear Mr. Payne:

The Commander, U.S. Pacific Fleet (CPF) is preparing an Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) to assess the potential environmental impacts associated with Navy training in the Gulf of Alaska (GOA). Specifically, the Proposed Action is to continue and increase training activities in the GOA. A collection of actions will be evaluated within the EIS/OEIS.

The No Action Alternative is the continuation of training activities associated with large-scale Joint training events in the GOA. Two action alternatives are proposed to accomplish the Proposed Action. Alternative 1 consists of an increase in the number of training activities from levels described in the No Action Alternative, along with force structure changes associated with the introduction of new weapon systems, vessels, and aircraft into the Fleet. Alternative 2 consists of all elements of Alternative 1 plus the addition of a second summertime carrier strike group exercise in the GOA each year.

The purpose of the Proposed Action is to:

- Support U.S. Pacific Command (PACOM) and U.S. Northern Command (NORTHCOM) training requirements;

  Support Joint Task Force 519 (JTF-519) training requirements;

- Achieve and maintain Fleet readiness using the GOA to support and conduct current, emerging, and future training activities;
- Accommodate new training requirements associated with the introduction of new weapons and systems to the Fleet; and
- Support civilian authorities in homeland defense training exercises.

More specific descriptions of the alternatives are included in enclosure (1).

Conduct of these activities will likely result in acoustic exposure of marine mammals listed under the Marine Mammal Protection Act (MMPA) from mid-frequency active sonar (MFAS) and impulsive sources, and likely requires a Letter of Authorization (LOA). As such, the Navy will be submitting an LOA request to your office in the coming months for these activities. It is expected that species for which an LOA is sought will include species listed under the Endangered Species Act.

As applicant for a Letter of Authorization, the Navy requests your office initiate early consultation procedures with the Endangered Species Division, in accordance with Section 7(a)(3) of the Endangered Species Act and its implementing regulation at 50 CFR §402.11. In accordance with these regulations, the attached Preliminary Draft Description of the Proposed Action and Alternatives for the GOA Navy Training Activities EIS/OEIS serves as the Navy's definitive proposal outlining the action (Enclosure 1). As previously stated, the effects of the proposed action for purposes of the MMPA permit will be from exposure to acoustic energy from MFAS and impulsive sources. The level of magnitude of these effects is still being modeled, and will be included in the Navy's request for an LOA.

Title 10, Section 5062 of the United States Code requires the Navy to be "organized, trained, and equipped primarily for prompt and sustained combat incident to operations at sea." The current and emerging training activities in the GOA will be used to meet this legal requirement. Thus, in accordance with 50 CFR §402.11(b), this letter serves as the Navy's statement that it intends to implement the proposal should an MMPA Letter of Authorization be obtained from your office.

We appreciate your continued support in helping us to meet our Section 7 responsibilities. My point of contact for this matter is Ms. Elizabeth Phelps, 703-604-5420 or Elizabeth.Phelps@navy.mil.

Sincerely,

R. E. Tickle

Ronald Tickle
Head, Operational Environmental
Readiness and Planning Branch
Environmental Readiness Division
(OPNAV N45)

Enclosure:
(1) DRAFT - Gulf of Alaska Navy Training Activities EIS/OEIS Description of Proposed Action and Alternatives (Dated March 2008)

Copy to:
Chief of Naval Operations (N43)
Commander, U.S. Fleet Forces Command (N73, N77)
Commander, U.S. Pacific Fleet (N01CE, N3, N7)
Commander, Naval Installations Command (N45)
Commander, Navy Region Northwest (N40)
Commander, Naval Facilities Engineering Command, Northwest (N45)

From: Frances_Mann@fws.gov
To: Burt, Amy E CIV NAVFAC NW, EV1;
cc: Ann_Rappoport@fws.gov; Frances_Mann@fws.gov;
Subject: FWS declines to be cooperators on EIS for Gulf of Alaska
Date: Monday, September 08, 2008 16:21:55

Dear Ms. Burt:

Thank you for your April 4, 2008, request for the U.S. Fish and Wildlife Service to be a cooperating agency in your preparation of an Environmental Impact Statement (EIS) for navy training exercises in the Gulf of Alaska. I regret that we must decline this opportunity due to staffing and timing constraints of other Service priorities. Nevertheless, we are concerned about potential effects of the proposed activities on Service trust resources in this area and surrounding areas where there could be secondary and indirect effects. Consequently we expect to maintain our status as a commenting agency throughout your National Environmental Policy Act process for this potential action. In that regard, we will involve pertinent Service programs and expect to work with your staff as the EIS is developed.

For further coordination and comments on this project, please contact Ann Rappoport or me (contact information provide below).

Thank you.

Frances

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Appendix C

Regulatory Consultations

APPENDIX C
AGENCY CONSULTATION

The Navy has consulted with regulatory agencies as appropriate during the National Environmental Policy Act process and prior to implementation of the Proposed Action to ensure requirements have been met. The following is a list of the Gulf of Alaska (GOA) regulatory agency consultation documentation. Agency correspondence and supporting documentation can be found on the GOA Environmental Impact Statement (EIS) website at www.gulfofalaskanavyeis.com.

U.S. Fish and Wildlife Service, Alaska Region, Endangered Species Act

- U.S. Navy, February 2010. Gulf of Alaska Navy Training Activities Biological Evaluation.
- U.S. Fish and Wildlife, March 24, 2010. Concurrence Letter, Gulf of Alaska Navy Training Activities (Consultation #2010-0075).

National Oceanic and Atmospheric Administration - National Marine Fisheries Service, Headquarters, Endangered Species Act

- U.S. Navy, April 2008. Request for Endangered Species Act Section 7 consultation.
- U.S. Navy, March 2010. Request for formal Endangered Species Act Section 7 consultation.

National Oceanic and Atmospheric Administration - National Marine Fisheries Service, Headquarters, Marine Mammal Protection Act

- U.S. Navy, March 2009. Request for five-year Letter of Authorization.
- U.S. Navy, August 2009. Request for review of working draft of Environmental Impact Statement (Draft EIS Version 3).
- U.S. Navy, November 2009. Revised request for five-year Letter of Authorization
- National Marine Fisheries Service, February 3, 2010. Taking and Importing Marine Mammals; Navy Training Activities Conducted in the Gulf of Alaska; Notice of receipt of application for letter of authorization. Published in the Federal Register (75 FR 5575 - 5576).
- National Marine Fisheries Service, October 19, 2010. Taking and Importing Marine Mammals; Military Training Activities Conducted Within the Gulf of Alaska (GoA) Temporary Maritime Activities Area (TMAA); Proposed Rule. Published in the Federal Register (75 FR 64508 - 64583).

National Oceanic and Atmospheric Administration - National Marine Fisheries Service, Magnuson-Stevens Fishery Conservation and Management Act

- U.S. Navy, August 2010. Gulf of Alaska (GOA) Navy Training Activities Essential Fish Habitat Assessment.
- National Marine Fisheries Service, January 4, 2011. Essential Fish Habitat Assessment consultation letter.
- U.S. Navy, January 24, 2011. Essential Fish Habitat Assessment consultation response letter.

Alaska Department of Natural Resources, Alaska Coastal Management Program, Coastal Zone Management Act

- U.S. Navy, June 2009. Request for Agency Preliminary Review of GoA Navy Training Activities EIS/OEIS for Alaska Coastal Management Program Applicability and Enforceable Policy Guidance.
- Alaska Department of Natural Resources, Alaska Coastal Management Program, August 27, 2009. Agency preliminary review response letter.
- U.S. Navy, July 2010. Coastal Zone Management Act *de minimis* statement letter.
- Alaska Department of Natural Resources, Alaska Coastal Management Program, October 14, 2010. De Minimis Consistency Response-Agreement.

Alaska Department of Natural Resources, Office of History and Archaeology, State Historic Preservation Office, National Historic Preservation Act, Section 106

- U.S. Navy, April 2010. National Historic Preservation Act Section 106 Determination for Gulf of Alaska Navy Training Activities.
- Alaska Department of Natural Resources, Office of History and Archaeology, State Historic Preservation Office, May 2010. Notice of No Historic Properties Affected.

Government to Government Consultation

- Department of Defense, March 2008. Kaguyak Tribal Council Notification Letter of anticipated U.S. Navy training activities in the Gulf of Alaska.
- Department of Defense, April 2008. Yakutat Tlingit Tribal Council Notification Letter of anticipated U.S. Navy training activities in the Gulf of Alaska.
- Native Village of Port Lions, June 9, 2008. Letter of No Concerns.
- Department of Navy, June 2008. Internal Memo with Status of Response of Tribes to GOA EIS letters.
- Department of Navy, December 2009. Native Village of Afognak Notification Letter of anticipated U.S. Navy training activities in the Gulf of Alaska.
- Department of Navy, December 2009. Native Village of Chenega Notification Letter of anticipated U.S. Navy training activities in the Gulf of Alaska.
- Department of Navy, December 2009. Native Village of Eyak Notification Letter of anticipated U.S. Navy training activities in the Gulf of Alaska.
- Department of Navy, December 2009. Kaguyak Village Notification Letter of anticipated U.S. Navy training activities in the Gulf of Alaska.
- Department of Navy, December 2009. Lesnoi Village Notification Letter of anticipated U.S. Navy training activities in the Gulf of Alaska.
- Department of Navy, December 2009. Native Village of Old Harbor Notification Letter of anticipated U.S. Navy training activities in the Gulf of Alaska.
- Department of Navy, December 2009. Native Village of Ouzinkie Notification Letter of anticipated U.S. Navy training activities in the Gulf of Alaska.
- Department of Navy, December 2009. Native Village of Port Graham Notification Letter of anticipated U.S. Navy training activities in the Gulf of Alaska.
- Department of Navy, December 2009. Native Village of Port Lions Notification Letter of anticipated U.S. Navy training activities in the Gulf of Alaska.
- Department of Navy, December 2009. Shoonaq' Tribe of Kodiak Notification Letter of anticipated U.S. Navy training activities in the Gulf of Alaska.
- Department of Navy, December 2009. Native Village of Tatitlek Notification Letter of anticipated U.S. Navy training activities in the Gulf of Alaska.
- Department of Navy, December 2009. Yakutat Tlingit Tribe Notification Letter of anticipated U.S. Navy training activities in the Gulf of Alaska.
- Native Village of Afognak, January 22, 2010. Native Village of Afognak Response Letter.
- Native Village of Eyak, January 22, 2010. Native Village of Eyak Response Letter

Federal Aviation Administration (FAA) Correspondence

- U.S. Navy, May 2009. OPNAV Recommendation ICO Navy Training Activities in the Gulf of Alaska letter.

Appendix D

Marine Mammal Modeling

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D MARINE MAMMAL MODELING

D.1 BACKGROUND AND OVERVIEW

All marine mammals are protected under the Marine Mammal Protection Act (MMPA). The MMPA prohibits, with certain exceptions, the unauthorized take of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S.

The Endangered Species Act of 1973 (ESA) provides for the conservation of species that are endangered or threatened throughout all or a significant portion of their range, and the conservation of their ecosystems. A “species” is considered endangered if it is in danger of extinction throughout all or a significant portion of its range. A species is considered threatened if it is likely to become an endangered species within the foreseeable future. There are marine mammals, already protected under MMPA, listed as either endangered or threatened under ESA, and afforded special protections.

Actions involving sound in the water include the potential to harass marine animals in the surrounding waters. Demonstration of compliance with MMPA and the ESA, using best available science, has been assessed using criteria and thresholds accepted or negotiated, and described here.

Sections of the MMPA (16 United States Code [U.S.C.] 1361 et seq.) direct the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity, other than commercial fishing, within a specified geographical region.

Authorization for incidental takings may be granted if the National Marine Fisheries Service (NMFS) finds that the taking will have no more than a negligible impact on the species or stock(s), will not have an immitigable adverse impact on the availability of the species or stock(s) for subsistence uses, and that the permissible methods of taking, and requirements pertaining to the mitigation, monitoring and reporting of such taking are set forth.

NMFS has defined negligible impact in 50 Code of Federal Regulations (CFR) 216.103 as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

Subsection 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the United States can apply for an authorization to incidentally take small numbers of marine mammals by harassment. The National Defense Authorization Act of 2004 (NDAA) (Public Law 108-136) removed the small numbers limitation and amended the definition of “harassment” as it applies to a military readiness activity to read as follows:

> (i) *any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild [Level A Harassment]; or*
>
> (ii) *any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where such behavioral patterns are abandoned or significantly altered [Level B Harassment].*

The primary potential impact to marine mammals from underwater acoustics is Level B harassment from exposure to various sources of sound in the water including sonar and explosives. The criteria for modeling impacts from these sources are detailed in the following sections.

D.1.1 Acoustic Sound Sources

The amount of Threshold Shift depends on the amplitude, duration, frequency, and temporal pattern of the sound exposure. Threshold shifts will generally increase with the amplitude and duration of sound exposure. For continuous sounds, exposures of equal energy will lead to approximately equal effects (Ward 1997). For intermittent sounds, less Threshold Shift will occur than from a continuous exposure with the same energy (some recovery will occur between exposures) (Kryter et al., 1966; Ward 1997). The magnitude of Threshold Shift normally decreases with the amount of time post-exposure (Miller 1974).

Permanent Threshold Shift (PTS) is non-recoverable and results from the destruction of tissues within the auditory system. PTS therefore qualifies as an injury and is classified as Level A harassment under the MMPA. The smallest amount of PTS (onset- PTS) is taken to be the indicator for the smallest degree of injury that can be measured. The acoustic exposure associated with onset-PTS is used to define the outer limit of the Level A exposure zone.

If the TS eventually returns to zero (the threshold returns to the pre-exposure value), the TS is a Temporary Threshold Shift (TTS). TTS is, from recent rulings (NOAA 2001; 2002a), considered to result from the temporary, non-injurious distortion of hearing-related tissues. The smallest measurable amount of TTS (onset-TTS) is taken as the best indicator for slight temporary sensory impairment. Because it is considered non-injurious, the acoustic exposure associated with onset-TTS is used to define the outer limit of the portion of the Level B exposure zone attributable to physiological effects. This follows from the concept that hearing loss potentially affects an animal's ability to react normally to the sounds around it. Therefore, the potential for TTS is considered as Level B harassment caused by physiological effects on the auditory system.

The exposure threshold established for onset-TTS is 195 dB re 1μPa^2-s. This result is supported by the short-duration tone data of Finneran et al. (2002, 2005) and the long-duration sound data from Nachtigall et al., (2003). Together, these data demonstrate that TTS in small odontocetes is correlated with the received EL and that onset-TTS exposures are fit well by an equal-energy line passing through 195 dB re 1μPa^2-s. Absent any additional data for other species and being that it is likely that small odontocetes are more sensitive to the mid-frequency active/high-frequency active frequency levels of concern, this threshold is used for analysis for all cetacea.

The PTS thresholds established for use in this analysis are based on a 20 dB increase in exposure EL over that required for onset-TTS. The 20 dB value is based on estimates from terrestrial mammal data of PTS occurring at 40 dB or more of TS, and on TS growth occurring at a rate of 1.6 dB/dB increase in exposure EL. This is conservative because: (1) 40 dB of TS is actually an upper limit for TTS used to approximate onset-PTS, and (2) the 1.6 dB/dB growth rate is the highest observed in the data from Ward et al. (1958, 1959). Using this estimation method (20 dB increase from onset-TTS) for analysis, the PTS threshold for cetacea is 215 dB re 1μPa^2-s.

Unlike cetaceans, the TTS and PTS thresholds used for pinnipeds vary with species. Otariids have thresholds of 206 dB re 1μPa^2-s for TTS and 226 dB re 1μPa^2-s for PTS. Northern elephant seals are similar to otariids (TTS = 204 dB re 1μPa^2-s, PTS = 224 dB re 1μPa^2-s) but are lower for harbor seals (TTS = 183 dB re 1μPa^2-s, PTS = 203 dB re 1μPa^2-s). A certain proportion of marine mammals is expected to experience behavioral disturbance at different received sound pressure levels and are counted as Level B harassment takes. The details of this theory and calculation are described in the Risk Function section. Table D-1 summarizes the threshold levels for analysis of non-explosive sound sources used during Navy training activities in the Gulf of Alaska (GOA) Temporary Maritime Activities Area (TMAA).

Table D-1 - Non-Explosive Sound Source Threshold Levels

Physiological Effects			
Animal	**Criteria**	**Threshold (re 1μPa^2-s)**	**MMPA Effect**
Cetacean	TTS PTS	195 215	Level B Harassment Level A Harassment
Pinnipeds			
Northern Elephant Seal	TTS PTS	204 224	Level B Harassment Level A Harassment
Steller Sea Lion	TTS PTS	206 226	Level B Harassment Level A Harassment
Northern Fur Seal	TTS PTS	206 226	Level B Harassment Level A Harassment

D.1.2 Explosives

For underwater explosions resulting from use of live ordnance in the TMAA, in the absence of any mitigation or monitoring measures, there is a very small chance that a marine mammal could be injured or killed when exposed to the energy generated from an explosive force. Analysis of sound and pressure impacts from underwater explosions is based on criteria and thresholds initially presented in U.S. Navy Environmental Impact Statements for ship shock trials of the Seawolf submarine and the Winston Churchill (DDG 81), and subsequently adopted by NMFS.

Non-lethal injurious impacts (Level A Harassment) are defined in those documents as tympanic membrane (TM) rupture and the onset of slight lung injury. The threshold for Level A Harassment corresponds to a 50-percent rate of TM rupture, which can be stated in terms of an energy flux density (EFD) value of 205 dB re 1μPa^2-s. TM rupture is well-correlated with permanent hearing impairment. Ketten (1998) indicates a 30-percent incidence of permanent threshold shift (PTS) at the same threshold.

The criteria for onset of slight lung injury were established using partial impulse because the impulse of an underwater blast wave was the parameter that governed damage during a study using mammals, not peak pressure or energy (Yelverton, 1981). Goertner (1982) determined a way to calculate impulse values for injury at greater depths, known as the Goertner "modified" impulse pressure. Those values are valid only near the surface because as hydrostatic pressure increases with depth, organs like the lung, filled with air, compress. Therefore the "modified" impulse pressure thresholds vary from the shallow depth starting point as a function of depth.

The shallow depth starting points for calculation of the "modified" impulse pressures are mass-dependent values derived from empirical data for underwater blast injury (Yelverton, 1981). During the calculations, the lowest impulse and body mass for which slight, and then extensive, lung injury found during a previous study (Yelverton et al, 1973) were used to determine the positive impulse that may cause lung injury. The Goertner model is sensitive to mammal weight such that smaller masses have lower thresholds for positive impulse so injury and harassment will be predicted at greater distances from the source for them. Impulse thresholds of 13.0 and 31.0 psi-msec, found to cause slight and extensive injury in a dolphin calf, were used as thresholds in the analysis contained in this document.

Level B (behavior response) Harassment includes temporary (auditory) threshold shift (TTS), a slight, recoverable loss of hearing sensitivity. One criterion used for TTS, the total energy flux density of the sound, is a threshold of 182 dB re 1µPa^2-s maximum EFD level in any 1/3-octave band above 100 Hz for toothed whales (e.g., dolphins). A second criterion, a maximum allowable peak pressure of 23 psi, has recently been established by NMFS to provide a more conservative range for TTS when the explosive or animal approaches the sea surface, in which case explosive energy is reduced, but the peak pressure is not. NMFS applies the more conservative of these two.

For multiple successive explosions (MSE) occurring underwater, the acoustic criterion for non-TTS behavioral disturbance is used to account for behavioral effects significant enough to be judged as harassment, but occurring at lower sound energy levels than those that may cause TTS. The non-TTS threshold is derived following the approach of the Churchill Final Environmental Impact Statement (FEIS) for the energy-based TTS threshold. The research on pure-tone exposures reported in Schlundt et al. (2000) and Finneran and Schlundt (2004) provided a threshold of 192 dB re 1µPa^2-s as the lowest TTS value. This value for pure-tone exposures is modified for explosives by (a) interpreting it as an energy metric, (b) reducing it by 10 dB to account for the time constant of the mammal ear, and (c) measuring the energy in 1/3 octave bands, the natural filter band of the ear. The resulting TTS threshold for explosives is 182 dB re 1µPa^2-s in any 1/3 octave band. As reported by Schlundt et al. (2000) and Finneran and Schlundt (2004), instances of altered behavior in the pure-tone research generally began five dB lower than those causing TTS. The non-TTS threshold is therefore derived by subtracting 5 dB from the 182 dB re 1µPa^2-s in any 1/3 octave band threshold, resulting in a 177 dB re 1µPa^2-s (EL) sub-TTS behavioral disturbance threshold for MSE. Table D-2 summarizes the threshold levels for analysis of explosives used in the GOA.

Table D-2 - Explosives Threshold Levels

Threshold Type	Threshold Level
Level A – 50% Eardrum rupture	205 dB re 1µPa^2-s
Temporary Threshold Shift (TTS) (peak 1/3 octave energy)	182 dB re 1µPa^2-s
Sub-TTS Threshold for Multiple Successive Explosions (peak 1/3 octave energy)	177 dB re 1µPa^2-s
Temporary Threshold Shift (TTS) (peak pressure)	23 psi
Level A – Slight lung injury (positive impulse)	13 psi-ms
Fatality – 1% Mortal lung injury (positive impulse)	31 psi-ms

The sound sources will be located in an area that is inhabited by species listed as threatened or endangered under the ESA (16 USC §§ 1531-1543). Operation of the sound sources, that is, transmission of acoustic signals in the water column, could potentially cause harm or harassment to listed species.

“Harm” defined under ESA regulations is “…an act which actually kills or injures…” (50 CFR 222.102) listed species. “Harassment” is an “intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering” (50 CFR 17.3).

If a federal agency determines that its proposed action “may affect” a listed species, it is required to consult, either formally or informally, with the appropriate regulator. There is no permit issuance under ESA, rather consultation among the cognizant federal agencies under Section 7 of the ESA. Such consultations would likely be concluded favorably, subject to requirements that the activity will not appreciably reduce the likelihood of the species’ survival and recovery and impacts are minimized and mitigated.

D.2 ACOUSTIC SOURCES

The acoustic sources employed in the TMAA are categorized as either broadband (producing sound over a wide frequency band) or narrowband (producing sound over a frequency band that that is small in comparison to the center frequency). In general, the majority of acoustic energy results from narrowband sonars utilized for Anti-Submarine Warfare (ASW) activities and underwater explosions as broadband sources. This delineation of source types has a couple of implications. First, the transmission loss used to determine the impact ranges of narrowband ASW sonars can be adequately characterized by model estimates at a single frequency. Broadband explosives, on the other hand, produce significant acoustic energy across several frequency decades of bandwidth. Propagation loss is sufficiently sensitive to frequency as to require model estimates at several frequencies over such a wide band.

Second, the types of sources have different sets of harassment metrics and thresholds. Energy metrics are defined for both types. However, explosives are impulsive sources that produce a shock wave that dictates additional pressure-related metrics (peak pressure and positive impulse). Detailed descriptions of both types of sources are provided in the following subsections.

D.2.1 Acoustic Sources

Operations in the TMAA involve four (4) types of narrowband sonars, as shown in Table D-3. Harassment estimates are calculated for each source according to the manner in which it operates. For example, the SQS-53 is a hull-mounted, surface ship sonar that operates for many hours at a time, so it is useful to calculate and report SQS-53 harassments per hour of operation. The AQS-22 is a helicopter-deployed sonar, which is lowered into the water, pings a number of times, and then moves to a new location. For the AQS-22, it is useful to calculate and report harassments per dip. The SSQ-62 sonobuoy is modeled at a single depth pinging for a fixed duration, so harassments are accordingly reported per sonobuoy deployed. The following table presents the deploying platform, frequency class, and the reporting metric for each acoustic source analyzed for use in the TMAA.

Table D-3 - Acoustic Sources Analyzed for use in the TMAA

Sonar	Description	Frequency Class	Harassments Reported
SQS-53	Surface ship sonar	Mid-frequency	Per hour
SSQ-62	Sonobuoy sonar	Mid-frequency	Per sonobuoy
AQS-22	Helicopter-dipping sonar	Mid-frequency	Per dip
SQS-56	Surface ship sonar	Mid-frequency	Per hour
MK-84 Range Pingers	Surface pingers	High-frequency	Per day
PUTR Transponders	Bottom pingers	Mid-frequency	Per day
MK-39 EMATT	Training target	Low frequency	Per hour
BQQ-10	Submarine sonar	Classified	Per hour
BQS-15	Submarine sonar	Classified	Per hour
SUS, MK-84	Expendable buoy	Mid-frequency	Per hour

The acoustic modeling that is necessary to support the harassment estimates for each of these sonars relies upon a generalized description of the manner of the sonar's operating modes. This description includes the following:

- "Effective" energy source level—This is the level relative to 1μPa^2-s of the integral over frequency and time of the square of the pressure and is given by the total energy level across the band of the source, scaled by the pulse length (10 $\log_{10}$ [pulse length]).

- Source depth—Depth of the source in meters.
- Nominal frequency - Typically the center band of the source emission. These are frequencies that have been reported in open literature and are used to avoid classification issues. Differences between these nominal values and actual source frequencies are small enough to be of little consequence to the output impact volumes.
- Source directivity - The source beam is modeled as the product of a horizontal beam pattern and a vertical beam pattern. Two parameters define the horizontal beam pattern:
  - Horizontal beam width—Width of the source beam (degrees) in the horizontal plane (assumed constant for all horizontal steer directions).
  - Horizontal steer direction—Direction in the horizontal in which the beam is steered relative to the direction in which the platform is heading.

  The horizontal beam is assumed to have constant level across the width of the beam with flat, 20-dB down side lobes at all other angles.

  Similarly, two parameters define the vertical beam pattern:

  - Vertical beam width - Width of the source beam (degrees) in the vertical plane measured at the 3-dB down point (assumed constant for all vertical steer directions).
  - Vertical steer direction - Direction in the vertical plane that the beam is steered relative to the horizontal (upward looking angles are positive).

  To avoid sharp transitions that a rectangular beam might introduce, the power response at vertical angle θ is

  $$\text{Power} = \max \{ \sin^2 [n(\theta_s - \theta)] / [n \sin (\theta_s - \theta)]^2,\ 0.01 \},$$

  where θ_s is the vertical beam steer direction, and $n = 2*L/\lambda$ (L = array length, λ = wavelength).

  The beamwidth of a line source is determined by n (the length of the array in half-wavelengths) as $\theta_w = 180^o/n$.

- Ping spacing - Distance between pings. For most sources this is generally just the product of the speed of advance of the platform and the repetition rate of the sonar. Animal motion is generally of no consequence as long as the source motion is greater than the speed of the animal (nominally, 3 knots). For stationary (or nearly stationary) sources, the “average” speed of the animal is used in place of the platform speed. The attendant assumption is that the animals are all moving in the same constant direction.

These parameters are defined for each of the active sound sources in Table D-4 and D-5.

Table D-4 – Source Description of Active Sources used in the TMAA

Sonar	Source Depth	Center Freq	Source Level	Emission Spacing	Vertical Directivity	Horizontal Directivity
SQS-53C	7 m	3.5 kHz	235 dB	154 m	Omni	240° Forward-looking
SSQ-62	27 m	8 kHz	201 dB	450 m	Omni	Omni
AQS-22	27 m	4.1 kHz	217 dB	15 m	Omni	Omni
SQS-56	7 m	7.5 kHz	225 dB	129 m	Omni	90° Forward-looking
MK-84 Range Pingers	7m, 100m	12.9 kHz	194 dB		90 Down	Omni
PUTR Transponders	1,800 m	8.8 kHz	186 dB	Variable	180 Upward	Omni
MK-39 EMATT	100 m	900 Hz	130 dB	Continuous	Omni	Omni
BQQ-10	100 m	Classified	Classified	Classified	Classified	Classified
BQS-15	50 m	Classified	Classified	Classified	Classified	Classified
SUS, MK-84	50 m	3.4 kHz	160 dB	Continuous	Omni	Omni

The following are the usage units for sonar sources in the TMAA (all modeled during the summer season):

Table D-5 – Sonar Usage Units

Sonar	2CSG	1CSG
SQS-53C	578 Hours	289 hours
SSQ-62	267 buoys	133 buoys
AQS-22	192 dips	96 dips
SQS-56	52 hours	26 hours
BQQ-10	48 hours	24 hours
BQS-15	24 hours	12 hours

D.2.2 Explosives

Explosives detonated underwater introduce loud, impulsive, broadband sounds into the marine environment. Three source parameters influence the effect of an explosive: the weight of the explosive material, the type of explosive material, and the detonation depth. The net explosive weight (or NEW) accounts for the first two parameters. The NEW of an explosive is the weight of TNT required to produce an equivalent explosive power.

The detonation depth of an explosive is particularly important due to a propagation effect known as surface-image interference. For sources located near the sea surface, a distinct interference pattern arises from the coherent sum of the two paths that differ only by a single reflection from the pressure-release surface. As the source depth and/or the source frequency decreases, these two paths increasingly, destructively interfere with each other, reaching total cancellation at the surface (barring surface-reflection scattering loss).

For the TMAA, explosive sources having detonations in the water include the following: SSQ-110 EER sonobuoys and MK-82, MK-83, MK-84, BDU-45 bombs, 5” rounds and 76 mm gunnery rounds, MK-48 torpedo, and Maverick missile. The SSQ-110 source can be detonated at several depths within the water column. For this analysis, a relatively shallow depth of 65 ft (20 m) is used to optimize the likelihood of the source being positioned in a surface duct. A source depth of two meters is used for bombs and missiles that do not strike their target. The MK-48 torpedo detonates immediately below the target's hull and a nominal depth of 50 ft (14 m) is used as its source depth in this analysis. For the gunnery rounds, a source depth of one foot is used. The NEW modeled for these sources are as follows:

- SSQ-110 Sonobuoy - 5 pounds
- MK-82 bomb - 238 pounds
- MK-83 bomb - 238 pounds
- MK-83 bomb – 574 pounds
- MK-84 bomb – 945 pounds
- 5" rounds – 9.54 pounds
- 76 mm rounds – 1.6 pounds
- MK-48 torpedo – 851 pounds
- Air-to-Ground (AGM)-65 Maverick Missile – 78.5 pounds

The harassments expected to result from these sources are computed on a per in-water explosive basis. The cumulative effect of a series of explosives can often be derived by simple addition if the detonations are spaced widely in time or space, allowing for sufficient animal movements as to ensure a different population of animals is considered for each detonation.

The cases in which simple addition of the harassment estimates may not be appropriate are addressed by the modeling of a "representative" sinking exercise (SINKEX). In a SINKEX, a decommissioned vessel is towed to a specified deep-water location and there used as a target for a variety of weapons. Although no two SINKEXs are ever the same, a representative case derived from past exercises is described in the Programmatic SINKEX Overseas Environmental Assessment (March 2006) for the Western North Atlantic. Unguided weapons are more frequently off-target and are modeled according to the statistical hit/miss ratios. Note that these hit/miss ratios are artificially low in order to demonstrate a worst-case scenario; they should not be taken as indicative of weapon or platform reliability. With one exception, it is assumed that all missiles in a SINKEX will strike the target vessel. The Maverick missile and bombs used in SINKEX were modeled as missing the target vessel approximately 33 percent of the time. For all live rounds fired in a GUNEX and an estimated 32 percent of rounds fired in SINKEX may explode in the water.

In a SINKEX, weapons are typically fired in order of decreasing range from the source with weapons fired until the target is sunk. A torpedo is used after all munitions have been expended if the target is still afloat. Since the target may sink at any time during the exercise, the actual number of weapons used can vary widely. In the representative case, however, all of the ordnances are assumed expended; this represents the worst case with maximum exposure.

The sequence of weapons firing for the representative SINKEX is described in Table D-6. Guided weapons are nearly 100% accurate and are modeled as hitting the target (that is, no underwater acoustic effect) in all but two cases: (1) the Maverick is modeled as a miss to represent the occasional miss, and (2) the MK-48 torpedo intentionally detonates in the water column immediately below the hull of the target. Unguided weapons are more frequently off-target and are modeled according to the statistical hit/miss ratios. Note that these hit/miss ratios are artificially low in order to demonstrate a worst-case scenario; they should not be taken as indicative of weapon or platform reliability.

Table D-6 – Representative SINKEX Weapons Firing Sequence

Time (Local)	Event Description
0900	Range Control Officer receives reports that the exercise area is clear of non-participant ship traffic, marine mammals, and sea turtles.
0909	Hellfire missile fired, hits target.
0915	2 HARM missiles fired, both hit target (5 minutes apart).
0930	1 Penguin missile fired, hits target.
0940	3 Maverick missiles fired, 2 hit target, 1 misses (5 minutes apart).
1145	1 SM-1 fired, hits target.
1147	1 SM-2 fired, hits target.
1205	5 Harpoon missiles fired, all hit target (1 minute apart).
1300-1335	7 live and 3 inert MK 82 bombs dropped – 7 hit target, 2 live and 1 inert miss target (4 minutes apart).
1355-1410	4 MK 83 bombs dropped – 3 hit target, 1 misses target (5 minutes apart).
1500	Surface gunfire commences – 400 5-inch rounds fired (one every 6 seconds), 280 hit target, 120 miss target.
1700	MK 48 Torpedo fired, hits, and sinks target.

D.3 ENVIRONMENTAL PROVINCES

Propagation loss ultimately determines the extent of the Zone of Influence (ZOI) for a particular source activity. In turn, propagation loss as a function of range responds to a number of environmental parameters:

- Water depth
- Sound speed variability throughout the water column
- Bottom geo-acoustic properties, and
- Surface roughness, as determined by wind speed

Due to the importance that propagation loss plays in Anti-Submarine Warfare (ASW) exercises, the Navy has, over the last four to five decades, invested heavily in measuring and modeling these environmental parameters. The result of this effort is the following collection of global databases of these environmental parameters, which are accepted as standards for Navy modeling efforts.

- Water depth - Digital Bathymetry Data Base Variable Resolution (DBDBV)
- Sound speed - Generalized Digital Environmental Model (GDEM)
- Bottom loss - Low-Frequency Bottom Loss (LFBL), Sediment Thickness Database, and High-Frequency Bottom Loss (HFBL), and
- Wind speed - U.S. Navy Marine Climatic Atlas of the World

This section provides a discussion of the relative impact of these various environmental parameters. These examples then are used as guidance for determining environmental provinces (that is, regions in which the environmental parameters are relatively homogeneous and can be represented by a single set of environmental parameters) within the TMAA.

D.3.1 Impact of Environmental Parameters

Within a typical operating area, the environmental parameter that tends to vary the most is bathymetry. It is not unusual for water depths to vary by an order of magnitude or more, resulting in significant impacts upon the ZOI calculations. Bottom loss can also vary considerably over typical operating areas but its impact upon ZOI calculations tends to be limited to waters on the continental shelf and the upper portion of the slope. Generally, the primary propagation paths in deep water, from the source to most of the ZOI volume, do not involve any interaction with bottom. In shallow water, particularly if the sound velocity profile directs all propagation paths to interact with the bottom, bottom loss variability can play a larger role.

The spatial variability of the sound speed field is generally small over operating areas of typical size. The presence of a strong oceanographic front is a noteworthy exception to this rule. To a lesser extent, variability in the depth and strength of a surface duct can be of some importance. In the mid-latitudes, seasonal variation often provides the most significant variation in the sound speed field. For this reason, both summer and winter profiles are modeled for each selected environment.

D.3.2 Environmental Provincing Methodology

The underwater acoustic environment can be quite variable over ranges in excess of ten kilometers. For ASW applications, ranges of interest are often sufficiently large as to warrant the modeling of the spatial variability of the environment. In the propagation loss calculations, each of the environmental parameters is allowed to vary (either continuously or discretely) along the path from acoustic source to receiver. In such applications, each propagation loss calculation is conditioned upon the particular locations of the source and receiver.

On the other hand, the range of interest for marine animal harassment by most Naval activities is more limited. This reduces the importance of the exact location of source and marine animal and makes the modeling required more manageable in scope.

In lieu of trying to model every environmental profile that can be encountered in an operating area, this effort utilizes a limited set of representative environments. Each environment is characterized by a fixed water depth, sound velocity profile, and bottom loss type. The operating area is then partitioned into homogeneous regions (or provinces) and the most appropriately representative environment is assigned to each. This process is aided by some initial provincing of the individual environmental parameters. The Navy-standard high-frequency bottom loss database in its native form is globally partitioned into nine classes. Low-frequency bottom loss is likewise provinced in its native form, although it is not considered in the process of selecting environmental provinces. Only the broadband sources produce acoustic energy at the frequencies of interest for low-frequency bottom loss (typically less than 1 kHz); even for those sources the low-frequency acoustic energy is secondary to the energy above 1 kHz. The Navy-standard sound velocity profiles database is also available as a provinced subset. Only the Navy-standard bathymetry database varies continuously over the world's oceans. However, even this environmental parameter is easily provinced by selecting a finite set of water depth intervals. For this analysis "octave-spaced" intervals (10, 20, 50, 100, 200, 500, 1000, 2000, and 5000 m) provide an adequate sampling of water depth dependence.

ZOI volumes are then computed using propagation loss estimates derived for the representative environments. Finally, a weighted average of the ZOI volumes is taken over all representative environments; the weighting factor is proportional to the geographic area spanned by the environmental province.

The selection of representative environments is subjective. However, the uncertainty introduced by this subjectivity can be mitigated by selecting more environments and by selecting the environments that occur most frequently over the operating area of interest.

As discussed in the previous subsection, ZOI estimates are most sensitive to water depth. Unless otherwise warranted, at least one representative environment is selected in each bathymetry province. Within a bathymetry province, additional representative environments are selected as needed to meet the following requirements.

- In shallow water (less than 1,000 meters), bottom interactions occur at shorter ranges and more frequently; thus significant variations in bottom loss need to be represented.
- Surface ducts provide an efficient propagation channel that can greatly influence ZOI estimates. Variations in the mixed layer depth need to be accounted for if the water is deep enough to support the full extent of the surface duct.

Depending upon the size and complexity of the operating area, the number of environmental provinces tends to range from 5 to 20.

D.3.3 Description of Environmental Provinces

The TMAA is approximately 92,246 square kilometers of ocean located south of Prince William Sound and east of Kodiak Island. The TMAA encompasses Warning Area W-612 and extends from the continental shelf to the deep waters of the Gulf of Alaska. The acoustic sources described in subsection D2 are deployed throughout the TMAA. This subsection describes the representative environmental provinces selected for the GOA. For all of these provinces, the average wind speed in the winter is 19 knots and in the summer 12 knots.

The GOA contains a total of 20 distinct environmental provinces. These represent various combinations of six bathymetry provinces, two Sound Velocity Profile (SVP) provinces, and four High-Frequency Bottom Loss (HFBL) classes.

The bathymetry provinces represent depths ranging from 100 meters to typical deep-water depths (slightly more than 5,000 meters). Nearly two-thirds of the Exercise Area is characterized as deep-water (depths of 2,000 meters or more). The second most prevalent water depth, covering nearly one-quarter of the Exercise Area, is representative of waters near the continental shelf break. The remaining water depths provide only small contributions (individually less than 5%) to the analysis. The distribution of the bathymetry provinces over the GOA is provided in D-7.

Table D-7 – Distribution of Bathymetry Provinces in GOA

Province Depth (m)	Frequency of Occurrence
100	4.85 %
200	22.29 %
500	4.22 %
1000	4.53 %
2000	12.67 %
5000	51.44 %

The distribution of the two sound speed provinces found in the TMAA is presented in Table D-8.

Table D-8 – Distribution of Sound Speed Provinces in GOA

SVP Province	Frequency of Occurrence
21	30.46 %
22	69.54 %

The variation in sound speed profiles associated with these two provinces is significant. This is illustrated in Figure D-1 and D-2 that display the upper 1,000 meters of the winter and summer profiles, respectively. In the winter, province 21 is a classic half-channel profile. The strong near-surface (within the upper 200 meters) gradient is the likely product of thorough mixing by strong winter winds and some fresh water sources. The winter profile for province 22 features a strong surface duct to a depth of 100 meters, also the result of thorough mixing by the winter winds. In contrast to province 21, however, the surface layer is modestly warmer. Nonetheless, both profiles are conducive to favorable sound propagation from a near-surface source.

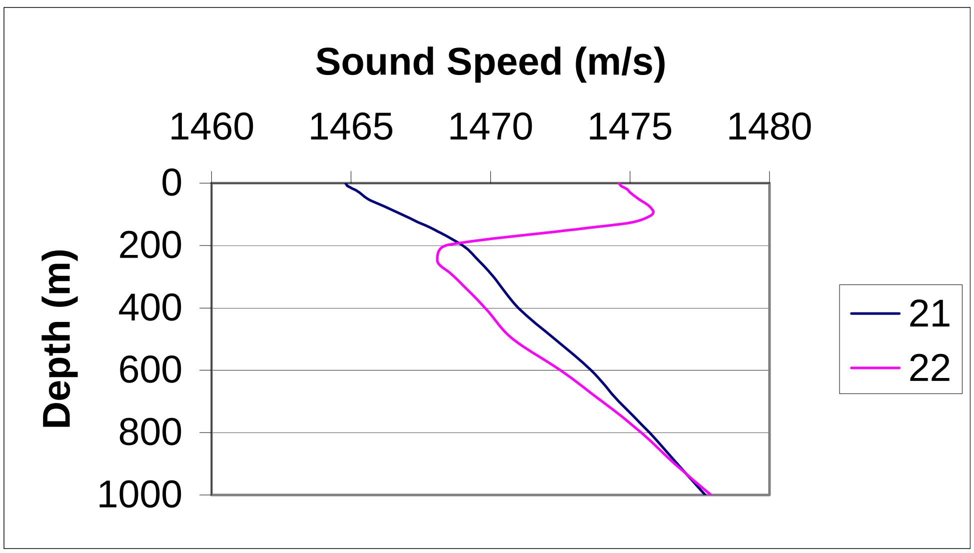

Figure D-1. – Winter SVPs in GOA

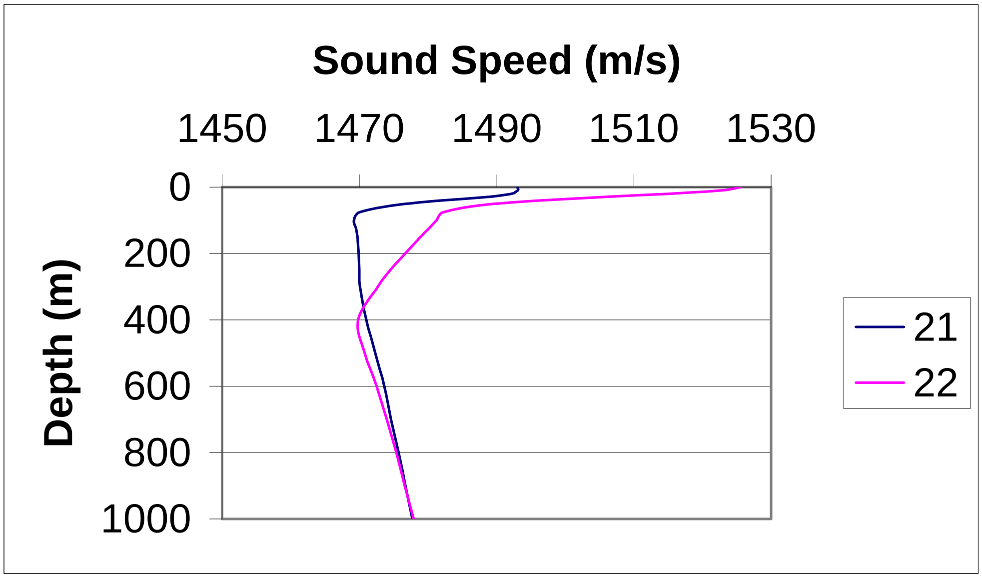

Figure D-2. – Summer SVPs in GOA

The summer profiles exhibit an even wider range of differences in the upper 200 meters (as much as 25 m/sec at the surface) with neither featuring a surface duct of significance. In the absence of surface loss considerations, both summer profiles would be less favorable than their winter counterparts for propagation from a near-surface source. However, the high wind speeds that are prevalent in the winter and the upward-refracting nature of the winter profiles appear to produce significantly higher surface scattering losses which can lead to summer being the season with the more favorable propagation.

The four HFBL classes represented in the GOA vary from low-loss bottoms (class 2, typically in shallow water) to high-loss bottoms (class 8). The four classes are fairly equally distributed as indicated in Table D-9 Distribution of High-Frequency Bottom Loss Classes in GOA. However, since two (classes 2 and 3) of the four classes are relatively low-loss, the bias in the environmental provinces will be towards low-loss bottoms.

Table D-9 – Distribution of High-Frequency Bottom Loss Classes in GOA

HFBL Class	Frequency of Occurrence
2	28.28 %
3	22.60 %
5	22.70 %
8	26.42 %

The logic for consolidating the environmental provinces focuses upon water depth, using the sound speed profile (in deep water) and the HFBL class (in shallow water) as secondary differentiating factors. The first consideration was to ensure that all six bathymetry provinces are represented. Then within each bathymetry province further partitioning of provinces proceeded as follows:

- The three shallowest bathymetry provinces are each represented by one environmental province. In each case, the bathymetry province is dominated (in some cases almost exclusively) by a single HFBL class, so that the secondary differentiating environmental parameter is of no consequence.
- The 1000-meter bathymetry province has two environmental provinces (differing in SVP province only) that occur in small, but relatively equal portions. Although they collectively

represent less than 5% of the TMAA, both are included in the analysis to ensure thoroughness. A third environmental province with a different HFBL class is not encountered enough to warrant consideration.

- The 2000-meter bathymetry province contains two environmental provinces that feature different SVP provinces. Both occur with sufficient frequency to warrant inclusion in the analysis.
- The 5000-meter bathymetry province consists of five environmental provinces. Four of these provinces are maintained for analysis; the fifth province is representative of less than one percent of the TMAA and for that reason, is excluded from consideration.

The distribution of the resulting eleven environmental provinces used in the acoustic modeling is summarized in Table D-10 and depicted in Figure D-3.

Table D-10 – Distribution of Environmental Provinces in TMAA

Environmental Province	Water Depth	SVP Province	Frequency of Occurrence
1	100 m	21	4.85 %
2	200 m	21	22.29 %
3	500 m	21	4.22 %
4	1000 m	21	2.32 %
5	1000 m	22	2.21 %
6	2000 m	21	10.61 %
7	2000 m	22	2.06 %
8	5000 m	21	22.60 %
9	5000 m	21	21.20 %
10	5000 m	22	1.51 %
11	5000 m	21	6.13 %

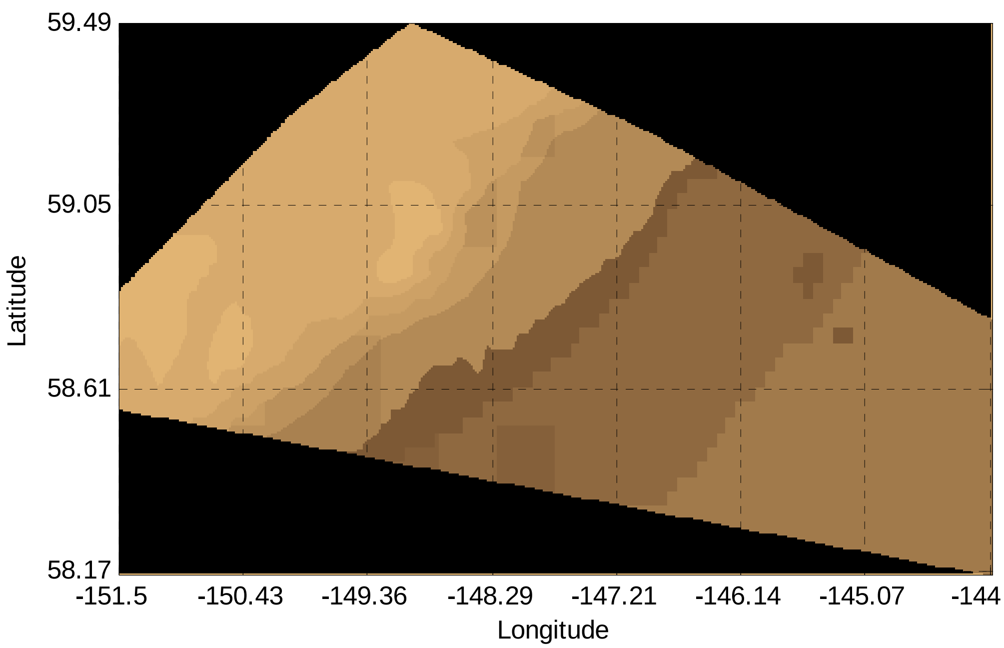

Figure D-3. – Distribution of Environmental Provinces in the TMAA

On this plot, darker-colored regions correspond to higher environmental province numbers, and hence depict deeper regions of the TMAA.

SINKEX operations are restricted to areas outside of 50 nautical miles (nm) from land and in waters deeper than 1,000 fathoms (or 1,852 meters). These limitations result not only in a smaller set of environments for analysis but also different frequencies of occurrence as indicated in Table D-11.

Table D-11 – Distribution of Environmental Provinces in the TMAA SINKEX Area

Environmental Province	Water Depth	SVP Province	Sediment Thickness	Frequency of Occurrence
1	2000 m	21	0.2 secs	7.15 %
2	5000 m	21	0.94 secs	35.55 %
3	5000 m	21	0.29 secs	9.04 %
4	5000 m	21	0.81 secs	45.93 %
5	5000 m	22	0.92 secs	1.75 %
6	5000 m	22	0.67 secs	0.58 %

D.4 IMPACT VOLUMES AND IMPACT RANGES

Many naval actions include the potential to injure or harass marine animals in the neighboring waters through noise emissions. The number of animals exposed to potential harassment in any such action is dictated by the propagation field and the characteristics of the noise source.

The impact volume associated with a particular activity is defined as the volume of water in which some acoustic metric exceeds a specified threshold. The product of this impact volume with a volumetric animal density yields the expected value of the number of animals exposed to that acoustic metric at a level that exceeds the threshold. The acoustic metric can either be an energy term (energy flux density, either in a limited frequency band or across the full band) or a pressure term (such as peak pressure or positive impulse). The thresholds associated with each of these metrics define the levels at which half of the animals exposed will experience some degree of harassment (ranging from behavioral change to mortality).

Impact volume is particularly relevant when trying to estimate the effect of repeated source emissions separated in either time or space. Impact range, which is defined as the maximum range at which a particular threshold is exceeded for a single source emission, defines the range to which marine mammal activity is monitored in order to meet mitigation requirements.

With the exception of explosive sources, the sole relevant measure of potential harm to the marine wildlife due to sonar operations is the accumulated (summed over all source emissions) energy flux density received by the animal over the duration of the activity. Harassment measures for explosive sources include energy flux density and pressure-related metrics (peak pressure and positive impulse).

Regardless of the type of source, estimating the number of animals that may be injured or otherwise harassed in a particular environment entails the following steps.

- Each source emission is modeled according to the particular operating mode of the sonar. The “effective” energy source level is computed by integrating over the bandwidth of the source, scaling by the pulse length, and adjusting for gains due to source directivity. The location of the source at the time of each emission must also be specified.

- For the relevant environmental acoustic parameters, transmission loss (TL) estimates are computed, sampling the water column over the appropriate depth and range intervals. TL data are sampled at the typical depth(s) of the source and at the nominal center frequency of the source. If the source is relatively broadband, an average over several frequency samples is required.
- The accumulated energy within the waters that the source is "operating" is sampled over a volumetric grid. At each grid point, the received energy from each source emission is modeled as the effective energy source level reduced by the appropriate propagation loss from the location of the source at the time of the emission to that grid point and summed. For the peak pressure or positive impulse, the appropriate metric is similarly modeled for each emission. The maximum value of that metric, over all emissions, is stored at each grid point.
- The impact volume for a given threshold is estimated by summing the incremental volumes represented by each grid point for which the appropriate metric exceeds that threshold.
- Finally, the number of harassments is estimated as the "product" (scalar or vector, depending upon whether an animal density depth profile is available) of the impact volume and the animal densities.

This section describes in detail the process of computing impact volumes (that is, the first four steps described above). This discussion is presented in two parts: active sonars and explosive sources. The relevant assumptions associated with this approach and the limitations that are implied are also presented. The final step, computing the number of harassments is discussed in subsection D.6.

D.4.1 Computing Impact Volumes for Active Sound Sources

This section provides a detailed description of the approach taken to compute impact volumes for active sonars. Included in this discussion are:

- Identification of the underwater propagation model used to compute transmission loss data, a listing of the source-related inputs to that model, and a description of the output parameters that are passed to the energy accumulation algorithm.
- Definitions of the parameters describing each sonar type.
- Description of the algorithms and sampling rates associated with the energy accumulation algorithm.

D.4.1.1 Transmission Loss Calculations

Transmission loss (TL) data are pre-computed for each of two seasons in each of the environmental provinces described in the previous subsection using the Gaussian Ray Bundle (GRAB) propagation loss model (Keenan, 2000). The TL output consists of a parametric description of each significant eigenray (or propagation path) from source to animal. The description of each eigenray includes the departure angle from the source (used to model the source vertical directivity later in this process), the propagation time from the source to the animal (used to make corrections to absorption loss for minor differences in frequency and to incorporate a surface-image interference correction at low frequencies), and the transmission loss suffered along the eigenray path.

The frequency and source depth TL inputs are specified in Table D-12.

Table D-12 – TL Frequency and Source Depth by Type

SONAR	FREQUENCY	SOURCE DEPTH
SQS-53	3.5 kHz	7 m
AQS-22	4.1 kHz	27 m
ASQ-62	8 kHz	27 m
SQS-56	7.5 kHz	7 m
MK-84 Range Pingers	12.9 kHz	7m, 100m
PUTR Transponders	8.8 kHz	1,800 m
MK-39 EMATT	900 Hz	100 m
BQQ-10	Classified	100 m
BQS-15	Classified	50 m
SUS, MK-84	3.4 kHz	50 m

The eigenray data for a single GRAB model run are sampled at uniform increments in range out to a maximum range for a specific "animal" (or "target" in GRAB terminology) depth. Multiple GRAB runs are made to sample the animal depth dependence. The depth and range sampling parameters are summarized in Table D-13. Note that some of the low-power sources do not require TL data to large maximum ranges.

Table D-13 – TL Depth and Range Sampling Parameters by Sonar Type

SONAR	RANGE STEP	MAXIMUM RANGE	DEPTH SAMPLING
SQS-53	10 m	200 km	0 – 1 km in 5 m steps 1 km – Bottom in 10 m steps
AQS-22	10 m	10 km	0 – 1 km in 5 m steps 1 km – Bottom in 10 m steps
ASQ-62	5 m	5 km	0 – 1 km in 5 m steps 1 km – Bottom in 10 m steps
SQS-56	10 m	50 km	0 – 1 km in 5 m steps 1 km – Bottom in 10 m steps
MK-84 Range Pingers	5 m	15 km	0 – 1 km in 5 m steps 1 km – Bottom in 10 m steps
PUTR Transponders	5 m	15 km	0 – 1 km in 5 m steps 1 km – Bottom in 10 m steps
MK-39 EMATT	5 m	1 km	1 m steps
BQQ-10	Classified	Classified	0 – 1 km in 5 m steps 1 km – Bottom in 10 m steps
BQS-15	Classified	Classified	0 – 1 km in 5 m steps 1 km – Bottom in 10 m steps
SUS, MK-84	5 m	1 km	1 m steps

In a few cases, most notably the SQS-53 for levels below approximately 180 dB, TL data may be required by the energy summation algorithm at ranges greater than covered by the pre-computed GRAB data. In these cases, TL is extrapolated to the required range using a simple cylindrical spreading loss law in addition to the appropriate absorption loss. This extrapolation leads to a conservative (or under) estimate of transmission loss at the greater ranges.

Although GRAB provides the option of including the effect of source directivity in its eigenray output, this capability is not exercised. By preserving data at the eigenray level, this allows source directivity to be applied later in the process and results in fewer TL calculations.

The other important feature that storing eigenray data supports is the ability to model the effects of surface-image interference that persist over range. However, this is primarily important at frequencies lower than those associated with the sonars considered in this subsection. A detailed description of the modeling of surface-image interference is presented in the subsection on explosive sources.

D.4.1.2 Energy Summation

The summation of energy flux density over multiple pings in a range-independent environment is a trivial exercise for the most part. A volumetric grid that covers the waters in and around the area of sonar operation is initialized. The source then begins its set of pings. For the first ping, the TL from the source to each grid point is determined (summing the appropriate eigenrays after they have been modified by the vertical beam pattern), the "effective" energy source level is reduced by that TL, and the result is added to the accumulated energy flux density at that grid point. After each grid point has been updated, the accumulated energy at grid points in each depth layer is compared to the specified threshold. If the accumulated energy exceeds that threshold, then the incremental volume represented by that grid point is added to the impact volume for that depth layer. Once all grid points have been processed, the resulting sum of the incremental volumes represents the impact volume for one ping.

The source is then moved along one of the axes in the horizontal plane by the specified ping separation range and the second ping is processed in a similar fashion. Again, once all grid points have been processed, the resulting sum of the incremental volumes represents the impact volume for two pings. This procedure continues until the maximum number of pings specified has been reached.

Defining the volumetric grid over which energy is accumulated is the trickiest aspect of this procedure. The volume must be large enough to contain all volumetric cells for which the accumulated energy is likely to exceed the threshold but not so large as to make the energy accumulation computationally unmanageable.

Determining the size of the volumetric grid begins with an iterative process to determine the lateral extent to be considered. Unless otherwise noted, throughout this process the source is treated as omni-directional and the only animal depth that is considered is the TL target depth that is closest to the source depth (placing source and receiver at the same depth is generally an optimal TL geometry).

The first step is to determine the impact range (R_{max}) for a single ping. The impact range in this case is the maximum range at which the effective energy source level reduced by the transmission loss is greater than the threshold. Next, the source is moved along a straight-line track and energy flux density is accumulated at a point that has a CPA range of R_{max} at the mid-point of the source track. That total energy flux density summed over all pings is then compared to the prescribed threshold. If it is greater than the threshold (which, for the first R_{max}, it must be) then R_{max} is increased by ten percent, the accumulation process is repeated, and the total energy is again compared to the threshold. This continues until R_{max} grows large enough to ensure that the accumulated energy flux density at that lateral range is less than the threshold. The lateral range dimension of the volumetric grid is then set at twice R_{max}, with the grid centered along the source track. In the direction of advance for the source, the volumetric grid extends on the interval from [$-R_{max}$, 3 R_{max}] with the first source position located at zero in this dimension. Note that the source motion in this direction is limited to the interval [0, 2 R_{max}]. Once the source reaches 2 R_{max} in this direction, the incremental volume contributions have approximately reached their asymptotic limit and further pings add essentially the same amount. This geometry is demonstrated in Figure D-4 below.

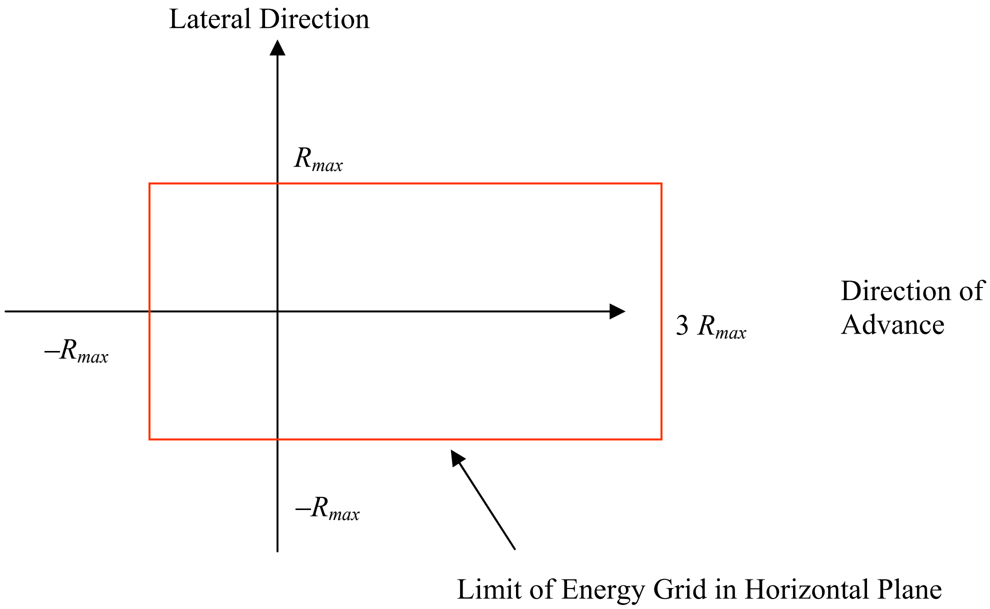

Figure D-4. Horizontal Plane of Volumetric Grid for Omni Directional Source

If the source is directive in the horizontal plane, then the lateral dimension of the grid may be reduced and the position of the source track adjusted accordingly. For example, if the main lobe of the horizontal source beam is limited to the starboard side of the source platform, then the port side of the track is reduced substantially as demonstrated in Figure D-5.

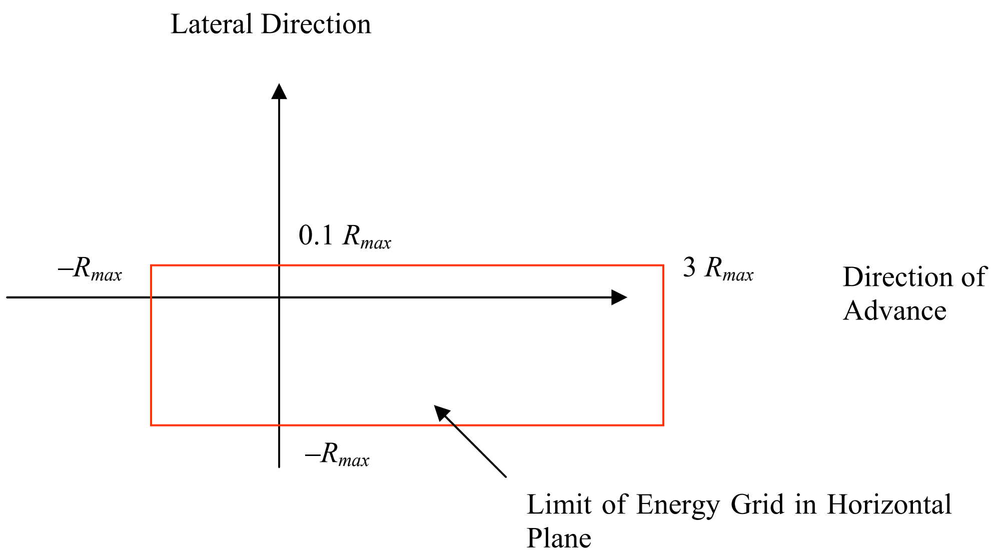

Figure D-5. Horizontal Plane of Volumetric Grid for Starboard Beam Source

Once the extent of the grid is established, the grid sampling can be defined. In both dimensions of the horizontal plane the sampling rate is approximately $R_{max}/100$. The round-off error associated with this sampling rate is roughly equivalent to the error in a numerical integration to determine the area of a circle with a radius of R_{max} with a partitioning rate of $R_{max}/100$ (approximately one percent). The depth-sampling rate of the grid is comparable to the sampling rates in the horizontal plane but discretized to match an actual TL sampling depth. The depth-sampling rate is also limited to no more than ten meters to ensure that significant TL variability over depth is captured.

D.4.1.3 Impact Volume per Hour of Source Operation

The impact volume for a source moving relative to the animal population increases with each additional ping. The rate at which the impact volume increases varies with a number of parameters but eventually approaches some asymptotic limit. Beyond that point the increase in impact volume becomes essentially linear as depicted in Figure D-6 using the SQS-53 as an example.

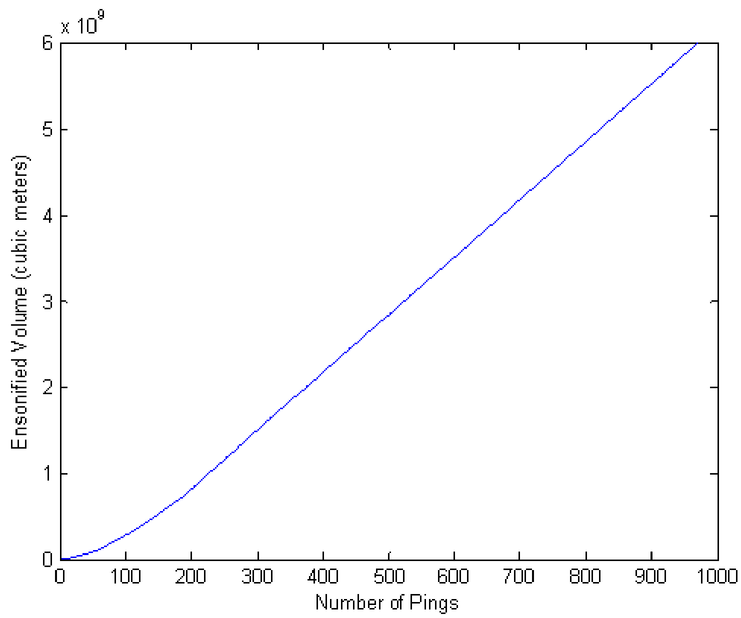

Figure D-6. SQS-53 Impact Volume by Ping

The slope of the asymptotic limit of the impact volume at a given depth is the impact volume added per ping. This number multiplied by the number of pings in an hour gives the hourly impact volume for the given depth increment. Completing this calculation for all depths in a province, for a given source, gives the hourly impact volume vector, v_n, which contains the hourly impact volumes by depth for province n. Figure D-7 provides an example of an hourly impact volume vector for a particular environment.

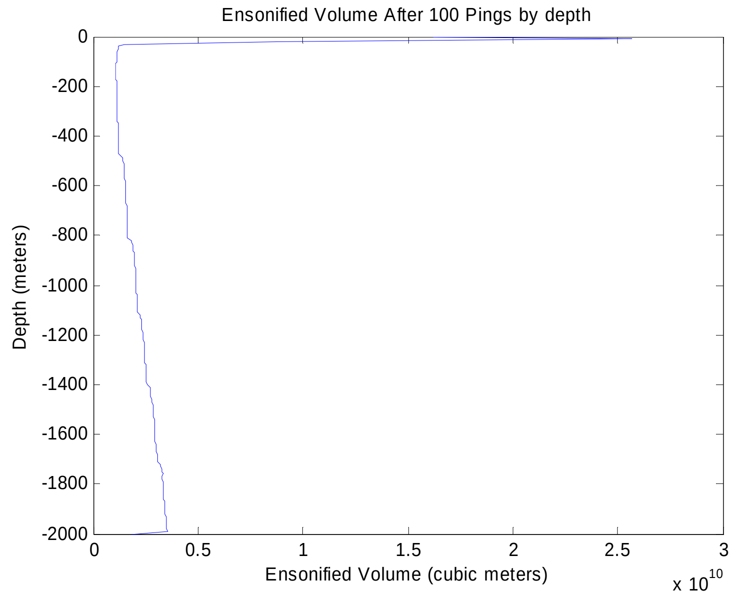

Figure D-7. Example of an Impact Volume Vector

D.4.2 Computing Impact Volumes for Explosive Sources

This section provides the details of the modeling of the explosive sources. This energy summation algorithm is similar to that used for sonars, only differing in details such as the sampling rates and source parameters. These differences are summarized in the following subsections. A more significant difference is that the explosive sources require the modeling of additional pressure metrics: (1) peak pressure, and (2) "modified" positive impulse. The modeling of each of these metrics is described in detail in the subsections of D.4.2.3.

D.4.2.1 Transmission Loss Calculations

Modeling impact volumes for explosive sources span requires the same type of TL data as needed for active sonars. However unlike active sonars, explosive ordnances and the EER source are broadband, contributing significant energy from tens of Hertz to tens of kilohertz. To accommodate the broadband nature of these sources, TL data are sampled at seven frequencies from 10 Hz to 40 kHz, spaced every two octaves.

An important propagation consideration at low frequencies is the effect of surface-image interference. As either source or target approach the surface, pairs of paths that differ by a single surface reflection set up an interference pattern that ultimately causes the two paths to cancel each other when the source or target is at the surface. A fully coherent summation of the eigenrays produces such a result but also introduces extreme fluctuations that would have to be highly sampled in range and depth, and then smoothed to give meaningful results. An alternative approach is to implement what is sometimes called a semi-coherent summation. A semi-coherent sum attempts to capture significant effects of surface-image interference (namely the reduction of the field due to destructive interference of reflected paths as the source or target approach the surface) without having to deal with the more rapid fluctuations associated with a fully coherent sum. The semi-coherent sum is formed by a random phase addition of paths that have already been multiplied by the expression:

$$\sin^2\left(\frac{4\pi f z_s z_a}{c^2 t}\right)$$

where f is the frequency, z_s is the source depth, z_a is the animal depth, c is the sound speed and t is the travel time from source to animal along the propagation path. For small arguments of the sine function this expression varies directly as the frequency and the two depths. It is this relationship that causes the propagation field to go to zero as the depths approach the surface or the frequency approaches zero.

This surface-image interference must be applied across the entire bandwidth of the explosive source. The TL field is sampled at several representative frequencies. However, the image-interference correction given above varies substantially over that frequency spacing. To avoid possible under sampling, the image-interference correction is averaged over each frequency interval.

D.4.2.2 Source Parameters

Unlike active sonars, explosive sources are defined by only two parameters: (1) net explosive weight, and (2) source detonation depth. Values for these source parameters are defined earlier in subsection D.2.2.

The effective energy source level, which is treated as a de facto input for the other sources, is instead modeled directly for SSQ-110 explosive sonobuoys and munitions. For both, the energy source level is comparable to the model used for other explosives (Arons (1954), Weston (1960), McGrath (1971), Urick (1983), Christian and Gaspin (1974)). The energy source level over a one-third octave band with a center frequency of f for a source with a net explosive weight of w pounds is given by:

$$\text{ESL} = 10 \log_{10} (0.26\, f) + 10 \log_{10} \left(2\, p_{max}^2 / [1/\theta^2 + 4\, \pi\, f^2] \right) + 197 \text{ dB}$$

where the peak pressure for the shock wave at 1 meter is defined as

$$p_{max} = 21600\, (w^{1/3} / 3.28\,)^{1.13} \text{ psi} \qquad \text{(A-1)}$$

and the time constant is defined as:

$$\theta = [(0.058)\, (w^{1/3})\, (3.28 / w^{1/3})^{\,0.22}\,] / 1000 \text{ msec} \qquad \text{(A-2)}$$

In contrast to munitions that are modeled as omni-directional sources, the SSQ-110 is a directed source consisting of two explosive strips that are fired simultaneously from the center of the array. Each strip generates a beam pattern with the steer direction of the main lobe determined by the burn rate. The resulting response of the entire array is a bifurcated beam for frequencies above 200 Hz, while at lower frequencies the two beams tend to merge into one.

Since very short ranges are under consideration, the loss of directivity of the array needs to be accounted for in the near field of the array. This is accomplished by modeling the sound pressure level across the field as the coherent sum of contributions of infinitesimal sources along the array that are delayed according to the burn rate. For example, for frequency f the complex pressure contribution at a depth z and horizontal range r from an infinitesimal source located at a distance z' above the center of the array is

$$p(r,z) = e^{\,i\phi}$$

where

$\phi = kr' + \alpha z'$, and

$\alpha = 2\pi f / c_b$

with k the acoustic wave number, c_b the burn rate of the explosive ribbon, and r' the slant range from the infinitesimal source to the field point (x,z).

Beam patterns as function of vertical angle are then sampled at various ranges out to a maximum range that is approximately L^2 / λ where L is the array length and λ is the wavelength. This maximum range is a rule-of-thumb estimate for the end of the near field (Bartberger, 1965). Finally, commensurate with the resolution of the TL samples, these beam patterns are averaged over octave bands.

A couple of sample beam patterns are provided in Figure D-8 and Figure D-9. In both cases, the beam response is sampled at various ranges from the source array to demonstrate the variability across the near field. The 80-Hz family of beam patterns presented in Figure D-8 shows the rise of a single main lobe as range increases.

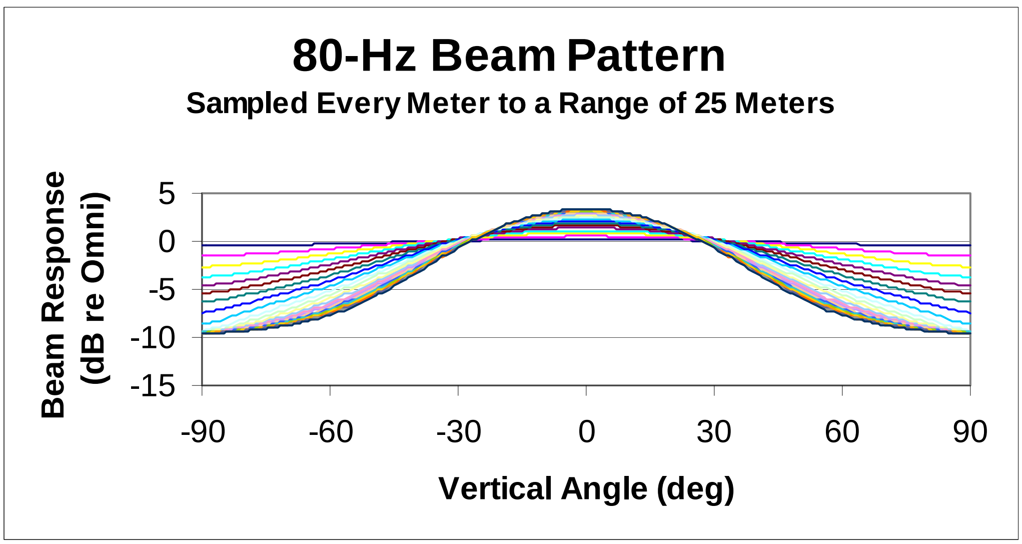

Figure D-8. 80-Hz Beam Patterns across Near Field of EER Source

On the other hand, the 1,250-Hz family of beam patterns depicted in Figure D-9 demonstrates the typical high-frequency bifurcated beam.

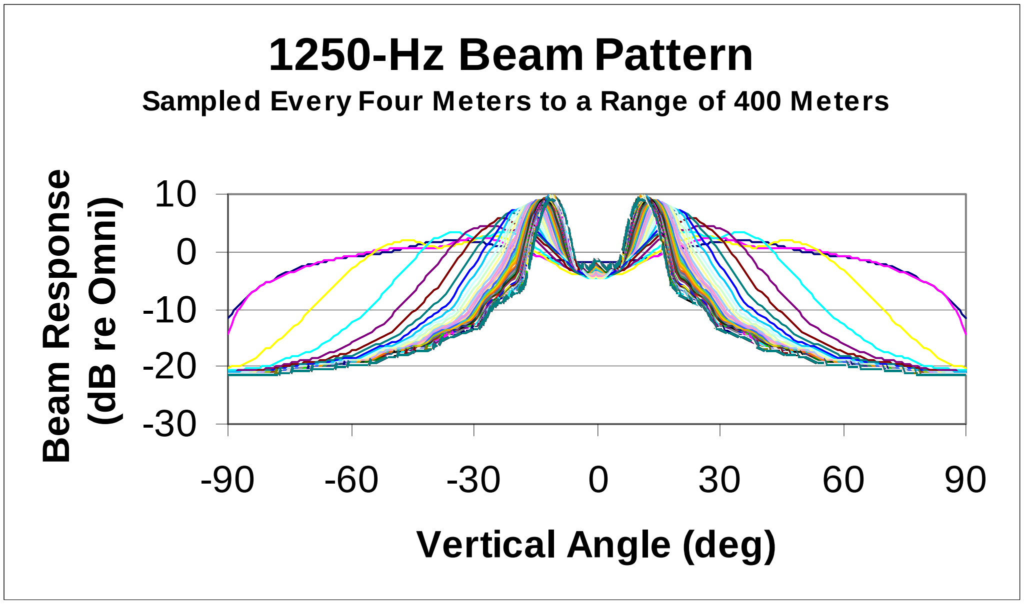

Figure D-9. 1250-Hz Beam Patterns across Near Field of SSQ-110 Source

D.4.2.3 Impact Volumes for Various Metrics

The impact of explosive sources on marine wildlife is measured by three different metrics, each with its own thresholds. The energy metric, peak one-third octave, is treated in similar fashion as the energy metric used for the active sonars, including the summation of energy if there are multiple source emissions. The other two, peak pressure and positive impulse, are not accumulated but rather the maximum levels are taken.

Peak One-Third Octave Energy Metric

The computation of impact volumes for the energy metric closely follows the approach taken to model the energy metric for the active sonars. The only significant difference is that energy flux density is sampled at several frequencies in one-third-octave bands and only the peak one-third-octave level is accumulated over time.

Peak Pressure Metric

The peak pressure metric is a simple, straightforward calculation at each range/animal depth combination. First, the transmission ratio, modified by the source level in a one-octave band and the vertical beam pattern, is averaged across frequency on an eigenray-by-eigenray basis. This averaged transmission ratio (normalized by the total broadband source level) is then compared across all eigenrays with the maximum designated as the peak arrival. Peak pressure at that range/animal depth combination is then simply the product of:

- The square root of the averaged transmission ratio of the peak arrival,
- The peak pressure at a range of 1 meter (given by equation A-1), and
- The similitude correction (given by $r^{-0.13}$, where r is the slant range along the eigenray estimated as tc with t the travel time along the dominant eigenray and c the nominal speed of sound).

If the peak pressure for a given grid point is greater than the specified threshold, then the incremental volume for the grid point is added to the impact volume for that depth layer.

"Modified" Positive Impulse Metric

The modeling of positive impulse follows the work of Goertner (Goertner, 1982). The Goertner model defines a "partial" impulse as

$$\int_0^{T_{min}} p(t)\,\mathrm{d}t$$

where $p(t)$ is the pressure wave from the explosive as a function of time t, defined so that $p(t) = 0$ for $t < 0$. This pressure wave is modeled as

$$p(t) = p_{max}\, e^{-t/\theta}$$

where p_{max} is the peak pressure at 1 meter (see, equation B-1), and θ is the time constant defined as

$$\theta = 0.058\, w^{1/3}\, (r/w^{1/3})^{0.22} \text{ seconds}$$

with w the net explosive weight (pounds), and r the slant range between source and animal.

The upper limit of the "partial" impulse integral is

$$T_{min} = \min\,\{T_{cut}, T_{osc}\}$$

where T_{cut} is the time to cutoff and T_{osc} is a function of the animal lung oscillation period. When the upper limit is T_{cut}, the integral is the definition of positive impulse. When the upper limit is defined by T_{osc}, the integral is smaller than the positive impulse and thus is just a "partial" impulse. Switching the integral limit from T_{cut} to T_{osc} accounts for the diminished impact of the positive impulse upon the animals lungs that compress with increasing depth and leads to what is sometimes call a "modified" positive impulse metric.

The time to cutoff is modeled as the difference in travel time between the direct path and the surface-*reflected* path in an isospeed environment. At a range of r, the time to cutoff for a source depth z_s and an animal depth z_a is

$$T_{cut} = 1/c\ \{\, [r^2 + (z_a + z_s)^2]^{1/2} - [r^2 + (z_a - z_s)^2]^{1/2} \,\}$$

where c is the speed of sound.

The *animal* lung oscillation period is a function of animal mass M and depth z_a and is modeled as

$$T_{osc} = 1.17\, M^{1/3}\, (1 + z_a/33)^{-5/6}$$

where M is the animal mass (in kg) and z_a is the animal depth (in feet).

The modified positive impulse threshold is unique among the various injury and harassment metrics in that it is a function of depth and the animal weight. So instead of the user specifying the threshold, it is computed as $K\ (M/42)^{1/3}\ (1 + z_a/33)^{1/2}$. The coefficient K depends upon the level of exposure. For the onset of slight lung injury, K is 19.7; for the onset of extensive lung hemorrhaging (1% mortality), K is 47.

Although the thresholds are a function of depth and animal weight, sometimes they are summarized as their value at the sea surface for a typical dolphin calf (with an average mass of 12.2 kg). For the onset of slight lung injury, the threshold at the surface is approximately 13 psi-msec; for the onset of extensive lung hemorrhaging (1% mortality), the threshold at the surface is approximately 31 psi-msec.

As with peak pressure, the "modified" positive impulse at each grid point is compared to the derived threshold. If the impulse is greater than that threshold, then the incremental volume for the grid point is added to the impact volume for that depth layer.

D.4.2.4 Impact Volume per Explosive Detonation

The detonations of explosive sources are generally widely spaced in time and/or space. This implies that the impact volume for multiple firings can be easily derived by scaling the impact volume for a single detonation. Thus the typical impact volume vector for an explosive source is presented on a per-detonation basis.

D.4.3 Impact Volume by Region

The TMAA is described by eleven (11) environmental provinces. The hourly impact volume vector for operations involving any particular source is a linear combination of the eleven impact volume vectors with the weighting determined by the distribution of those eleven environmental provinces within the range. Unique hourly impact volume vectors for winter and summer are calculated for each type of source and each metric/threshold combination.

D.5 RISK FUNCTION: THEORETICAL AND PRACTICAL IMPLEMENTATION

This section discusses the recent addition of a risk function response "threshold" to acoustic effects analysis procedure. This approach includes two parts, a metric, and a function to map exposure level under the metric to probability of harassment for acoustic sources. What these two parts mean, how they affect exposure calculations, and how they are implemented are the objects of discussion.

D.5.1 Thresholds and Metrics

The term "thresholds" is broadly used to refer to both thresholds and metrics. The difference, and the distinct roles of each in effects analyses, will be the foundation for understanding the dose-response approach, putting it in perspective, and showing that, conceptually, it is similar to past approaches.

Sound is a pressure wave, so at a certain point in space, sound is simply rapidly changing pressure. Pressure at a point is a function of time. Define $p(t)$ as pressure (in micropascals) at a given point at time t (in seconds); this function is called a "time series." Figure D-10 gives the time series of the first "hallelujah" in Handel's Hallelujah Chorus.

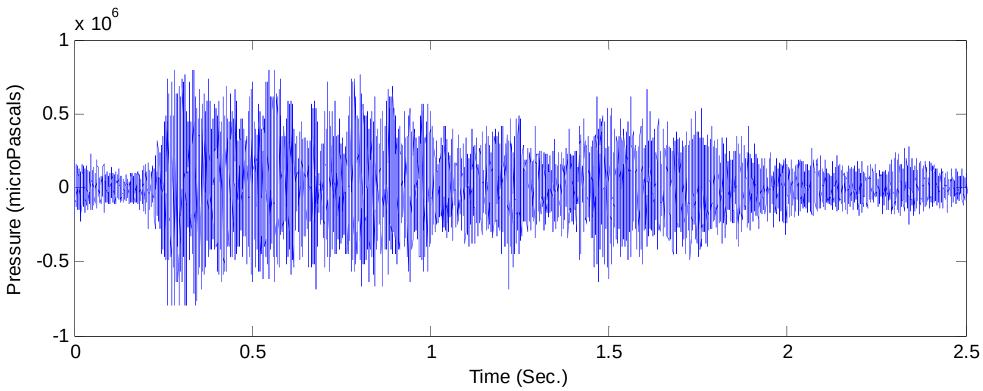

Figure D-10. Time Series

The time-series of a source can be different at different places. Therefore, sound, or pressure, is not only a function of time, but also of location. Let the function $p(t)$, then be expanded to $p(t;x,y,z)$ and denote the time series at point (x,y,z) in space. Thus, the series in Figure D-10 $p(t)$ is for a given point (x,y,z). At a different point in space, it would be different.

Assume that the location of the source is (0,0,0) and this series is recorded at (0,10,-4). The time series above would be p(t;0,10,-4) for 0<t<2.5.

As in Figure D-10, pressure can be positive or negative, but acoustic power, which is proportional to the square of the pressure, is always positive, this makes integration meaningful. Figure D-11 is $p^2(t;0,10,-4)$.

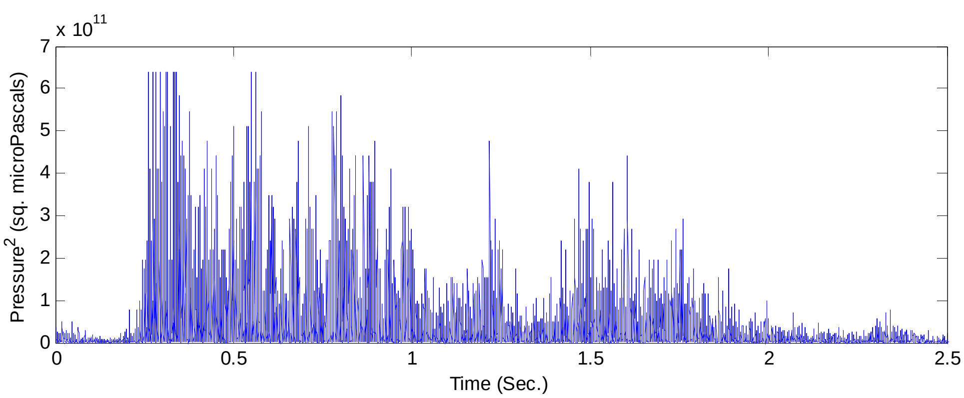

Figure D-11. Time Series Squared

The metric chosen to evaluate the sound field at the end of this first "hallelujah" determines how the time series is summarized from thousands of points, as in Figure D-10, to a single value for each point (x,y,z) in the space. The metric essentially "boils down" the four dimensional $p(t,x,y,z)$ into a three dimensional function $m(x,y,z)$ by dealing with time. There is more than one way to summarize the time component, so there is more than one metric.

D.5.2 Maximum Sound Pressure Level

Because of the large dynamic range of the acoustic power, it is generally represented on a logarithmic scale using sound pressure levels (SPLs). SPL is actually the ratio of acoustic power and density (power/unit area = $\frac{p^2}{Z}$ where Z = ρc is the acoustic impedance). This ratio is presented on a logarithmic scale relative to a reference pressure level, and is defined as:

$$SPL = 10\log_{10}\left(\frac{p^2}{p_{ref}^2}\right) = 20\log_{10}\left(abs\left(\frac{p}{p_{ref}}\right)\right)$$

(Note that SPL is defined in dB re a reference pressure, even though it comes from a ratio of powers.)

One way to characterize the power of the time series $p(t;x,y,z)$ with a single number over the 2.5 seconds is to only report the maximum SPL value of the function over time or,

$SPL_{\max} = \max\{10\log_{10}(p^2(t,x,y,z))\}$ (relative to a reference pressure of 1 µPa^2-s) for 0<t<2.5

The $SPL_{\max}$ for this snippet of the Hallelujah Chorus is $10\log_{10}(6.4\times10^{11}\,\mu Pa^2/1\mu Pa^2) = 118\,dB$ re 1µPa^2-s and occurs at 0.2606 seconds, as shown in Figure D-12.

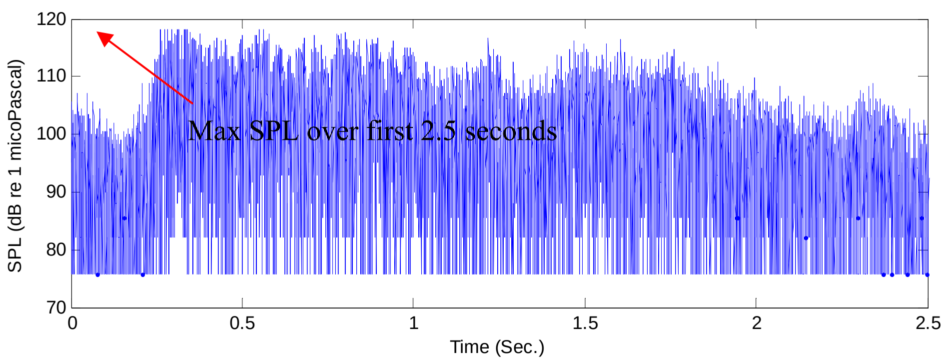

Figure D-12. Max SPL of Time Series Squared

D.5.3 Integration

$SPL_{\max}$ is not necessarily influenced by the duration of the sound (2.5 seconds in this case). Integrating the function over time gives the EFD, which accounts for this duration. A simple integration of $p^2(t;x,y,z)$ over t is common and is proportional to the EFD at (*x,y,z*). Because we will again be dealing in levels (logarithms of ratios), we neglect the impedance and simply measure the square of the pressure:

$$Energy = \int_0^T p^2(t,x,y,z)dt$$, where T is the maximum time of interest in this case 2.5.

The energy for this snippet of the Hallelujah Chorus is $8.47\times10^{10}\ \mu Pa^2 \cdot s$. This would more commonly be reported as an energy level (EL):

$$EL = 10\log_{10}\left(\frac{\int_0^T p^2(t,x,y,z)dt}{1.0\mu Pa^2 s}\right) = \text{ 109.3 dB re 1}\mu\text{Pa}^2\text{-s}$$

Energy is sometimes called "equal energy" because if *p*(*t*) is a constant function and the duration is doubled, the effect is the same as doubling the signal amplitude (*y* value). Thus, the duration and the signal have an "equal" influence on the energy metric.

Mathematically we have

$$\int_0^{2T} p(t)^2\,dt = 2\int_0^T p(t)^2\,dt = \int_0^T 2p(t)^2\,dt$$

or a doubling in duration equals a doubling in energy equals a doubling in signal.

Sometimes, the integration metrics are referred to as having a "3 dB exchange rate" because if the duration is doubled, this integral increases by a factor of two, or 10log10(2)=3.01 dB. Thus, equal energy has "a 3 dB exchange rate."

After *p(t)* is determined (i.e., when the stimulus is over), propagation models can be used to determine *p(t;x,y,z)* for every point in the vicinity and for a given metric. Define

$$m_a(x,y,z,T) = \text{value of metric "}a\text{" at point }(x,y,z)\text{ after time }T$$

So,

$$m_{energy}(x,y,z;T) = \int_0^T p(t)^2\,dt$$

$$m_{\max SPL}(x,y,z;T) = \max 10\log_{10}\left(p^2(t)\right) over\ [0,T]$$

Since modeling is concerned with the effects of an entire event, *T* is usually implicitly defined: a number that captures the duration of the event. This means that $m_a(x,y,z)$ is assumed to be measured over the duration of the received signal.

D.5.3.1 Three Dimensions versus Two Dimensions

To further reduce the calculation burden, it is possible to reduce the domain of $m_a(x,y,z)$ to two dimensions by defining $m_a(x,y) = \max\{m_a(x,y,z)\}$ over all *z*. This reduction is not used for this analysis, which is exclusively three-dimensional.

D.5.4 Threshold

For a given metric, a threshold is a function that gives the probability of exposure at every value of m_a. This threshold function will be defined as

$$D(m_a(x,y,z)) = P(\mathit{effect\ at}\ m_a(x,y,z))$$

The domain of *D* is the range of $m_a(x,y,z)$, and the range of *D* is [0,1].

An example of threshold functions is the heavyside (or unit step) function, currently used to determine permanent and temporary threshold shift (PTS and TTS) in cetaceans. For PTS, the metric is $m_{energy}(x,y,z)$, defined above, and the threshold function is a heavyside function with a discontinuity at 215 dB, shown in Figure D-13.

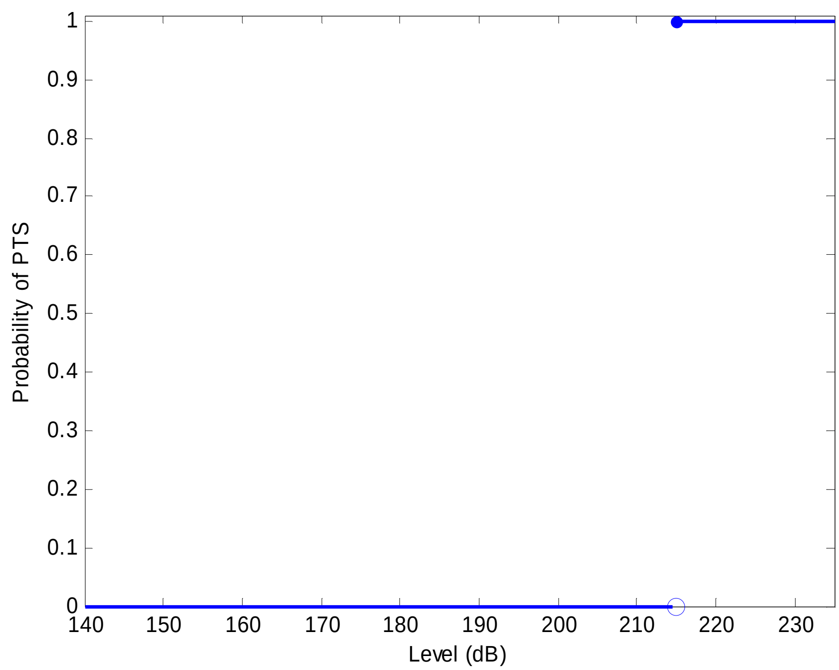

Figure D-13. PTS Heavyside Threshold Function

Symbolically, this *D* is defined as:

$$D(m_{energy}) = \begin{cases} 0\ \mathit{for}\ m_{energy} < 215 \\ 1\ \mathit{for}\ m_{energy} \geq 215 \end{cases}$$

Any function can be used for D, as long as its range is in [0,1]. The risk function uses normal Feller risk functions (defined below) instead of heavyside functions, and use the max SPL metric instead of the energy metric. While a heavyside function is specified by a single parameter, the discontinuity, a Feller function requires three parameters: the basement cutoff value, the level above the basement for 50% effect, and a steepness parameter. Mathematically, these Feller, "risk" functions, *D*, are defined as

$$D(m_{\max SPL}) = \begin{cases} \dfrac{1}{1+\left(\dfrac{K}{m_{\max SPL}-B}\right)^{A}} & for\ m_{\max SPL} \geq B \\ 0 & for\ m_{\max SPL} < B \end{cases} \quad 1$$

where B = cutoff (or basement), K = the difference in level (dB) between the basement and the median (50% effect) harassment level, and A = the steepness factor. The dose function for odontocetes and pinnipeds uses the parameters:

B = 120 dB,

K = 45 dB, and

A = 10.

The dose function for mysticetes uses:

B = 120 dB,

K = 45 dB, and

A = 8.

Harbor porpoises are a special case. Though the metric for their behavioral harassment is also SPL, their risk function is a heavyside step function with a harassment threshold discontinuity (0 % to 100 %) at 120 dB. All other species use the continuous Feller risk-function for evaluating expected harassment.

D.5.5 Calculation of Expected Exposures

Determining the number of expected exposures for disturbance is the object of this analysis.

$$\text{Expected exposures in volume V} = \int_V \rho(V) D(m_a(V))dV$$

For this analysis, $m_a = m_{\max SPL}$, so

$$\int_V \rho(V) D\big(m_a(V)\big)dV = \int_{-\infty}^{\infty}\int_{-\infty}^{\infty}\int_{-\infty}^{\infty} \rho(x,y,z) D(m_{\max SPL}(x,y,z))\, dx\, dy\, dz$$

In this analysis, the densities are constant over the xy-plane, and the z dimension is always negative, so this reduces to

$$\int_{-\infty}^{0} \rho(z) \int_{-\infty}^{\infty}\int_{-\infty}^{\infty} D(m_{\max SPL}(x,y,z))\, dx\, dy\, dz$$

1 The equation can also be represented as shown in Section 3.8.6.3 of this EIS/OEIS

D.5.6 Numeric Implementation

Numeric integration of $\int_{-\infty}^{0} \rho(z) \int_{-\infty}^{\infty}\int_{-\infty}^{\infty} D(m_{\max SPL}(x,y,z))\, dx\, dy\, dz$ can be involved because, although the bounds are infinite, D is non-negative out to 120 dB, which, depending on the environmental specifics, can drive propagation loss calculations and their numerical integration out to more than 100 km.

The first step in the solution is to separate out the *xy*-plane portion of the integral:

$$\text{Define } f(z) = \int_{-\infty}^{\infty}\int_{-\infty}^{\infty} D(m_{\max SPL}(x,y,z))\, dx\, dy\, .$$

Calculation of this integral is the most involved and time consuming part of the calculation. Once it is complete,

$$\int_{-\infty}^{0} \rho(z) \int_{-\infty}^{\infty}\int_{-\infty}^{\infty} D(m_{\max SPL}(x,y,z))\, dx\, dy\, dz = \int_{-\infty}^{0} \rho(z) f(z) dz\, ,$$

which, when numerically integrated, is a simple dot product of two vectors.

Thus, the calculation of *f(z)* requires the majority of the computation resources for the numerical integration. The rest of this section presents a brief outline of the steps to calculate *f(z)* and preserve the results efficiently.

The concept of numerical integration is, instead of integrating over continuous functions, to sample the functions at small intervals and sum the samples to approximate the integral. Smaller sized intervals yield closer approximations with longer calculation time, so a balance between accuracy and time is determined in the decision of step size. For this analysis, z is sampled in 5 meter steps to 1000 meters in depth and 10 meter steps to 2000 meters, which is the limit of animal depth in this analysis. The step size for x is 5 meters, and y is sampled with an interval that increases as the distance from the source increases. Mathematically,

$$z \in Z = \{0,5,...1000,1010,...,2000\}$$
$$x \in X = \{0,\pm 5,...,\pm 5k\}$$
$$y \in Y = \left\{0,\pm 5 * (1.005)^0, \pm 5 * \left[(1.005)^0 + (1.005)^1\right], ..., \pm 5 * \left[\sum_{i=0}^{j} (1.005)^i\right]\right\}$$

for integers k, j, which depend on the propagation distance for the source. For this analysis, k = 20,000 and j = 600.

With these steps, $f(z_0) = \int_{-\infty}^{\infty}\int_{-\infty}^{\infty} D(m_{\max SPL}(x,y,z_0))dxdy$ is approximated as

$$\sum_{z\in Y}\sum_{x\in X} D(m_{\max SPL}(x,y,z_0))\Delta x \Delta y$$

where X,Y are defined as above.

This calculation must be repeated for each $z_0 \in Z$, to build the discrete function *f*(*z*).

With the calculation of *f*(*z*) complete, the integral of its product with $\rho(z)$ must be calculated to complete evaluation of

$$\int_{-\infty}^{\infty} \rho(z) \int_{-\infty}^{\infty}\int_{-\infty}^{\infty} D(m_{\max SPL}(x,y,z))dxdydz = \int_{-\infty}^{0} \rho(z) f(z)dz$$

Since *f*(*z*) is discrete, and $\rho(z)$ can be readily made discrete, this equation is approximated numerically as $\sum_{z\in Z} \rho(z) f(z)$, a dot product.

D.5.7 Preserving Calculations for Future Use

Calculating *f*(*z*) is the most time-consuming part of the numerical integration, but the most time-consuming portion of the entire process is calculating $m_{\max SPL}(x,y,z)$ over the area range required for the minimum cutoff value (120 dB). The calculations usually require propagation estimates out to over 100 km, and those estimates, with the beam pattern, are used to construct a sound field that extends 200 km × 200 km = 40,000 sq km, with a calculation at the steps for every value of *X* and *Y*, defined above. This is repeated for each depth, to a maximum of 2,000 meters.

Saving the entire $m_{\max SPL}$ for each *z* is unrealistic, requiring great amounts of time and disk space. Instead, the different levels in the range of $m_{\max SPL}$ are sorted into 0.5 dB wide bins; the volume of water at each bin level is taken from $m_{\max SPL}$, and associated with its bin. Saving this, the amount of water ensonified at each level, at a 0.5 dB resolution, preserves the ensonification information without using the space and time required to save $m_{\max SPL}$ itself. Practically, this is a histogram of occurrence of level at each depth, with 0.5 dB bins. Mathematically, this is simply defining the discrete functions $V_z(L)$, where $L = \{.5a\}$ for every positive integer *a*, and for all $z \in Z$. These functions, or histograms, are saved for future work. The information lost by saving only the histograms is *where* in space the different levels occur, although *how often* they occur is saved. But the thresholds (risk function curves) are purely a function of level, not location, so this information is sufficient to calculate *f*(*z*).

Applying the risk function to the histograms is a dot product:

$$\sum_{\ell \in L_1} D(\ell) V_{z_0}(\ell) \approx \int_{-\infty}^{\infty}\int_{-\infty}^{\infty} D(m_{\max SPL}(x,y,z_0))dxdy$$

So, once the histograms are saved, neither $m_{\max SPL}(x,y,z)$ nor *f*(*z*) must be recalculated to generate $\int_{-\infty}^{0} \rho(z) \int_{-\infty}^{\infty}\int_{-\infty}^{\infty} D(m_{\max SPL}(x,y,z))dxdydz$ for a new threshold function.

For the interested reader, the following section includes an in-depth discussion of the method, software, and other details of the *f*(*z*) calculation.

D.5.8 Software Detail

The risk-function metric uses the aforementioned Feller function to determine the probability that an animal is affected by a given sound pressure level. The acoustic quantity of interest is the maximum sound pressure level (SPL) experienced over multiple pings in a range-independent environment. The procedure for calculating the impact volume at a given depth is relatively simple. In brief, given the SPL of the source and the transmission loss (TL) curve, the received SPL is calculated on a volumetric grid. For a given depth, volume associated with each SPL interval is calculated. Then, this volume is multiplied by the probability that an animal will be affected by that sound pressure level. This gives the impact volume for that depth, which can be multiplied by the animal densities at that depth, to obtain the number of animals affected at that depth. The process repeats for each depth to construct the impact volume as a function of depth.

The case of a single emission of sound energy, one ping, illustrates the computational process in more detail. First, the sound pressure levels are segregated into a sequence of bins that cover the range encountered in the area. The SPL are used to define a volumetric grid of the local sound field. The impact volume for each depth is calculated as follows: for each depth in the volumetric grid, the SPL at each *xy*-plane grid point is calculated using the SPL of the source, the TL curve, the horizontal beam pattern of the source, and the vertical beam patterns of the source. The sound pressure levels in this grid become the bins in the volume histogram.

Figure D-14 shows an example volume histogram for a low-power source. Level bins are 0.5 dB in width and the depth is 50 meters in an environment with water depth of 100 meters. The oscillatory structure at very low levels is due to the flattening of the TL curve at long distances from the source, which magnifies the fluctuations of the TL as a function of range. The “expected” impact volume for a given level at a given depth is calculated by multiplying the volume in each level bin by the risk function evaluated at that level. Total expected impact volume for a given depth is the sum of these “expected” volumes.

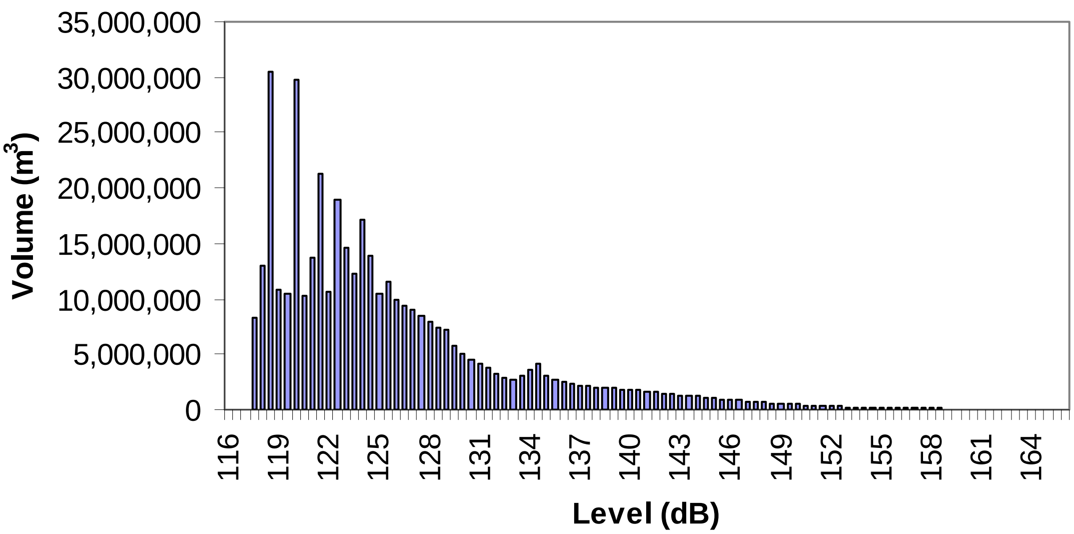

Figure D-14. Example of a Volume Histogram

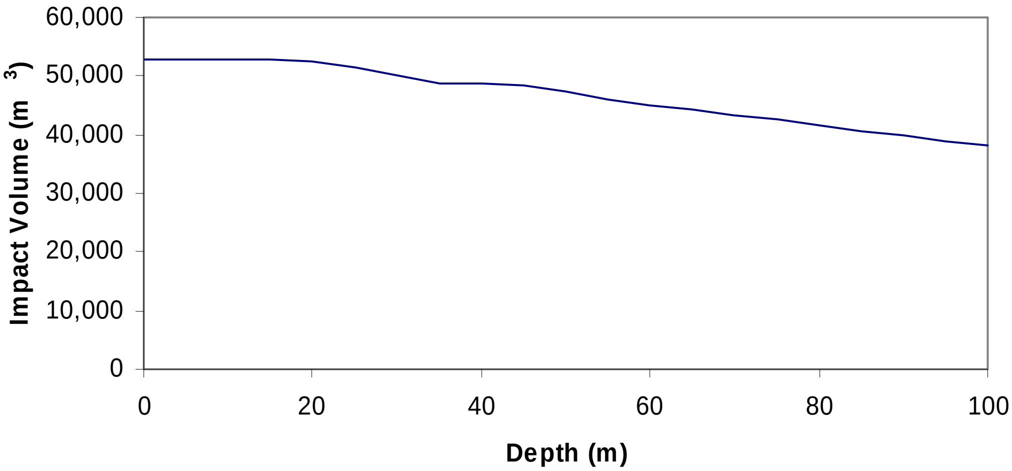

Figure D-15. Example of the Dependence of Impact Volume on Depth

The volumetric grid covers the waters in and around the area of a source's operation. The grid for this analysis has a uniform spacing of 5 meters in the *x*-coordinate and a slowly expanding spacing in the *y*-coordinate that starts with 5 meters spacing at the origin. The growth of the grid size along the *y*-axis is a geometric series where each successive grid size is obtained from the previous by multiplying it by 1 + *Ry*, where *Ry* is the *y*-axis growth factor. The n^{th} grid size is related to the first grid size by multiplying by $(1 + Ry)^{(n-1)}$. For an initial grid size of 5 meters and a growth factor of 0.005, the 100^{th} grid increment is 8.19 meters. The constant spacing in the *x*-coordinate allows greater accuracy as the source moves along the *x*-axis. The slowly increasing spacing in *y* reduces computation time, while maintaining accuracy, by taking advantage of the fact that TL changes more slowly at longer distances from the source. The *x*-and *y*-coordinates extend from $-R_{max}$ to $+R_{max}$, where R_{max} is the maximum range used in the TL calculations. The *z* direction uses a uniform spacing of 5 meters down to 1000 meters and 10 meters from 1000 to 2000 meters. This is the same depth mesh used for the effective energy metric as described above. The depth mesh does not extend below 2000 meters, on the assumption that animals of interest are not found below this depth.

The next three figures indicate how the accuracy of the calculation of impact volume depends on the parameters used to generate the mesh in the horizontal plane. Figure D-16 shows the relative change of impact volume for one ping as a function of the grid size used for the *x*-axis. The *y*-axis grid size is fixed at 5 m and the *y*-axis growth factor is 0, i.e., uniform spacing. The impact volume for a 5 meters grid size is the reference. For grid sizes between 2.5 and 7.5 meters, the change is less than 0.1%. A grid size of 5 meters for the *x*-axis is used in the calculations.

Figure D-17 shows the relative change of impact volume for one ping as a function of the grid size used for the x-axis and the *y*-axis grids, respectively. The *x*-axis grid size is fixed at 5 meters and the *y*-axis growth factor is 0. The impact volume for a 5 meters grid size is the reference. This figure is very similar to that for the *x*-axis grid size. For grid sizes between 2.5 and 7.5 meters, the change is less than 0.1%. A grid size of 5 meters is used for the *y*-axis in our calculations. Figure D-18 shows the relative change of impact volume for one ping as a function of the *y*-axis growth factor. The *x*-axis grid size is fixed at 5 meters and the initial *y*-axis grid size is 5 meters. The impact volume for a growth factor of 0 is the reference. For growth factors from 0 to 0.01, the change is less than 0.1%. A growth factor of 0.005 is used in the calculations.

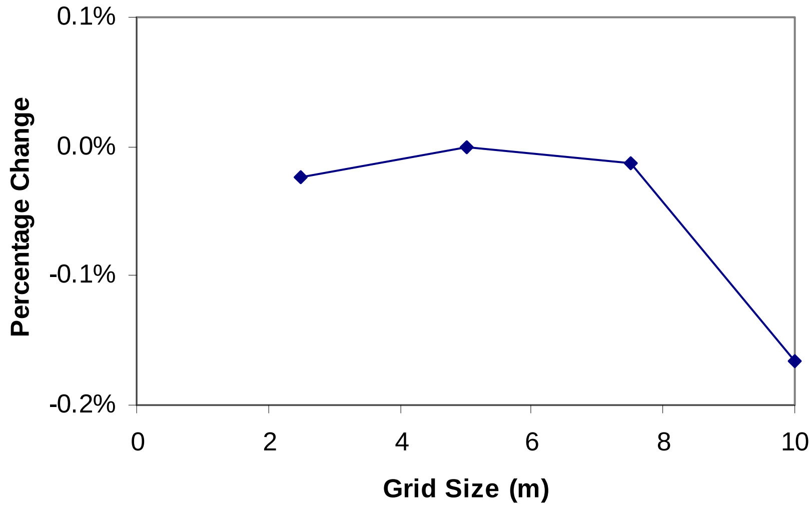

Figure D-16. Change of Impact Volume as a Function of *x*-axis Grid Size

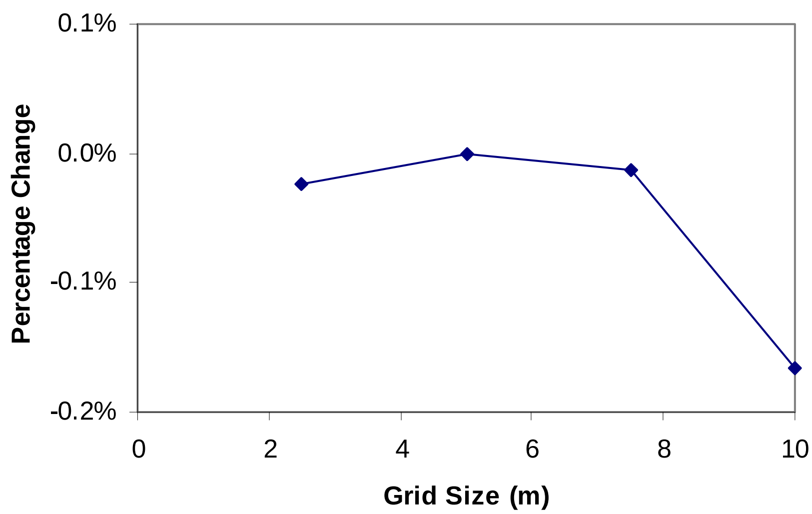

Figure D-17. Change of Impact Volume as a Function of y-axis Grid Size

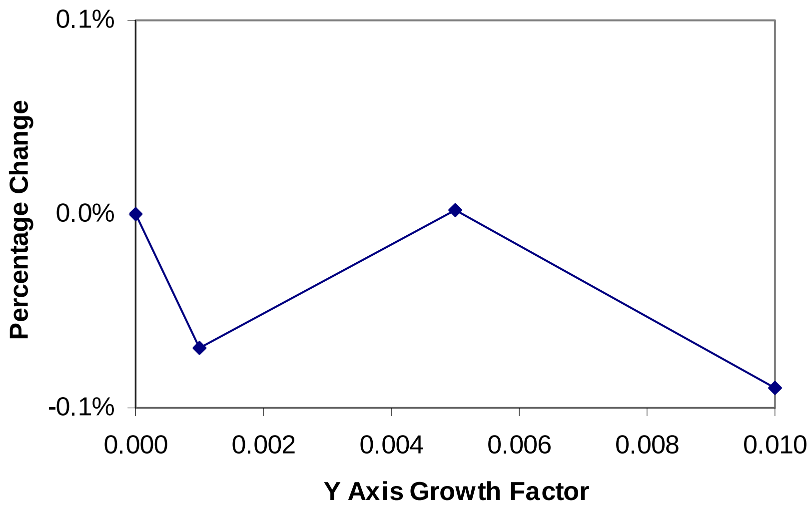

Figure D-18. Change of Impact Volume as a Function of y-axis Growth Factor

Another factor influencing the accuracy of the calculation of impact volumes is the size of the bins used for sound pressure level. The sound pressure level bins extend from 100 dB (far lower than required) up to 300 dB (much higher than that expected for any sonar system).

Figure D-19 shows the relative change of impact volume for one ping as a function of the bin width. The *x*-axis grid size is fixed at 5 meters, and the initial *y*-axis grid size is 5 meters with a *y*-axis growth factor of 0.005. The impact volume for a bin size of 0.5 dB is the reference. For bin widths from 0.25 dB to 1.00 dB, the change is about 0.1%. A bin width of 0.5 is used in our calculations.

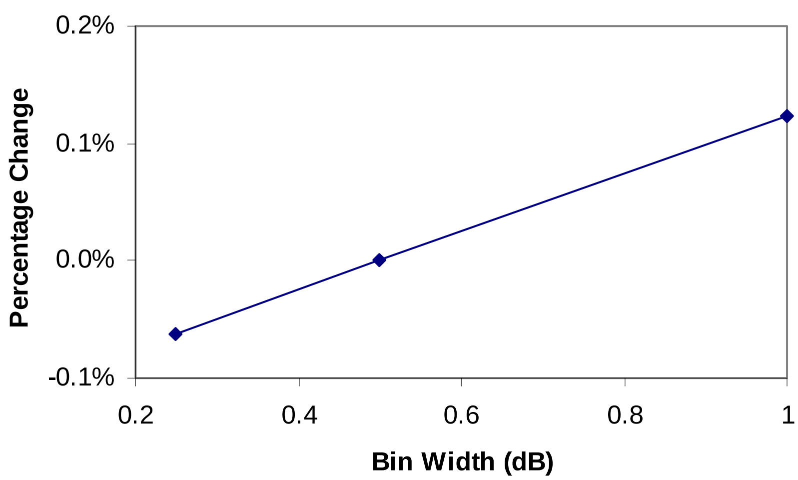

Figure D-19. Change of Impact Volume as a Function of Bin Width

Two other issues for discussion are the maximum range (R_{max}) and the spacing in range and depth used for calculating TL. The TL generated for the energy accumulation metric is used for dose-response analysis. The same sampling in range and depth is adequate for this metric because it requires a less demanding computation (i.e., maximum value instead of accumulated energy). Using the same value of R_{max} needs some discussion since it is not clear that the same value can be used for both metrics. R_{max} was set so that the TL at R_{max} is more than needed to reach the energy accumulation threshold of 173 dB for 1000 pings. Since energy is accumulated, the same TL can be used for one ping with the source level increased by 30 dB (10 $\log_{10}$(1000)). Reducing the source level by 30 dB, to get back to its original value, permits the handling of a sound pressure level threshold down to 143 dB, comparable to the minimum required. Hence, the TL calculated to support energy accumulation for 1000 pings will also support calculation of impact volumes for the dose-response metric.

The process of obtaining the maximum sound pressure level at each grid point in the volumetric grid is straightforward. The active sonar starts at the origin and moves at constant speed along the positive x-axis emitting a burst of energy, a ping, at regularly spaced intervals. For each ping, the distance and horizontal angle connecting the source to each grid point is computed. Calculating the TL from the source to a grid point has several steps. The TL is made up of the sum of many eigenrays connecting the source to the grid point. The beam pattern of the source is applied to the eigenrays based on the angle at which they leave the source. After summing the vertically beamformed eigenrays on the range mesh used for the TL calculation, the vertically beamformed TL for the distance from the sonar to the grid point is derived by interpolation. Next, the horizontal beam pattern of the source is applied using the horizontal angle connecting the sonar to the grid point. To avoid problems in extrapolating TL, only grid points with distances less than R_{max} are used. To obtain the sound pressure level at a grid point, the sound pressure level of the source is reduced by that TL. For the first ping, the volumetric grid is populated by the calculated sound pressure level at each grid point. For the second ping and subsequent pings, the source location increments along the x-axis by the spacing between pings and the sound pressure level for each grid point is again calculated for the new source location. Since the risk-function metric uses the maximum of the sound pressure levels at each grid point, the newly calculated sound pressure level at each grid point is compared to the sound pressure level stored in the grid. If the new level is larger than the stored level, the value at that grid point is replaced by the new sound pressure level.

For each bin, a volume is determined by summing the ensonified volumes with a maximum SPL in the bin's interval. This forms the volume histogram shown in Figure D-14. Multiplying by the dose-response probability function for the level at the center of a bin gives the impact volume for that bin. The result can be seen in Figure D-15, which is an example of the impact volume as a function of depth.

The impact volume for a sonar moving relative to the animal population increases with each additional ping. The rate at which the impact volume increases for the risk function metric is essentially linear with the number of pings. Figure D-20 shows the dependence of impact volume on the number of pings. The slope of the line at a given depth is the impact volume added per ping. This number multiplied by the number of pings in an hour gives the hourly impact volume for the given depth increment. Completing this calculation for all depths in a province, for a given source, gives the hourly impact volume vector which contains the hourly impact volumes by depth for a province.

Figure D-21 provides an example of an hourly impact volume vector for a particular environment. Given the speed of the sonar platform, the hourly impact volume vector could be displayed as the impact volume vector per kilometer of track.

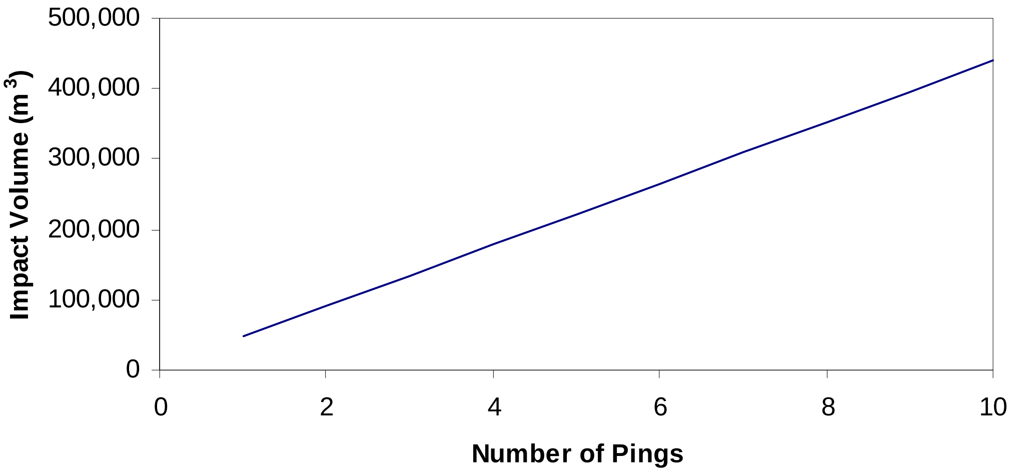

Figure D-20. Dependence of Impact Volume on the Number of Pings

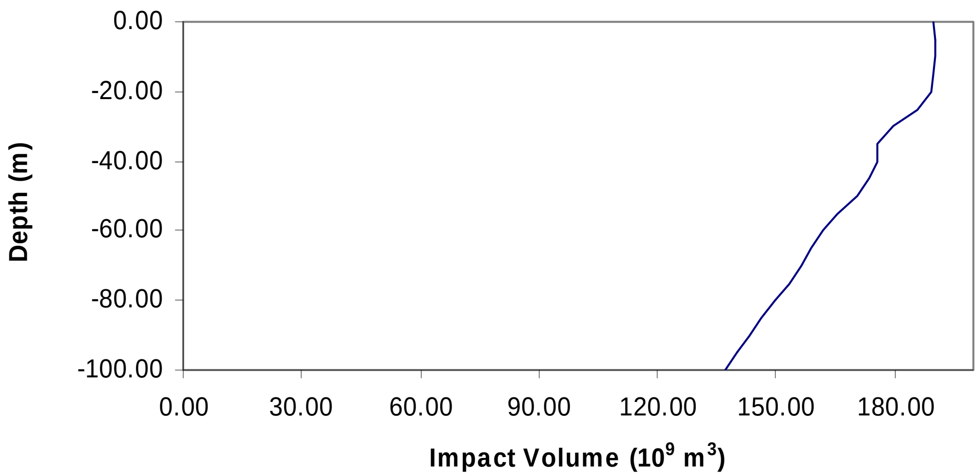

Figure D-21. Example of an Hourly Impact Volume Vector

D.5.9 Modeling Quiet and Continuous Sources

The TMAA has modeled sources whose energy contributions do not exceed EFDL thresholds, but have source levels above 120 dB, and move in a continuous fashion. The previous discussion of software detail would present under-sampling artifacts when applied to quiet sources, so an alternative approach is implemented.

Consider transmission loss with cylindrical symmetry surrounding an omni-directional source (Figure D-22):

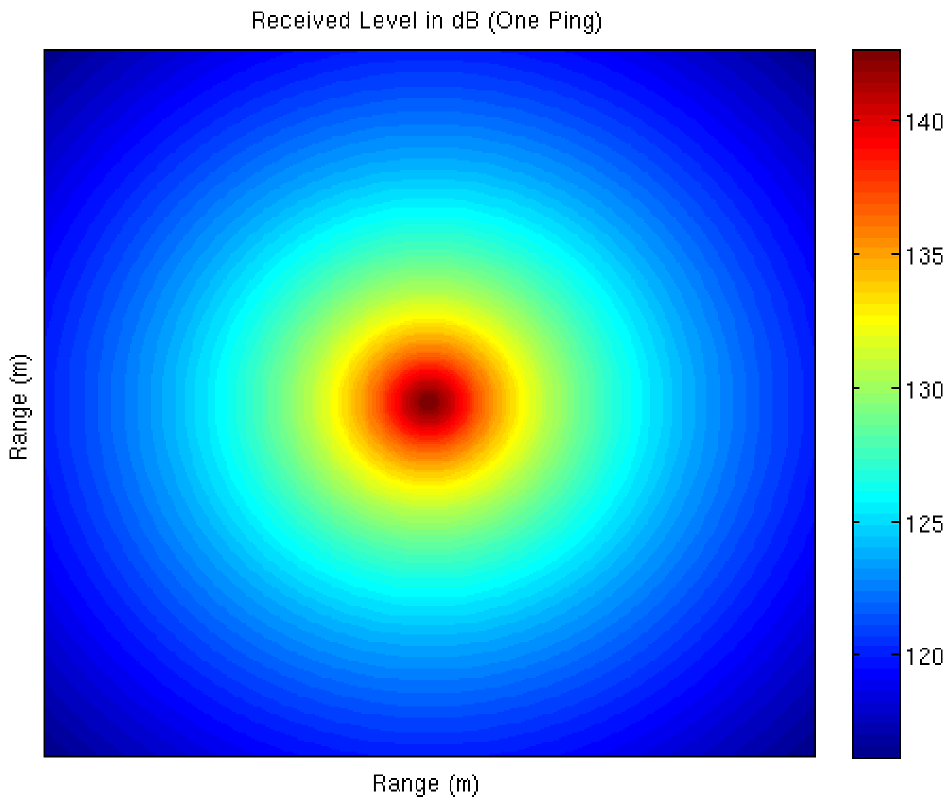

Figure D-22. – Single Ping Maximum SPL Field

When the factors of continuous pinging behavior, monotonic transmission loss in the short range, and maximum SPL as the input metric for the risk function, computing the maximum SPL field is a matter of extending the field as such (Figure D-23):

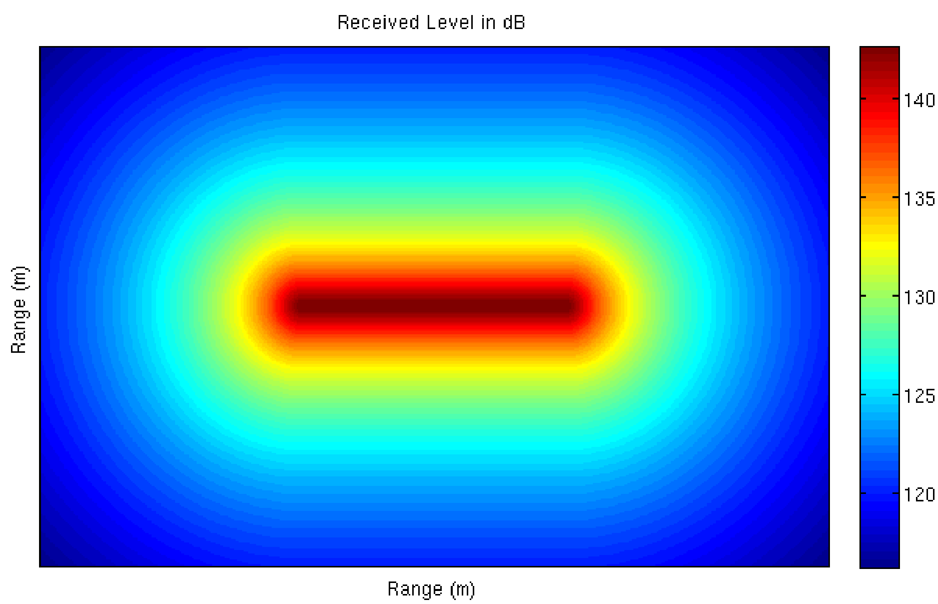

Figure D-23. – Quiet Continuous Sound Source

In the direction orthogonal to source motion, maximum SPL is achieved at CPA. This algorithm takes a 0.5-meter resolution frequency-dependent TL curve and proceeds as follows.

In a given depth interval:

- Find the received level in one meter increments about a source. In the first one meter step, calculate the area of circle ensonified at the matching received level.
- Calculate areas of subsequent n^{th} circles in 1 meter steps.
- Compute the area on a rectangular strip for a one-meter extent in parallel to annulus radius of equivalent received level. Scale by the probability of harassment based on received level at this n^{th} range. Note that received level at the outer-radius of the modified annulus was used to calculate the probability with the risk function.
- Convert annulus result to volume based on the depth increment.
- Sum all scaled volumes of interior cylinder and subsequent annuli to impact range at 120 dB to find a cumulative volume for this depth interval which inherits the probabilistic calculation.

This algorithm takes place over the entire water column to capture dynamics of ensonification over all depths, and hence produces an impact volume vector.

D.6 HARRASSMENTS

This section defines the animal densities and their depth distributions for the TMAA. This is followed by a series of tables providing MMPA harassment estimates per unit of operation for each source type (active sound sources and explosives).

D.6.1 Animal Densities

Densities are usually reported by marine biologists as animals per square kilometer, which is an area metric. This gives an estimate of the number of animals below the surface in a certain area, but does not provide any information about their distribution in depth. The impact volume vector (see subsection D.4.3) specifies the volume of water ensonified above the specified threshold in each depth interval. A corresponding animal density for each of those depth intervals is required to compute the expected value of the number of exposures. The two-dimensional area densities do not contain this information, so three-dimensional densities must be constructed by using animal depth distributions to extrapolate the density at each depth. The required depth distributions are presented in the biology subsection.

D.6.2 Harassment Estimates

The following sperm whale example demonstrates the methodology used to create a three-dimensional density by merging the area densities with the depth distributions. The sperm whale surface density is 0.0003 whales per square kilometer. From the depth distribution report, "depth distribution for sperm whales based on information in the Amano paper is: 31% in 0-10 m, 8% in 10-200 m, 9% in 201-400 m, 9% in 401-600 m, 9% in 601-800 m and 34% in >800 m." So the sperm whale density at 0-10 m is 0.0003*0.31/0.01 = 0.0093 per cubic km, at 10-200 m is 0.0003*0.08/0.19 = .00012632 per cubic km, and so forth.

In general, the impact volume vector samples depth in finer detail than given by the depth distribution data. When this is the case, the densities are apportioned uniformly over the appropriate intervals. For example, suppose the impact volume vector provides volumes for the intervals 0-10 meters, 10-50 meters, and 50-200 meters. Then for the depth-distributed densities discussed in the preceding paragraph,

- 0.0093 whales per cubic km is used for 0-10 meters,
- 0.00012632 whales per cubic km is used for the 10-50 meters, and
- 0.00012632 whales per cubic km is used for the 50-200 meters.

Once depth-varying, three-dimensional densities are specified for each species type, with the same depth intervals and the ensonified volume vector, the density calculations are finished. The expected number of ensonified animals within each depth interval is the ensonified volume at that interval multiplied by the volume density at that interval and this can be obtained as the dot product of the ensonified volume and animal density vectors.

Since the ensonified volume vector is the ensonified volume per unit operation (i.e. per hour, per sonobuoy, etc), the final harassment count for each animal is the unit operation harassment count multiplied by the number of units (hours, sonobuoys, etc).

D.6.3 Additional Modeling Considerations in a General Modeling Scenario

When modeling the effect of sound projectors in the water, the ideal task presents modelers with complete *a priori* knowledge of the location of the source(s) and transmission patterns during the times of interest. In these cases, calculation inputs include the details of source path, proximity of shoreline, high-resolution density estimates, and other details of the scenario. However, in the TMAA, there are sound-producing events for which the source locations and transmission patterns are unknown, but still require analysis to predict effects. For these cases, a more general modeling approach is required: “We will be operating somewhere in this large area for *X* minutes. What are the potential effects on average?”

Modeling these general scenarios requires a statistical approach to incorporate the scenario nuances into harassment calculations. For example, one may ask: “If an animal receives 130 dB SPL when the source passes at closest point of approach (CPA) on Tuesday morning, how do we know it doesn't receive a higher level on Tuesday afternoon?” This question cannot be answered without knowing the path of the source (and several other facts). Because the path of the source is unknown, the number of an individual's re-exposures cannot be calculated directly. But it can, on average, be accounted for by making appropriate assumptions.

Table D-14 lists unknowns created by uncertainty about the specifics of a future proposed action, the portion of the calculation to which they are relevant, and the assumption that allows the effect to be computed without the detailed information:

Table D-14 – Unknowns and Assumptions

Unknowns	Relevance	Assumption
Path of source (esp. with respect to animals)	Ambiguity of multiple exposures, Local population: upper bound of harassments	Most conservative case: sources can be anywhere within range
Source locations	Ambiguity of multiple exposures, land shadow	Equal distribution of action in each range
Direction of sonar transmission	Land shadow	Equal probability of pointing any direction

The following sections discuss two topics that require action details, and describe how the modeling calculations used the general knowledge and assumptions to overcome the future-action uncertainty with respect to re-exposure of animals, and land shadow.

D.6.4 Multiple Exposures in General Modeling Scenario

Consider the following hypothetical scenario. A box is painted on the surface of a well-studied ocean environment with well-known propagation. A sound source and 100 whales are inserted into that box and a curtain is drawn. What will happen? The details of what will happen behind the curtain are unknown, but the existing knowledge, and general assumptions, can allow for a calculation of average affects.

For the first period of time, the source is traveling in a straight line and pinging at a given rate. In this time, it is known how many animals, on average, receive their max SPLs from each ping. As long as the source travels in a straight line, this calculation is valid. However, after an undetermined amount of time, the source will change course to a new and unknown heading.

If the source changes direction 180 degrees and travels back through the same swath of water, all the animals the source passes at closest point of approach (CPA) before the next course change have already been exposed to what will be their maximum SPL, so the population is not “fresh.” If the direction does not change, only new animals will receive what will be their maximum SPL from that source (though most have received sound from it), so the population is completely “fresh.” Most source headings lead to a population of a mixed “freshness,” varying by course direction. Since the route and position of the source over time are unknown, the freshness of the population at CPA with the source is unknown. This ambiguity continues through the remainder of the exercise.

What is known? The source and, in general, the animals remain in the vicinity of the range. Thus, if the farthest range to a possible effect from the source is *X* km, no animals farther than *X* km outside of the TMAA can be harassed. The intersection of this area with a given animal’s habitat multiplied by the density of that animal in its habitat represents the maximum number of animals that can be harassed by activity in that TMAA, which shall be defined as “the local population.” Two details: first, this maximum should be adjusted down if a risk function is being used, because not 100% of animals within *X* km of the TMAA border will be harassed. Second, it should be adjusted up to account for animal motion in and out of the area.

The ambiguity of population freshness throughout the exercise means that multiple exposures cannot be calculated for any individual animal. It must be dealt with generally at the population level.

D.6.4.1 Solution to the Ambiguity of Multiple Exposures in the General Modeling Scenario

At any given time, each member of the population has received a maximum SPL (possibly zero) that indicates the probability of harassment in the exercise. This probability indicates the contribution of that individual to the expected value of the number of harassments. For example, if an animal receives a level that indicates 50% probability of harassment, it contributes 0.5 to the sum of the expected number of harassments. If it is passed later with a higher level that indicates a 70% chance of harassment, its contribution increases to 0.7. If two animals receive a level that indicates 50% probability of harassment, they together contribute 1 to the sum of the expected number of harassments. That is, we statistically expect exactly one of them to be harassed. Let the expected value of harassments at a given time be defined as “the harassed population” and the difference between the local population (as defined above) and the harassed population be defined as “the unharassed population.” As the exercise progresses, the harassed population will never decrease and the unharassed population will never increase.

The unharassed population represents the number of animals statistically “available” for harassment. Since we do not know where the source is, or where these animals are, we assume an average (uniform) distribution of the unharassed population over the area of interest. The densities of unharassed animals are lower than the total population density because some animals in the local population are in the harassed population.

Density relates linearly to expected harassments. If action A in an area with a density of 2 animals per square kilometer produces 100 expected harassments, then action A in an area with 1 animal per square kilometer produces 50 expected harassments. The modeling produces the number of expected harassments per ping starting with 100% of the population unharassed. The next ping will produce slightly fewer harassments because the pool of unharassed animals is slightly less.

For example, consider the case where 1 animal is harassed per ping when the local population is 100, 100% of which are initially unharassed. After the first ping, 99 animals are unharassed, so the number of animals harassed during the second ping are

$$1\left(\frac{99}{100}\right) = 1(.99) = 0.99 \text{ animals}$$

and so on for the subsequent pings.

Mathematics

A closed form function for this process can be derived as follows.

Define $H =$ number of animals harassed per ping with 100% unharassed population. H is calculated by determining the expected harassments for a source moving in a straight line for the duration of the exercise and dividing by the number of pings in the exercise (Figure D-24).

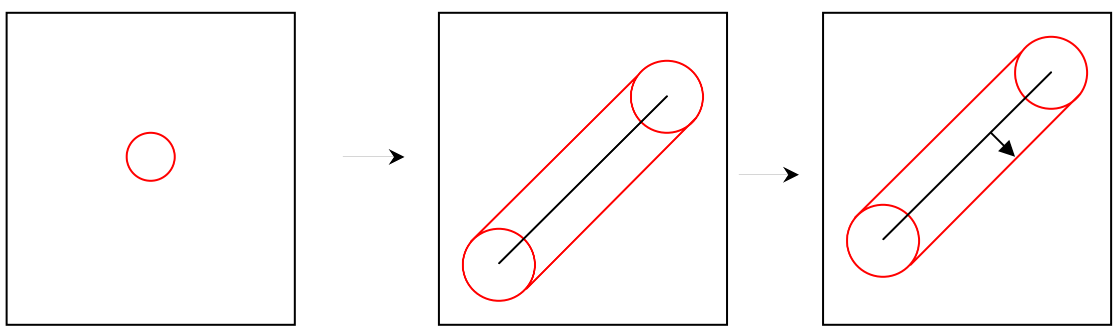

Figure D-24. – Process of calculating *H*

$$H = \frac{\iiint \rho(z)D(L(x,y,z))dxdydz}{N_{pings}}$$

The total un-harassed population is then calculated by iteration. Each ping affects the un-harassed population left after all previous pings:

Define $P_n =$ unharassed population after n^{th} ping

$$P_0 = \text{local population}$$

$$P_1 = P_0 - H$$
$$P_2 = P_1 - H\left(\frac{P_1}{P_0}\right)$$
$$\ldots$$
$$P_n = P_{n-1} - H\left(\frac{P_{n-1}}{P_0}\right)$$

Therefore,

$$P_n = P_{n-1}\left(1-\left(\frac{H}{P_0}\right)\right) = P_{n-2}\left(1-\left(\frac{H}{P_0}\right)\right)^2 = \ldots = P_0\left(1-\left(\frac{H}{P_0}\right)\right)^n$$

Thus, the total number of harassments depends on the per-ping harassment rate in an un-harassed population, the local population size, and the number of operation hours.

D.6.4.2 Local Population: Upper Bound on Harassments

As discussed above, Navy planners have confined periods of sonar use to operation areas. The size of the harassed population of animals for an action depends on animal re-exposure, so uncertainty about the precise source path creates variability in the "harassable" population. Confinement of sonar use to a sonar operating area allows modelers to compute an upper bound, or worst case, for the number of harassments with respect to location uncertainty. This is done by assuming that every animal which enters the operation area at any time in the exercise (and also many outside) is "harassable" and creates an upper bound on the number of harassments for the exercise. Since this is equivalent to assuming that there are sonars transmitting simultaneously from each point in the confined area throughout the action length, this greatly overestimates the harassments from an exercise.

NMFS has defined a twenty-four hour "refresh rate," or amount of time in which an individual animal can be harassed no more than once. The Navy has determined that, in a twenty-four hour period, all training events in the TMAA involve sources that transmit for no longer than sixteen (16) hours.

The most conservative assumption for a single ping is that it harasses the entire population within the range (a gross over-estimate). However, the total harassable population for multiple pings will be even greater since animal motion over the period in the above table can bring animals into range that otherwise would be out of the harassable population.

D.6.4.3 Animal Motion Expansion

Though animals often change course to swim in different directions, straight-line animal motion would bring the more animals into the harassment area than a "random walk" motion model. Since precise and accurate animal motion models exist more as speculation than documented fact and because the modeling requires an undisputable upper bound, calculation of the upper bound for TMAA modeling areas uses a straight-line animal motion assumption. This is a conservative assumption.

For a circular area, the straight-line motion in any direction produces the same increase in harassable population. However, since the ranges are non-circular polygons, choosing the initial fixed direction as perpendicular to the longest diagonal produces greater results than any other direction. Thus, the product of the longest diagonal and the distance the animals move in the period of interest gives an overestimate of the expansion in range modeling areas due to animal motion. The expansions use this estimate as an absolute upper bound on animal-motion expansion.

Figure D-25 illustrates the overestimation, which occurs during the second arrow:

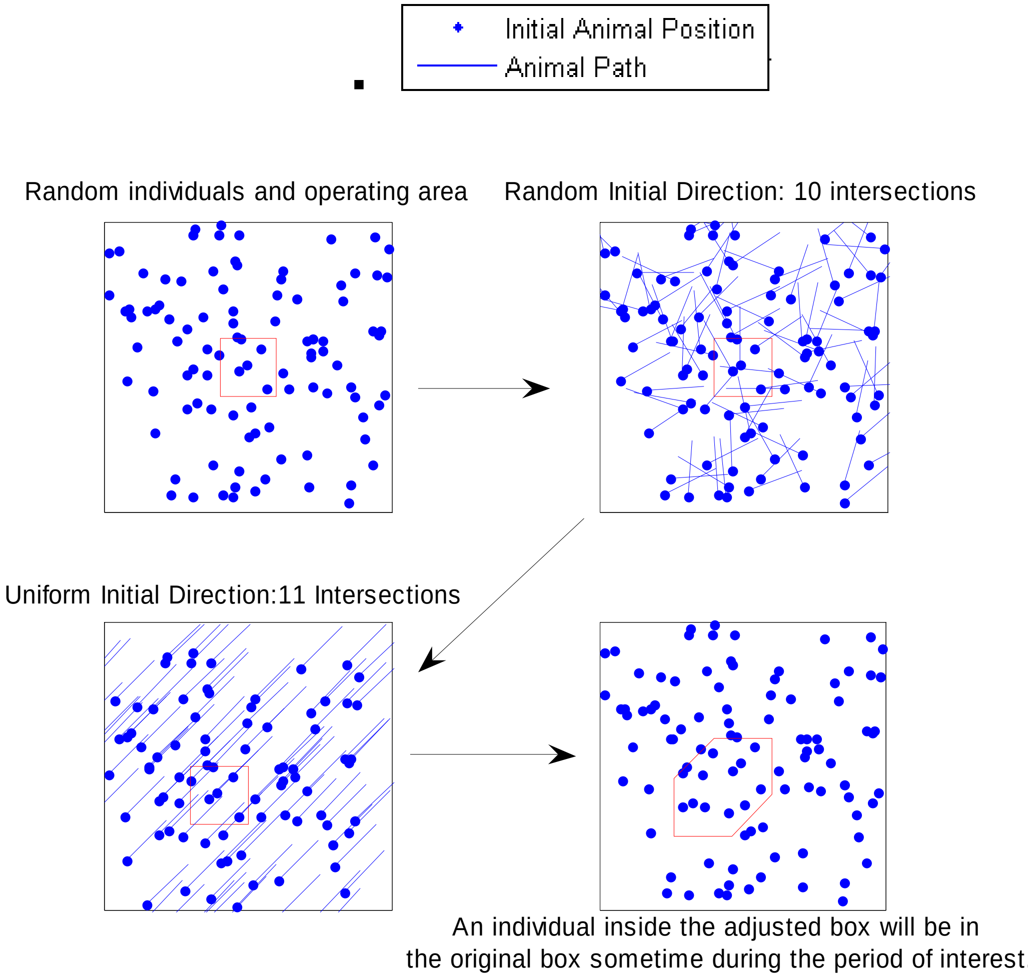

Figure D-25. Process of Setting an Upper Bound on Individuals Present in Area

It is important to recognize that the area used to calculate the harassable population, shown in Figure D-25 will, in general, be much larger than the area that will be within the ZOI of a ship for the duration of its broadcasts. For a ship moving faster than the speed of the marine animals, a better (and much smaller) estimate of the harassable population would be that within the straight line ZOI cylinder shown in Figure D-26. Using this smaller population would lead to a greater dilution of the unharassed population per ping and would greatly reduce the estimated harassments.

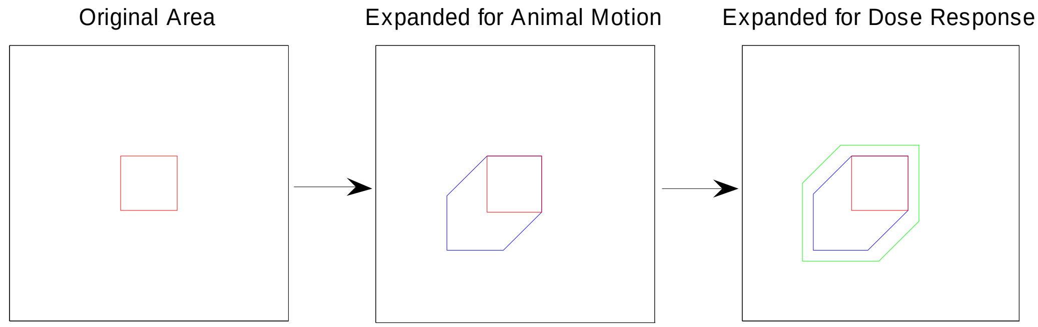

Figure D-26. Process of Expanding Area to Create Upper Bound of Harassments

D.6.4.4 Risk Function Expansion

The expanded area contains the number of animals that will enter the range over the period of interest. However, an upper bound on harassments must also include animals outside the area that would be affected by a source transmitting from the area's edge. A gross overestimation could simply assume pinging at every point on the range border throughout the exercise and would include all area with levels from a source on the closest border point greater than the risk function basement. In the case of GOA, this would include all area within approximately 105 km from the edge of the adjusted box. (See Table D-15). This basic method would give a crude and exaggerated upper bound, since only a tiny fraction of this out-of-range area can be ensonified above threshold for a given ping. A more refined upper bound on harassments can be found by maintaining the assumption that a source is transmitting from each point in the adjusted box and calculating the expected ensonified area, which would give all animals inside the area a 100% probability of harassment, and those outside the area a varying probability, based on the risk function.

$$\int_0^{L^{-1}(120dB)} D(L(r))dr\,,$$

Where L is the SPL function with domain in range and range in level,

r is the range from the sonar operating area,

L^{-1}(120 dB) is the range at which the received level drops to 120 dB, and

D is the risk function (probability of harassment vs. Level).

At the corners of the polygon, additional area can be expressed as

$$\frac{[\pi-\theta]\displaystyle\int_0^{L^{-1}(120dB)} D(L(r))rdr}{2\pi}$$

with D, L, and r as above, and

θ the inner angle of the polygon corner, in radians.

For the risk function and transmission loss of the TMAA, this method adds an area equivalent by expanding the boundaries of the adjusted box by four kilometers. The resulting shape, the adjusted box with a boundary expansion of 4 km, does not possess special meaning for the problem. But the number of individuals contained by that shape, is the harassable population and an absolute upper bound on possible harassments for that operation.

The following plots illustrate the growth of area for the sample case above. The shapes of the boxes are unimportant. The area after the final expansion, though, gives an upper bound on the "harassable", or initially unharassed population which could be affected by operations.

Example Case

Consider a sample case from the TMAA. For the most powerful source, the SQS-53, the expected winter rate of exposures under the risk function considered behaviorial MMPA Level B harassment for minke whales is approximately 0.068985832 harassments per ping. The exercise will transmit sonar pings for 16 hours in a 24 hour period as consistent with planned use, with 120 pings per minute, a total of 120 * 16 = 1,920 pings in a 24 hour period.

The TMAA has an area of approximately 92,246 square kilometers and a diagonal of 486.5 km. Adjusting this with straight-line (upper bound) animal motion of 5.5 kilometers per hour for 16 hours, animal motion adds 486.5 * 5.5 * 16 = 42,812 square kilometers to the area. Using the risk function to calculate the expected range outside the OA approximately adds another 5,068 square kilometers, bringing the total upper-bound of the affected area to 140,126 square km.

For example, minke whales have an average winter density of 0.0006 animals per square kilometer, so the upper bound number of minke whales that can be affected by SQS-53 activity in the GOA during a 24 hour period is 140,126 * 0.0006 = 84.0756 whales.

In the first ping, 0.068985832 minke whales will be harassed. With the second ping,

$0.068985832 \left(\frac{84.0756 - 0.068985832}{84.0756} \right) = 0.068929228$ minke whales will be harassed. Using the formula derived above, after 16 hours of continuous operation, the remaining **unharassed** population is

$$P_{1920} = P_0 \left(1 - \left(\frac{h}{P_0} \right) \right)^{1920} = 84.0756 \left(1 - \left(\frac{0.068985832}{84.0756} \right) \right)^{1920} \approx 17.3861$$

So the **harassed** population will be 84.0756 – 17.3861 = 66.6895 animals.

Contrast this with linear accumulation of harassments without consideration of the local population and the dilution of the unharassed population:

Harassments = 0.068985832 * 1920 = 132.45 whales,

which is 57% greater than the estimated local population of 84.0756 minke whales. Because linear accumulation assumes an infinite local population, it always overestimates the number of harassments, sometimes to the point of producing impossible results.

D.6.5 Land Shadow

The risk function considers the possibility of harassment possible if an animal receives 120 dB sound pressure level, or above. In the open ocean of the GOA, this can occur as far away as 105 km, so over a large "effect" area, sonar sound could, but does not necessarily, harass an animal. The harassment calculations for a general modeling case must assume that this effect area covers only water fully populated with animals, but in some portions of the GOA, land partially encroaches on the area, obstructing sound propagation.

As discussed in the introduction of "Additional Modeling Considerations" Navy planners do not know the exact location and transmission direction of the sonars at future times. These factors however, completely determine the interference of the land with the sound, or "land shadow," so a general modeling approach does not have enough information to compute the land shadow effects directly. However, modelers can predict the reduction in harassments at any point due to land shadow for different pointing directions and use expected probability distribution of activity to calculate the average land shadow for operations in each range.

For each of the coastal points that are within 105 km of the grid, the azimuth and distance are computed. In the computation, only the minimum range at each azimuth is computed.

Now, the average of the distances to shore, along with the angular profile of land is computed (by summing the unique azimuths that intersect the coast) for each grid point. The values are then used to compute the land shadow for the grid points.

D.6.5.1 Computing the Land Shadow Effect at Each Grid Point

The effect of land shadow is computed by determining the levels, and thus the distances from the sources, that the harassments occur. The levels vary according to acoustic propagation conditions, so the analysis breaks down according to two seasons. Table D-15 gives a mathematical extrapolation of the distances and levels at which harassments occur, with average seasonal propagation in the GOA using the SQS-53 as an example and as displayed in Figures D-27 and D-28.

Table D-15 – Behavioral Harassments at each Received Level Band from SQS-53 During Summer Months

Received Level (dB SPL)	Distance at which Levels Occur in GOA	Percent of Behavioral Harassments Occurring at Given Levels
Below 138	42 km – 105 km	~ 0 %
138<Level<144	28 km – 42 km	< 1 %
144<Level<150	17 km – 28 km	~1 %
150<Level<156	9 km – 17 km	7 %
156<Level<162	5 km – 9 km	18 %
162<Level<168	2.5 km – 5 km	26 %
168<Level<174	1.2 km – 2.5 km	22 %
174<Level<180	0.5 km – 1.2 km	14 %
180<Level<186	335 m – 0.5 km	6 %
186<Level<TTS	178 m – 335 m	5 %

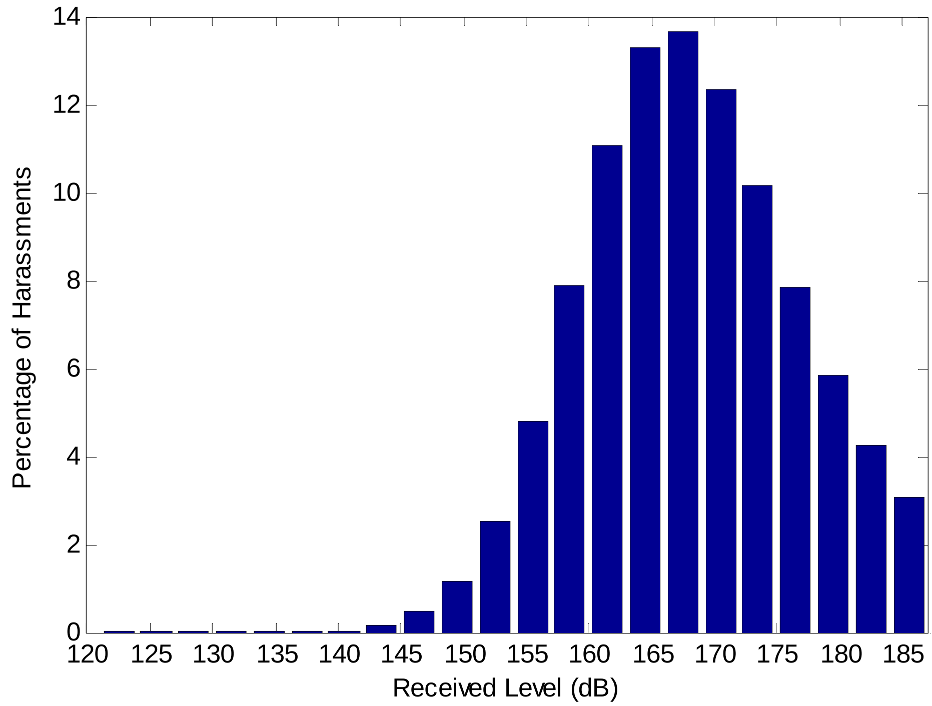

Figure D-27. – The Approximate Percentage of Behavioral Harassments for Every 3 Degree Band of Received Level from the SQS-53 During Summer Months

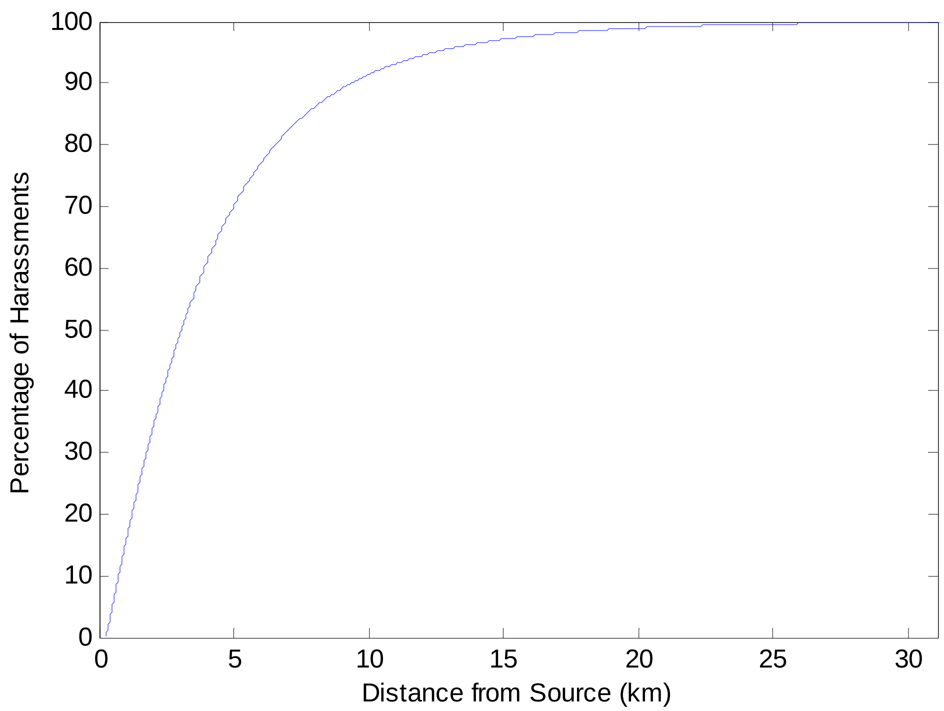

Figure D-28. – Average Percentage of Harassments Occurring Within a Given Distance during Summer Months

With the data used to produce the previous figure, the average effect reduction during summer months for a sound path blocked by land can be calculated. For the SQS-53, since approximately 92% of harassments occur within 10 km of the source, a sound path blocked by land at 10 km will, on average, cause approximately 92% of the effect of an unblocked path.

As described above, the mapping process determines the angular profile of and distance to the coastline(s) from each grid point. The distance, then, determines the reduction due to land shadow when the sonar is pointed in that direction. The angular profile, then, determines the probability that the sonar is pointed at the coast.

Define θ_n = angular profile of coastline at point n in radians

Define r_n = mean distance to shoreline

Define $A(r)$ = average effect adjustment factor for sound blocked at distance r

The land shadow at point n can be approximated by $A(r_n)\theta_n/(2\pi)$. For illustration, the following plot gives the land shadow reduction factor at each point in each range area for the SQS-53 (Figure D-29) . The white portions of the plot indicate the areas outside the range and the blue lines indicate the coastline. The color plots inside the ranges give the land shadow factor at each point. The average land shadow factor for the SQS-53 in the GOA is essentially 1, or the reduction in effect is 0% for both seasons. For the other, lower-power sources it follows that this reduction is also negligible.

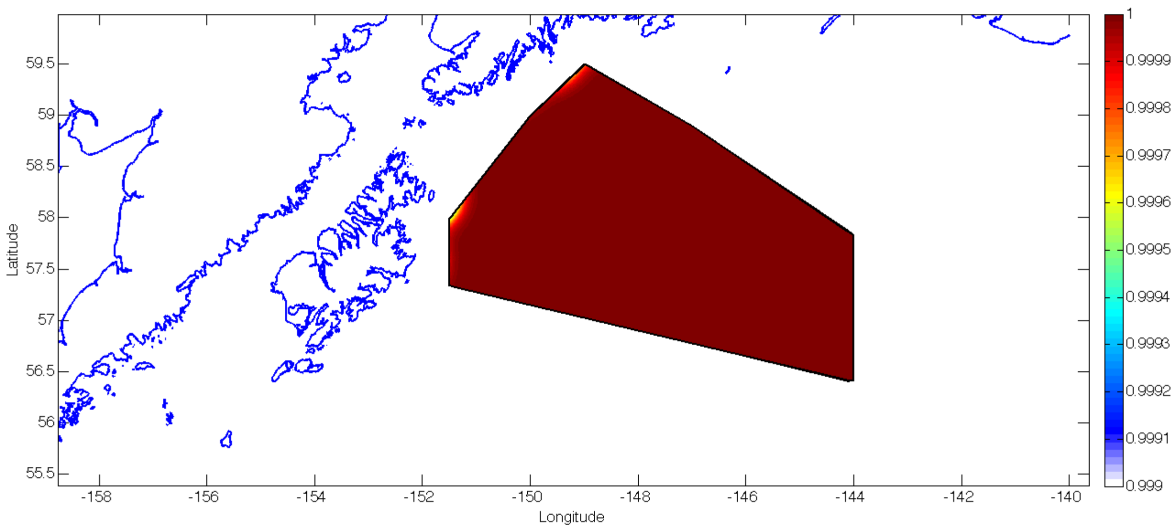

Figure D-29. – Depiction of Land Shadow over the TMAA

D.6.5.2 The Effect of Multiple Ships

Behavioral harassment, under dose response (risk function), uses maximum sound pressure level over a 24 hour period as the metric for determining the probability of harassment. An animal that receives sound from two sonars, operating simultaneously, receives its maximum sound pressure level from one of the ships. Thus, the effects of the louder, or closer, sonar determine the probability of harassment, and the more distant sonar does not. If the distant sonar operated by itself, it would create a lesser effect on the animal, but in the presence of a more dominating sound, its effects are cancelled. When two sources are sufficiently close together, their sound fields within the cutoff range will partially overlap and the larger of the two sound fields at each point in that overlap cancel the weaker. If the distance between sources is twice as large as the range to cutoff, there will be no overlap.

Computation of the overlap between sound fields requires the precise locations and number of the source ships. The general modeling scenarios of the TMAA do not have these parameters, so the effect was modeled using an average ship distance, 20 km, and an average number of ships per exercise, in this case three ships.

The formation of ships in any of the above exercised has been determined by Navy planners. The ships are located in a straight line, perpendicular to the direction has traveled. The figures below (D-30 to D-34) show examples with four ships, and their ship tracks.

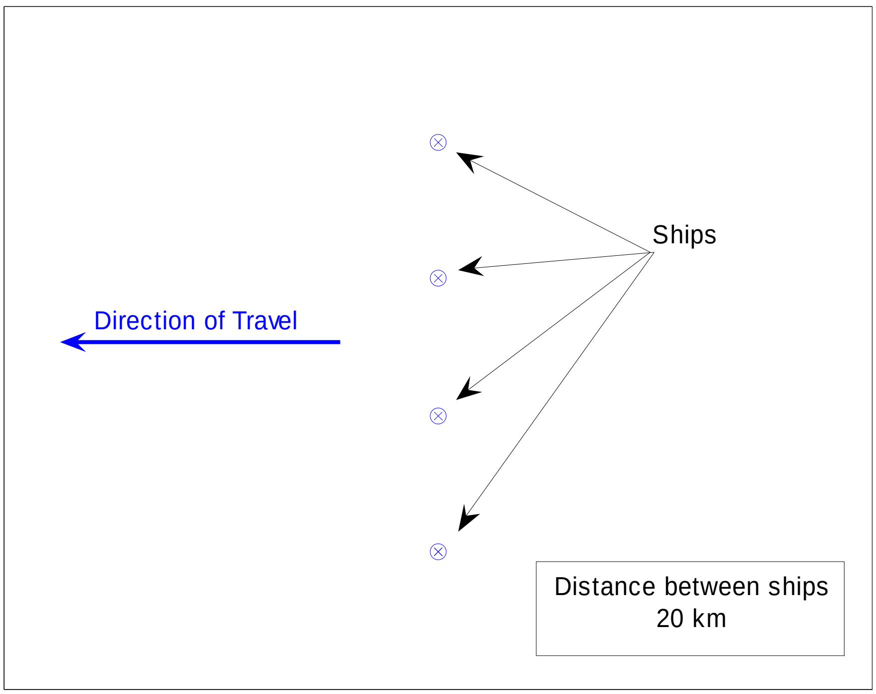

Figure D-30. – Formation and Bearing of Ships in 4-Ship Example

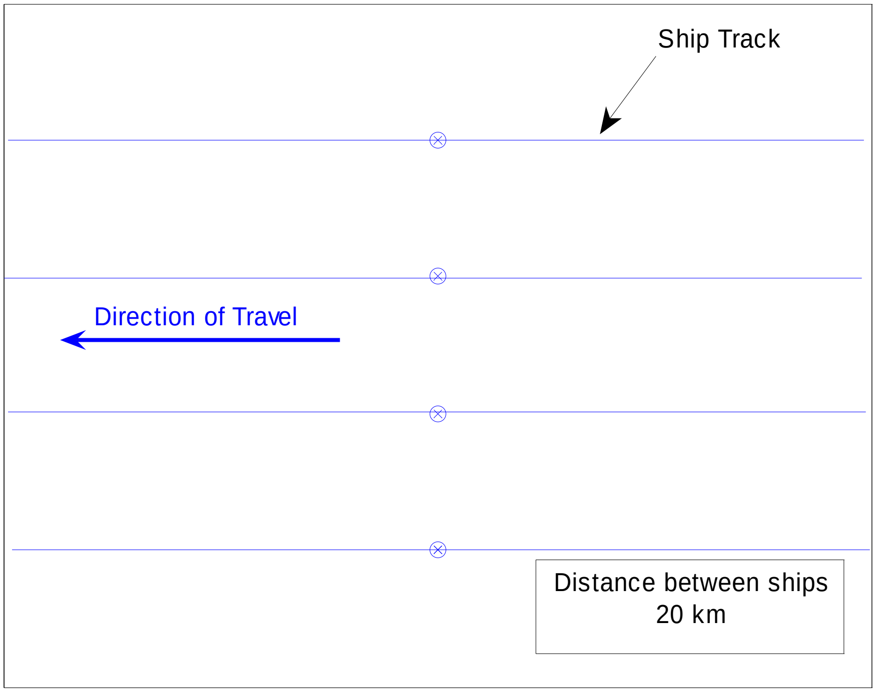

Figure D-31. – Ship Tracks of Ships in 4-Ship Example

The sound field created by these ships, which transmit sonar continually as they travel will be uniform in the direction of travel (or the "*x*" direction), and vary by distance from the ship track in the direction perpendicular to the direction of travel (or the "*y*" direction).

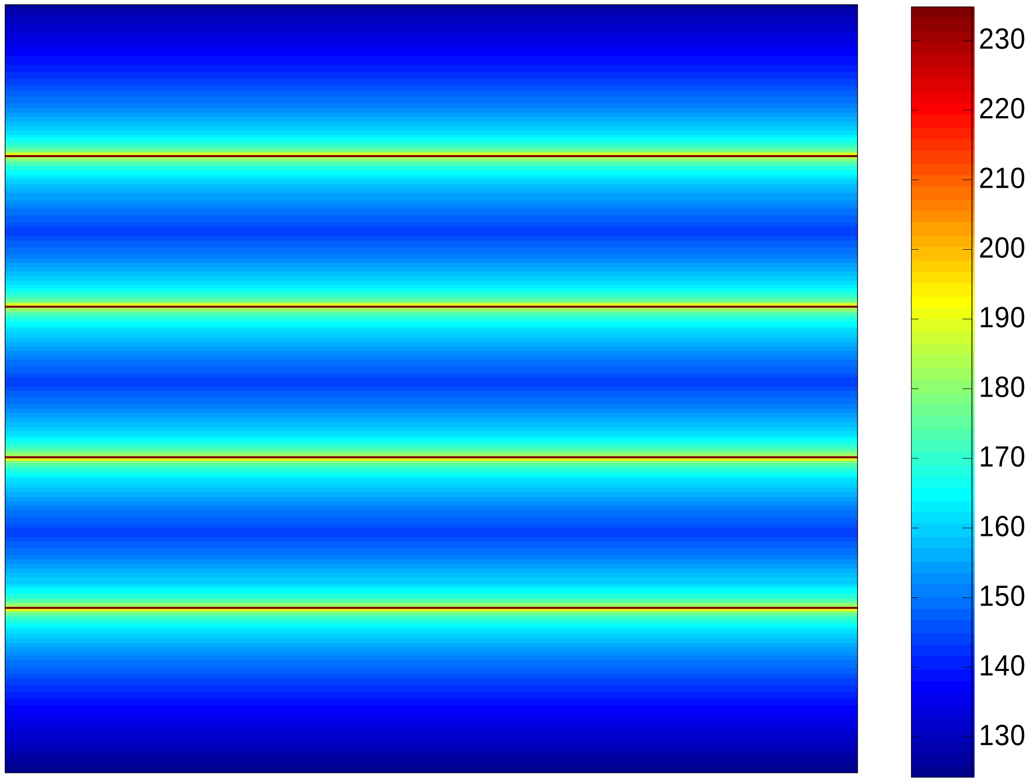

Figure D-32. – Sound Field Produced by Multiple Ships

This sound field of the four ships operating together (Figure D-32) ensonifies less area than four ships operating individually. However, because at the time of modeling, even the average number of ships and mean distances between them were unknown, a post-calculation correction should be applied.

As shown on Figure D-32, the sound field around the ship tracks, the portion above the upper-most ship track, and the portion below the lower-most ship track sum to produce exactly the sound field as an individual ship (Figure D-33).

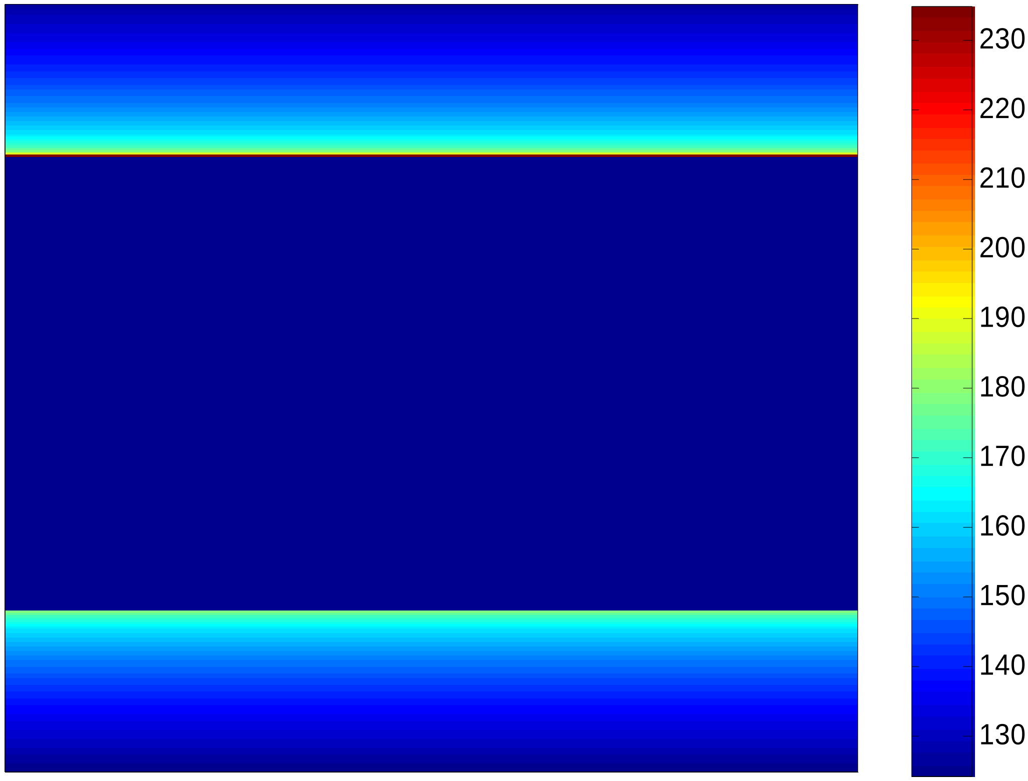

Figure D-33. – Upper and Lower Portion of Sound Field

Therefore, the remaining portion of the sound field, between the uppermost ship track and the lowermost ship track, is the contribution of the three additional ships (Figure D-34).

This remaining sound field is made up of three bands. Each of the three additional ships contributes one band to the sound field. Each band is somewhat less than the contribution of the individual ship because its sound is overcome by the nearer source at the center of the band. Since each ship maintains 20 km distance between it and the next, the height of these bands is 20 km, and the sound from each side projects 10 km before it is overcome by the source on the other side of the band. Thus, the contribution to a sound field for an additional ship is identical to that produced by an individual ship whose sound path is obstructed at 10 km. The work in the previous discussion on land shadow provides a calculation of effect reduction for obstructed sound at each range. An SQS-53-transmitting ship with obstructed signal at 10 kilometers across both seasons causes an average of 95% of the number of harassments as a ship with an unobstructed signal. Therefore, each additional ship causes 0.95 times the harassments of the individual ship. Applying this single-ship factor to the exercise type described earlier (three ships), the adjustment factor given this formation is approximately 2.90.

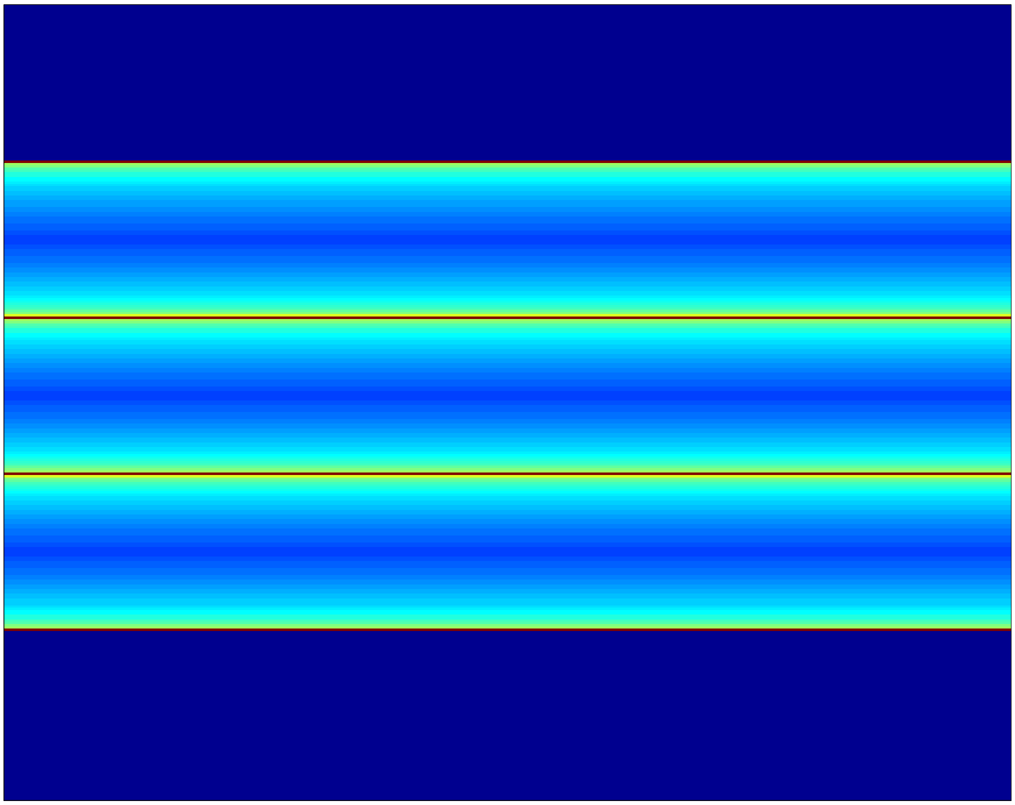

Figure D-34.– Central Portion of Sound Field

D.7 REFERENCES

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Appendix E

Marine Mammal Density Report

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E MARINE MAMMAL DENSITY AND DEPTH DISTRIBUTION

E.1 BACKGROUND AND OVERVIEW

Marine mammal species occurring in the Gulf of Alaska (GOA) and the GOA Temporary Maritime Activities Area (TMAA) include baleen whales (mysticetes), toothed whales (odontocetes), and seals and sea lions (commonly referred to as pinnipeds). Baleen and toothed whales, collectively known as cetaceans, spend their entire lives in the water and spend most of the time (>90% for most species) entirely submerged below the surface. When at the surface, cetacean bodies are almost entirely below the water's surface, with only the blowhole exposed to allow breathing. This makes cetaceans difficult to locate visually and also exposes them to underwater noise, both natural and anthropogenic, essentially 100% of the time because their ears are nearly always below the water's surface. Seals and sea lions (pinnipeds) spend significant amounts of time out of the water during breeding, molting and hauling out periods. In the water, pinnipeds spend varying amounts of time underwater, as some species regularly undertake long, deep dives (e.g., elephant seals) and others are known to rest at the surface in large groups for long amounts of time (e.g., California sea lions). When not actively diving, pinnipeds at the surface often orient their bodies vertically in the water column and often hold their heads above the water surface. Consequently, pinnipeds may not be exposed to underwater sounds to the same extent as cetaceans.

For the purposes of this analysis, we have adopted a conservative approach to underwater noise and marine mammals:

- Cetaceans – assume 100% of time is spent underwater and therefore exposed to noise
- Pinnipeds – adjust densities to account for time periods spent at breeding areas, haulouts, etc.; but for those animals in the water, assume 100% of time is spent underwater and therefore exposed to noise.

E.1.1 Density

Mysticetes regularly occurring in the GOA include fin, minke, humpback and gray whales; blue and North Pacific right whales have been sighted in the GOA, but are considered rare and are included here only for discussion purposes because both are endangered species. Odontocetes regularly occurring include sperm whale, Cuvier's and Baird's beaked whales, killer whale, Pacific white-sided dolphin and Dall's porpoise. Belugas are occasionally sighted in the GOA, but most sightings are in coastal areas and their occurrence in the region is extremely low. Pinnipeds regularly occurring include Steller's sea lion, northern fur seal and northern elephant seal. California sea lion range extends as far north as the Pribilof Islands in the Bering Sea but their occurrence is likely rare.

Recent survey data for marine mammals in the GOA is limited. Most survey efforts are localized and extremely near shore. There is evidence of occurrence of several species based on acoustic studies, but these do not provide measurements of abundance. Best available density data were incorporated from several different sources which are described below and summarized in Table 1.

Fin and Humpback Whales

The Gulf of Alaska Line-Transect Survey (GOALS) was conducted in April 2009 (Rone et al., 2009) in the TMAA. Line-transect visual data and acoustic data were collected over a 10-day period, which resulted in sightings of several odontocete and mysticete species. Densities were derived for fin and humpback whales for inshore and offshore strata (Table 9 in Rone et al., 2009). Densities from each stratum were weighted by the percentage of stratum area compared to the TMAA: inshore stratum was 33% of the total area and offshore stratum was 67% of the total area.

Killer Whale

Vessel surveys were conducted in nearshore areas (within 85 km) of the TMAA in 2001-2003 (Zerbini et al., 2006), between Resurrection Bay on the Kenai Peninsula to Amchitka Island in the Aleutians. Densities were calculated for fin, humpback and killer whales; only those for killer whales are included here (Table 1) because more recent densities for fin and humpback whales are available from Rone et al. (2009). Killer whale densities are from "Block 1" in Zerbini et al. (2006).

Minke, Sperm and Beaked Whales, Pacific White-sided Dolphin and Dall's Porpoise

Waite (2003) conducted vessel surveys for cetaceans near Kenai Peninsula, within Prince William Sound and around Kodiak Island, during acoustic-trawl surveys for pollock in summer 2003. Surveys extended offshore to the 1000 m contour and therefore overlapped with some of the TMAA. Waite (2003) did not calculate densities, but did provide some of the elements necessary for calculating density.

Barlow (2003) provided the following equation for calculating density:

$$\text{Density/km}^2 = \frac{(n)\ (s)\ (f_0)}{(2L)\ (g_0)}$$

Where (n) = number of animal group sightings on effort

(s) = mean group size

f(0) = sighting probability density at zero perpendicular distance (influenced by species detectability and sighting cues such as body size, blows and number of animals in a group)

(L) = transect length completed (km)

g(0) = probability of seeing a group directly on trackline (influenced by perception bias and availability bias)

Three values, n, s, and L, were provided by Waite (2003). Values for f(0) and g(0) were not provided, and were instead assigned based on values from the literature for other vessel survey efforts in the North Pacific (Table 2). Using values calculated from other vessel survey efforts is acceptable in this situation because the correction factors were calculated from vessel surveys that were conducted similarly to the GOA effort. Specifically, factors such as number of observers (three), height of the flying bridge from the water's surface (12 m), ship's speed (11 kts), number of "Bigeyes" binoculars used (two), and acceptable sea state conditions (up to B05) during the GOA survey effort were all comparable to those used during NMFS survey efforts along the west coast of the US, in Hawaii and in the eastern tropical Pacific (see Table 2). Values for f(0) and g(0) are very similar per species between efforts, therefore the most conservative value was adopted for each species and applied to the density calculation.

Table 3 illustrates how the data from Waite (2003) were used to calculate densities using correction factors from Table 2. There are no variances attached to any of the resulting density values, so overall confidence in these values is unknown. Densities based on only one or two sightings generally have fairly high variance.

Gray whales

Gray whale density was calculated from data obtained from a feeding study near Kodiak Island (Moore et al. (2007).

Steller Sea Lion, Northern Fur Seal and Northern Elephant Seal

Pinniped at-sea density is not often available because pinniped abundance is obtained via shore counts of animals at known rookeries and haulouts. Therefore, densities of pinnipeds were derived quite differently from those of cetaceans. Several parameters were identified from the literature, including area of stock occurrence, number of animals (which may vary seasonally) and season, and those parameters were then used to calculate density. Once density per "pinniped season" was determined, those values were prorated to fit the warm water (June-October) and cold water (November-May) seasons. Determining density in this manner is risky as the parameters used usually contain error (e.g., geographic range is not exactly known and needs to be estimated, abundance estimates usually have large variances) and, as is true of all density estimates, it assumes that animals are always distributed evenly within an area which is likely never true. However, this remains one of the few means available to determine at-sea density for pinnipeds.

The Marine Resource Assessment for the Gulf of Alaska Operating Area (Department of the Navy, 2006), listed six mysticetes, twelve odontocetes, and five pinnipeds as occurring or possibly occurring in the GOA region (Department of the Navy, 2006; Table 3-1). However, several of the species listed are rare and do not regularly occur. Brief species summaries are included for all marine mammals whose distribution extends to the GOA, even if rarely seen, and additional information on all species can be found in the Marine Resources Assessment referenced above.

Table E-1. Marine mammals in the Gulf of Alaska; densities and season(s) included for species regularly seen.

Common Name	Scientific Name	Status	Density/km2 within TMAA	Season	Source
MYSTICETES					
Blue whale	*Balaenoptera musculus*	Endangered	-		
Fin whale	*B. physalus*	Endangered	0.010	Year round	Rone et al. (2009)
Sei whale	*B. borealis*	Endangered	-		
Minke whale	*B. acutorostrata*		0.0006	Year round	Waite (2003)
Humpback whale	*Megaptera novaeangliae*	Endangered	0.0019	Apr-Dec	Rone et al. (2009)
			-	Jan-Mar	Reeves et al. (2002)
North Pacific right whale	*Eubalaena japonica*	Endangered	-		
Gray whale	*Eschrichtius robustus*		0.0003	Year round	Moore et al. (2007)
ODONTOCETES					
Sperm whale	*Physeter catodon*	Endangered	0.0003	Year round	Waite (2003); Mellinger et al. (2004a)
Cuvier's beaked whale	*Ziphius cavirostris*		0.0022	Year round	Waite (2003)
Baird's beaked whale	*Berardius bairdii*		0.0005	Year round	Waite (2003)
Stejneger's beaked whale	*Mesoplodon stejnegeri*		-		
Killer whale	*Orcinus orca*		0.0100	Year round	Zerbini et al. (2007)
Beluga	*Delphinapterus leucas*		-		
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*		0.0208	Year round	Waite (2003)
Northern right whale dolphin	*Lissodelphis borealis*		-		
Risso's dolphin	*Grampus griseus*		-		
False killer whale	*Pseudorca crassidens*		-		
Short-finned pilot whale	*Globicephala macrorhynchus*		-		
Dall's porpoise	*Phocoenoides dalli*		0.1892	Year round	Waite (2003)
Harbor porpoise	*Phocoena phocoena*		-		
PINNIPEDS					
Steller's sea lion	*Eumetopias jubatus*	Endangered/ Threatened	0.0098	Year round	Angliss and Allen (2009); Bonnell and Bowlby (1992)
California sea lion	*Zalophus californianus*		-		
Harbor seal	*Phoca vitulina*		-		
Northern fur seal	*Callorhinus ursinus*		0.1180	June-October	Carretta et al., 2009
Northern elephant seal	*Mirounga angustirostris*		0.0022	June-October	Carretta et al., 2009

Table E-2. Comparison of f(0) and g(0) values, for species being considered from Waite (2003) from survey efforts outside of the TMAA.

Reference	Barlow (2003)		Ferguson and Barlow (2001)		Forney (2007)		Barlow and Forney (2007)		Barlow (2006)		Wade and Gerrodette (1993)
Species	f_0	g_0	f_0	g_0	f_0	g_0	f_0	g_0	f_0	g_0	f_0
Minke whale	**0.567**	**0.84**	0.362	0.84	0.38	0.856	0.46	0.856			
Sperm whale	0.217	**0.87**	**0.462**	0.87	0.36	0.87	0.34	0.87	0.27	0.87	0.14
Baird's beaked whale	0.354	**0.96**	0.215	0.96	0.37	0.96	**0.52**	0.96			
Cuvier's beaked whale	**0.567**	**0.23**	0.362	0.23	0.39	0.23	0.37	0.23	0.61	0.23	0.58
Pacific white-sided dolphin	**0.809**	1	0.519	1	0.4	**0.97**	0.45	0.97			
Dall's porpoise	**1.221**	**0.79**	0.855	0.79	0.74	0.822	0.91	0.822			
Survey region	US West Coast		US West Coast		US West Coast		US West Coast		Hawaii		Eastern Tropical Pacific
Number of observers	3		3		3		3		3		3
Speed of vessel (kts)	9-10		9-10		9-10		9-10		9-10		9-10
Height of flying bridge (m)	10.5		10.5		10.5 and 15.2		10.5 and 15.2		10.5		10.5
Big Eyes binoculars	two pair		two pair		two pair		two pair		two pair		two pair
Sea conditions	up to B05		up to B05		up to B05		up to B05		up to B05		up to B05

Conservative values for each species are bolded

Table E-3. Densities calculated from data presented in Waite (2003) using f(0) and g(0) values from Table 2.

Species	n = animal groups on effort[a]	s = mean group size[a]	L = transect length (km^2)[a]	f_0 = perpendicular sighting distance[b]	g_0 = probability of seeing group directly on trackline[b]	Density/km^2 = (n) (s) (f_0) / (2L) (g_0)[c]
Minke whale	3	1.3	2242	0.567	0.84	0.0006
Sperm whale	2	1.2	2242	0.462	0.87	0.0003
Baird's beaked whale	1	4	2242	0.52	0.96	0.0005
Cuvier's beaked whale	1	4	2242	0.567	0.23	0.0022
Pacific white-sided dolphin	2	56	2242	0.809	0.97	0.0208
Dall's porpoise	196	2.8	2242	1.221	0.79	0.1892

[a] from Waite (2003), [b] Values for f0 and g0 taken from Table 12, [c] Calculation taken from Barlow (2003).
There is no variance associated with these density calculations so there is no way to indicate the confidence in the value. Densities from sperm, Pacific white-sided, Baird's and Cuvier's beaked whales are quite weak as they are based on only 1-2 sightings.

E.1.2 Depth Distribution

There are limited depth distribution data for most marine mammals. This is especially true for cetaceans, as they must be tagged at-sea and by using a tag that either must be implanted in the skin/blubber in some manner or adhere to the skin. There is slightly more data for some pinnipeds, as they can be tagged while on shore during breeding or molting seasons and the tags can be glued to the pelage rather than implanted. There are a few different methodologies/ techniques that can be used to determine depth distribution percentages, but by far the most widely used technique currently is the time-depth recorder. These instruments are attached to the animal for a fairly short period of time (several hours to a few days) via a suction cup or glue, and then retrieved immediately after detachment or when the animal returns to the beach. Depth information can also be collected via satellite tags, sonic tags, digital tags, and, for sperm whales, via acoustic tracking of sounds produced by the animal itself.

There are somewhat suitable depth distribution data for a few marine mammal species. Sample sizes are usually extremely small, nearly always fewer than 10 animals total and often only one or two animals. Depth distribution information can also be interpreted from other dive and/or preferred prey characteristics, and from methods including behavioral observations, stomach content analysis and habitat preference analysis. Depth distributions for species for which no data are available were extrapolated from similar species.

Depth distribution information for marine mammal species with regular occurrence and for which densities are available is provided in Table 4. More detailed summary depth information for species in the GOA for which densities are available is included as Table 6.

E.1.3 DENSITY AND DEPTH DISTRIBUTION COMBINED

Density is nearly always reported for an area, e.g., animals/km^2. Analyses of survey results using Distance Sampling techniques include correction factors for animals at the surface but not seen as well as animals below the surface and not seen. Therefore, although the area (e.g., km^2) appears to represent only the surface of the water (two-dimensional), density actually implicitly includes animals anywhere within the water column under that surface area. Density assumes that animals are uniformly distributed within the prescribed area, even though this is likely rarely true. Marine mammals are usually clumped in areas of greater importance, for example, areas of high productivity, lower predation, safe calving, etc. Density can occasionally be calculated for smaller areas that are used regularly by marine mammals, but more often than not, there are insufficient data to calculate density for small areas. Therefore, assuming an even distribution within the prescribed area remains the norm.

The ever-expanding database of marine mammal behavioral and physiological parameters obtained through tagging and other technologies has demonstrated that marine mammals use the water column in various ways, with some species capable of regular deep dives (>800 m) and others regularly diving to <200 m, regardless of the bottom depth. Therefore, assuming that all species are evenly distributed within the water column does not accurately reflect behavior and can present a distorted view of marine mammal distribution in any region.

By combining marine mammal density with depth distribution information, a more accurate three-dimensional density estimate is possible. These 3-D estimates allow more accurate modeling of potential marine mammal exposures from specific noise sources.

This document is organized into taxonomic categories: Mysticetes, Odontocetes and the pseudo-taxonomic category Pinnipeds. Nomenclature was adopted from the Integrated Taxonomic Information System (www.itis.gov). Distribution and density summaries are followed by discussions of depth distribution for those species that have regular occurrence. Density and depth info are **bolded** in text.

Table E-4. Summary of marine mammal depth distributions for the TMAA

Common Name	Scientific Name	Depth Distribution	Reference
MYSTICETES - Baleen whales			
Fin whale	*B. physalus*	44% at <50m, 23% at 50-225m, 33% at >225m	Goldbogen et al. (2006)
Minke whale	*B. acutorostrata*	53% at <20m, 47% at 21-65m	Blix and Folkow (1995)
Humpback whale	*Megaptera novaeangliae*	37% at <4m, 25% at 4-20m, 7% at 21-35m,4% at 36-50m, 6% at 51-100m, 7% at 101-150m, 8% at 151-200m, 6% at 201-300m, <1% at >300m	Dietz et al. (2002)
Gray whale	*Eschrichtius robustus*	40% at <4 m, 38% at 4-30 m, 22% at >30 m	Malcolm et al. (1995/96); Malcolm and Duffus (2000)
ODONTOCETES - Toothed whales			
Sperm whale	*Physeter catodon*	31% at <10 m, 8% at 10-200 m, 9% at 201-400 m, 9% at 401-600 m, 9% at 601-800 m and 34% at >800 m	Amano and Yoshioka (2003)
Cuvier's beaked whale	*Ziphius cavirostris*	27% at <2 m, 29% at 2-220 m, 4% at 221-400 m, 4% at 401-600 m, 4% at 601-800 m, 5% at 801-1070 m and 27% at >1070 m	Tyack et al. (2006)
Baird's beaked whale	*Berardius bairdii*	34% at 0-40 m, 39% at 41-800 m, 27% at >800 m	extrapolated from northern bottlenose whale (Hooker and Baird, 1999)
Killer whale	*Orcinus orca*	96% at 0-30 m, 4% at >30 m	Baird et al. (2003)
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	Daytime: 100% at 0-65 m; Nighttime: 100% at 0-130 m	extrapolated from other *Lagenorhynchus* (Mate et al., 1994; Benoit-Bird et al., 2004)
Dall's porpoise	*Phocoenoides dalli*	39% at <1 m, 8% at 1-10 m, 45% at 11-40 m, and 8% at >40 m	Hanson and Baird (1998)
PINNIPEDS			
Northern fur seal	*Callorhinus ursinus*	Daytime: 74% at <2 m; 26% at 2-260 m; Nighttime: 74% at <2 m; 26% at 2-75 m	Ponganis et al. (1992); Kooyman and Goebel (1986); Sterling and Ream (2004); Gentry et al. (1986)
Steller sea lion	*Eumetopias jubatus*	60% at 0-10 m, 22% at 11-20 m, 12% at 21-50 m, 5% at 51-100 m and 1% at >100 m	Merrick and Loughlin (1997)
Northern elephant seal	*Mirounga angustirostris*	9% at <2 m, 11% at 2-100 m, 11% at 101-200 m, 11% at 201-300 m, 11% at 301-400 m, 11% at 401-500 m and 36% at >500 m	Asaga et al. (1994)

E.2 MYSTICETES

E.2.1 Blue whale, *Balaenoptera musculus*

Blue whales were previously sighted and caught throughout the GOA, but are rarely seen in the post-whaling era; two blue whales seen in 2004 during a NMFS humpback whale study and approximately 150 nm southeast of Prince William Sound are the first documented sightings of blue whales in several decades. There may be two to five stocks of blue whale in the north Pacific (Angliss and Allen, 2009).

The Eastern North Pacific population, which winters as far south as the eastern tropical Pacific, has been sighted off Oregon and Washington although sightings are rare and there is no abundance estimate (Angliss and Allen, 2009). Blue whale calls attributed to this stock as well as the Northwestern stock were recorded in the Gulf of Alaska (Stafford, 2003) via hydrophones located offshore of the TMAA. Both call types were recorded seasonally, with peak occurrence from August-November. Blue whales are likely present in low numbers in the GOA; **there is no density estimate available (Table 1)**.

E.2.2 Fin whale, *Balaenoptera physalus*

Fin whales were extensively hunted in coastal waters of Alaska as they congregated at feeding areas in the spring and summer (Mizroch et al., 2009). There has been little effort in the GOA since the cessation of whaling activities to assess abundance of large whale stocks. Fin whale calls have been recorded year-round in the GOA, but are most prevalent from August-February (Moore et al., 1998; 2006). Zerbini et al. (2006) sighted fin whales south of the Kenai Peninsula, and calculated a density of 0.008/km^2 (see Table 4, Block 1 in Zerbini et al., 2006). Waite (2003) recorded 55 fin whale sightings on effort, with several occurring within the TMAA (see Figure 2 in Waite, 2003). Rone et al. (2009) recorded 24 sightings of 64 fin whales during a 10-day cruise in the TMAA in April 2009. Density for the inshore stratum was estimated as 0.012/km^2, while density in the offshore stratum was estimated as 0.009/km^2 (Table 9, Rone et al., 2009). **Combined density for the TMAA was 0.010/km^2, which is applicable to the entire region year round (Table 1).**

Fin whales feed on planktonic crustaceans, including *Thysanoessa* sp and *Calanus* sp, as well as schooling fish including herring, capelin and mackerel (Aguilar, 2002). Depth distribution data from the Ligurian Sea in the Mediterranean are the most complete (Panigada et al., 2003; Panigada et al., 2006), and showed differences between day and night diving; daytime dives were shallower (<100m) and night dives were deeper (>400m), likely taking advantage of nocturnal prey migrations into shallower depths; this data may be atypical of fin whales elsewhere in areas where they do not feed on vertically-migrating prey. Traveling dives in the Ligurian Sea were generally shorter and shallower (mean = 9.8 m, maximum = 20 m) than feeding dives (mean = 181m, maximum = 474 m) (Jahoda et al., 1999). Goldbogen et al. (2006) studied fin whales in southern California and found that ~56% of total time was spent diving, with the other 44% near surface (<50m); dives were to >225 m and were characterized by rapid gliding ascent, foraging lunges near the bottom of dive, and rapid ascent with flukes. Dives are somewhat V-shaped although the bottom of the V is wide. **Therefore, % of time at depth levels is estimated as 44% at <50m, 23% at 50-225 m (covering the ascent and descent times) and 33% at >225 m.**

E.2.3 Sei whale, *Balaenoptera borealis*

Sei whales occur in all oceans from subtropical to sub-arctic waters, and can be found on the shelf as well as in oceanic waters (Reeves et al., 2002). They are known to occur in the GOA and as far north as the Bering Sea in the north Pacific. However, their distribution is poorly understood. The only stock estimate for U.S. waters is for the eastern north Pacific stock offshore California, Oregon and Washington (Carretta et al., 2009); abundance in Alaskan waters is unknown and they were not been sighted during recent surveys (Waite, 2003; Rone et al., 2009). Sei whales are likely present in low numbers in the GOA; **there is no density estimate available (Table 1)**.

E.2.4 Minke whale, *Balaenoptera acutorostrata*

Minke whales are the smallest of all mysticete whales. They are widely distributed in the north Atlantic and Pacific, and appear to undergo migration between warmer waters in winter and colder waters in summer. Minke whales can be found in near shore shallow waters and have been detected acoustically in offshore deep waters. There is no current abundance estimate for the Alaska stock of minke whales (Angliss and Allen, 2009). Zerbini et al. (2006) sighted minke whales near Kodiak Island (and a single sighting nearshore off the Kenai Peninsula), and calculated a density of 0.006/km^2 (see Table 4, Block 3 in Zerbini et al., 2006). Waite (2003) recorded three minke sightings on effort, all southeast of the Kenai

Peninsula (see Figure 2 in Waite, 2003). Rone et al. (2009) sighted three minke whales in April 2009, all of which were in the Nearshore stratum, but no density was calculated. **Density calculated from Waite (2003) data yielded a density of 0.0006/km^2 (Table 1), which is applicable to the entire region year round.** Although this is lower than density calculated by Zerbini et al. (2006), it is likely more representative of minke whale abundance in the region as the Waite (2003) surveys were farther offshore.

Minke whales feed on small schooling fish and krill, and are the smallest of all balaenopterid species which may affect their ability to dive. Hoelzel et al. (1989) observed minke whales feeding off the San Juan Islands of Puget Sound, Washington, where 80% of the feeding occurred over depths of 20-100m and two types of feeding were observed near surface, lunge feeding and bird association. The only depth distribution data for this species were reported from a study on daily energy expenditure conducted off northern Norway and Svalbard (Blix and Folkow, 1995). The limited depth information available (from Figure 2 in Blix and Folkow, 1995) was representative of a 75-min diving sequence where the whale was apparently searching for capelin, then foraging, then searching for another school of capelin. Search dives were mostly to ~20 m, while foraging dives were to 65 m. **Based on this very limited depth information, rough estimates for % of time at depth are as follows: 53% at <20 m and 47% at 21-65 m.**

E.2.5 Humpback whale, *Megaptera novaeangliae*

Humpback whales are found in all oceans, in both coastal and continental waters as well as near seamounts and in deep water during migration (Reeves et al., 2002). Some populations have been extensively studied (e.g., Hawaii, Alaska, Caribbean), and details about migratory timing, feeding and breeding areas are fairly well known (e.g., Calambokidis et al., 2008). Humpbacks are highly migratory, feeding in summer at mid and high latitudes and calving and breeding in winter in tropical or subtropical waters. Humpbacks feeding in the TMAA in summer appear to winter in Hawaiian and Mexican waters (Calambokidis et al., 2008). Humpbacks are present in Alaskan waters during summer and fall, although there may be a few stragglers that remain year round. Waite (2003) recorded 41 humpback whale sightings on effort, with several occurring near shore around the Kenai Peninsula (see Figure 2 in Waite, 2003). Rone et al. (2009) recorded 11 sightings of 20 individuals during a 10-day cruise in the TMAA in April 2009. Density for the inshore stratum was estimated as 0.004/km^2, while density in the offshore stratum was estimated as 0.0005/km^2 (Table 9, Rone et al., 2009). **Combined density for the TMAA was 0.0019/km^2, which is applicable to the entire region year round (Table 1).** Calambokidis et al. (2008) estimated 3,000-5,000 humpbacks in the entire GOA, an area much larger than the TMAA.

Humpback whales feed on pelagic schooling euphausiids and small fish including capelin, herring and mackerel (Clapham, 2002). Like other large mysticetes, they are a "lunge feeder" taking advantage of dense prey patches and engulfing as much food as possible in a single gulp. They also blow nets, or curtains, of bubbles around or below prey patches to concentrate the prey in one area, then lunge with open mouths through the middle. Dives appear to be closely correlated with the depths of prey patches, which vary from location to location. In the north Pacific, most dives were of fairly short duration (<4 min) with the deepest dive to 148 m (southeast Alaska; Dolphin, 1987), while whales observed feeding on Stellwagen Bank in the North Atlantic dove to <40 m (Hain et al., 1995). Hamilton et al. (1997) tracked one possibly feeding whale near Bermuda to 240 m depth. Depth distribution data collected at a feeding area in Greenland resulted in the following estimation of depth distribution: **37% of time at <4 m, 25% of time at 4-20 m, 7% of time at 21-35m, 4% of time at 36-50 m, 6% of time at 51-100 m, 7% of time at 101-150 m, 8% of time at 151-200 m, 6% of time at 201-300 m, and <1% at >300 m** (Dietz et al., 2002).

E.2.6 North Pacific right whale, *Eubalaena japonica*

North Pacific right whales were heavily hunted near Kodiak Island from the mid-1800s through the early 1900s. Despite international protection, the species has not recovered and remains one of the rarest of all cetaceans. There have been only two verified sightings of right whales in the GOA since the 1970s, with one occurring very near Kodiak Island (Shelden et al., 2005). Regular sightings of right whales do occur in the southeastern Bering Sea in summer, where up to 13 individual whales have been identified based on photos and biopsy dart data, but their winter habitat remains unknown. Acoustic monitoring for right whales was carried out via autonomous hydrophones in 2000-2001 near Kodiak Island, and right whale calls were recorded in August and early September (Moore et al., 2006; Mellinger et al., 2004b). Right whales are likely present in extremely low numbers in the GOA; **there is no density estimate available (Table 1).**

E.2.7 Gray whale, *Eschrichtius robustus*

The current stock estimate for the eastern north Pacific stock of gray whales is 18,813 (Angliss and Allen, 2009). Gray whales undertake a well-documented migration from winter calving lagoons in Baja California to summer feeding areas in the Bering and Chukchi seas (Swartz et al., 2006). Their migration route is primarily near shore in shallow water, although gray whales have been documented swimming offshore near the Channel Islands in the Southern California Bight. In addition to the Bering and Chukchi sea feeding areas, gray whales are known to feed opportunistically at several locations along the migratory route. Two such areas are near Ugak Bay, Kodiak Island, and along the outer coast of southeast Alaska where 30-50 gray whales have been sighted feeding year round (Moore et al., 2007). Gray whales would not be found in most of the TMAA but likely do cross the northernmost section (estimated at 2,400 km^2 via ArcMap and representing 2.75% of the total TMAA; 2,400 km^2/87,250 km^2 as measured in ArcMap) migrating to and from both local and distant feeding grounds. Rone et al. (2009) recorded three sightings of eight gray whales (see Figure 3 in Rone), which were located nearshore at Kodiak Island to the west of the TMAA and in the westernmost section of the TMAA on the continental shelf. The number of gray whales within the TMAA at any given time is likely quite small as it is probably at the deeper limit of their occurrence. Therefore, the lower estimate of Kodiak Island feeding gray whales from Moore et al. (2007) was used to estimate density. **Density was estimated at 0.0125/km^2 (30 gray whales/2,400 km^2) year round, and is applicable only for the farthest north area of the TMAA (2.75 % of area, see Figure 1) for an overall density for the TMAA of 0.0003/km^2 (Table 1).**

Gray whales migrate from breeding and calving grounds in Baja California to primary feeding grounds in the Bering and Chukchi Seas between Alaska and Russia. Behavior, including diving depth and frequency, can vary greatly between geographic regions. Gray whales feed on the bottom, mainly on benthic amphipods that are filtered from the sediment (Reeves et al., 2002), so dive depth is dependent on depth at location for foraging whales. There have been several studies of gray whale movement within the Baja lagoons (Harvey and Mate, 1984; Mate and Harvey, 1984), but these are likely not applicable to gray whales elsewhere. Mate and Urban Ramirez (2003) noted that 30 of 36 locations for a migratory gray whale with a satellite tag were in water <100m deep, with the deeper water locations all in the southern California Bight within the Channel Islands. There has been only one study of a gray whale dive profile, and all information was collected from a single animal that was foraging off the west coast of Vancouver Island (Malcolm and Duffus, 2000; Malcolm et al.,1995/96). They noted that the majority of time was spent near the surface on interventilation dives (<3 m depth) and near the bottom (extremely nearshore in a protected bay with mean dive depth of 18 m, range 14-22 m depth). There was very little time spent in the water column between surface and bottom. Foraging depth on summer feeding grounds is generally between 50-60 m (Jones and Swartz, 2002). Based on this very limited information, **the following is a rough estimate of depth distribution for gray whales: 40% of time at <4 m (surface and interventilation dives), 38% of time at 3-30 m (active migration), 22% of time at >30 m (foraging).**

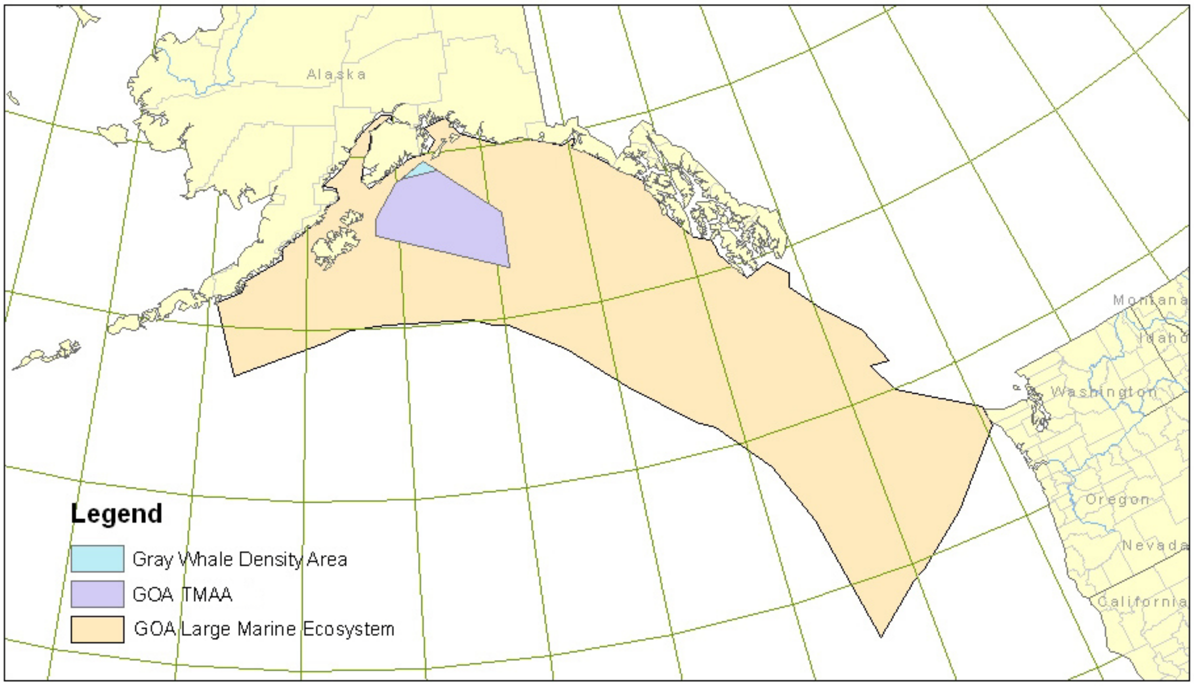

Figure E-1. TMAA, GOA Large Marine Ecosystem and Gray Whale Density Area.

E.3 ODONTOCETES

E.3.1 Sperm whale, *Physeter catodon*

Sperm whales are well known from the GOA region. Sperm whales are most often found in deep water, near submarine canyons, and along the edges of banks and over continental slopes (Reeves et al., 2002). Acoustic evidence collected via autonomous recorders suggests that sperm whales are present in the offshore regions of the GOA year round (see Figure 2 in Mellinger et al., 2004a). Rone et al. (2009; Figure 8) recorded sperm whales acoustically in both the inshore and offshore strata of the TMAA in April 2009; no sperm whales were detected visually. Waite (2003) recorded two on-effort sightings of sperm whales; both within the TMAA (see Figure 2 in Waite, 2003). **Data from vessel surveys conducted by Waite (2003) yielded a density of 0.0003/km^2 (Table 1), which is applicable to the entire region year round.** Density was based on only two sightings, so confidence in the value is low, but it is the only density that exists at this time for the region.

Unlike other cetaceans, there is a preponderance of dive information for this species, most likely because it is the deepest diver of all cetacean species so generates a lot of interest. Sperm whales feed on large and medium-sized squid, octopus, rays and sharks, on or near the ocean floor (Whitehead, 2002; Clarke, 1986). Some evidence suggests that they do not always dive to the bottom of the sea floor (likely if food is elsewhere in the water column), but that they do generally feed at the bottom of the dive. Davis et al. (2007) report that dive-depths (100-500 m) of sperm whales in the Gulf of California overlapped with depth distributions (200-400 m) of jumbo squid, based on data from satellite-linked dive recorders placed on both species, particularly during daytime hours. Their research also showed that sperm whales foraged throughout a 24-hour period, and that they rarely dove to the sea floor bottom (>1000 m). The most consistent sperm whale dive type is U-shaped, during which the whale makes a rapid descent to the bottom of the dive, forages at various velocities while at depth (likely while chasing prey) and then ascends rapidly to the surface. There is some evidence that male sperm whales, feeding at higher latitudes during summer months, may forage at several depths including <200 m, and utilize different strategies depending on position in the water column (Teloni et al., 2007). Perhaps the best source for depth distribution data comes from Amano and Yoshioka (2003), who attached a tag to a female sperm whale near Japan in an area where water depth was 1000-1500m. Based on values in Table 1 (in Amano and Yoskioka, 2003) for dives with active bottom periods, the total dive sequence was 45.9 min (mean surface time plus dive duration). Mean post-dive surface time divided by total time (8.5/45.9) plus time at surface between deep dive sequences yields a percentage of time at the surface (<10 m) of 31%. Mean bottom time divided by total time (17.5/45.9) and adjusted to include the percentage of time at the surface between dives, yields a percentage of time at the bottom of the dive (in this case >800 m as the mean maximum depth was 840 m) of 34%. Total time in the water column descending or ascending results from the duration of dive minus bottom time (37.4-17.5) or ~20 minutes. Assuming a fairly equal descent and ascent rate (as shown in Table 1 in Amano and Yoshioka) and a fairly consistent descent/ascent rate over depth, we assume 10 minutes each for descent and ascent and equal amounts of time in each depth gradient in either direction. Therefore, 0-200 m = 2.5 minutes one direction (which correlates well with the descent/ascent rates provided) and therefore 5 minutes for both directions. The same is applied to 201-400 m, 401-600 m and 601-800 m. **Therefore, the depth distribution for sperm whales based on information in the Amano paper is: 31% in <10 m, 8% in 10-200 m, 9% in 201-400 m, 9% in 401-600 m, 9% in 601-800 m and 34% in >800 m.** The percentages derived above from data in Amano and Yoshioka (2003) are in fairly close agreement with those derived from Table 1 in Watwood et al. (2006) for sperm whales in the Ligurian Sea, Atlantic Ocean and Gulf of Mexico.

E.3.2 Cuvier's beaked whale, *Ziphius cavirostris*

Cuvier's beaked whale has the widest distribution of all beaked whales, and occurs in all oceans. It is most often found in deep offshore waters, and appear to prefer slope waters with steep depth gradients. There are no reliable population estimates for this species in Alaskan waters (Angliss and Allen, 2009). **Data from vessel surveys conducted by Waite (2003) yielded a density of 0.0022/km^2 (Table 1), which is applicable to the entire region year round.** Density was based on a single sighting, so confidence in the value is low, but it is the only density available for this region.

Cuvier's feed on mesopelagic or deep water benthic organisms, particularly squid (Heyning, 2002). Stomach content analyses indicate that they take advantage of a larger range of prey species than do other deep divers (e.g., Santos et al., 2001; Blanco and Raga, 2000). Cuvier's, like other beaked whales, are likely suction feeders based on the relative lack of teeth and enlarged hyoid bone and tongue muscles. Foraging dive patterns appear to be U-shaped, although inter-ventilation dives are shallower and have a parabolic shape (Baird et al., 2006a). Depth distribution studies in Hawaii (Baird et al., 2005a; Baird et al., 2006a) found that Cuvier's undertook three or four different types of dives, including intermediate (to depths of 292-568 m), deep (>1000 m) and short-inter-ventilation (within 2-3 m of surface); this study was of a single animal. Studies in the Ligurian Sea indicated that Cuvier's beaked whales dived to >1000 m and usually started "clicking" (actively searching for prey) around 475 m (Johnson et al., 2004; Soto et al., 2006). Clicking continued at depths and ceased once ascent to the surface began, indicating active foraging at depth. In both locations, Cuvier's spent more time in deeper water than did Blainville's beaked whale, although maximum dive depths were similar. There was no significant difference between day and night diving indicating that preferred prey likely does not undergo vertical migrations.

Dive information for Cuvier's was collected in the Ligurian Sea (Mediterranean) via DTAGs on a total of seven animals (Tyack et al., 2006) and, despite the geographic difference and the author's cautions about the limits of the data set, the Ligurian Sea dataset represents a more complete snapshot than that from Hawaii (Baird et al., 2006a). Cuvier's conducted two types of dives – U-shaped deep foraging dives (DFD) and shallow duration dives. Dive cycle commenced at the start of a DFD and ended at the start of the next DFD, and included shallow duration dives made in between DFD.

Mean length of dive cycle = 121.4 min (mean DFD plus mean Inter-deep dive interval)

Number of DFD recorded = 28

Mean DFD depth = 1070 m (range 689-1888 m)

Mean length DFD = 58.0 min

Mean Vocal phase duration = 32.8 min

Mean inter-deep dive interval = 63.4 min

Mean shallow duration dive = 221 m (range 22-425 m)

Mean # shallow duration dives per cycle = 2 (range 0-7)

Mean length of shallow duration dives = 15.2 min

Total time at surface (0-2 m) was calculated by subtracting the mean length of DFD and two shallow duration dives from the total dive cycle (121.4 - 58.0 – 30.4 = 33 min). Total time at deepest depth was taken from the Vocal phase duration time, as echolocation clicks generally commenced when animals were deepest, and was 32.8 min. The amount of time spent descending and ascending on DFDs was calculated by subtracting the mean Vocal phase duration time from the mean total DFD (58.0 - 32.8 = 25.2 min) and then dividing by five (# of 200 m depth categories between surface and 1070 m) which equals ~five min per 200 m. The five-minute value was applied to each 200 m depth category from 400-1070 m; for the 2-220 m category, the mean length of shallow duration dives was added to the time for descent/ascent (30.4 + 5 = 35.4 min). **Therefore, the depth distribution for Cuvier's beaked whales based on best available information from Tyack et al. (2006) is: 27% at <2 m, 29% at 2-220 m, 4% at 221-400 m, 4% at 401-600 m, 4% at 601-800 m, 5% at 801-1070 m and 27% in >1070 m.**

E.3.3 Baird's beaked whale, *Berardius bairdii*

Baird's beaked whales, like most beaked whales, are a deep water species that inhabits the north Pacific. They generally occur close to shore only in areas with a narrow continental shelf. There is no reliable population estimate for this species in Alaskan waters (Angliss and Allen, 2009). **Data from vessel surveys conducted by Waite (2003) yielded a density of 0.0005/km^2 (Table 1), which is applicable to the entire region year round.** Density was based on a single sighting, so confidence in the value is low, but it is the only density available for this region.

There are no depth distribution data for this species. Studies conducted on the diet of Baird's from stomach content analysis reveal some insight into feeding patterns. Samples collected off the Pacific coast of Honshu, Japan, revealed a preference primarily for benthopelagic fish (87%) and cephalopods (13%), while samples collected in the southern Sea of Okhotsk were primarily cephalopods (Walker et al., 2002). Other stomach samples collected from same geographic regions indicated demersal fish were the most commonly identified prey, and that Baird's were feeding at the bottommost depths of at least 1000 m (Ohizumi et al., 2003). The overall dive behavior of this beaked whale is not known (e.g., shape of dive, interventilation dives, etc). In lieu of other information, the depth distribution for northern bottlenose whales, *Hyperoodon ampullatus,* will be extrapolated to Baird's. There has been one study on northern bottlenose whales, which provides some guidance as to depth distribution (Hooker and Baird, 1999). Most (62-70%, average = 66%) of the time was spent diving (deeper than 40 m), and most dives were somewhat V-shaped. Both shallow dives (<400 m) and deep dives (>800 m) were recorded, and whales spent 24-30% (therefore, average of 27%) of dives at 85% maximum depth indicating they feed near the bottom. Using these data points, we **estimate 34% of time at 0-40 m, 39% at 41-800 m, 27% at >800 m for *H. ampullatus* and extrapolate this to *B. berardius*.**

E.3.4 Stejneger's beaked whale, *Mesoplodon stejnegeri*

Stejneger's beaked whale is known from the north Pacific only, ranging in subarctic and cool temperate waters. It is likely the only mesoplodont whale to be found in the GOA, as other *Mesoplodon* species do not range that far north. There is no abundance estimate for this species, as it is rarely seen at-sea and is most often recorded via stranding events (Angliss and Allen, 2009). Stejneger's beaked whales are likely present in low numbers in the GOA; **there is no density estimate available (Table 1)**.

E.3.5 Killer whale, *Orcinus orca*

There are two stocks of killer whales in the north Pacific whose ranges overlap in the GOA, but who differ in feeding preferences, acoustics and genetics. The Alaska Resident stock feeds primarily on fish, ranges from southeast Alaska to the Aleutian Islands and Bering Sea, and has a minimum population estimate of 1,123 based on photo ID (Angliss and Allen, 2009). The Gulf of Alaska, Aleutian Islands and Bering Sea Transient stock feeds primarily on other marine mammals and ranges farther offshore in the GOA than the resident stock, as well as to the Aleutian Islands and Bering Sea. The minimum estimate based on photo ID for that population is 314. Vessel surveys for killer whales were conducted in July and August from 2001-2003 near Steller sea lion haulouts from the Kenai Peninsula to Amchitka Pass in the Aleutian Islands (Zerbini et al., 2007). The surveys did not venture far from shore but do provide density estimates for transient and resident stocks. **Survey blocks closest to the TMAA (blocks 2-5) had an average density of 0.010/km^2 resident killer whales (IGS density which the authors indicate is more appropriate for resident killer whales), which is applicable to the entire region year round (Table 3).** Killer whales were seen and heard during a vessel cruise in the TMAA in April 2009 (Rone et al., 2009; Figures 4 and 8), but density was not calculated.

Diving studies on killer whales have been undertaken mainly on "resident" (fish-eating) killer whales in the Puget Sound and may not be applicable across all populations of killer whales. Diving is usually related to foraging, and mammal-eating killer whales may display different dive patterns. Killer whales in one study (Baird et al., 2005b) dove as deep as 264 m, and males dove more frequently and more often to depths >100 m than females, with fewer deep dives at night. Using best available data from Baird et al. (2003), it would appear that **killer whales spend ~4% of time at depths >30 m and 96% of time at depths <30 m**. Dives to deeper depths were often characterized by velocity bursts which may be associated with foraging or social activities.

E.3.6 Beluga, *Delphinapterus leucas*

A genetically and geographically discrete population of belugas exists in Cook Inlet. Scattered sightings of belugas in the northern GOA have been recorded since the mid-1970s, and these animals may be part of the Cook Inlet stock (Laidre et al., 2000) or may be part of a group of belugas that appear to be resident to Yakutat Bay (O'Corry-Crowe et al., 2006). An in-depth review of 13 dedicated cetacean surveys in the GOA found that all northern GOA sightings were coastal and none were reported in offshore areas. **No density is available (Table 1).**

E.3.7 Pacific white-sided dolphin, *Lagenorhychus obliquidens*

Pacific white-sided dolphins range throughout the north Pacific in cold temperate waters. Movements between inshore/offshore and north/south are not well understood. The north Pacific stock of this species, which ranges from British Columbia across the north Pacific and including the GOA, is currently estimated to have a minimum abundance of 26,880 based on data collected from 1987-90 (Angliss and Allen, 2009). **Data from vessel surveys conducted by Waite (2003) yielded a density of 0.0208/km^2 (Table 1), which is applicable to the entire region year round.** This density was based on just two sightings so confidence in this value is low, but it is the only density available for this region. Rone et al. (2009) collected one sighting of 60 Pacific white-sided dolphins during the April 2009 cruise; the sighting was outside of the TMAA, south of Kodiak Island (See Figure 4 in Rone).

Pacific white-sided dolphins are generalist feeders (von Waerebeek and Wursig, 2002). Studies on diving by this species have not been undertaken. Satellite tag studies of a rehabilitated related species (*Lagenorhynchus acutus*) in the Gulf of Maine indicated that nearly all time was spent in waters <100 m total depth with largely directed movement (Mate et al., 1994). Another related species, *Lagenorhynchus obscurus*, was observed feeding in two circumstances; at night to 130 m depth to take advantage of the deep scattering layer closer to the surface and during the day in shallower depths (<65 m) where they fed on schooling fish (Benoit-Bird et al., 2004). **In lieu of the lack of other data available for this Pacific lags, the following are very rough estimates of time at depth: daytime - 100% at 0-65 M; night time – 100% at 0-130 m.**

E.3.8 Northern right whale dolphin, *Lissodelphis borealis*

The northern right whale dolphin occurs in a band across the north Pacific, generally between 34˚ and 47˚N (Reeves et al., 2002). They are primarily an open ocean species, and rarely come near shore. Their presence in the GOA is unknown but, based on the lack of sightings of this gregarious species, is likely rare; **there is no density for this species (Table 1)**.

E.3.9 Risso's dolphin, *Grampus griseus*

This species is known from tropical and warm temperate oceans, primarily in waters with surface temperatures between 50 and 82˚F (Reeves et al., 2002). Their pres ence in the GOA is likely extremely rare and extralimital; **there is no density for this species (Table 1).**

E.3.10 False killer whale, *Pseudorca crassidens*

False killer whales are found from tropical to warm temperate waters, with well known populations near Japan and in the eastern tropical Pacific. They were not seen along the Pacific US coast during surveys conducted from 1986-2001 (Ferguson and Barlow, 2003; Barlow, 2003) nor in 2005 (Forney, 2007), although they have occasionally been sighted as far north as British Columbia (Reeves et al., 2002). Their presence in the GOA is likely extremely rare and extralimital; **there is no density for this species (Table 1).**

E.3.11 Short-finned pilot whale, *Globicephala macrorhynchus*

This species is known from tropical and warm temperate waters and, in the northeast Pacific, its distribution likely extends as far north as Vancouver Island (Reeves et al., 2002). Pilot whales were not seen during vessel surveys conducted offshore Washington and Oregon in 1996 or 2001 (Barlow, 2003) and there was only one sighting during surveys conducted in 2005 (Forney, 2007). Their presence in the GOA is likely extremely rare and extralimital; **there is no density for this species (Table 1).**

E.3.12 Dall's porpoise, *Phocoenoides dalli*

Dall's porpoises are endemic to the north Pacific, ranging north of ~32˚N into the Bering Sea. It is generally found in deep, cool waters but is also common in coastal areas. The Alaska stock is currently estimated at 83,400 animals (Angliss and Allen, 2009). Waite (2003) sighted Dall's porpoise frequently throughout their study area, including several sightings south of the Kenai Peninsula and therefore within the TMAA. **Data from vessel surveys conducted by Waite (2003) yielded a density of 0.1892/km^2 (Table 1), which is applicable to the entire region year round.** Rone et al. (2009; Figure 4) recorded 10 sightings of 59 Dall's porpoise in both the inshore and offshore strata, but density was not calculated.

Dall's porpoise feed on a wide variety of schooling fish, including herring and anchovies, mesopelagic fish including deep-sea smelts, and squids (a, 2002). One study of this species includes dive information for a single animal (Hanson and Baird, 1998). The authors concluded that the animal responded to the TDR tag for the initial eight minutes it was in place. Therefore, using data only from dives 7-17 (after the abnormally deep high velocity dive) in Table 2 of Hanson and Baird (1998), total time of the sequence was 26.5 min (from start of dive 7 to end of dive 17). Total time at the surface was 10.27 min (time between dives minus the dive durations). Dives within 10 m totaled 2.11 min, dives to >60 m totaled 0.4 min, and dives with bottom time between 41 and 60 m totaled 1.83 min. The remaining time can be assumed to be spent diving between 11 and 40 m. **Based on this information, the depth distribution can be estimated as 39% at <1 m, 8% at 1-10 m, 45% at 11-40 m, and 8% at >40 m.**

E.3.13 Harbor porpoise, *Phocoena phocoena*

Harbor porpoise are found in coastal regions of northern temperate and subarctic waters (Reeves et al., 2002). To determine abundance of harbor porpoises in southern Alaska, Dahlheim et al. (2000) conducted aerial surveys from 1991-1993 only within 30 km of shore, based on data from Dohl et al. (1983) that indicated that harbor porpoise off California were almost exclusively within 0.25 nm of shore. Sightings around Kodiak Island were clustered in near shore bays on the north side of the island, with only two sightings up to 30 km offshore (see Figures 2 and 4 in Dahlheim et al., 2000). Harbor porpoise are generally not found in water deeper than 100 m, and decline linearly as depth increases (Carretta et al., 2001; Barlow, 1988; Angliss and Allen, 2009). A survey conducted in the GOA in June 2003 yielded a single sighting of two individuals (Waite, 2003). The vessel survey conducted in April 2009 yielded 30 sightings of 89 harbor porpoise, most of which were outside of the TMAA (Rone et al., 2009; Figure 4). The coastal distribution and limitation to shallower depths make it likely that harbor porpoises would not be within the TMAA; **there is no density for this species (Table 1)**.

E.4 PINNIPEDS

E.4.1 Steller's sea lion, *Eumetopias jubatus*

The range of the Steller's sea lion (SSL) crosses the north Pacific from Japan to northern California. This species does not undergo extensive migrations but will disperse widely during the non-breeding season. There are two US stocks, which are delineated based on location of rookeries. The Western US stock, listed as Endangered, encompasses SSL using rookeries west of 144°W, and the Eastern US stock, listed as Threatened, include SSL whose rookeries are east of 144°W. SSL from both stocks likely use the TMAA. Most SSL remain fairly close to rookeries and haulouts throughout the year, with adult females with pups averaging 17 km trip length in summer and 130 km trip length in winter; however foraging trips extended to >500 km offshore (Loughlin, 2002; Merrick and Loughlin, 1997) which encompasses the entire TMAA. Foraging trips are interspersed with time spent at haulouts throughout the year, and different age and sex classes molt at different times from late summer through early winter. Consequently, at any particular time during the year, at least some portion of the population will be at-sea. Call et al. (2007) found that the duration of at-sea and on-shore cycles of juvenile SSL differed between regions. In the Aleutian Islands and GOA, juvenile SSL departed at dusk and returned to haul out just prior to sunrise, while juvenile SSL in southeast Alaska departed throughout the day. Time of day departures and length of time at-sea are likely related to foraging opportunities and the distance/depth required for juveniles to travel finding food.

Pinniped at-sea density is not generally calculated because they are counted much more easily while on shore. Therefore, to determine densities of SSL in the TMAA, two sets of parameters need to be identified – the specific area and the number of animals. The area of the TMAA (measured in ArcMap) is ~87,250 km^2 (Figure 1). This represents 6.25% of the entire GOA Large Marine Ecosystem (LME) as defined by NOAA (www.lme.noaa.gov), and measured via ArcMap (~1,396,800 km^2, not including inland passages). The GOA LME extends from the Alaska Peninsula in the west to the British Columbia-Washington border in the east. To determine the number of SSL in the GOA LME, the most recent counts of adult, juvenile and pup SSL at rookeries in the GOA (pups = 4,518, non-pups = 13,892; data from 2004-2005), southeast Alaska (n=20,793, data from 2005) and British Columbia (n=15,402, data from 2002) were combined for a total of 54,605 SSL (Angliss and Allen, 2009). These are considered minimum counts, as they were not corrected for animals not counted because they were at sea. Bonnell and Bowlby (1992) estimated that 25% of the SSL sea lion population was feeding at sea at any given time. Therefore, 13,651

SSL (54,605 * 0.25) would be expected feeding at-sea in the GOA LME. To estimate the number within the TMAA, the number of SSL in the entire GOA (13,651) was multiplied by the percent area of the TMAA compared to the GOA LME (0.0625) for a total of 853 SSL. **Density was then calculated as 853 SSL/87,250 km^2, or 0.0098/km^2, which is applicable to the entire region year round (Table 1).**

Acoustic modeling was calculated for two seasons, warm (June-October) and cold (November-May) water. Pinniped densities were therefore averaged to these two seasons by summing monthly densities and dividing by the number of months in each season (Table 5). For Steller sea lions the warm and cold water densities are the same, as densities are expected to remain consistent throughout the year.

Steller sea lions feed on fishes and invertebrates, including walleye pollock, Pacific cod, mackerel, octopus, squid and herring (Loughlin, 2002). Ongoing studies of SSL diving behavior have been conducted by NMFS in Alaska and Washington as part of an overall effort to determine why sea lion populations have been steadily declining (Merrick and Loughlin, 1997; Loughlin et al., 2003). Tagging studies often focus on different age classes (weanling, young of year, adult female). Steller sea lion prey changes depending on the season, with some prey moving farther offshore in winter, which affects maximum depth. Females dived the longest and deepest, with young of the year and weanlings having lesser values for both categories (Call et al., 2007; Loughlin et al., 2003). Adult males generally disperse farthest (commonly 120 km but as far as 500 km) from haulouts (Raum-Suryan et al., 2004). Loughlin et al. (2003) recorded maximum dive depth of 328 m, although most dives were shallower. Some SSL appear to take advantage of vertically migrating prey, leaving haulouts at dusk and returning at dawn (Call et al., 2007) but other SSL appear to feed throughout daylight hours as well. Because all age classes may be in the water at any given time, the depth distribution was estimated from the proportion of dives per depth range for all age classes (Merrick and Loughlin, 1997; Figures 4 and 2, respectively). **Based on this information, the depth distribution can be roughly estimated at 60% at 0-10 m, 22% at 11-20 m, 12% at 21-50 m, 5% at 51-100 m and 1% at >100 m.**

Table E-5. Averaging of Stellers sea lion, Northern fur seal, and Northern elephant seal densities to fit warm (June-October) and cold (November-May) water seasons.

Species	Stellers sea lion	Northern fur seal	Northern elephant seal
Month	**Density**		
June	0.0098	0.1059	0.0000
July	0.0098	0.0000	0.0000
August	0.0098	0.0000	0.0000
September	0.0098	0.0072	0.0055
October	0.0098	0.4768	0.0055
Average Warm Season	**0.0098**	**0.1180**	**0.0022**
November	0.0098	0.4768	0.0055
December	0.0098	0.4768	0.0000
January	0.0098	0.0072	0.0000
February	0.0098	0.0072	0.0000
March	0.0098	0.0072	0.0055
April	0.0098	0.0072	0.0055
May	0.0098	0.1059	0.0000
Average Cold Season	**0.0098**	**0.1555**	**0.0024**

E.4.2 Northern fur seal, *Callorhinus ursinus*

The northern fur seal is endemic to the north Pacific. Breeding sites are located in the Pribilof Islands (up to 70% of the world population) and Bogoslof Island in the Bering Sea, Kuril and Commander Islands in the northwest Pacific, and San Miguel Island in the southern California Bight. Abundance of the Eastern Pacific Stock has been decreasing at the Pribilof Islands since the 1940s although increasing on Bogoslof Island. The stock is currently estimated to number 665,550 (Angliss and Allen, 2009). The San Miguel Island Stock is much smaller, estimated at 9,424 (Carretta et al., 2009); this stock is believed to remain predominantly offshore California year round.

Males are present in the rookeries from around mid-May until August; females are present in the rookeries from mid-June to late-October. Nearly all fur seals from the Pribilof Island rookeries are foraging at sea from fall through late spring. Females and young males migrate through the Gulf of Alaska and feed primarily off the coasts of British Columbia, Washington, Oregon and California before migrating north to the rookeries (Ream et al., 2005). Immature males and females may remain in southern foraging areas year round until they are old enough to mate (National Marine Fisheries Service, 2006). Adult males migrate only as far as the Gulf of Alaska or to the west off the Kuril Islands. Therefore, adult males (September-April), adult females (October-December; May-June) and all non-adult fur seals (October-December) can potentially be found in the TMAA depending on the time of year.

Counts conducted in 2004 of males at Pribilof Island rookeries yielded a total 9,978 (Table 2 in National Marine Fisheries Service, 2006). Assuming an even distribution of fur seals throughout the GOA, and using a similar method as for other pinnipeds, the number of male fur seals was multiplied by the percent area of the TMAA compared to the GOA LME (0.0625) for a total of 624 fur seals. **Density was then calculated as 624 fur seals/87,250 km^2, or 0.0072/km^2, which is applicable for the entire region in September and January through April.** Because some northern fur seal adult males feed near the Kuril Islands, this density is likely an over-estimate.

To determine density for migration time periods when adult female, adult male and non-adult fur seals would be present in the TMAA while enroute to feeding areas (October-December), the total number of fur seals in the eastern Pacific stock (665,550) was multiplied by the percent area of the TMAA compared to the GOA LME (0.0625) for a total of 41,597 fur seals. **Density was then calculated as 41,597 fur seals/87,250 km^2, or 0.4768/km^2. This density is applicable for the entire TMAA for October-December.** Because this number includes pups of the year and first year mortality due to predation and other factors is very high, the density is very likely an over-estimate.

To account for migration time periods when adult females would be migrating north thru the TMAA enroute to the rookeries (May-June), the number of pups born (2006 Pribilof Islands and Bogoslof Island count= 147,900; Angliss and Allen, 2009) was used to estimate the number of adult females (assuming all adult females birthed a pup). Assuming an even distribution of fur seal females as they migrate through the GOA, the number of female fur seals was multiplied by the percent area of the TMAA compared to the GOA LME (0.0625) for a total of 9,244 fur seals**. Density was then calculated as 9,244 fur seals/87,250 km^2, or 0.1059/km^2. This density is applicable for the entire** TMAA **for May-June.**

In most years, northern fur seals would not be expected in the GOA in July and August, because adults would still be in the rookeries and non-adults would be foraging farther south, so density would be zero.

Acoustic modeling was calculated for two seasons, warm (June-October) and cold (November-May) water. Northern fur seal densities were therefore averaged to these two seasons by summing monthly densities and dividing by the number of months in each season (Table 5). **The warm water density for northern fur seals was 0.1180/km^2 and the cold water density was 0.1555/km^2 (see Table 1), which are applicable to the entire area.**

Northern fur seals feed on small fish and squid in deep water and along the shelf break; deep dives occur on the shelf and feeding probably occurs near the bottom (Gentry, 2002). There have been a few studies of this species' diving habits during feeding and migrating, although there is no information on dive depth distribution. Ponganis et al. (1992) identified two types of northern fur seal dives, shallow (<75 m) and deep (>75 m). Kooyman and Goebel (1986) found that the mean dive depth for seven tagged females was 68 m (range 32-150 m) and the mean maximum depth was 168 m (range 86-207). Sterling and Ream (2004) reported that the mean dive depth for 19 juvenile males was 17.5 m, with a maximum depth attained of 175 m. Diving was deeper in the daytime than during nighttime, perhaps reflecting the different distribution of prey (especially juvenile pollock), and also differed between inner-shelf, mid-shelf, outer-shelf and off-shelf locations. Deeper diving in the Sterling and Ream study tended to occur on-shelf, with shallower diving off-shelf. Diving patterns during migration tended to be shallower, with diving occurring mainly at night (indicating some feeding on vertically migrating prey) and most time during the day in the upper 5 m of the water column (Baker, 2007). **Based on these very limited depth data, the following are very rough order estimates of time at depth: daytime: 74% at <2 m; 26% at 2-260 m; nighttime: 74% at <2 m; 26% at 2-75 m.**

E.4.3 California sea lion, *Zalophus californianus*

California sea lions breed in the Channel Islands in the southern California Bight and south into Baja California. Males will migrate after the breeding season north to near shore waters of Washington, Oregon and British Columbia (some immature males will remain in northern feeding areas year round). Females generally do not migrate as far north as males. California sea lions have been documented at several locations in Alaska (Maniscalco et al., 2004), including southeast Alaska, Kenai Peninsula and as far north and west at St. Paul Island in the Bering Sea. There were a total of 52 animals documented between 1963 and 2003, and they were observed during all seasons of the year. Their presence in the GOA Exercise Area is likely extremely low both due to the extralimital nature of the occurrence and the species preference for near shore habitat. **No density estimate is available (Table 1).**

E.4.4 Northern elephant seal, *Mirounga angustirostris*

The California stock of elephant seals breeds at rookeries located along the California coast. The most recent population estimate (2005) was 124,000 animals, and was based primarily on pup counts and correction factors (Carretta et al., 2009). Only male elephant seals migrate as far north as the GOA during foraging trips, information known from extensive satellite tagging studies (LeBoeuf et al., 1986, 1993, 2000). Adult males are present at the California rookeries from December through February for mating, and again from May to August during molting. The number of males in the population is particularly difficult to estimate because all adult males are generally not present at the rookery at any one time.

Counts of males at rookeries in the Channel Islands and some central California sites in 2005 yielded 3,815 males and juveniles for which sex could not be determined. Some rookeries were not included in this estimate, including a rapidly growing rookery at Piedras Blancas, which in 2007 had an estimated population of 16,000 animals of all age and sex classes (www.elephantseal.org). The California elephant seal population has also been steadily increasing over time (Carretta et al., 2009). To account for males at rookeries not counted and an increase in the population since 2005, the number of males and juveniles reported in the 2009 stock assessment report (3,815) was doubled to 7,630. Using similar methods as described for Steller's, the number of male elephant seals (7,630) was multiplied by percent area of the TMAA compared to the GOA LME (0.0625) for a total of 477 elephant seals. **Density was then calculated as 475 seals/87,250 km^2, or 0.0055/km^2, which is applicable for the entire TMAA for March-April and September-November.** Because all elephant seal adult males are not at-sea at the same time, the density is probably an over-estimate.

As with northern fur seals, elephant seal densities were averaged to warm (June-October) and cold (November-May) water seasons to provide data suitable for acoustic modeling. To do so, monthly densities were summer and divided by the number of months in each season (Table 5). **The warm water density for elephant seals was 0.0022/km^2 and the cold water density was 0.0023/km^2 (see Table 1, which is applicable to the entire area.**

Elephant seals feed on deep-water squid and fish, and likely spend about 80% of their annual cycle at sea feeding (Hindell, 2002). There has been a disproportionate amount of research done in the diving capabilities of northern elephant seals. Breeding and molting beaches are all located in California and Baja California, and elephant seals are relatively easy to tag (compared to cetaceans) when they are hauled out on the beach; the tag package can be retrieved when the animal returns to shore rather than relying on finding it in the ocean. They are deep divers, and have been tracked to depths >1000 m, although mean depths are usually around 400-600 m. Elephant seals have more than one dive type, termed Types A-E, including rounded and squared-off U-shape, V-shape and others. Particular dive types appear to be used mainly during transit (Types A and B), "processing" of food (Type C), and foraging (Types D and E; Crocker et al., 1994). Asaga et al. (1994) collected dive information on three female seals and provided summary statistics for three dive types. Davis et al. (2001) recorded the diving behavior of a seal returning to the beach, and demonstrated transit depths averaging 186 m with range of depth from 8 m to 430 m. LeBoeuf et al. (1986; 1988), Stewart and DeLong (1993) and LeBoeuf (1994) provided histograms of dives per depth range for tagged females. LeBoeuf et al. (2000; 1988) and LeBoeuf (1994) provided details on foraging trips for males and females offshore California, including information on percentage of time at surface. Hassrick et al. (2007) noted that larger animals (adult males) exhibited longer bottom times and that surface swimming was not noted in the sixteen elephant seals that they tagged. Hindell (2002) noted that traveling likely takes place at depths >200m.

Even with this abundance of information, the numerous types of dives and lack of clear-cut depth distribution data means that the percentage of time at depth needs to be estimated. The closest information provided is from Asaga et al. (1994), which was used here. Note that this information is representative of type D foraging dives of female only. This is the type of dive that would be likely of an elephant seal at-sea. Summary stats from Table 17.3 (Asaga et al., 1994) were used; the data were collected from females only but will be applied to both sexes and all age classes due to lack of other concise data. Mean dive duration and mean surface intervals were added together to come up with total dive cycle in minutes. Amount of time to traverse from surface to bottom and bottom to surface was calculated by subtracting bottom time (given) from dive duration. Values for total cycle, surface interval, bottom time and descent/ascent were then averaged for all three females. Roundtrip surface to bottom and back averaged 12.9 minutes. Assuming a mean rate of descent/ascent over 527 m (average mean dive depth for all three females combined), the average rate per 100 m was 2.4 min. **Based on these averaged numbers, the following are estimates of time at depth: 9% at <2 m, 11% at 2-100 m, 11% at 101-200 m, 11% at 201-300 m, 11% at 301-400 m, 11% at 401-500 m and 36% at >500 m.**

E.4.5 Harbor seal, *Phoca vitulina*

Harbor seals are distributed throughout coastal areas of the North Pacific. Their distribution is largely tied to suitable beaches for hauling out, pupping and molting, and areas offering good foraging and protection from predators such as killer whales. Most harbor seals are non-migratory. Satellite-tracking studies of movements of adults and pups near Kodiak Island and elsewhere in the GOA indicate that mean distance between haul out and at-sea foraging was 10-25 km for juveniles and 5-10 km for adults (e.g., Lowry et al., 2001; Rehberg and Small, 2001), and nearly all locations were in water <200 m deep, with an apparent preference for depths 20-100 m (Frost et al., 2001). The coastal distribution and limitation to shallower depths make it likely that harbor seals would not be within the TMAA; **there is no density for this species (Table 1).**

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Table E-6. Summary of Marine Mammal Depth and Diving Information for Species Found in the TMAA

NOTE: some species that are not endemic to GOA are included in this appendix because data on their depth and diving preferences were extrapolated to GOA species.

	GENERAL INFORMATION			DEPTH SPECIFIC INFORMATION					
Common Name	**Food Preference**	**Depth or Oceanic Preference**	**References**	**Behavioral State**	**Geographic Region**	**Depth Information**	**Depth Distribution**	**Sample Size/ Time of Year/Method**	**References**
MYSTICETES - Baleen whales									
Fin whale	Planktonic crustaceans, including *Thyanoessa* sp and *Calanus* sp, as well as scholling fishes such as capelin (*Mallotus*), herring (*Clupea*) and mackerel (*Scomber*)	Pelagic with some occurrence over continental shelf areas, including in island wake areas of Bay of Fundy	Aguilar (2002); Croll et al. (2001); Acevado et al. (2002): Notarbartolo-di-Sciara et al. (2003); Bannister (2002); Johnston et al. (2005); Watkins and Schevill (1979)	Feeding at depth	Northeast Pacific (Mexico, California)	Mean depth 98 +- 33 m; mean dive time 6.3+- 1.5 min		Fifteen whales/ April-October/Time-depth-recorder	Croll et al. (2001)
Fin whale				Non-feeding	Northeast Pacific (Mexico, California)	Mean depth 59 +-30 m; mean dive time 4.2 +- 1.7 min; most dives to ~ 30 m with occasional deeper V-shaped dives to >90 m		Fifteen whales/ April-October/Time-depth-recorder	Croll et al. (2001)
Fin whale				Feeding	Mediterranean (Ligurian Sea)	Shallow dives (mean 26-33 m, with all <100m) until late afternoon; then dives in excess of 400 m (perhaps to 540 m); in one case a whale showed deep diving in midday; deeper dives probably were to feed on specific prey (*Meganyctiphanes norvegica*) that undergo diel vertical migration		Three whales/ Summer/ Velocity-time-depth-recorder	Panigada et al. (1999); Panigada et al. (2003); Panigada et al. (2006)
Fin whale				Traveling	Mediterranean (Ligurian Sea)	Shallow dives (mean 9.8 +- 5.3 m, with max 20 m) , shorter dive times and slower swimming speed indicate travel mode; deep dives (mean 181.3 +- 195.4 m, max 474 m), longer dive times and faster swimming speeds indicate feeding mode		One whale/ Summer/ Velocity-time-depth-recorder	Jahoda et al. (1999)
Fin whale				Feeding	Northeast Pacific (Southern California Bight)	Mean dive depth 248+-18 m; total dive duration mean 7.0+-1.0 min with mean descent of 1.7+-0.4 min and mean ascet of 1.4+-0.3 min; 60% (i.e., 7.0 min) of total time spent diving with 40% (i.e., 4.7 min) total time spent near sea surface (<50m)	44% in 0-49m (includes surface time plus descent and ascent to 49 m); 23% in 50-225 m (includes descent and ascent times taken from Table 1 minus time spent descending and ascending through 0-49 m); 33% at >225 m (total dive duration minus surface, descent and ascent times)	Seven whales/ August/ Bioacoustic probe	Goldbogen et al. (2006)
Fin whale				Feeding	Northeast Pacific (Southern California Bight)	Distribution of foraging dives mirrored distribution of krill in water collumn, with peaks at 75 and 200-250 m.		Two whales/ September-October/ Time-depth-recorder	Croll et al. (2001)

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Common Name	**Food Preference**	**Depth or Oceanic Preference**	**References**	**Behavioral State**	**Geographic Region**	**Depth Information**	**Depth Distribution**	**Sample Size/ Time of Year/Method**	**References**
Minke whale	Regionally dependent; can include euphausiids, copepods, small fish and squids; Japanese anchovy preferred in western North Pacific, capelin and krill in the Barents Sea; armhook squids in North Pacific	Coastal, inshore and offshore; known to concentrate in areas of highest prey density, including during flood tides	Perrin and Brownell (2002); Jefferson et al. (1993); Murase et al. (2007); Bannister (2002); Lindstrom and Haug (2001); Johnston et al. (2005); Hoelzel et al. (1989); Haug et al. (2002); Haug et al. (1995); Haug et al. (1996); Konishi and Tamura (2007); Clarke (1986)	Feeding, Searching	North Atlantic (Norway)	Searching for capelin at less than 20 m, then lunge-feeding at depths from 15 to 55 m, then searching again at shallower depths	Based on time series in Figure 2, 47% of time was spent foraging from 21-55 m; 53% of time was spent searching for food from 0-20 m	One whale/ August/ Dive-depth-transmitters	Blix and Folkow (1995)
Minke whale				Feeding	North Pacific (San Juan Islands)	80% of feeding occurred over depths of 20-100m; two types of feeding observed both near surface - lunge feeding and bird association		23 whales/ June-September/ behavioral observations	Hoelzel et al. (1989)
Humpback whale	Pelagic schooling euphausiids and small fish including capelin, herring, mackerel, croaker, spot, and weakfish	Coastal, inshore, near islands and reefs, migration through pelagic waters	Clapham (2002); Hain et al. (1995); Laerm et al. (1997); Bannister (2002); Watkins and Schevill (1979)	Feeding	North Atlantic (Stellwagen Bank)	Depths <40 m		Several whales/ August/ Visual Observations	Hain et al. (1995)
Humpback whale				Feeding (possible)	Tropical Atlantic (Bermuda)	Dives to 240 m		One whale/ April/ VHF tag	Hamilton et al. (1997)
Humpback whale				Feeding (in breeding area)	Tropical Atlantic (Samana Bay - winter breeding area)	Not provided; lunge feeding with bubblenet		One whale/ January/ Visual observations	Baraff et al. (1991)
Humpback whale				Breeding	North Pacific (Hawaii)	Depths in excess of 170 m recorded; some depths to bottom, others to mid- or surface waters; dive duration was not necessarily related to dive depth; whales resting in morning with peak in aerial displays at noon	40% in 0-10 m, 27% in 11-20 m, 12% in 21-30 m, 4% in 31-40 m, 3% in 41-50 m, 2% in 51-60 m, 2% in 61-70 m, 2% in 71-80 m, 2% in 81-90 m, 2% in 91-100 m, 3% in >100 m (from Table 3)	Ten Males/ February-April/ Time-depth-recorder	Baird et al. (2000); Helweg and Herman (1994)
Humpback whale				Feeding	Northeast Atlantic (Greenland)	Dive data was catalogued for time spent in upper 8 m as well as maximum dive depth; diving did not extend to the bottom (~1000 m) with most time in upper 4 m of depth with few dives in excess of 400 m	37% of time in <4 m, 25% of time in 4-20 m, 7% of time in 21-35m, 4% of time in 36-50 m, 6% of time in 51-100 m, 7% of time in 101-150 m, 8% of time in 151-200 m, 6% of time in 201-300 m, and <1% in >300 m	Four whales/ June-July/ Satellite transmitters	Dietz et al. (2002)
Humpback whale				Feeding	North Pacific (Southeast Alaska)	Dives were short (<4 min) and shallow (<60 m); deepest dive to 148m; percent of time at surface increased with increased dive depth and with dives exceeding 60 m; dives related to position of prey patches		Several whales/ July-September/ Passive sonar	Dolphin (1987); Dolphin (1988)

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Gray whale	Amphipods, including *Ampelisca* sp, and other organisms living in the sea floor; also occasionally surface skim and engulfing; dependent on location; euphausiids along frontal systems may also be important	Continental shelf, 4-120 m depth	Dunham and Duffus (2002); Jones and Swartz (2002); Bannister (2002); Yazvenko et al. (2007); Bluhm et al. (2007)	Migrating	Northeast Pacific (coastal Baja California to northern California)	30 of 36 locations in depths <100m deep (mean 39 m); consistent speed indicating directed movement		One whale/ February/ Satellite tag	Mate and Urban Ramirez (2003)
Gray whale				Feeding	Bering and Chukchi Seas	Depths at feeding locations from 5-51 m depth		Several whales/ July-November/ Aerial surveys and benthic sampling	Clarke et al. (1989); Clarke and Moore (2002); Moore et al. (2003)
Gray whale				Feeding	Northeast Pacific (Kodiak Island)	Feeding on cumacean invertebrates		Several whales/ Year-round/ Aerial surveys	Moore et al. (2007)
Gray whale				Feeding	Northeast Pacific (Vancouver Island)	Majority of time was spent near the surface on interventilation dives (<3 m depth) and near the bottom (extremely nearshore in a protected bay with mean dive depth of 18 m, range 14-22 m depth; little time spent in the water column between surface and bottom.	40% of time at <4 m (surface and interventilation dives), 38% of time at 3-18 m (active migration), 22% of time at >18 m (foraging).	One whale/ August/ Time-depth recorder	Malcolm et al. (1995/96); Malcolm and Duffus (2000)
ODONTOCETES - Toothed whales									
Sperm whale	Squids and other cephalopods, demersal and mesopelagic fish; varies according to region	Deep waters, areas of upwelling	Whitehead (2002); Roberts (2003); Clarke (1986)	Feeding	Mediterranean Sea	Overall dive cycle duration mean = 54.78 min, with 9.14 min (17% of time) at the surface between dives; no measurement of depth of dive		16 whales/ July-August/ visual observations and click recordings	Drouot et al. (2004)
Sperm whale				Feeding	South Pacific (Kaikoura, New Zealand)	83% of time spent underwater; no change in abundance between summer and winter but prey likely changed between seasons		>100 whales/ Year-round/ visual observations	Jacquet et al. (2000)
Sperm whale				Feeding	Equatorial Pacific (Galapagos)	Fecal sampling indicated four species of cephalopods predominated diet, but is likely biased against very small and very large cephalopods; samples showed variation over time and place		Several whales/ January-June/ fecal sampling	Smith and Whitehead (2000)
Sperm whale				Feeding	Equatorial Pacific (Galapagos)	Dives were not to ocean floor (2000-4000 m) but were to mean 382 m in one year and mean of 314 in another year; no diurnal patterns noted; general pattern was 10 min at surface followed by dive of 40 min; clicks (indicating feeding) started usually after descent to few hundred meters		Several whales/ January-June/ acoustic sampling	Papastavrou et al. (1989)
Sperm whale				Feeding	North Pacific (Baja California)	Deep dives (>100m) accounted for 26% of all dives; average depth 418 +- 216 m; most (91%) deep dives were to 100-500 m; deepest dives were 1250-1500m; average dive duration was 27 min; average surface time was 8.0; whale dives closely correlated with depth of squid (200-400 m) during day; nighttime squid were shallower but whales still dove to same depths	74% in <100 m; 24% in 100-500 m; 2% in >500m	Five whales/ October-November/ Satellite-linked dive recorder	Davis et al. (2007)

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Common Name	**Food Preference**	**Depth or Oceanic Preference**	**References**	**Behavioral State**	**Geographic Region**	**Depth Information**	**Depth Distribution**	**Sample Size/ Time of Year/Method**	**References**
Sperm whale				Resting/ socializing	North Pacific (Baja California)	Most dives (74%) shallow (8-100 m) and short duration; likely resting and/or socializing		Five whales/ October-November/ Satellite-linked dive recorder	Davis et al. (2007)
Sperm whale				Feeding	North Atlantic (Norway)	Maximum dive depths near sea floor and beyond scattering layer		Unknown # male whales/ July/ hydrophone array	Wahlberg (2002)
Sperm whale				Feeding	North Pacific (Southeast Alaska)	Maximum dive depth if 340 m when fishing activity was absent; max dive depth during fishing activity was 105 m		Two whales/ May/ acoustic monitoring	Tiemann et al. (2006)
Sperm whale				Feeding	Northwest Atlantic (Georges Bank)	Dives somewhat more U-shaped than observed elsewhere; animals made both shallow and deep dives; average of 27% of time at surface; deepest dive of 1186 m while deepest depths in area were 1500-3000 m so foraging was mid-water column; surface interval averaged 7.1 min		Nine Whales/ July 2003/ DTAG	Palka and Johnson (2007)
Sperm whale				Feeding	Northwest Atlantic (Georges Bank)	37% of total time was spent near surface (0-10m); foraging dive statistics provided in Table 1 and used to calculate percentages of time in depth categories, adjusted for total time at surface	48% in <10 m; 3% in 10-100 m; 7% in 101-300 m; 7% in 301-500 m; 4% in 501-636 m; 31% in >636 m	Six females or immatures/ September-October/ DTAG	Watwood et al. (2006)
Sperm whale				Feeding	Mediterranean Sea	20% of total time was spent near surface (0-10m); foraging dive statistics provided in Table 1 and used to calculate percentages of time in depth categories, adjusted for total time at surface	35% in <10 m; 4% in 10-100 m; 9% in 101-300 m; 9% in 301-500 m; 5% in 501-623 m; 38% in >636 m	Eleven females or immatures/ July/ DTAG	Watwood et al. (2006)
Sperm whale				Feeding	Gulf of Mexico	28% of total time was spent near surface (0-10m); foraging dive statistics provided in Table 1 and used to calculate percentages of time in depth categories, adjusted for total time at surface	41% in <10 m; 4% in 10-100 m; 8% in 101-300 m; 7% in 301-468 m; 40% >468 m	20 females or immatures/ June-September/ DTAG	Watwood et al. (2006)
Sperm whale				Feeding/ Resting	North Pacific (Japan)	Dives to 400-1200 m; active bursts in velocity at bottom of dive suggesting search-and-pursue strategy for feeding; 14% of total time was spent at surface not feeding or diving at all, with 86% of time spent actively feeding; used numbers from Table 1 to determine percentages of time in each depth category during feeding then adjusted by total time at surface	31% in <10 m (surface time); 8% in 10-200 m; 9% in 201-400 m; 9% in 401-600 m; 9% in 601-800m; 34% in >800 m	One female/ June/ Time-depth-recorder	Amano and Yoshioka (2003)
Sperm whale				Feeding	North Pacific (Japan)	Diel differences in diving in one location offshore Japan, with deeper dives (mean 853 m) and faster swimming during the day than at night (mean 469 m); other location along Japan's coast showed no difference between day and night dives; most time (74%) spent on dives exceeding 200 m; surface periods of 2.9 h at least once per day; max depth recorded 1304 m		Ten whales/ May-June, October/ depth data loggers and VHF radio transmitters	Aoki et al. (2007)

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Sperm whale				Feeding/ Resting	North Atlantic (Caribbean)	Whales within 5 km of shore during day but moved offshore at night; calves remained mostly at surface with one or more adults; night time tracking more difficult due to increased biological noise from scattering layer; both whales spent long periods of time (>2hr) at surface during diving periods		Two whales/ October/ Acoustic transponder	Watkins et al. (1993)
Sperm whale					North Atlantic (Caribbean)	Dives did not approach bottom of ocean (usually >200 m shallower than bottom depth); day dives deeper than night dives but not significantly; 63% of total time in deep dives with 37% of time near surface or shallow dives (within 100 m of surface)		One whale/ April/ Time-depth tag	Watkins et al. (2002)
Sperm whale				Feeding	Northern Pacific (Hawaii)	Cephalopods of several genera recovered		Two animals/ unknown/ stomach contents	Clarke and Young (1998)
Sperm whale				Occurrence	Mediterranean Sea (Alborian Sea south of Spain)	Preferred waters >700m		Vessel transects	Canadas et al. (2002)
Sperm whale				Feeding	Arctic Ocean (Norway)	Dives from 14-1860 m with median of 175 m; clicking (searching for prey) began at 14-218 m and stopped at 1-1114 m, and whale spent 91% of overall dives emitting clicks; shallower dives were apparently to target more sparse prey while deep dives led to frequent prey capture attempts and were likely within denser food layers		Four adult males/ July/ DTAG	Teloni et al. (2007)
Cuvier's beaked whale	Meso-pelagic or deep water benthic organisms, particularly squid (Cephalapoda: Teuthoidea); may have larger range of prey species than other deep divers; likely suction feeders based on lack of teeth and enlarged hyoid bone and tongue muscles	Offshore, deep waters of continental slope (200-2000 m) or deeper	Heyning (2002); Santos et al. (2001); Blanco and Raga (2000); Clarke (1986)	Feeding	Northeast Pacific (Hawaii)	Max dive depth = 1450 m; identified at least three dive categories including inter-ventilation (<4 m, parabolic shape), long duration (>1000m, U-shaped but with inflections in bottom depth), and intermediate duration (292-568 m, U-shaped); dive cycle usually included one long duration per 2 hours; one dive interval at surface of >65 min; mean depth at taggin was 2131 m so feeding occurred at mid-depths; no difference between day and night diving		Two whales/September-November/Time-depth recorders	Baird et al. (2006a); Baird et al. (2005a)
Cuvier's beaked whale				Feeding	Mediterranean (Ligurian Sea)	Two types of dive, U-shaped deep foraging dives (>500 m, mean 1070 m) and shallower non-foraging dives (<500 m, mean 221 m); depth distribution taken from information in Table 2	27% in <2 m (surface); 29% in 2-220 m; 4% in 221-400 m; 4% in 401-600 m; 4% in 601-800 m; 5% in 801-1070; 27% in >1070 m	Seven whales/ June/ DTAGs	Tyack et al. (2006)
Cuvier's beaked whale				Feeding	Mediterranean (Ligurian Sea)	Deep dives broken into three phases: silent descent, vocal-foraging and silent ascent; vocalizations not detected <200m depth; detected when whales were as deep as 1267 m; vocalizations ceased when whale started ascending from dive; clicks ultrasonic with no significant energy below 20 kHz		Two whales/ September/ DTAGs	Johnson et al. (2004); Soto et al. (2006)

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Baird's beaked whale	Benthic fishes and cephalopods, also pelagic fish including mackerel and sardine; primarily squid off northern coast of Hokkaido and deep sea fish off Pacific coast of Japan	Deep waters over continental slope	Kasuya (2002); Kasuya (1986); Walker et al. (2002); Clarke (1986)	Feeding	Northwest Atlantic (Japan)	Whales caught at depths of ~1000 m; stomach contents included prey species normally found from 1100-1300 m; likely feeding at or near bottom		Several whales/ August-September/ Stomach contents	Ohizumi et al. (2003)
Northern bottlenose whale	Squid of genus *Gonatus* and *Taonius* and occasionally fish and benthic invertebrates	Deep waters >500 m; can dive to >1400 m	Gowans (2002); Kasuya (2002); Clarke and Kristensen (1980); Clarke (1986)	Feeding	Northeast Atlantic (Nova Scotia "Gully")	Most (62-70%, average = 66%) of the time was spent diving (deeper than 40 m); most dives somewhat V-shaped; shallow dives (<400 m) and deep dives (>800 m); whales spent 24-30% (therefore, average of 27%) of dives at 85% maximum depth indicating they feed near the bottom; deepest dive 1453 m; depth distribution taken from info in Table 1	34% at 0-40 m, 39% at 41-800 m, 27% at >800 m	Two whales/ June-August/ Time-depth recorders	Hooker and Baird (1999)
Killer whale	Diet includes fish (salmon, herring, cod, tuna) and cephalopods, as well as other marine mammals (pinnipeds, dolphins, mustelids, whales) and sea birds; most populations show marked dietary specialization	Widely distributed but more commonly seen in coastal temperate waters of high productivity	Ford (2002); Estes et al. (1998); Ford et al. (1998); Saulitis et al. (2000); Baird et al. (2006b)	Feeding	North Pacific (Puget Sound)	Resident-type (fish-eater) whales; maximum dive depth recorded 264 m with maximum depth in study area of 330 m; population appeared to use primarily near-surface waters most likely because prey was available there; some difference between day and night patterns and between males and femalesl depth distribution info from Table 5 in Baird et al. (2003)	96% at 0-30 m; 4% at >30 m	Eight whales/ Summer-fall/ Time-depth recorders	Baird et al. (2005b); Baird et al. (2003)
Killer whale				Feeding	Southwest Atlantic (Brazil)	Small to medium-sized cephalopods, both offshore and coastal		Unknown animals/ unknown/ stomach contents	Santos and Haimovici (2001)
Killer whale				Feeding	North Pacific	Offshore type whales, likely fish eaters based on behavioral observations and stomach content analysis		Several/ Year round/ Observations and stomach contents	Dahlheim et al. (2008)
Pacific white-sided dolphin	Lanternfish, anchovies, hake and squid; also herring, salmon, cod, shrimp and capelin	Mostly pelagic and temperate; may syncrhonize movements with anchovy and other prey	van Waerebeek and Wursig (2002); Clarke (1986)	Feeding	Northeast Pacific (British Columbia inland waters)	Prey collected included herring, capelin, Pacific sardine and possibly eulachon		Unknown/ year round/ dipnet collection of prey	Morton (2000)
Atlantic white-sided dolphin	Herring, small mackerel, gadid fishes, smelts, hake, sand lances, squid; likely change from season to season	Continental shelf and slope from deep oceanic areas to occasionally coastal waters	Cipriano (2002); Clarke (1986)		North Atlantic (Gulf of Maine)	Most (89%) of time spent submerged; most (76%) dives were <1 min duration and none were for longer that 4 minute duration		One animal/ February/ satellite-monitored radio tag	Mate et al. (1994)
Atlantic white-sided dolphin				Feeding	North Atlantic (Ireland)	Most frequent prey were mackerel and silvery pout		Four animals/ year round/ stomach contents	Berrow and Rogan (1996)
White-beaked dolphin	Mesopelagic fish, especially cod, whiting and other gadids, and squid		Kinze (2002); Clarke (1986)	Feeding	North Atlantic (Ireland)	Stomach contained Gadoid fish and scad remains		One animal/ year round/ stomach contents	Berrow and Rogan (1996)
Dall's porpoise	Small schooling and mesopelagic fish and cephalopods	Deep offshore as well as deeper near shore waters; diurnal as well as nocturnal feeders to take advantage of prey availability	Jefferson (2002), Amano et al. (1998); Clarke (1986)	Travelling	North Pacific (Puget Sound)	Feasibility study to determine if Dall's could be successfully tagged with suction cup tag; depth distribution info from Table 2 and excludes initial dive data when animal responded to tag event	39% at <1 m, 8% at 1-10 m, 45% at 11-40 m and 8% at >40 m	One animal/ August/ time-depth recorder	Hanson and Baird (1998)

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PINNIPEDS									
Northern fur seal	Small fish and squid in deep water and along the shelf break; Pacific herring, squid and walleye pollock dominated in the Gulf of Alaska, British Columbia, Washington and Oregon; northern anchovy and squid primary in Oregon, Washington and California	Deep dives occur on the shelf and feeding probably occurs near the bottom	Gentry (2002); Ream et al. (2005)			Maximum dive depth 256 m		Two females/ July/ time-depth recorders	Ponganis et al. (1992)
Northern fur seal				Feeding	North Pacific (Bering Sea)	Mean dive depth 68 m (range 32-150 m); mean maximum depth 168 m (range 86-207 m); two types of dives, shallow (<75 m; mean = 30 m; occur at night) and deep (>75 m; mean = 130 m; occur during day and night); total activity budget during feeding trips was 57% active at surface, 26% diving and 17% resting; depth distribution info from Gentry and others	Daytime: 74% at <2 m, 24% at 2-260 m; night time: 74% at <2 m, 24% at 2-75 m	Seven females/ July/ time-depth recorders	Gentry et al. (1986)
Northern fur seal				Feeding	North Pacific (Bering Sea)	Mean dive depth of 17.5 m, with a maximum depth of 175 m; diving deeper in the daytime than during nighttime, perhaps reflecting the different distribution of prey (especially juvenile pollock) that undertake night time vertical migrations, and also differed between inner-shelf, mid-shelf, outer-shelf and off-shelf locations; deeper diving tended to occur on-shelf, with shallower diving off-shelf.		19 juvenile males/ July-September/ satellite transmitters	Sterling and Ream (2004)
Northern fur seal				Feeding	North Pacific (Bering Sea to California)	Higher dive rates during night time hours compared with daytime; variation in mean dive depth between migratory travelling and destination area (eastern North Pacific coast) where mean dive depth was <25 m; night time mean dive depths were greater during full moon than during new moon		Three females/ November-May/ satellite transmitters	Ream et al. (2005)
Northern fur seal				Feeding	North Pacific (Bering Sea)	Activity budgets of lactating females of 44% locomoting, 23% diving and 33% resting at the surface		Four females/ August/ platform terminal transmitters	Insley et al. (2008)
Northern fur seal				Migrating	North Pacific (Bering Sea to Gulf of Alaska)	Diving behavior consistent regardless of habitat (pelagic or continental shelf); diving largely at night and in evening and morning with little diving during day suggesting feeding on vertically migrating prey	71% at <2 m, 14% at 2-5 m, 5% at 6-10 m, 6% at 11-25 m and 3% at 26-50 m	20 post-weaning pups/ November-May/ satellite-linked time-depth recorders	Baker (2007)

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Steller sea lion	Fish, including walleye pollock, Pacific herring, sand lance, salmon, flounder, rockfish and cephalopods	Diets and feeding patterns change with seasons; population levels are related to prey with increasing populations correlated with diverse diets and decreasing populations correlated with diets of primarily one prey item; females feed mostly at night during breeding season; feeding occurs throughout the day during non-breeding season	Trites et al. (2007); Loughlin (2002); Merrick et al. (1994)	Feeding	North Pacific (southeast Alaska)	Characterized by relatively brief trips to sea that represent about on-half of total time, and by fairly frequent, short and shallow dives that occur mostly at night. Maximum depth recorded was 424 m; mean depth was 26.4 m, and 49% of all dives were <10 m.		13 females/ May-June, January/ satellite-linked time-depth recorders	Swain (1996)
Steller sea lion				Feeding	North Pacific (Gulf of Alaska)	Adult females forage close to land in summer (<20 km) and make brief trips (<2 days) and shallow dives (<30 m); in winter, divers are longer in distance (up to 300 km), time (up to several months) and deeper (>250 m), Average dive depth of 36.5 and 42.9 m		Two females/ unknown/ satellite-linked time-depth recorder	Merrick et al. (1994)
Steller sea lion					North Pacific (Gulf of Alaska)	Adult females capable of foraging throughout GOA and Bering Sea, while young-of-year have smaller ranges and shallower dives; females in winter dove deepest (median 24 m, maximum >250 m, while young-of-year were shallowest (median 9 m, max 72 m); depth distribution taken from Figure 4 and represent averaging of all age/season classes	60% at 0-10 m, 22% at 11-20 m, 12% at 21-50 m, 5% at 51-100 m and 1% at >100 m.	15 animals/ June-July, November-March/ satellite-linked time-depth recorders and VHF transmitters	Merrick and Loughlin (1997)
Steller sea lion					North Pacific (Gulf of Alaska)	Young of year dove for shorter periods and shallower depths than yearlings; maximum dive depth was 288 m; long-range transits began at >10 months of age; depth distribution taken from Figure 2	78% in 0-10 m, 13% in 11-20 m, 7% in 21-50 m, and 2% in > 51 m	18 animals/ October-June/ satellite-linked time-depth recorders	Loughlin et al. (2003)
Steller sea lion					North Pacific (Washington)	Maximum dive depth was 328 m; depth distribution taken from Figure 2	28% in 0-10 m, 30% in 11-20 m, 18% in 21-50 m, 14% in 51-100 m and 10% in >100 m	Seven animals/ October-June/ satellite-linked time-depth recorders	Loughlin et al. (2003)
Steller sea lion					North Pacific (Gulf of Alaska)	Juveniles from western Alaska rookeries left on foraging trips at dusk and returned at dawn (taking advantage of polluck that vertically migrates and hauling out during the day), while juveniles from eastern Alaska rookeries left on foraging trips throughout the day and night, likely feeding on prey other than vertical migrants		129 animals/ August-November, January-May/ satellite dive recorders	Call et al. 2007)
Steller sea lion					North Pacific (Gulf of Alaska)	Round trip distance and duration of pups and juveniles increased with age, trip distance was greater for western rookeries than for eastern rookeries, trip duration was greater for females than males; 90% of trips were <=15 km from haul-outs; dispersals >500 km were undertaken only by males although dispersals of >120 km were common.		103 animals/ year round/ satellite dive recorders	Raum-Suryan et al. (2004)

	GENERAL INFORMATION			DEPTH SPECIFIC INFORMATION					
Common Name	**Food Preference**	**Depth or Oceanic Preference**	**References**	**Behavioral State**	**Geographic Region**	**Depth Information**	**Depth Distribution**	**Sample Size/ Time of Year/Method**	**References**
Northern elephant seal	Feed on deep-water squid and fish, and likely spend about 80% of their annual cycle at sea feeding; feed in meso-pelagic zone on vertically migrating squid	Deeper waters (>1000 m); males farther north than females	Hindell (2002); Stewart and DeLong (1993; 1995); LeBoeuf et al. (1988); Asaga et al. (1994); LeBoeuf (1994)	Feeding	North Pacific	Dive continuously for 8-10 months/year; dispersion and migratory patterns related to oceanographic features and areas of biological productivity; primarily squid eaters; males travel farther than females; females submerged 91% and males submerged 88% of time at sea; dive continuously; average depth for females was 479 m (post-moult) and 518 m (post-breeding) and for males 364 m (post-breeding) and 366 m (post-moult)		36 adults (both sexes)/ February-August/ dive and location recorders	Stewart and Delong (1993)
Northern elephant seal				Feeding	North Pacific	seals use same foraging areas during post-breeding and post-moulting periods; sexes are segregated geographically		36 adults (both sexes)/ January-February; May; July/ geographic location time depth recorders	Stewart and DeLong (1995)
Northern elephant seal				Feeding	North Pacific	little time at depths <200 m or >800 m; post-breeding migration is directed northward and quick until feeding areas are obtained; dives in transit are shallower than those on foraging grounds		14 adults (both sexes)/ February-July/ geographic location time depth recorders	Stewart and DeLong (1994)
Northern elephant seal				Feeding	North Pacific	Sea surface temperature appears to influence female forage area choice; foraging occurred in near shore areas of Gulf of Alaska, offshore Gulf of Alaska, near shore off Washington and Oregon and offshore between 40 and 50 N		12 adult females/ year round/ time depth recorders	Simmins et al. (2007)
Northern elephant seal				Feeding	North Pacific	Post-lactation monitoring; 86% of time at-sea spent submerged; maximum dive of 894 m, but dives >700 m were rare; modal dive depths between 350 and 650 m; continuous deep diving while at-sea; night dives were more numerous, shallower and of shorter duration; most dives types D (deep and u-shaped)		Seven adult females/ February-March/ time-depth recorders	LeBoeuf et al. (1988)
Northern elephant seal				Feeding	North Pacific	Mean depth of dive 333 m; maximum dive 630 m; 6% of all dives <200 m		One adult female/ February/ time-depth recorder	LeBoeuf et al. (1986)
Northern elephant seal				Feeding	North Pacific	Differences in foraging locations and behavior between males and females; females exhibited pelagic diving with varying dive depths depending on prey location in deep scattering layer; males exhibited pelagic diving as well as flat-bottom benthic dives near continental margins; males migrated to northern Gulf of Alaska and eastern Aleutians with females distributed west to 150 W between 44 and 52 N		32 adults (both sexes)/ March-July/ radio-telemetry	LeBoeuf et al. (1993)
Northern elephant seal				Transiting	North Pacific	90% of time submerged; mean depth 289 m; directed swimming even while submerged used prolonged gliding during dive descents which reduces cost of transport and can increase the duration of the dive		One adult female/ April/ video and satellite telemetry	Davis et al. (2001)

	GENERAL INFORMATION			DEPTH SPECIFIC INFORMATION					
Common Name	**Food Preference**	**Depth or Oceanic Preference**	**References**	**Behavioral State**	**Geographic Region**	**Depth Information**	**Depth Distribution**	**Sample Size/ Time of Year/Method**	**References**
Northern elephant seal				Feeding	North Pacific	Type D (foraging) dives account for 75-80% of all dives; type A (transit dives) rarely occurred in series; type C dives were shallowest; depth distribution information from table 17.3, type D dives which are foraging dives as they are the most common	9% at <2 m, 11% at 2-100 m, 11% at 101-200 m, 11% at 201-300 m, 11% at 301-400 m, 11% at 401-500 m and 36% at >500 m.	Two adult females/ February-May/ time-depth recorders	Asaga et al. (1994)
Northern elephant seal				Feeding	North Pacific	Transit dives in males cover large horizontal distances and are shallower than pelagic dive depths; transit dives in females and juveniles are both for transiting and search for prey patches; foraging dives have steeper angles than transit dives in females, but angles are not noticeably different in juveniles; swim speeds were similar across age and sex		16 animals (various ages)/ April-May/ time-depth recorders and platform terminal transmitters	Hassrick et al. (2007)
Northern elephant seal				Feeding	North Pacific	Males feed primarily from coastal Oregon to western Aleutian Islands, along continental margin and feed primarily on benthic organisms, migration is direct to forage areas across Pacific; females have wider foraging area from 38-60 N and from the coast to 172 E, and forage on pelagic prey in the water column, migration is more variable to take advantage of prey patches		47 adults (both sexes)/ March-June, September-December/ time-depth swim speed recorders	LeBoeuf et al. (2000)
Northern elephant seal				Feeding, Transiting	North Pacific	Different types of dives serve three general functions: type AB dives are transit dives (covering great horizontal distance and with shallow ascent and descent angles); type C dives are "processing" dives for internal processes such as digestions (slower swimming speed and short horizontal distance; type DE dives are foraging (both chasing prey pelagically and benthic foraging)		unknown	Crocker et al. (1994)

Appendix F

Cetacean Stranding Report

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F CETACEAN STRANDING REPORT

F.1 CETACEAN STRANDINGS AND THREATS

Strandings can involve a single animal or several to hundreds of animals. An event where animals are found out of their normal habitat may be considered a stranding even though animals do not necessarily end up beaching (such as the July 2004 "Hanalei Mass Stranding Event"; Southall et al., 2006). Several hypotheses have been given for the mass strandings which include the impact of shallow beach slopes on odontocete echolocation, disease or parasites, geomagnetic anomalies that affect navigation, following a food source in close to shore, avoiding predators, social interactions that cause other cetaceans to come to the aid of stranded animals, and human actions. Generally, inshore species do not strand in large numbers but generally just as individual animals. This may be due to their unfamiliarity with the coastal area. By contrast, pelagic species that are unfamiliar with obstructions or sea bottom tend to strand more often in larger numbers (Woodings, 1995). The Navy has studied several stranding events in detail that may have occurred in association with Navy sonar activities. To better understand the causal factors in stranding events that may be associated with Navy sonar activities, the main factors - including bathymetry (i.e. steep drop offs), narrow channels (less than 35 nm), environmental conditions (e.g. surface ducting), and multiple sonar ships (see Section on Stranding Events Associated with Navy Sonar) - were compared among the different stranding events.

F.1.1 What is a Stranded Marine Mammal?

When a live or dead marine mammal swims or floats onto shore and becomes "beached" or incapable of returning to sea, the event is termed a "stranding" (Geraci et al., 1999; Perrin and Geraci, 2002; Geraci and Lounsbury, 2005; NMFS, 2007). The legal definition for a stranding within the U.S. is that "a marine mammal is dead and is (i) on a beach or shore of the United States; or (ii) in waters under the jurisdiction of the United States (including any navigable waters); or (B) a marine mammal is alive and is (i) on a beach or shore of the United States and is unable to return to the water; (ii) on a beach or shore of the United States and, although able to return to the water, is in need of apparent medical attention; or (iii) in the waters under the jurisdiction of the United States (including any navigable waters), but is unable to return to its natural habitat under its own power or without assistance." (16 United States Code [U.S.C.] section 1421h).

The majority of animals that strand are dead or moribund (NMFS, 2007). For animals that strand alive, human intervention through medical aid and/or guidance seaward may be required for the animal to return to the sea. If unable to return to sea, rehabilitation at an appropriate facility may be determined as the best opportunity for animal survival. An event where animals are found out of their normal habitat may be considered a stranding depending on circumstances even though the animals do not necessarily end up beaching (Southall, 2006).

Three general categories can be used to describe strandings: single, mass, and unusual mortality events. The most frequent type of stranding involves only one animal (or a mother/calf pair) (NMFS, 2007).

Mass stranding involves two or more marine mammals of the same species other than a mother/calf pair (Wilkinson, 1991), and may span one or more days and range over several miles (Simmonds and Lopez-Jurado, 1991; Frantzis, 1998; Walsh et al., 2001; Freitas, 2004). In North America, only a few species typically strand in large groups of 15 or more and include sperm whales, pilot whales, false killer whales, Atlantic white-sided dolphins, white-beaked dolphins, and rough-toothed dolphins (Odell 1987, Walsh et al. 2001). Some species, such as pilot whales, false-killer whales, and melon-headed whales occasionally strand in groups of 50 to 150 or more (Geraci et al. 1999). All of these normally pelagic off-shore species are highly sociable and infrequently encountered in coastal waters. Species that commonly strand in smaller numbers include pygmy killer whales, common dolphins, bottlenose dolphins, Pacific white-sided dolphin Frasier's dolphins, gray whale and humpback whale (West Coast only), harbor porpoise, Cuvier's beaked whales, California sea lions, and harbor seals (Mazzuca et al. 1999, Norman et al. 2004, Geraci and Lounsbury 2005).

Unusual mortality events (UMEs) can be a series of single strandings or mass strandings, or unexpected mortalities (i.e., die-offs) that occur under unusual circumstances (Dierauf and Gulland, 2001; Harwood, 2002; Gulland, 2006; NMFS, 2007). These events may be interrelated: for instance, at-sea die-offs lead to increased stranding frequency over a short period of time, generally within one to two months. As published by the NMFS, revised criteria for defining a UME include (71 FR 75234, 2006):

(1) A marked increase in the magnitude or a marked change in the nature of morbidity, mortality, or strandings when compared with prior records.

(2) A temporal change in morbidity, mortality or strandings is occurring.

(3) A spatial change in morbidity, mortality or strandings is occurring.

(4) The species, age, or sex composition of the affected animals is different than that of animals that are normally affected.

(5) Affected animals exhibit similar or unusual pathologic findings, behavior patterns, clinical signs, or general physical condition (e.g., blubber thickness).

(6) Potentially significant morbidity, mortality, or stranding is observed in species, stocks or populations that are particularly vulnerable (e.g., listed as depleted, threatened or endangered or declining). For example, stranding of three or four right whales may be cause for great concern whereas stranding of a similar number of fin whales may not.

(7) Morbidity is observed concurrent with or as part of an unexplained continual decline of a marine mammal population, stock, or species.

UMEs are usually unexpected, infrequent, and may involve a significant number of marine mammal mortalities. As discussed below, unusual environmental conditions are probably responsible for most UMEs and marine mammal die-offs (Vidal and Gallo-Reynoso, 1996; Geraci et al., 1999; Walsh et al., 2001; Gulland and Hall, 2005).

F.1.2 United States Stranding Response Organization

Stranding events provide scientists and resource managers information not available from limited at-sea surveys, and may be the only way to learn key biological information about certain species such as distribution, seasonal occurrence, and health (Rankin, 1953; Moore et al., 2004; Geraci and Lounsbury, 2005). Necropsies are useful in attempting to determine a reason for the stranding, and are performed on stranded animals when the situation and resources allow.

In 1992, Congress amended the MMPA to establish the Marine Mammal Health and Stranding Response Program (MMHSRP) under authority of the NMFS. The MMHSRP was created out of concern started in the 1980s for marine mammal mortalities, to formalize the response process, and to focus efforts being initiated by numerous local stranding organizations and as a result of public concern.

Major elements of the MMHSRP include (NMFS, 2007):

- National Marine Mammal Stranding Network
- Marine Mammal UME Program

- National Marine Mammal Tissue Bank (NMMTB) and Quality Assurance Program
- Marine Mammal Health Biomonitoring, Research, and Development
- Marine Mammal Disentanglement Network
- John H. Prescott Marine Mammal Rescue Assistance Grant Program (a.k.a. the Prescott Grant Program)
- Information Management and Dissemination.

The United States has a well-organized network in coastal states to respond to marine mammal strandings. Overseen by the NMFS, the National Marine Mammal Stranding Network is comprised of smaller organizations manned by professionals and volunteers from nonprofit organizations, aquaria, universities, and state and local governments trained in stranding response animal health, and diseased investigation. Currently, 141 organizations are authorized by NMFS to respond to marine mammal strandings (National Marine Fisheries Service, 2007o). Through a National Coordinator and six regional coordinators, NMFS authorizes and oversees stranding response activities and provides specialized training for the network.

NMFS Regions and Associated States and Territories

NMFS Northeast Region- ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, VA

NMFS Southeast Region- NC, SC, GA, FL, AL, MS, LA, TX, PR, VI

NMFS Southwest Region- CA

NMFS Northwest Region- OR, WA

NMFS Alaska Region- AK

NMFS Pacific Islands Region- HI, Guam, American Samoa, Commonwealth of the Northern Mariana Islands (CNMI)

Stranding reporting and response efforts over time have been inconsistent, although effort and data quality within the U.S. have been improving within the last 20 years (NMFS, 2007). Given the historical inconsistency in response and reporting, however, interpretation of long-term trends in marine mammal stranding is difficult (NMFS, 2007). Nationwide, between 1995-2004, there were approximately 700-1500 cetacean strandings per year and between 2000-4600 pinniped strandings per year (NMFS, 2007). In Alaska from 2001-2004, there were 45-165 cetacean strandings per year and 58-125 pinniped strandings per year (NMFS, 2007). Detailed regional stranding information including most commonly stranded species can be found in Zimmerman (1991), Geraci and Lounsbury (2005), and NMFS (2007).

F.1.3 Unusual Mortality Events (UMEs)

From 1991 to the present, there have been 45 formally recognized UMEs in the U.S. The UMEs have either involved single or multiple species and dozens to hundreds of individual marine mammals per event (NOAA Fisheries, Office of Protected Resources 2008). Table F-1 contains a list of documented UMEs in and along the Pacific coast of the U.S.

Table F-1. Documented UMEs in the Pacific.

Year	Composition	Determination
2007	Guadeloupe fur seals in the Northwest	Cause not determined
2007	Large whales in California	Human Interaction
2007	Cetaceans in California	Cause not determined
2006	Harbor porpoises in the Pacific Northwest	Cause not determined
2006	Sea otters in Alaska	Cause not determined
2003	Sea otters in California	Ecological Factors
2002	Multiple species (common dolphins, California sea lion, sea otters) in California	Biotoxin
2001-2002	Hawaiian monk seals in the Northwest Hawaiian Islands	Ecological Factors
2000	Harbor seals in California	Infectious disease
2000	California sea lions in California	Biotoxin
1999/2000	Gray whales in California, Oregon and Washington	Cause not determined
1998	California sea lions in California	Harmful algal bloom; Domoic acid
1997	Harbor seals in California	Unknown infectious respiratory disease
1994	Common dolphins in California	Cause not determined
1993	Harbor seals, Steller sea lions, and California sea lions on the central Washington coast	Human Interaction
1992-1993	Pinnipeds in California	Ecological Factors
1991	California sea lions in California	Infectious disease

Source: NOAA Fisheries, Office of Protected Resources 2008

Stranding of cetaceans and pinnipeds reported to NMFS Alaska Region from 1998-2007 are summarized in Table F-2. The southcentral area includes the area from Cape Suckling to Cape Douglas and the Kodiak area follows the boundaries of the Kodiak Borough.

Strandings constituting this record were reported by fishermen, hunters, fishery observers, and other members of the public and include animals found dead (floating and beach-cast) and reports of live stranded, mass stranded, abandoned, sick or injured animals. Strandings where the animal(s) could not be examined are included in the numbers as long as the animal was at least identified as either cetacean or pinniped. Human interactions like ship strike/collisions, fishery interactions and entanglements are also included. Known subsistence takes are not included, but suspected subsistence animals are in some cases included (e.g., animals reported shot). Fishery observer reports are not included unless the animal was observed outside of statistical reporting protocols (and thus would not be included by the observer program as part of their watch data set). (NMFS, Alaska Region, Protected Resources, 2008).

Both unconfirmed and confirmed reports are included. (NMFS, Alaska Region, Protected Resources, 2008). This practice differs somewhat from strandings tabulated in the official record for other regions (such as for the Northwest Region), where a field investigation must confirm the reported stranding, however, Alaska's size, weather conditions, geography, and remote coastlines do not always allow for a field investigation/ confirmation to be a reasonable use of resources.

While the Alaska records could potentially be argued to constitute a variable record based on opportunistic reports, this data collection (sampling) method has been consistent for a decade and therefore constitutes a record that can be compared across reporting years. It is recognized that controls were not established for other important variables influencing the occurrence of strandings and/or the reporting of strandings (e.g, weather, seismic events, changes in fisheries).

Table F-2. Alaska Region Marine Mammal Strandings

Year	Cetacea – All Areas	Beaked Whales – All Areas	Cetacea – Southcentral and Kodiak Areas	Pinnipedia – All Areas	Pinnipedia – Southcentral and Kodiak Areas
1998 – 2002*	110	8	74	50	25
2003	166	1	131	81	14
2004	62	8	33	59	12
2005	63	2	30	54	20
2006	92	1	34	57	26
2007	63	0	30	54	20

Source: NMFS, Alaska Region, Protected Resources 2004; 2005; 2006; 2007; 2008

Records gathered by Zimmerman (1991) for the period between 1975 and 1987 indicate that 325 stranded cetaceans were reported for the entire state of Alaska. Prior to 1985, a centralized Federal stranding network had not been established, which limited the number of stranding reports recorded. Table F-3 details the most commonly stranded cetaceans in the Gulf of Alaska for that period.

Table F-3. Most Commonly Reported Species of Cetaceans Found Stranded in the Gulf of Alaska 1975 – 1987

Species	Number Stranded
Gray Whale	7
Beluga Whale	20
Stejneger's Beaked Whale	5
Killer Whale	6
Cuvier's Beaked Whale	5
Minke Whale	10
Bowhead Whale	0
Humpback Whale	9
Sperm Whale	4
Baird's Beaked Whale	1
Fin Whale	3
Total	70

Source: Zimmerman, 1991

F.1.4 Threats to Marine Mammals and Potential Causes for Stranding

Reports of marine mammal strandings can be traced back to ancient Greece (Walsh et al., 2001). Like any wildlife population, there are normal background mortality rates that influence marine mammal population dynamics, including starvation, predation, aging, reproductive success, and disease (Geraci et al. 1999; Carretta et al. 2007). Strandings in and of themselves may be reflective of this natural cycle or, more recently, may be the result of anthropogenic sources (i.e., human impacts). Current science suggests that multiple factors, both natural and man-made, may be acting alone or in combination to cause a marine mammal to strand (Geraci et al., 1999; Culik, 2002; Perrin and Geraci, 2002; Hoelzel, 2003; Geraci and Lounsbury, 2005; NRC, 2006). While post-stranding data collection and necropsies of dead animals are attempted in an effort to find a possible cause for the stranding, it is often difficult to pinpoint exactly one factor that can be blamed for any given stranding. An animal suffering from one ailment becomes susceptible to various other influences because of its weakened condition, making it difficult to determine a primary cause. In many stranding cases, scientists never learn the exact reason for the stranding.

Specific potential stranding causes can include both natural and human influenced (anthropogenic) causes listed below and described in the following sections:

Natural Stranding Causes
- Disease
- Natural toxins
- Weather and climatic influences
- Navigation errors
- Social cohesion
- Predation

Human Influenced (Anthropogenic) Stranding Causes
- Fisheries interaction
- Vessel strike
- Pollution and ingestion
- Noise

F.1.4.1 Natural Stranding Causes

Significant natural causes of mortality, die-offs, and stranding discussed below include disease and parasitism; marine neurotoxins from algae; navigation errors that lead to inadvertent stranding; and climatic influences that impact the distribution and abundance of potential food resources (i.e., starvation). Other natural mortality not discussed in detail includes predation by other species such as sharks (Cockcroft et al., 1989; Heithaus, 2001), killer whales (Constantine et al. 1998; Guinet et al. 2000; Pitman et al. 2001), and some species of pinniped (Hiruki et al. 1999; Robinson et al. 1999).

Disease

Like other mammals, marine mammals frequently suffer from a variety of diseases of viral, bacterial, parasitic, and fungal origin (Visser et al. 1991; Dunn et al. 2001; Harwood 2002). Gulland and Hall (2005) provide a more detailed summary of individual and population effects of marine mammal diseases.

Microparasites such as bacteria, viruses, and other microorganisms are commonly found in marine mammal habitats and usually pose little threat to a healthy animal (Geraci et al. 1999). For example, long-finned pilot whales that inhabit the waters off of the northeastern coast of the U.S. are carriers of the morbillivirus, yet have grown resistant to its usually lethal effects (Geraci et al. 1999). Since the 1980s, however, virus infections have been strongly associated with marine mammal die-offs (Domingo et al., 1992; Geraci and Lounsbury, 2005). Morbillivirus is the most significant marine mammal virus and suppresses a host's immune system, increasing risk of secondary infection (Harwood 2002). A bottlenose dolphin UME in 1993 and 1994 was caused by infectious disease. Die-offs ranged from northwestern Florida to Texas, with an increased number of deaths as it spread (NMFS 2007c). A 2004 UME in Florida was also associated with dolphin morbillivirus (NMFS 2004). Influenza A was responsible for the first reported mass mortality in the U.S., occurring along the coast of New England in 1979-1980 (Geraci et al. 1999; Harwood 2002). Canine distemper virus (a type of morbillivirus) has been responsible for large scale pinniped mortalities and die-offs (Grachev et al. 1989; Kennedy et al., 2000; Gulland and Hall, 2005), while a bacteria, *Leptospira pomona*, is responsible for periodic die-offs in California sea lions about every four years (Gulland et al. 1996; Gulland and Hall 2005). It is difficult to determine whether microparasites commonly act as a primary pathogen, or whether they show up as a secondary infection in an already weakened animal (Geraci et al. 1999). Most marine mammal die-offs from infectious disease in the last 25 years, however, have had viruses associated with them (Simmonds and Mayer 1997; Geraci et al. 1999; Harwood 2002).

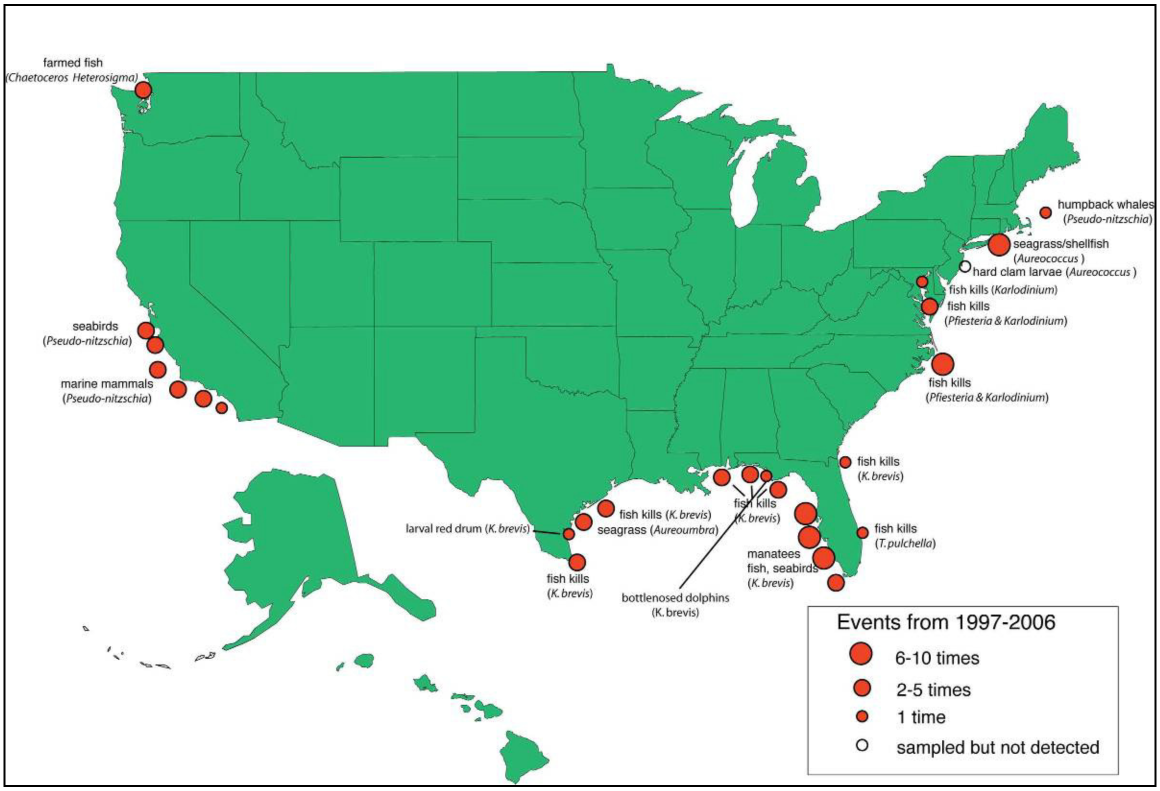
Macroparasites are usually large parasitic organisms and include lungworms, trematodes (parasitic flatworms), and protozoans (Geraci and St. Aubin 1987; Geraci et al. 1999). Marine mammals can carry many different types, and have shown a robust tolerance for sizeable infestation unless compromised by illness, injury, or starvation (Morimitsu et al. 1987; Dailey et al. 1991; Geraci et al., 1999). Nasitrema, a usually benign trematode found in the head sinuses of cetaceans (Geraci et al. 1999), can cause brain damage if it migrates (Ridgway and Dailey 1972). As a result, this worm is one of the few directly linked to stranding in the cetaceans (Dailey and Walker 1978; Geraci et al. 1999).

Non-infectious disease, such as congenital bone pathology of the vertebral column (osteomyelitis, spondylosis deformans, and ankylosing spondylitis [AS]), has been described in several species of cetacean (Paterson 1984; Alexander et al. 1989; Kompanje 1995; Sweeny et al. 2005). In humans, bone pathology such as AS, can impair mobility and increase vulnerability to further spinal trauma (Resnick and Niwayama 2002). Bone pathology has been found in cases of single strandings (Paterson 1984; Kompanje 1995), and also in cetaceans prone to mass stranding (Sweeny et al. 2005), possibly acting as a contributing or causal influence in both types of events.

Naturally Occurring Marine Neurotoxins

Some single cell marine algae common in coastal waters, such as dinoflagellates and diatoms, produce toxic compounds that can accumulate (termed bioaccumulation) in the flesh and organs of fish and invertebrates (Geraci et al. 1999; Harwood 2002). Marine mammals become exposed to these compounds when they eat prey contaminated by these naturally produced toxins although exposure can also occur through inhalation and skin contact (Van Dolah 2005). Figure F-1 shows U.S. animal mortalities from 1997-2006 resulting from toxins produced during harmful algal blooms.

In the Gulf of Mexico and mid- to southern Atlantic states, “red tides,” a form of harmful algal bloom, are created by a dinoflagellate (*Karenia brevis*). *K. brevis* is found throughout the Gulf of Mexico and sometimes along the Atlantic coast (Van Dolah 2005; NMFS 2007). It produces a neurotoxin known as brevetoxin. Brevetoxin has been associated with several marine mammal UMEs within this area (Geraci 1989; Van Dolah et al. 2003; NMFS 2004; Flewelling et al. 2005; Van Dolah 2005; NMFS 2007). On the U.S. West Coast and in the northeast Atlantic, several species of diatoms produce a toxin called domoic acid which has also been linked to marine mammal strandings (Geraci et al. 1999; Van Dolah et al. 2003; Greig et al. 2005; Van Dolah 2005; Brodie et al. 2006; NMFS 2007; Bargu et al. 2008; Goldstein et al. 2008). Other algal toxins associated with marine mammal strandings include saxitoxins and ciguatoxins and are summarized by Van Dolah (2005).



Source: Woods Hole Oceanographic Institute (WHO) http://www.whoi.edu/redtide/HABdistribution/HABmap.html

Figure F-1. Animal Mortalities from Harmful Algal Blooms within the U.S., 1997-2006.

Weather events and climate influences

Severe storms, hurricanes, typhoons, and prolonged temperature extremes may lead to localized marine mammal strandings (Geraci et al., 1999; Walsh et al. 2001). Hurricanes may have been responsible for mass strandings of pygmy killer whales in the British Virgin Islands and Gervais' beaked whales in North Carolina (Mignucci-Giannoni et al. 2000; Norman and Mead 2001). Storms in 1982-1983 along the California coast led to deaths of 2,000 northern elephant seal pups (Le Boeuf and Reiter 1991). Ice movement along southern Newfoundland has forced groups of blue whales and white-beaked dolphins ashore (Sergeant 1982). Seasonal oceanographic conditions in terms of weather, frontal systems, and local currents may also play a role in stranding (Walker et al. 2005).

The effect of large scale climatic changes to the world's oceans and how these changes impact marine mammals and influence strandings is difficult to quantify given the broad spatial and temporal scales involved, and the cryptic movement patterns of marine mammals (Moore 2005; Learmonth et al. 2006). The most immediate, although indirect, effect is decreased prey availability during unusual conditions. This, in turn, results in increased search effort required by marine mammals (Crocker et al. 2006), potential starvation if not successful, and corresponding stranding due directly to starvation or succumbing to disease or predation while in a more weakened, stressed state (Selzer and Payne 1988; Geraci et al. 1999; Moore 2005; Learmonth et al. 2006; Weise et al. 2006).

Two recent papers examined potential influences of climate fluctuation on stranding events in southern Australia, including Tasmania, an area with a history of more than 20 mass stranding since the 1920s (Evans et al., 2005; Bradshaw et al. 2006). These authors note that patterns in animal migration, survival, fecundity, population size, and strandings will revolve around the availability and distribution of food resources. In southern Australia, movement of nutrient-rich waters pushed closer to shore by periodic meridinal winds (occurring about every 12 to 14 years) may be responsible for bringing marine mammals closer to land, thus increasing the probability of stranding (Bradshaw et al. 2006). The papers conclude, however, that while an overarching model can be helpful for providing insight into the prediction of strandings, the particular reasons for each one are likely to be quite varied.

Navigation Error

Geomagnetism - It has been hypothesized that, like some land animals, marine mammals may be able to orient to the Earth's magnetic field as a navigational cue, and that areas of local magnetic anomalies may influence strandings (Bauer et al. 1985; Klinowska 1985; Kirschvink et al. 1986; Klinowska, 1986; Walker et al. 1992; Wartzok and Ketten 1999). In a plot of live stranding positions in Great Britain with magnetic field maps, Klinowska (1985; 1986) observed an association between live stranding positions and magnetic field levels. In all cases, live strandings occurred at locations where magnetic minima, or lows in the magnetic fields, intersect the coastline. Kirschvink et al. (1986) plotted stranding locations on a map of magnetic data for the East Coast of the U.S., and were able to develop associations between stranding sites and locations where magnetic minima intersected the coast. The authors concluded that there were highly significant tendencies for cetaceans to beach themselves near these magnetic minima and coastal intersections. The results supported the hypothesis that cetaceans may have a magnetic sensory system similar to other migratory animals, and that marine magnetic topography and patterns may influence long-distance movements (Kirschvink et al. 1986). Walker et al. (1992) examined fin whale swim patterns off the northeastern U.S. continental shelf, and reported that migrating animals aligned with lows in the geometric gradient or intensity. While a similar pattern between magnetic features and marine mammal strandings at New Zealand stranding sites was not seen (Brabyn and Frew, 1994), mass strandings in Hawaii typically were found to occur within a narrow range of magnetic anomalies (Mazzuca et al. 1999).

Echolocation Disruption in Shallow Water - Some researchers believe stranding may result from reductions in the effectiveness of echolocation within shallow water, especially with the pelagic species of odontocetes that may be less familiar with coastline (Dudok van Heel 1966; Chambers and James 2005). For an odontocete, echoes from echolocation signals contain important information on the location and identity of underwater objects and the shoreline. The authors postulate that the gradual slope of a beach may present difficulties to the navigational systems of some cetaceans, since it is common for live strandings to occur along beaches with shallow, sandy gradients (Brabyn and McLean, 1992; Mazzuca et al., 1999; Maldini et al., 2005; Walker et al., 2005). A contributing factor to echolocation interference in turbulent, shallow water is the presence of microbubbles from the interaction of wind, breaking waves, and currents. Additionally, ocean water near the shoreline can have an increased turbidity (e.g., floating sand or silt, particulate plant matter, etc.) due to the run-off of fresh water into the ocean, either from rainfall or from freshwater outflows (e.g., rivers and creeks). Collectively, these factors can reduce and scatter the sound energy within echolocation signals and reduce the perceptibility of returning echoes of interest.

Social Cohesion

Many pelagic species such as sperm whale, pilot whales, melon-head whales, and false killer whales, and some dolphins occur in large groups with strong social bonds between individuals. When one or more animals strand due to any number of causative events, then the entire pod may follow suit out of social cohesion (Geraci et al. 1999; Conner 2000; Perrin and Geraci 2002; NMFS 2007).

F.1.4.2 Anthropogenic Stranding Causes and Potential Risks

With the exception of historic whaling in the 19th and early part of the 20th century, over the past few decades there has been an increase in marine mammal mortalities associated with a variety of human activities (Geraci et al. 1999; NMFS 2007). These include fisheries interactions (bycatch and directed catch), pollution (marine debris, toxic compounds), habitat modification (degradation, prey reduction), direct trauma (vessel strikes, gunshots), and noise. Figure F-2 shows potential worldwide risk to small toothed cetaceans by source.

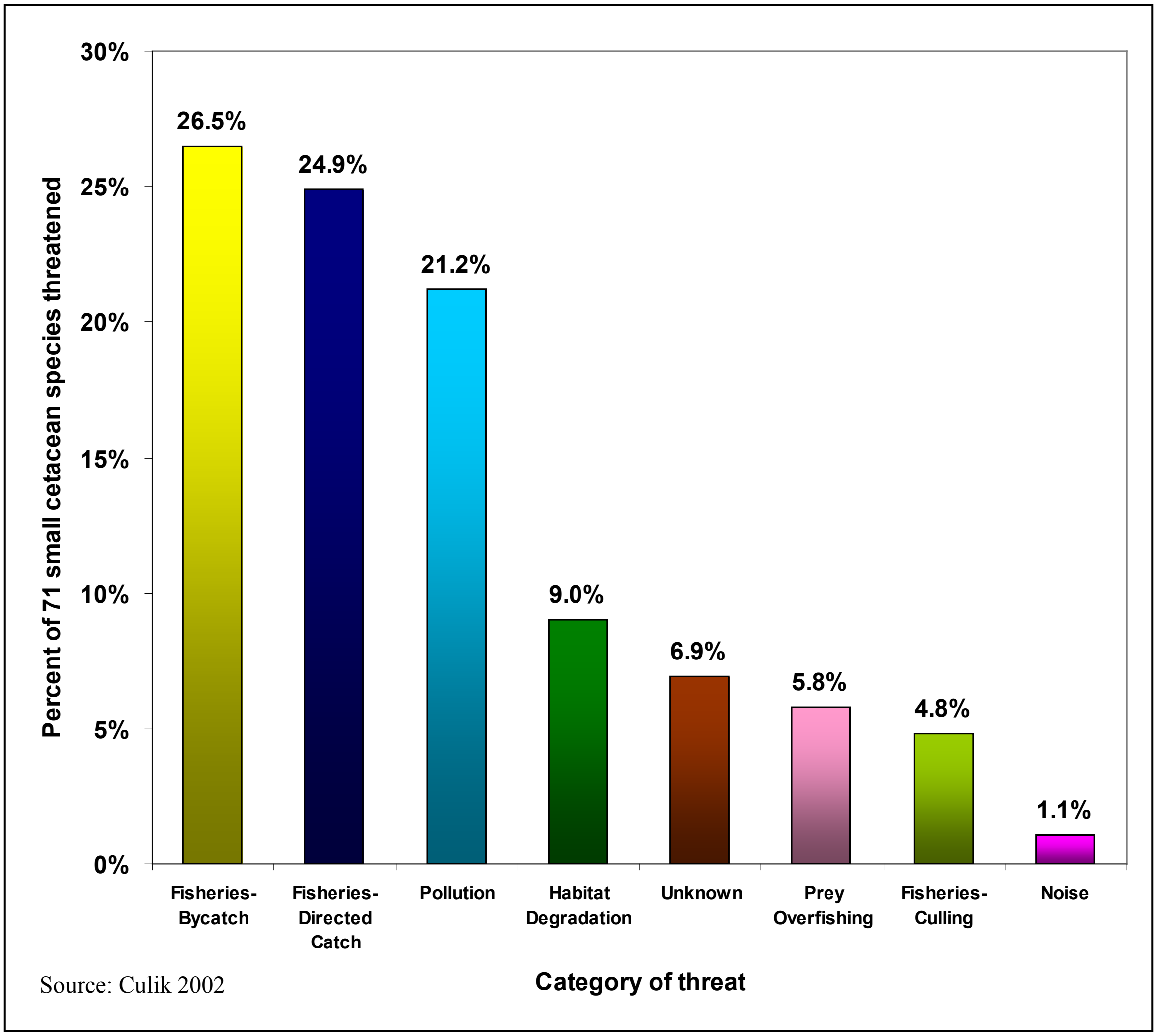


Figure F-2. Human Threats to World Wide Small Cetacean Populations

<u>Fisheries Interaction: By-Catch, Directed Catch, and Entanglement</u>

The incidental catch of marine mammals in commercial fisheries is a significant threat to the survival and recovery of many populations of marine mammals (Geraci et al.,1999; Baird 2002; Culik 2002; Carretta et al. 2004; Geraci and Lounsbury 2005; NMFS 2007). Interactions with fisheries and entanglement in discarded or lost gear continue to be a major factor in marine mammal deaths worldwide (Geraci et al. 1999; Nieri et al. 1999; Geraci and Lounsbury 2005; Read et al. 2006; Zeeber et al. 2006). For instance, baleen whales and pinnipeds have been found entangled in nets, ropes, monofilament line, and other fishing gear that has been discarded out at sea (Geraci et al. 1999; Campagna et al. 2007).

Bycatch - Bycatch is the catching of non-target species within a given fishing operation and can include non-commercially used invertebrates, fish, sea turtles, birds, and marine mammals (NRC 2006). Read et al. (2006) attempted to estimate the magnitude of marine mammal bycatch in U.S. and global fisheries. Data on marine mammal bycatch within the United States was obtained from fisheries observer programs, reports of entangled stranded animals, and fishery logbooks, and was then extrapolated to estimate global bycatch by using the ratio of U.S. fishing vessels to the total number of vessels within the world's fleet (Read et al., 2006). Within U.S. fisheries, between 1990 and 1999 the mean annual bycatch of marine mammals was 6,215 animals, with a standard error of +/- 448 (Read et al., 2006). Eight-four percent of cetacean bycatch occurred in gill-net fisheries, with dolphins and porpoises constituting most of the cetacean bycatch (Read et al., 2006). Over the decade there was a 40 percent decline in marine mammal bycatch, which was significantly lower from 1995-1999 than it was from 1990-1994 (Read et al., 2006). Read et al., (2006) suggests that this is primarily due to effective conservation measures that were implemented during this period.

Read et al. (2006) then extrapolated this data for the same time period and calculated an annual estimate of 653,365 of marine mammals globally, with most of the world's bycatch occurring in gill-net fisheries. With global marine mammal bycatch likely to be in the hundreds of thousands every year, bycatch in fisheries is the single greatest threat to many marine mammal populations around the world (Read et al., 2006).

Entanglement - Entanglement in active fishing gear is a major cause of death or severe injury among the endangered whales in the action area. Entangled marine mammals may die as a result of drowning, escape with pieces of gear still attached to their bodies, manage to be set free either of their own accord, or are set free by fishermen. Many large whales carry off gear after becoming entangled (Read et al., 2006). Many times when a marine mammal swims off with gear attached, the end result can be fatal. The gear may be become too cumbersome for the animal or it can be wrapped around a crucial body part and tighten over time. Stranded marine mammals frequently exhibit signs of previous fishery interaction, such as scarring or gear attached to their bodies, and the cause of death for many stranded marine mammals is often attributed to such interactions (Baird and Gorgone, 2005). Because marine mammals that die or are injured in fisheries may not wash ashore and because not all animals that do wash ashore exhibit clear signs of interactions, stranding data probably underestimate fishery-related mortality and serious injury (NMFS 2005a)

From 1993 through 2003, 1,105 harbor porpoises were reported stranded from Maine to North Carolina, many of which had cuts and body damage suggestive of net entanglement (NMFS 2005e). In 1999 it was possible to determine that the cause of death for 38 of the stranded porpoises was from fishery interactions, with one additional animal having been mutilated (right flipper and fluke cut off) (NMFS 2005e). In 2000, one stranded porpoise was found with monofilament line wrapped around its body (NMFS 2005e). In 2003, nine stranded harbor porpoises were attributed to fishery interactions, with an additional three mutilated animals (NMFS 2005e). An estimated 78 baleen whales were killed annually in the offshore Southern California/Oregon drift gillnet fishery during the 1980s (Heyning and Lewis 1990). From 1998-2005, based on observer records, five fin whales (CA/OR/WA stock), 12 humpback whales (ENP stock), and six sperm whales (CA/OR/WA stock) were either seriously injured or killed in fisheries off the mainland West Coast of the U.S. (California Marine Mammal Stranding Network Database 2006).

Ship Strike

Vessel strikes to marine mammals are another cause of mortality and stranding (Laist et al., 2001; Geraci and Lounsbury 2005; de Stephanis and Urquiola, 2006). An animal at the surface could be struck directly by a vessel, a surfacing animal could hit the bottom of a vessel, or an animal just below the surface could be cut by a vessel's propeller. The severity of injuries typically depends on the size and speed of the vessel (Knowlton and Kraus, 2001; Laist et al., 2001; Vanderlaan and Taggart, 2007).

An examination of all known ship strikes from all shipping sources (civilian and military) indicates vessel speed is a principal factor in whether a vessel strike results in death (Knowlton and Kraus, 2001; Laist et al., 2001, Jensen and Silber, 2003; Vanderlaan and Taggart, 2007). In assessing records in which vessel speed was known, Laist et al. (2001) found a direct relationship between the occurrence of a whale strike and the speed of the vessel involved in the collision. The authors concluded that most deaths occurred when a vessel was traveling in excess of 13 knots although most vessels do travel greater than 15 knots. Jensen and Silber (2003) detailed 292 records of known or probable ship strikes of all large whale species from 1975 to 2002. Of these, vessel speed at the time of collision was reported for 58 cases. Of these cases, 39 (or 67 percent) resulted in serious injury or death (19 or 33 percent resulted in serious injury as determined by blood in the water, propeller gashes or severed tailstock, and fractured skull, jaw, vertebrae, hemorrhaging, massive bruising or other injuries noted during necropsy and 20 or 35% resulted in death). Operating speeds of vessels that struck various species of large whales ranged from 2 to 51 knots. The majority (79 percent) of these strikes occurred at speeds of 13 knots or greater. The average speed that resulted in serious injury or death was 18.6 knots. Pace and Silber (2005) found that the probability of death or serious injury increased rapidly with increasing vessel speed. Specifically, the predicted probability of serious injury or death increased from 45 percent to 75 % as vessel speed increased from 10 to 14 knots, and exceeded 90% at 17 knots. Higher speeds during collisions result in greater force of impact, but higher speeds also appear to increase the chance of severe injuries or death by pulling whales toward the vessel. Computer simulation modeling showed that hydrodynamic forces pulling whales toward the vessel hull increase with increasing speed (Clyne, 1999; Knowlton et al., 1995).

The growth in civilian commercial ports and associated commercial vessel traffic is a result in the globalization of trade. The Final Report of the NOAA International Symposium on “Shipping Noise and Marine Mammals: A Forum for Science, Management, and Technology” stated that the worldwide commercial fleet has grown from approximately 30,000 vessels in 1950 to more than 85,000 vessels in 1998 (NRC, 2003; Southall, 2005). Between 1950 and 1998, the U.S. flagged fleet declined from approximately 25,000 to fewer than 15,000 and currently represents only a small portion of the world fleet. From 1985 to 1999, world seaborne trade doubled to 5 billion tons and currently includes 90 percent of the total world trade, with container shipping movements representing the largest volume of seaborne trade. It is unknown how international shipping volumes and densities will continue to grow. However, current statistics support the prediction that the international shipping fleet will continue to grow at the current rate or at greater rates in the future. Shipping densities in specific areas and trends in routing and vessel design are as, or more, significant than the total number of vessels. Densities along existing coastal routes are expected to increase both domestically and internationally. New routes are also expected to develop as new ports are opened and existing ports are expanded. Vessel propulsion systems are also advancing toward faster ships operating in higher sea states for lower operating costs; and container ships are expected to become larger along certain routes (Southall 2005).

While there are reports and statistics of whales struck by vessels in U.S. waters, the magnitude of the risks of commercial ship traffic poses to marine mammal populations is difficult to quantify or estimate. In addition, there is limited information on vessel strike interactions between ships and marine mammals outside of U.S. waters (de Stephanis and Urquiola 2006). Laist et al. (2001) concluded that ship collisions may have a negligible effect on most marine mammal populations in general, except for regional based small populations where the significance of low numbers of collisions would be greater given smaller populations or populations segments.

U.S. Navy vessel traffic is a small fraction of the overall U.S. commercial and fishing vessel traffic. While U.S. Navy vessel movements may contribute to the ship strike threat, given the lookout and mitigation measures adopted by the U.S. Navy, probability of vessel strikes is greatly reduced. Furthermore, actions to avoid close interaction of U.S. Navy ships and marine mammals and sea turtles, such as maneuvering to keep away from any observed marine mammal and sea turtle are part of existing at-sea protocols and standard operating procedures. Navy ships have up to three or more dedicated and trained lookouts as well as two to three bridge watchstanders during at-sea movements who would be searching for any whales, sea turtles, or other obstacles on the water surface. Such lookouts are expected to further reduce the chances of a collision.

Commercial and Private Marine Mammal Viewing

In addition to vessel operations, private and commercial vessels engaged in marine mammal watching also have the potential to impact marine mammals in Southern California. NMFS has promulgated regulations at 50 CFR 224.103, which provide specific prohibitions regarding wildlife viewing activities. In addition, NMFS launched an education and outreach campaign to provide commercial operators and the general public with responsible marine mammal viewing guidelines. In January 2002, NMFS also published an official policy on human interactions with wild marine mammals which states: "NOAA Fisheries cannot support, condone, approve or authorize activities that involve closely approaching, interacting or attempting to interact with whales, dolphins, porpoises, seals, or sea lions in the wild. This includes attempting to swim, pet, touch or elicit a reaction from the animals."

Although considered by many to be a non-consumptive use of marine mammals with economic, recreational, educational, and scientific benefits, marine mammal watching is not without potential negative impacts. One concern is that animals become more vulnerable to vessel strikes once they habituate to vessel traffic (Swingle et al. 1993; Wiley et al. 1995). Another concern is that preferred habitats may be abandoned if disturbance levels are too high. A whale's behavioral response to whale watching vessels depends on the distance of the vessel from the whale, vessel speed, vessel direction, vessel noise, and the number of vessels (Amaral and Carlson 2005; Au and Green 2000; Cockeron 1995; Erbe 2002; Felix 2001; Magalhaes et al. 2002; Richter et al. 2003; Schedat et al. 2004; Simmonds 2005; Watkins 1986; Williams et al. 2002). The whale's responses changed with these different variables and, in some circumstances, the whales did not respond to the vessels, but in other circumstances, whales changed their vocalizations surface time, swimming speed, swimming angle or direction, respiration rates, dive times, feeding behavior, and social interactions. In addition to the information on whale watching, there is also direct evidence of pinniped haul out site (Pacific harbor seals) abandonment because of human disturbance at Strawberry Spit in San Francisco Bay (Allen 1991).

Ingestion of Plastic Objects and Other Marine Debris and Toxic Pollution Exposure

For many marine mammals, debris in the marine environment is a great hazard and can be harmful to wildlife. Not only is debris a hazard because of possible entanglement, animals may mistake plastics and other debris for food (NMFS, 2007g). U.S. Navy vessels have a zero-plastic discharge policy and return all plastic waste to appropriate disposition on shore.

There are certain species of cetaceans, along with Florida manatees, that are more likely to eat trash, especially plastics, which is usually fatal for the animal (Geraci et al. 1999). From 1990 through October 1998, 215 pygmy sperm whales stranded along the U.S. Atlantic Coast from New York through the Florida Keys (NMFS 2005a). Remains of plastic bags and other debris were found in the stomachs of 13 of these animals (NMFS 2005a). During the same period, 46 dwarf sperm whale strandings occurred along the U.S. Atlantic coastline between Massachusetts and the Florida Keys (NMFS 2005d). In 1987 a pair of latex examination gloves was retrieved from the stomach of a stranded dwarf sperm whale (NMFS 2005d). One hundred twenty-five pygmy sperm whales were reported stranded from 1999 to 2003 between Maine and Puerto Rico; in one pygmy sperm whale found stranded in 2002, red plastic debris was found in the stomach along with squid beaks (NMFS 2005a).

Sperm whales have been known to ingest plastic debris, such as plastic bags (Evans et al. 2003; Whitehead 2003). While this has led to mortality, the scale to which this is affecting sperm whale populations is unknown, but Whitehead (2003) suspects it is not substantial at this time.

High concentrations of potentially toxic substances within marine mammals along with an increase in new diseases have been documented in recent years. Scientists have begun to consider the possibility of a link between pollutants and marine mammal mortality events. NMFS takes part in a marine mammal bio-monitoring program not only to help assess the health and contaminant loads of marine mammals, but also to assist in determining anthropogenic impacts on marine mammals, marine food chains and marine ecosystem health. Using strandings and bycatch animals, the program provides tissue/serum archiving, samples for analyses, disease monitoring and reporting, and additional response during disease investigations (NMFS 2007).

The impacts of these activities are difficult to measure. However, some researchers have correlated contaminant exposure to possible adverse health effects in marine mammals. Contaminants such as organochlorines do not tend to accumulate in significant amounts in invertebrates, but do accumulate in fish and fish-eating animals. Thus, contaminant levels in planktivorous mysticetes have been reported to be one to two orders of magnitude lower compared to piscivorous odontocetes (Borell 1993; O'Shea and Brownell 1994; O'Hara and Rice 1996; O'Hara et al. 1999).

The manmade chemical PCB (polychlorinated biphenyl), and the pesticide DDT (dichlorodiphyenyltrichloroethane), are both considered persistent organic pollutants that are currently banned in the United States for their harmful effects in wildlife and humans (NMFS, 2007c). Despite having been banned for decades, the levels of these compounds are still high in marine mammal tissue samples taken along U.S. coasts (NMFS, 2007c). Both compounds are long-lasting, reside in marine mammal fat tissues (especially in the blubber), and can be toxic causing effects such as reproductive impairment and immunosuppression (NMFS, 2007c).

Both long-finned and short-finned pilot whales have a tendency to mass strand throughout their range. Short-finned pilot whales have been reported as stranded as far north as Rhode Island, and long-finned pilot whales as far south as South Carolina (NMFS 2005b). For U.S. East Coast stranding records, both species are lumped together and there is rarely a distinction between the two because of uncertainty in species identification (NMFS 2005b). Since 1980 within the Northeast region alone, between 2 and 120 pilot whales have stranded annually either individually or in groups (NMFS 2005b). Between 1999 and 2003 from Maine to Florida, 126 pilot whales were reported stranded, including a mass stranding of 11 animals in 2000 and another mass stranding of 57 animals in 2002, both along the Massachusetts coast (NMFS 2005b).

It is unclear how much of a role human activities play in these pilot whale strandings, and toxic poisoning may be a potential human-caused source of mortality for pilot whales (NMFS, 2005b). Moderate levels of PCBs and chlorinated pesticides (such as DDT, DDE, and dieldrin) have been found in pilot whale blubber (NMFS 2005b). Bioaccumulation levels have been found to be more similar in whales from the same stranding event than from animals of the same age or sex (NMFS 2005b). Numerous studies have measured high levels of toxic metals (mercury, lead, and cadmium), selenium, and PCBs in pilot whales in the Faroe Islands (NMFS 2005b). Population effects resulting from such high contamination levels are currently unknown (NMFS 2005b).

Habitat contamination and degradation may also play a role in marine mammal mortality and strandings. Some events caused by man have direct and obvious effects on marine mammals, such as oil spills (Geraci et al. 1999). But in most cases, effects of contamination will more than likely be indirect in nature, such as effects on prey species availability, or by increasing disease susceptibility (Geraci et al. 1999).

U.S. Navy vessel operation between ports and exercise locations has the potential for release of small amounts of pollutant discharges into the water column. U.S. Navy vessels are not a typical source, however, of either pathogens or other contaminants with bioaccumulation potential such as pesticides and

PCBs. Furthermore, any vessel discharges such as bilge water and deck runoff associated with the vessels would be in accordance with international and U.S. requirements for eliminating or minimizing discharges of oil, garbage, and other substances, and not likely to contribute significant changes to ocean water quality.

Deep Water Ambient Noise

Urick (1983) provided a discussion of the ambient noise spectrum expected in the deep ocean. Shipping, seismic activity, and weather, are the primary causes of deep-water ambient noise. The ambient noise frequency spectrum can be predicted fairly accurately for most deep-water areas based primarily on known shipping traffic density and wind state (wind speed, Beaufort wind force, or sea state) (Urick 1983). For example, for frequencies between 100 and 500 Hz, Urick (1983) estimated the average deep water ambient noise spectra to be 73 to 80 dB for areas of heavy shipping traffic and high sea states, and 46 to 58 dB for light shipping and calm seas.

Shallow Water Ambient Noise

In contrast to deep water, ambient noise levels in shallow waters (i.e., coastal areas, bays, harbors, etc.) are subject to wide variations in level and frequency depending on time and location. The primary sources of noise include distant shipping and industrial activities, wind and waves, marine animals (Urick 1983). At any give time and place, the ambient noise is a mixture of all of these noise variables. In addition, sound propagation is also affected by the variable shallow water conditions, including the depth, bottom slope, and type of bottom. Where the bottom is reflective, the sounds levels tend to be higher, than when the bottom is absorptive.

Noise from Aircraft and Vessel Movement

Surface shipping is the most widespread source of anthropogenic, low frequency (0 to 1,000 Hz) noise in the oceans and may contribute to over 75 percent of all human sound in the sea (Simmonds and Hutchinson 1996, ICES 2005b). Ross (1976) has estimated that between 1950 and 1975, shipping had caused a rise in ambient noise levels of 10 dB. He predicted that this would increase by another 5 dB by the beginning of the 21st century. The National Resource Council (1997) estimated that the background ocean noise level at 100 Hz has been increasing by about 1.5 dB per decade since the advent of propeller-driven ships. Michel et al. (2001) suggested an association between long-term exposure to low frequency sounds from shipping and an increased incidence of marine mammal mortalities caused by collisions with ships.

Sound from a low-flying helicopter or airplane may be heard by marine mammals and turtles while at the surface or underwater. Due to the transient nature of sounds from aircraft involved in at-sea operations, such sounds would not likely cause physical effects but have the potential to affect behaviors. Responses by mammals and turtles could include hasty dives or turns, or decreased foraging (Soto et al., 2006). Whales may also slap the water with flukes or flippers or swim away from the aircraft track.

Sound emitted from large vessels, particularly in the course of transit, is the principal source of noise in the ocean today, primarily due to the properties of sound emitted by civilian cargo vessels (Richardson et al., 1995; Arveson and Vendittis, 2000). Ship propulsion and electricity generation engines, engine gearing, compressors, bilge and ballast pumps, as well as hydrodynamic flow surrounding a ship's hull and any hull protrusions contribute to a large vessels' noise emission into the marine environment. Propeller-driven vessels also generate noise through cavitation, which accounts for much of the noise emitted by a large vessel depending on its travel speed. Military vessels underway or involved in naval operations or exercises, also introduce anthropogenic noise into the marine environment. Noise emitted by large vessels can be characterized as low-frequency, continuous, and tonal. The sound pressure levels at the vessel will vary according to speed, burden, capacity and length (Richardson et al. 1995; Arveson and Vendittis, 2000). Vessels ranging from 135 to 337 meters generate peak source sound levels from 169 to 200 dB between 8 Hz and 430 Hz, although Arveson and Vendittis (2000) documented components of higher frequencies (10-30 kHz) as a function of newer merchant ship engines and faster transit speeds.

Whales have variable responses to vessel presence or approaches, ranging from apparent tolerance to diving away. Unfortunately, it is not always possible to determine whether the whales are responding to the vessel itself or the noise generated by the engine and cavitation around the propeller. Apart from some disruption of behavior, an animal may be unable to hear other sounds in the environment due to masking by the noise from the vessel. Any masking of environmental sounds or conspecific sounds is expected to be temporary, as noise dissipates with a vessel transit through an area.

Vessel noise primarily raises concerns for masking of environmental and conspecific cues. However, exposure to vessel noise of sufficient intensity and/or duration can also result in temporary or permanent loss of sensitivity at a given frequency range, referred to as temporary or permanent threshold shifts (TTS or PTS). Threshold shifts are assumed to be possible in marine mammal species as a result of prolonged exposure to large vessel traffic noise due to its intensity, broad geographic range of effectiveness, and constancy.

Collectively, significant cumulative exposure to individuals, groups, or populations can occur if they exhibit site fidelity to a particular area; for example, whales that seasonally travel to a regular area to forage or breed may be more vulnerable to noise from large vessels compared to transiting whales. Any permanent threshold shift in a marine animal's hearing capability, especially at particular frequencies for which it can normally hear best, can impair its ability to perceive threats, including ships. Whales have variable responses to vessel presence or approaches, ranging from apparent tolerance to diving away from a vessel. It is not possible to determine whether the whales are responding to the vessel itself or the noise generated by the engine and cavitation around the propeller. Apart from some disruption of behavior, an animal may be unable to hear other sounds in the environment due to masking by the noise from the vessel.

Most observations of behavioral responses of marine mammals to human generated sounds have been limited to short-term behavioral responses, which included the cessation of feeding, resting, or social interactions. Nowacek et al. (2007) provide a detailed summary of cetacean response to underwater noise.

Given the sound propagation of low frequency sounds, a large vessel in this sound range can be heard 139 to 463 kilometers away (Ross, 1976 in Polefka, 2004). U.S. Navy vessels, however, have incorporated significant underwater ship quieting technology to reduce their acoustic signature (compared to a similarly sized vessel) in order to reduce their vulnerability to detection by enemy passive acoustics (Southall, 2005). Therefore, the potential for TTS or PTS from U.S. Navy vessel and aircraft movement is extremely low given that the exercises and training events are transitory in time, with vessels moving over large area of the ocean. A marine mammal or sea turtle is unlikely to be exposed long enough at high levels for TTS or PTS to occur. Any masking of environmental sounds or conspecific sounds is expected to be temporary, as noise dissipates with a U.S. Navy vessel transiting through an area. If behavioral disruptions result from the presence of aircraft or vessels, it is expected to be temporary. Animals are expected to resume their migration, feeding, or other behaviors without any threat to their survival or reproduction. However, if an animal is aware of a vessel and dives or swims away, it may successfully avoid being struck.

F.1.5 Stranding Events Associated with Navy Sonar

There are two classes of sonars employed by the U.S. Navy: active sonars and passive sonars. Most active military sonars operate in a limited number of areas, and are most likely not a significant contributor to a comprehensive global ocean noise budget (ICES, 2005b).

The effects of mid-frequency active naval sonar on marine wildlife have not been studied as extensively as the effects of air-guns used in seismic surveys (Madsen et al., 2006; Stone and Tasker, 2006; Wilson et al., 2006; Palka and Johnson, 2007; Parente et al., 2007). Maybaum (1989, 1993) observed changes in behavior of humpbacks during playback tapes of the M-1002 system (using 203 dB re 1 µPa-m for study); specifically, a decrease in respiration, submergence, and aerial behavior rates; and an increase in speed of travel and track linearity. Direct comparison of Maybaum's results, however, with U.S Navy mid-frequency active sonar are difficult to make. Maybaum's signal source, the commercial M-1002, operated differently from naval mid-frequency sonar. In addition, behavioral responses were observed during playbacks of a control tape, (i.e. a tape with no sound signal) so interpretation of Maybaum's results are inconclusive.

Research by Nowacek, et al. (2004) on North Atlantic right whales using a whale alerting signal designed to alert whales to human presence suggests that received sound levels of only 133 to 148 pressure level (decibel [dB] re 1 microPascals [µPa]) for the duration of the sound exposure may disrupt feeding behavior. The authors did note, however, that within minutes of cessation of the source, a return to normal behavior would be expected. Direct comparison of the Nowacek et al. (2004) sound source to MFA sonar, however, is not possible given the radically different nature of the two sources. Nowacek et al.'s source was a series of non-sonar like sounds designed to purposely alert the whale, lasting several minutes, and covering a broad frequency band. Direct differences between Nowacek et al. (2004) and MFA sonar is summarized below from Nowacek et al. (2004) and Nowacek et al. (2007):

(1) Signal duration: Time difference between the two signals is significant, 18-minute signal used by Nowacek et al. versus < 1 sec for MFA sonar.

(2) Frequency modulation: Nowacek et al. contained three distinct signals containing frequency modulated sounds:

1st - alternating 1-sec pure tone at 500 and 850 Hz

2nd - 2-sec logarithmic down-sweep from 4500 to 500 Hz

3rd - pair of low-high (1500 and 2000 Hz) sine wave tones amplitude modulated at 120 Hz

(3) Signal-to-noise ratio: Nowacek et al.'s signal maximized signal-to noise-ratio so that it would be distinct from ambient noise and resist masking.

(4) Signal acoustic characteristics: Nowacek et al.'s signal comprised of disharmonic signals spanning northern right whales' estimated hearing range.

Given these differences, therefore, the exact cause of apparent right whale behavior noted by the authors can not be attributed to any one component since the source was such a mix of signal types.

The effects of naval sonars on marine wildlife have not been studied as extensively as have the effects of airguns used in seismic surveys (Nowacek et al., 2007). In the Caribbean, sperm whales were observed to interrupt their activities by stopping echolocation and leaving the area in the presence of underwater sounds surmised to have originated from submarine sonar signals (Watkins and Schevill, 1975; Watkins et al., 1985). The authors did not report receive levels from these exposures, and also got a similar reaction from artificial noise they generated by banging on their boat hull. It was unclear if the sperm whales were reacting to the sonar signal itself or to a potentially new unknown sound in general. Madsen et al. (2006) tagged and monitored eight sperm whales in the Gulf of Mexico exposed to seismic airgun surveys. Sound sources were from approximately 2 to 7 nm (4 to 13 km) away from the whales and based on multipath propagation RLs were as high as 162 dB re 1 uPa with energy content greatest between 0.3

and 3.0 kHz. Sperm whales engaged in foraging dives continued the foraging dives throughout exposures to these seismic pulses. In the Caribbean Sea, sperm whales avoided exposure to mid-frequency submarine sonar pulses, in the range 1000 Hz to 10,000 Hz (IWC 2005). Sperm whales have also moved out of areas after the start of air gun seismic testing (Davis et al. 1995). In contrast, during playback experiments off the Canary Islands, André et al. (1997) reported that foraging sperm whales exposed to a 10 kHz pulsed signal did not exhibit any general avoidance reactions.

The Navy sponsored tests of the effects of low-frequency active (LFA) sonar source, between 100 Hz and 1000 Hz, on blue, fin, and humpback whales. The tests demonstrated that whales exposed to sound levels up to 155 dB did not exhibit significant disturbance reactions, though there was evidence that humpback whales altered their vocalization patterns in reaction to the noise. Given that the source level of the Navy's LFA is reported to be in excess of 215 dB, the possibility exists that animals in the wild may be exposed to sound levels much higher than 155 dB.

Acoustic exposures have been demonstrated to kill marine mammals and result in physical trauma, and injury (Ketten 2005). Animals in or near an intense noise source can die from profound injuries related to shock wave or blast effects. Acoustic exposures can also result in noise induced hearing loss that is a function of the interactions of three factors: sensitivity, intensity, and frequency. Loss of sensitivity is referred to as a threshold shift; the extent and duration of a threshold shift depends on a combination of several acoustic features and is specific to particular species (TTS or PTS, depending on how the frequency, intensity and duration of the exposure combine to produce damage). In addition to direct physiological effects, noise exposures can impair an animal's sensory abilities (masking) or result in behavioral responses such as aversion or attraction (see Section 3.19).

Acoustic exposures can also result in the death of an animal by impairing its foraging, ability to detect predators or communicate, or by increasing stress, and disrupting important physiological events. Whales have moved away from their feeding and mating grounds (Bryant *et al*., 1984; Morton and Symnods, 2002; Weller et al., 2002), moved away from their migration route (Richardson et al., 1995), and have changed their calls due to noise (Miller et al., 2000). Acoustic exposures such as MFA sonar tend to be infrequent and temporary in nature. In situations such as the alteration of gray whale migration routes in response to shipping and whale watching boats, those acoustic exposures were chronic over several years (Moore and Clarke 2002). This was also true of the effect of seismic survey airguns (daily for 39 days) on the use of feeding areas by gray whales in the western North Pacific although whales began returning to the feeding area within one day of the end of the exposure (Weller et al. 2002).

Below are evaluations of the general information available on the variety of ways in which cetaceans and pinnipeds have been reported to respond to sound, generally, and mid-frequency sonar, in particular.

The Navy is very concerned and coordinates with NMFS as they thoroughly investigate each marine mammal stranding potentially associated with Navy activities to better understand the events surrounding strandings (Norman 2006). Strandings can involve a single animal or several to hundreds. An event where animals are found out of their normal habitat may be considered a stranding even though animals do not necessarily end up beaching (such as the July 2004 "Hanalei Mass Stranding Event"; Southall et al., 2006). Several hypotheses have been given for the mass strandings which include the impact of shallow beach slopes on odontocete sonar, disease or parasites, geomagnetic anomalies that affect navigation, following a food source in close to shore, avoiding predators, social interactions that cause other cetaceans to come to the aid of stranded animals, and human actions. Generally, inshore species do not strand in large numbers but generally just as a single animal. This may be due to their familiarity with the coastal area whereas pelagic species that are unfamiliar with obstructions or sea bottom tend to strand more often in larger numbers (Woodings, 1995). The Navy has studied several stranding events in detail that may have occurred in association with Navy sonar activities. To better understand the causal factors in stranding events that may be associated with Navy sonar activities, the main factors, including bathymetry (i.e., steep drop offs), narrow channels (less than 35 nm), environmental conditions (e.g., surface ducting), and multiple sonar ships were compared between the different stranding events.

When a marine mammal swims or floats onto shore and becomes “beached” or stuck in shallow water, it is considered a “stranding” (MMPA section 410 (16 USC section 1421g); NMFS, 2007a). NMFS explains that “a cetacean is considered stranded when it is on the beach, dead or alive, or in need of medical attention while free-swimming in U.S. waters. A pinniped is considered to be stranded either when dead or when in distress on the beach and not displaying normal haul-out behavior” (NMFS, 2007b).

Over the past three decades, several “mass stranding” events [strandings involving two or more individuals of the same species (excluding a single cow-calf pair) and at times, individuals from different species] that have occurred have been associated with naval operations, seismic surveys, and other anthropogenic activities that introduce sound into the marine environment (Canary Islands, Greece, Vieques, U.S. Virgin Islands, Madeira Islands, Haro Strait, Washington State, Alaska, Hawaii, North Carolina).

Information was collected on mass stranding events (events in which two or more cetaceans stranded) that have occurred and for which reports are available, from the past 40 years. Any causal agents that have been associated with those stranding events were also identified. Major range events undergo name changes over the years, however, the equivalent of COMPTUEX and JTFEX have been conducted in southern California since 1934. Training involving sonar has been conducted since World War II and sonar systems described in the SOCAL EIS/OEIS since the 1970's (Jane’s 2005).

F.1.6 Stranding Analysis

Over the past two decades, several mass stranding events involving beaked whales have been documented. While beaked whale strandings have been reported since the 1800s (Geraci and Lounsbury, 1993; Cox et al., 2006; Podesta et al., 2006), several mass strandings since have been associated with naval operations that may have included mid-frequency sonar (Simmonds and Lopez-Jurado, 1991; Frantzis, 1998; Jepson et al., 2003; Cox et al., 2006). As Cox et al. (2006) concludes, the state of science can not yet determine if a sound source such as mid-frequency sonar alone causes beaked whale strandings, or if other factors (acoustic, biological, or environmental) must co-occur in conjunction with a sound source.

A review of historical data (mostly anecdotal) maintained by the Marine Mammal Program in the National Museum of Natural History, Smithsonian Institution reports 49 beaked whale mass stranding events between 1838 and 1999. The largest beaked whale mass stranding occurred in the 1870s in New Zealand when 28 Gray’s beaked whales (*Mesoplodon grayi*) stranded. Blainsville’s beaked whale (*Mesoplodon densirostris*) strandings are rare, and records show that they were involved in one mass stranding in 1989 in the Canary Islands. Cuvier’s beaked whales (*Ziphius cavirostris*) are the most frequently reported beaked whale to strand, with at least 19 stranding events from 1804 through 2000 (DoC and DoN, 2001; Smithsonian Institution, 2000).

The discussion below centers on those worldwide stranding events that may have some association with naval operations, and global strandings that the U.S. Navy feels are either inconclusive or can not be associated with naval operations.

F.1.6.1 Naval Association

In the following sections, specific stranding events that have been putatively linked to potential sonar operations are discussed. Of note, these events represent a small number of animals over an 11-year period (40 animals), and not all worldwide beaked whale strandings can be linked to naval activity (ICES

2005a; 2005b; Podesta et al., 2006). Four of the five events occurred during NATO exercises or events where U.S. Navy presence was limited (Greece, Portugal, Spain). One of the five events involved only U.S. Navy ships (Bahamas).

Beaked whale stranding events associated with potential naval operations.

1996 May	Greece (NATO)
2000 March	Bahamas (US)
2000 May	Portugal, Madeira Islands (NATO/US)
2002 September	Spain, Canary Islands (NATO/US)
2006 January	Spain, Mediterranean Sea coast (NATO/US)

Case Studies of Stranding Events (coincidental with or implicated with naval sonar)

1996 Greece Beaked Whale Mass Stranding (May 12 – 13, 1996)

Description: Twelve Cuvier's beaked whales (*Ziphius cavirostris*) stranded along a 38.2-kilometer strand of the coast of the Kyparissiakos Gulf on May 12 and 13, 1996 (Frantzis, 1998). From May 11 through May 15, the NATO research vessel Alliance was conducting sonar tests with signals of 600 Hz and 3 kHz and root-mean-squared (rms) sound pressure levels (SPL) of 228 and 226 dB re: 1µPa, respectively (D'Amico and Verboom, 1998; D'Spain et al., 2006). The timing and the location of the testing encompassed the time and location of the whale strandings (Frantzis, 1998).

Findings: Partial necropsies of eight of the animals were performed, including external assessments and the sampling of stomach contents. No abnormalities attributable to acoustic exposure were observed, but the stomach contents indicated that the whales were feeding on cephalopods soon before the stranding event. No unusual environmental events before or during the stranding event could be identified (Frantzis, 1998).

Conclusions: The timing and spatial characteristics of this stranding event were atypical of stranding in Cuvier's beaked whale, particularly in this region of the world. No natural phenomenon that might contribute to the stranding event coincided in time with the mass stranding. Because of the rarity of mass strandings in the Greek Ionian Sea, the probability that the sonar tests and stranding coincided in time and location, while being independent of each other, was estimated as being extremely low (Frantzis, 1998). However, because information for the necropsies was incomplete and inconclusive, the cause of the stranding cannot be precisely determined.

2000 Bahamas Marine Mammal Mass Stranding (March 15-16, 2000)

Description: Seventeen marine mammals - Cuvier's beaked whales, Blainville's beaked whales (*Mesoplodon densirostris*), minke whale (*Balaenoptera acutorostrata*), and one spotted dolphin (*Stenella frontalis*), stranded along the Northeast and Northwest Providence Channels of the Bahamas Islands on March 15-16, 2000 (Evans and England, 2001). The strandings occurred over a 36-hour period and coincided with U.S. Navy use of mid-frequency active sonar within the channel. Navy ships were involved in tactical sonar exercises for approximately 16 hours on March 15. The ships, which operated the AN/SQS-53C and AN/SQS-56, moved through the channel while emitting sonar pings approximately every 24 seconds. The timing of pings was staggered between ships and average source levels of pings varied from a nominal 235 dB SPL (AN/SQS-53C) to 223 dB SPL (AN/SQS-56). The center frequency of pings was 3.3 kHz and 6.8 to 8.2 kHz, respectively.

Seven of the animals that stranded died, while ten animals were returned to the water alive. The animals known to have died included five Cuvier's beaked whales, one Blainville's beaked whale, and the single spotted dolphin. Six necropsies were performed and three of the six necropsied animals (one Cuvier's beaked whale, one Blainville's beaked whale, and the spotted dolphin) were fresh enough to permit identification of pathologies by computerized tomography (CT). Tissues from the remaining three animals were in a state of advanced decomposition at the time of inspection.

Findings: The spotted dolphin demonstrated poor body condition and evidence of a systemic debilitating disease. In addition, since the dolphin stranding site was isolated from the acoustic activities of Navy ships, it was determined that the dolphin stranding was unrelated to the presence of Navy active sonar.

All five necropsied beaked whales were in good body condition and did not show any signs of external trauma or disease. In the two best preserved whale specimens, hemorrhage was associated with the brain and hearing structures. Specifically, subarachnoid hemorrhage within the temporal region of the brain and intracochlear hemorrhages were noted. Similar findings of bloody effusions around the ears of two other moderately decomposed whales were consistent with the same observations in the freshest animals. In addition, three of the whales had small hemorrhages in their acoustic fats, which are fat bodies used in sound production and reception (i.e., fats of the lower jaw and the melon). The best-preserved whale demonstrated acute hemorrhage within the kidney, inflammation of the lung and lymph nodes, and congestion and mild hemorrhage in multiple other organs. Other findings were consistent with stresses and injuries associated with the stranding process. These consisted of external scrapes, pulmonary edema and congestion.

Conclusions: The post-mortem analyses of stranded beaked whales lead to the conclusion that the immediate cause of death resulted from overheating, cardiovascular collapse and stresses associated with being stranded on land. However, subarachnoid and intracochlear hemorrhages were believed to have occurred prior to stranding and were hypothesized as being related to an acoustic event. Passive acoustic monitoring records demonstrated that no large scale acoustic activity besides the Navy sonar exercise occurred in the times surrounding the stranding event. The mechanism by which sonar could have caused the observed traumas or caused the animals to strand was undetermined. The spotted dolphin was in overall poor condition for examination, but showed indications of long-term disease. No analysis of baleen whales (minke whale) was conducted. Baleen whale stranding events have not been associated with either low-frequency or mid-frequency sonar use (ICES 2005a, 2005b).

2000 Madeira Island, Portugal Beaked Whale Strandings (May 10 – 14, 2000)

Description: Three Cuvier's beaked whales stranded on two islands in the Madeira Archipelago, Portugal, from May 10 to 14, 2000 (Cox et al., 2006). A joint NATO amphibious training exercise, named "Linked Seas 2000," which involved participants from 17 countries, took place in Portugal during May 2 to 15, 2000. The timing and location of the exercises overlapped with that of the stranding incident.

Findings: Two of the three whales were necropsied. Two heads were taken to be examined. One head was intact and examined grossly and by CT; the other was only grossly examined because it was partially flensed and had been seared from an attempt to dispose of the whale by fire (Ketten, 2005).

No blunt trauma was observed in any of the whales. Consistent with prior CT scans of beaked whales stranded in the Bahamas 2000 incident, one whale demonstrated subarachnoid and peribullar hemorrhage and blood within one of the brain ventricles. Post-cranially, the freshest whale demonstrated renal congestion and hemorrhage, which was also consistent with findings in the freshest specimens in the Bahamas incident.

Conclusions: The pattern of injury to the brain and auditory system were similar to those observed in the Bahamas strandings, as were the kidney lesions and hemorrhage and congestion in the lungs (Ketten, 2005). The similarities in pathology and stranding patterns between these two events suggested a similar causative mechanism. Although the details about whether or how sonar was used during “Linked Seas 2000” is unknown, the presence of naval activity within the region at the time of the strandings suggested a possible relationship to Navy activity.

2002 Canary Islands Beaked Whale Mass Stranding (September 24, 2002)

Description: On September 24, 2002, 14 beaked whales stranded on Fuerteventura and Lanzaote Islands in the Canary Islands (Jepson et al., 2003). Seven of the 14 whales died on the beach and the 7 were returned to the ocean. Four beaked whales were found stranded dead over the next three days either on the coast or floating offshore (Fernández et al., 2005). At the time of the strandings, an international naval exercise (Neo-Tapon 2002) that involved numerous surface warships and several submarines was being conducted off the coast of the Canary Islands. Tactical mid-frequency active sonar was utilized during the exercises, and strandings began within hours of the onset of the use of mid-frequency sonar (Fernández et al., 2005).

Findings: Eight Cuvier’s beaked whales, one Blainville’s beaked whale, and on Gervais’ beaked whale were necropsied; six of them within 12 hours of stranding (Fernández et al. 2005). The stomachs of the whales contained fresh and undigested prey contents. No pathogenic bacteria were isolated from the whales, although parasites were found in the kidneys of all of the animals. The head and neck lymph nodes were congested and hemorrhages were noted in multiple tissues and organs, including the kidney, brain, ears, and jaws. Widespread fat emboli were found throughout the carcasses, but no evidence of blunt trauma was observed in the whales. In addition, the parenchyma of several organs contained macroscopic intravascular bubbles and lesions, putatively associated with nitrogen off-gassing.

Conclusions: The association of NATO mid-frequency sonar use close in space and time to the beaked whale strandings, and the similarity between this stranding event and previous beaked whale mass strandings coincident with sonar use, suggests that a similar scenario and causative mechanism of stranding may be shared between the events. Beaked whales stranded in this event demonstrated brain and auditory system injuries, hemorrhages, and congestion in multiple organs, similar to the pathological findings of the Bahamas and Madeira stranding events. In addition, the necropsy results of the Canary Islands stranding event lead to the hypothesis that the presence of disseminated and widespread gas bubbles and fat emboli were indicative of nitrogen bubble formation, similar to what might be expected in decompression sickness (Jepson et al., 2003; Fernández et al., 2005). Whereas gas emboli would develop from the nitrogen gas, fat emboli would enter the blood stream from ruptured fat cells (presumably where nitrogen bubble formation occurs) or through the coalescence of lipid bodies within the blood stream.

The possibility that the gas and fat emboli found by Fernández et al. (2005) was due to nitrogen bubble formation has been hypothesized to be related to either direct activation of the bubble by sonar signals or to a behavioral response in which the beaked whales flee to the surface following sonar exposure. The first hypothesis is related to rectified diffusion (Crum and Mao, 1996), the process of increasing the size of a bubble by exposing it to a sound field. This process is facilitated if the environment in which the ensonified bubbles exist is supersaturated with gas. Repetitive diving by marine mammals can cause the blood and some tissues to accumulate gas to a greater degree than is supported by the surrounding environmental pressure (Ridgway and Howard, 1979). Deeper and longer dives of some marine mammals, such as those conducted by beaked whales, are theoretically predicted to induce greater levels of supersaturation (Houser et al., 2001). If rectified diffusion were possible in marine mammals exposed to high-level sound, conditions of tissue supersaturation could theoretically speed the rate and increase the size of bubble growth. Subsequent effects due to tissue trauma and emboli would presumably mirror those observed in humans suffering from decompression sickness. It is unlikely that the brief duration of sonar pings would be long enough to drive bubble growth to any substantial size, if such a phenomenon occurs. However, an alternative but related hypothesis has also been suggested: stable bubbles could be destabilized by high-level sound exposures such that bubble growth then occurs through static diffusion of gas out of the tissues. In such a scenario the marine mammal would need to be in a gas-supersaturated state long enough for bubbles to become of a problematic size. The second hypothesis speculates that rapid ascent to the surface following exposure to a startling sound might produce tissue gas saturation sufficient for the evolution of nitrogen bubbles (Jepson et al. 2003; Fernández et al. 2005). In this scenario, the rate of ascent would need to be sufficiently rapid to compromise behavioral or physiological protections against nitrogen bubble formation. Tyack et al. (2006) showed that beaked whales often make rapid ascents from deep dives suggesting that it is unlikely that beaked whales would suffer from decompression sickness. Zimmer and Tyack (2007) speculated that if repetitive shallow dives that are used by beaked whales to avoid a predator or a sound source, they could accumulate high levels of nitrogen because they would be above the depth of lung collapse (above about 210 feet) and could lead to decompression sickness. There is no evidence that beaked whales dive in this manner in response to predators or sound sources and other marine mammals such as Antarctic and Galapagos fur seals, and pantropical spotted dolphins make repetitive shallow dives with no apparent decompression sickness (Kooyman and Trillmich, 1984; Kooyman et al., 1984; Baird et al., 2001).

Although theoretical predictions suggest the possibility for acoustically mediated bubble growth, there is considerable disagreement among scientists as to its likelihood (Piantadosi and Thalmann, 2004). Sound exposure levels predicted to cause in vivo bubble formation within diving cetaceans have not been evaluated and are suspected as needing to be very high (Evans, 2002; Crum et al., 2005). Moore and Early (2004) reported that in analysis of sperm whale bones spanning 111 years, gas embolism symptoms were observed indicating that sperm whales may be susceptible to decompression sickness due to natural diving behavior. Further, although it has been argued that traumas from recent beaked whale strandings are consistent with gas emboli and bubble-induced tissue separations (Jepson et al. 2003), there is no conclusive evidence supporting this hypothesis and there is concern that at least some of the pathological findings (e.g., bubble emboli) are artifacts of the necropsy. Currently, stranding networks in the United States have agreed to adopt a set of necropsy guidelines to determine, in part, the possibility and frequency with which bubble emboli can be introduced into marine mammals during necropsy procedures (Arruda et al., 2007).

2006 Spain, Gulf of Vera Beaked Whale Mass Stranding (26-27 January 2006)

Description: The Spanish Cetacean Society reported an atypical mass stranding of four beaked whales that occurred January 26 to 28, 2006, on the southeast coast of Spain near Mojacar (Gulf of Vera) in the Western Mediterranean Sea. According to the report, two of the whales were discovered the evening of January 26 and were found to be still alive. Two other whales were discovered on January 27, but had already died. A following report stated that the first three animals were located near the town of Mojacar and were examined by a team from the University of Las Palmas de Gran Canarias, with the help of the stranding network of Ecologistas en Acción Almería-PROMAR and others from the Spanish Cetacean Society. The fourth animal was found dead on the afternoon of January 27, a few kilometers north of the first three animals.

From January 25-26, 2006, a NATO surface ship group (seven ships including one U.S. ship under NATO operational command) conducted active sonar training against a Spanish submarine within 50 nm of the stranding site.

Findings: Veterinary pathologists necropsied the two male and two female beaked whales (*Z. cavirostris*).

Conclusions: According to the pathologists, a likely cause of this type of beaked whale mass stranding event may have been anthropogenic acoustic activities. However, no detailed pathological results confirming this supposition have been published to date, and no positive acoustic link was established as a direct cause of the stranding.

Even though no causal link can be made between the stranding event and naval exercises, certain conditions may have existed in the exercise area that, in their aggregate, may have contributed to the marine mammal strandings (Freitas, 2004):

- Operations were conducted in areas of at least 1000 meters in depth near a shoreline where there is a rapid change in bathymetry on the order of 1000 to 6000 meters occurring a cross a relatively short horizontal distance (Freitas, 2004).

- Multiple ships, in this instance, five MFA sonar equipped vessels, were operating in the same area over extended periods (20 hours) in close proximity.

- Exercises took place in an area surrounded by landmasses, or in an embayment. Operations involving multiple ships employing mid-frequency active sonar near land may produce sound directed towards a channel or embayment that may cut off the lines of egress for marine mammals (Freitas, 2004).

F.1.6.2 Other Global Stranding Discussions

In the following sections, stranding events that have been linked to U.S. Navy activity in popular press are presented. As detailed in the individual case study conclusions, the U.S. Navy believes there is enough evidence available to refute allegations of impacts from mid-frequency sonar, or at least indicate a substantial degree of uncertainty in time and space that precludes a meaningful scientific conclusion.

Case Studies of Stranding Events

2003 Washington State Harbor Porpoise Strandings (May 2 – June 2 2003)

Description: At 1040 hours on May 5, 2003, the USS SHOUP began the use of mid-frequency tactical active sonar as part of a naval exercise. At 1420, the USS SHOUP entered the Haro Strait and terminated active sonar use at 1438, thus limiting active sonar use within the strait to less than 20 minutes. Between May 2 and June 2, 2003, approximately 16 strandings involving 15 harbor porpoises (*Phocoena phocoena*) and one Dall's porpoise (*Phocoenoides dalli*) were reported to the Northwest Marine Mammal Stranding Network. A comprehensive review of all strandings and the events involving USS SHOUP on May 5, 2003 were presented in U.S. Department of Navy (2004). Given that the USS SHOUP was known to have operated sonar in the strait on May 5, and that supposed behavioral reactions of killer whales (*Orcinus orca*) had been putatively linked to these sonar operations (NMFS Office of Protected Resources, 2005), NMFS undertook an analysis of whether sonar caused the strandings of the harbor porpoises.

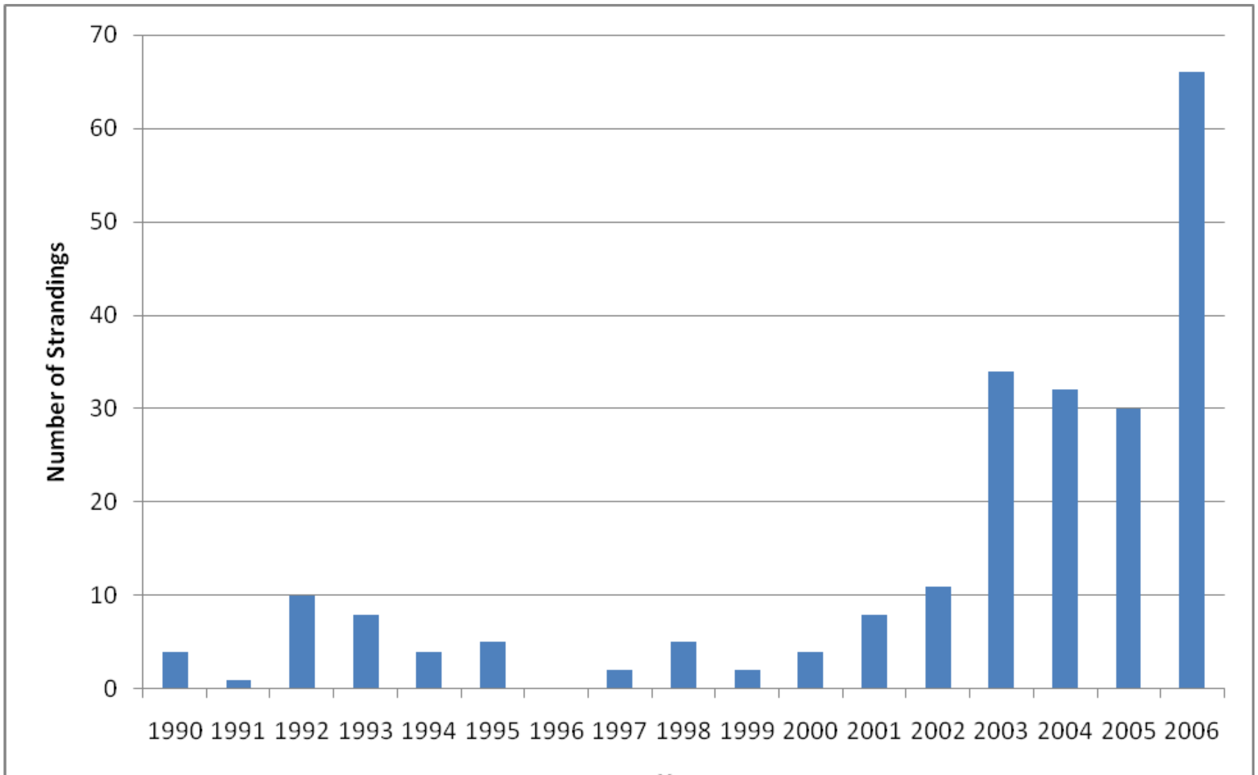
Whole carcasses of ten harbor porpoises and the head of an additional porpoise were collected for analysis. Necropsies were performed on ten of the porpoises and six whole carcasses, and two heads were selected for CT imaging. Gross examination, histopathology, age determination, blubber analysis, and various other analyses were conducted on each of the carcasses (Norman et al., 2004).

Findings: Post-mortem findings and analysis details are found in Norman et al. (2004). All of the carcasses suffered from some degree of freeze-thaw artifact that hampered gross and histological evaluations. At the time of necropsy, three of the porpoises were moderately fresh, whereas the remainder of the carcasses was considered to have moderate to advanced decomposition. None of the 11 harbor porpoises demonstrated signs of acoustic trauma. In contrast, a putative cause of death was determined for five of the porpoises; two animals had blunt trauma injuries and three animals had indication of disease processes (fibrous peritonitis, salmonellosis, and necrotizing pneumonia). A cause of death could not be determined in the remaining animals, which is consistent with expected percentage of marine mammal necropsies conducted within the Northwest region. It is important to note, however, that these determinations were based only on the evidence from the necropsy to avoid bias with regard to determinations of the potential presence or absence of acoustic trauma. The result was that other potential causal factors, such as one animal (Specimen 33NWR05005) found tangled in a fishing net, was unknown to the investigators in their determination regarding the likely cause of death.

Conclusions: NMFS concluded from a retrospective analysis of stranding events that the number of harbor porpoise stranding events in the approximate month surrounding the USS SHOUP use of sonar was higher than expected based on annual strandings of harbor porpoises (Norman et al., 2004). In this regard, it is important to note that the number of strandings in the May-June timeframe in 2003 was also higher for the outer coast indicating a much wider phenomena than use of sonar by USS SHOUP in Puget Sound for one day in May. The conclusion by NMFS that the number of strandings in 2003 was higher is also different from that of The Whale Museum, which has documented and responded to harbor porpoise strandings since 1980 (Osborne, 2003). According to The Whale Museum, the number of strandings as of May 15, 2003, was consistent with what was expected based on historical stranding records and was less than that occurring in certain years. For example, since 1992 the San Juan Stranding Network has documented an average of 5.8 porpoise strandings per year. In 1997 there were 12 strandings in the San Juan Islands with more than 30 strandings throughout the general Puget Sound area. Disregarding the discrepancy in the historical rate of porpoise strandings and its relation to the USS SHOUP, NMFS acknowledged that the intense level of media attention focused on the strandings likely resulted in an increased reporting effort by the public over that which is normally observed (Norman et al., 2004). NMFS also noted in its report that the “sample size is too small and biased to infer a specific relationship with respect to sonar usage and subsequent strandings.”

Seven of the porpoises collected and analyzed died prior to SHOUP departing to sea on May 5, 2003. Of these seven, one, discovered on May 5, 2003, was in a state of moderate decomposition, indicating it died before May 5; the cause of death was determined, most likely, to be salmonella septicemia. Another porpoise, discovered at Port Angeles on May 6, 2003, was in a state of moderate decomposition, indicating that this porpoise also died prior to May 5. One stranded harbor porpoise discovered fresh on May 6 is the only animal that could potentially be linked in time to the USS SHOUP’s May 5 active sonar use. Necropsy results for this porpoise found no evidence of acoustic trauma. The remaining eight strandings were discovered one to three weeks after the USS SHOUP’s May 5 transit of the Haro Strait, making it difficult to causally link the sonar activities of the USS SHOUP to the timing of the strandings. Two of the eight porpoises died from blunt trauma injury and a third suffered from parasitic infestation, which possibly contributed to its death (Norman et al. 2004). For the remaining five porpoises, NMFS was unable to identify the causes of death.

Additionally, it has become clear that the number of harbor porpoise strandings in the Northwest increased beginning in 2003 and through 2006. Figure F-3 shows the number of strandings documented in the Northwest for harbor porpoises. On November 3, 2006, a UME in the Pacific Northwest was declared. In 2006, a total of 66 harbor porpoise strandings were reported in the Outer Coast of Oregon and Washington and Inland waters of Washington (NOAA Fisheries, 2006; NOAA Fisheries, Northwest Region, 2006a).



Source: NOAA Fisheries, Northwest Region, 2006b

Figure F-3. Northwest Region Harbor Porpoise Strandings 1990 – 2006

The speculative association of the harbor porpoise strandings to the use of sonar by the USS SHOUP is inconsistent with prior stranding events linked to the use of mid-frequency sonar. Specifically, in prior events, the stranding of whales occurred over a short period of time (less than 36 hours), stranded individuals were spatially co-located, traumas in stranded animals were consistent between events, and active sonar was known or suspected to be in use. Although mid-frequency active sonar was used by the USS SHOUP, the distribution of harbor porpoise strandings by location and with respect to time surrounding the event do not support the suggestion that mid-frequency active sonar was a cause of harbor porpoise strandings. Rather, a complete lack of evidence of any acoustic trauma within the harbor porpoises, and the identification of probable causes of stranding or death in several animals, further supports the conclusion that harbor porpoise strandings were unrelated to the sonar activities of the USS SHOUP.

Additional allegations regarding USS SHOUP use of sonar having caused behavioral effects to Dall's porpoise, orca, and a minke whale also arose in association with this event (see U.S. Department of Navy 2004 for a complete discussion).

Dall's porpoise: Information regarding the observation of Dall's porpoise on May 5, 2003 came from the operator of a whale watch boat at an unspecified location. This operator reported the Dall's porpoise were seen "going north" when the SHOUP was estimated by him to be 10 miles away. Potential reasons for the Dall's movement include the pursuit of prey, the presence of harassing resident orca or predatory transient orca, vessel disturbance from one of many whale watch vessels, or multiple other unknowable reasons including the use of sonar by SHOUP. In short, there was nothing unusual in the observed behavior of the Dall's porpoise on May 5, 2003 and no way to assess if the otherwise normal behavior was in reaction to the use of sonar by USS SHOUP, any other potential causal factor or a combination of factors.

Orca: Observer opinions regarding orca J-Pod behaviors on 5 May 2003 were inconsistent, ranging from the orca being "at ease with the sound" or "resting" to their being "annoyed." One witness reported observing "low rates of surface active behavior" on behalf of the orca J-Pod, which is in conflict with that of another observer who reported variable surface activity, tail slapping and spyhopping. Witnesses also expressed the opinion that the behaviors displayed by the orca on 5 May 2003 were "extremely unusual," although those same behaviors are observed and reported regularly on the Orca Network Website, are behaviors listed in general references as being part of the normal repertoire of orca behaviors. Given the contradictory nature of the reports on the observed behavior of the J-Pod orca, there is no way to assess if any unusual behaviors were present or if present they were in reaction to vessel disturbance from one of many nearby whale watch vessels, use of sonar by SHOUP, any other potential causal factor, or a combination of factors.

Minke whale: A minke whale was reported porpoising in Haro Strait on May 5, 2003, which is a rarely observed behavior. The cause of this behavior is indeterminate given multiple potential causal factors including but not limited to the presence of predatory Transient orca, possible interaction with whale watch boats, other vessels, or SHOUP's use of sonar. Given the existing information, there is no way to be certain if the unusual behavior observed was in reaction to the use of sonar by SHOUP, any other potential causal factor or a combination of factors.

2004 Alaska Beaked Whale Strandings (Northern Edge Exercise, 7-16 June 2004)

Description: Between 27 June and 19 July 2004, five beaked whales were discovered at various locations along 1,600 miles of the Alaskan coastline and one was found floating (dead) at sea. These whales included three Baird's beaked whales and two Cuvier's beaked whales. Questions and comments posed on previous Navy environmental documents have alleged that sonar use may have been the cause of these strandings in association with the Navy Alaska Shield/Northern Edge exercise, which occurred June 7 to June 16, 2004 (within the approximate timeframe of these strandings).

Findings: Information regarding the strandings is incomplete as the whales had been dead for some time before they were discovered. The stranded beaked whales were in moderate to advanced states of decomposition and necropsies were not performed. Additionally, prior to the Navy conducting the Alaska Shield/Northern Edge exercise, two Cuvier's beaked whales were discovered stranded at two separate locations along the Alaskan coastline (February 26 at Yakutat and June 1 at Nuka Bay).

Zimmerman (1991) reported that between 1975 and 1987, 11 species of cetaceans were found stranded in Alaska seven or more times, including 29 Stejneger's beaked whales, 19 Cuvier's beaked whales, and 8 Baird's beaked whales. Cuvier's beaked whales have been found stranded from the eastern Gulf of Alaska to the western Aleutians. Baird's beaked whales were found stranded as far north as the area between Cape Pierce and Cape Newenham, east near Kodiak, and along the Aleutian Islands. (Zimmerman, 1991). In short, however, the stranding of beaked whales in Alaska is a relatively uncommon occurrence (as compared to other species).

Conclusions: The at-sea portion of the Alaska Shield/Northern Edge 2004 exercise consisted mainly surface ships and aircraft tracking a vessel of interest followed by a vessel boarding search and seizure event. There was no ASW component to the exercise, no use of mid-frequency sonar, and no use of explosives in the water. There were no events in the Alaska Shield/Northern Edge exercise that could have caused or been related to any of the strandings over this 33 day period along 1,600 miles of coastline.

2004 Hawai'i Melon-Headed Whale Unusual Milling Event (July 3-4 2004)

Description: The majority of the following information is taken from the NMFS report (which referred to the event as a "mass stranding event"; Southall et al., 2006) but includes additional and new information not presented in the NMFS report. On the morning of July 3, 2004, between 150 and 200 melon-headed whales (*Peponocephala electra*) entered Hanalei Bay, Kauai. Individuals attending a canoe blessing ceremony observed the animals entering the bay at approximately 7:00 a.m. The whales were reported entering the bay in a "wave as if they were chasing fish" (Braun 2006). At 6:45 a.m. on July 3, 2004, approximately 25 nm north of Hanalei Bay, active sonar was tested briefly prior to the start of an anti-submarine warfare exercise.

The whales stopped in the southwest portion of the bay, grouping tightly, and displayed spy-hopping and tail-slapping behavior. As people went into the water among the whales, the pod separated into as many as four groups, with individual animals moving among the clusters. This continued through most of the day, with the animals slowly moving south and then southeast within the bay. By about 3 p.m., police arrived and kept people from interacting with the animals. The Navy believes that the abnormal behavior by the whales during this time is likely the result of people and boats in the water with the whales rather than the result of sonar activities taking place 25 or more miles off the coast. At 4:45 p.m. on July 3, 2004, the RIMPAC Battle Watch Captain received a call from a National Marine Fisheries representative in Honolulu, Hawaii, reporting the sighting of as many as 200 melon-headed whales in Hanalei Bay. At 4:47 p.m. the Battle Watch Captain directed all ships in the area to cease active sonar transmissions.

At 7:20 p.m. on July 3, 2004, the whales were observed in a tight single pod 75 yards from the southeast side of the bay. The pod was circling in a group and displayed frequent tail slapping and whistle vocalizations and some spy hopping. No predators were observed in the bay and no animals were reported as having fresh injuries. The pod stayed in the bay through the night of July 3, 2004. On the morning of July 4, 2004, the whales were observed to still be in the bay and collected in a tight group. A decision was made at that time to attempt to herd the animals out of the bay. A 700-to-800-foot rope was constructed by weaving together beach morning glory vines. This vine rope was tied between two canoes and with the assistance of 30 to 40 kayaks, was used to herd the animals out of the bay. By approximately 11:30 a.m. on July 4, 2004, the pod was coaxed out of the bay.

A single neonate melon-headed whale was observed in the bay on the afternoon of July 4, after the whale pod had left the bay. The following morning on July 5, 2004, the neonate was found stranded on Lumahai Beach. It was pushed back into the water but was found stranded dead between 9 and 10 a.m. near the Hanalei pier. NMFS collected the carcass and had it shipped to California for necropsy, tissue collection, and diagnostic imaging.

Following the unusual milling event, NMFS undertook an investigation of possible causative factors of the event. This analysis included available information on environmental factors, biological factors, and an analysis of the potential for sonar involvement. The latter analysis included vessels that utilized mid-frequency active sonar on the afternoon and evening of July 2. These vessels were to the southeast of Kauai, on the opposite side of the island from Hanalei Bay.

Findings: NMFS concluded from the acoustic analysis that the melon-headed whales would have had to have been on the southeast side of Kauai on July 2 to have been exposed to sonar from naval vessels on that day (Southall et al. 2006). There was no indication whether the animals were in that region or whether they were elsewhere on July 2. NMFS concluded that the animals would have had to swim from 1.4-4.0 m/s for 6.5 to 17.5 hours after sonar transmissions ceased to reach Hanalei Bay by 7:00 a.m. on July 3. Sound transmissions by ships to the north of Hanalei Bay on July 3 were produced as part of exercises between 6:45 a.m. and 4:47 p.m. Propagation analysis conducted by the 3rd Fleet estimated that the level of sound from these transmissions at the mouth of Hanalei Bay could have ranged from 138-149 dB re: 1 µPa.

NMFS was unable to determine any environmental factors (e.g., harmful algal blooms, weather conditions) that may have contributed to the stranding. However, additional analysis by Navy investigators found that a full moon occurred the evening before the stranding and was coupled with a squid run (Mobley 2007). One of the first observations of the whales entering the bay reported the pod came into the bay in a line “as if chasing fish” (Braun, 2005). In addition, a group of 500 to700 melon-headed whales were observed to come close to shore and interact with humans in Sasanhaya Bay, Rota, on the same morning as the whales entered Hanalei Bay (Jefferson et al. 2006). Previous records further indicated that, though the entrance of melon-headed whales into the shallows is rare, it is not unprecedented. A pod of melon-headed whales entered Hilo Bay in the 1870s in a manner similar to that which occurred at Hanalei Bay in 2004.

The necropsy of the melon-headed whale calf suggested that the animal died from a lack of nutrition, possibly following separation from its mother. The calf was estimated to be approximately one week old. Although the calf appeared not to have eaten for some time, it was not possible to determine whether the calf had ever nursed after it was born. The calf showed no signs of blunt trauma or viral disease and had no indications of acoustic injury.

Conclusions: Although it is not impossible, it is unlikely that the sound level from the sonar caused the melon-headed whales to enter Hanalei Bay. This conclusion is based on a number of factors:

1. The speculation that the whales may have been exposed to sonar the day before and then fled to the Hanalei Bay is not supported by reasonable expectation of animal behavior and swim speeds. The flight response of the animals would have had to persist for many hours following the cessation of sonar transmissions. Such responses have not been observed in marine mammals and no documentation exists that such persistent flight response after the cessation of a frightening stimulus has been observed in other mammals. The swim speeds, though feasible for the species, are highly unlikely to be maintained for the durations proposed, particularly since the pod was a mixed group containing both adults and neonates. Whereas adults may maintain a swim speed of 4.0 m/s for some time, it is improbable that a neonate could achieve the same for a period of many hours.

2. The area between the islands of Oahu and Kauai and the Pacific Missile Range Facility training range have been used in RIMPAC exercises for more than 30 years, and are used year-round for ASW training with mid frequency active sonar. Melon-headed whales inhabiting the waters around Kauai are likely not naive to the sound of sonar and there has never been another stranding event associated in time with ASW training at Kauai. Similarly, the waters surrounding Hawaii contain an abundance of marine mammals, many of which would have been exposed to the same sonar operations that were speculated to have affected the melon-headed whales. No other strandings were reported coincident with the RIMPAC exercises. This leaves it uncertain as to why melon-headed whales, and no other species of marine mammal, would respond to the sonar exposure by stranding.

3. At the nominal swim speed for melon-headed whales, the whales had to be within 1.5 to 2 nm of Hanalei Bay before sonar was activated on July 3. The whales were not in their open ocean habitat but had to be close to shore at 6:45 a.m. when the sonar was activated to have been observed inside Hanalei Bay from the beach by 7 a.m. (Hanalei Bay is very large area). This observation suggests that other potential factors could have caused the event (see below).

4. The simultaneous movement of 500 to 700 melon-headed whales and Risso’s dolphins into Sasanhaya Bay, Rota, in the Northern Marianas Islands on the same morning as the 2004 Hanalei stranding (Jefferson et al., 2006) suggests that there may be a common factor which prompted the melon-headed

whales to approach the shoreline. A full moon occurred the evening before the stranding and a run of squid was reported concomitant with the lunar activity (Mobley et al. 2007). Thus, it is possible that the melon-headed whales were capitalizing on a lunar event that provided an opportunity for relatively easy prey capture (Mobley et al. 2007). A report of a pod entering Hilo Bay in the 1870s indicates that on at least one other occasion, melon-headed whales entered a bay in a manner similar to the occurrence at Hanalei Bay in July 2004. Thus, although melon-headed whales entering shallow embayments may be an infrequent event, and every such event might be considered anomalous, there is precedent for the occurrence.

5. The received noise sound levels at the bay were estimated to range from roughly 95 to 149 dB re: 1 μPa. Received levels as a function of time of day have not been reported, so it is not possible to determine when the presumed highest levels would have occurred and for how long. However, received levels in the upper range would have been audible by human participants in the bay. The statement by one interviewee that he heard “pings” that lasted an hour and that they were loud enough to hurt his ears is unreliable. Received levels necessary to cause pain over the duration stated would have been observed by most individuals in the water with the animals. No other such reports were obtained from people interacting with the animals in the water.

Although NMFS concluded that sonar use was a “plausible, if not likely, contributing factor in what may have been a confluence of events (Southall et al. 2006)," this conclusion was based primarily on the basis that there was an absence of any other compelling explanation. The authors of the NMFS report on the incident were unaware, at the time of publication, of the simultaneous event in Rota. In light of the simultaneous Rota event, the Hanalei event does not appear as anomalous as initially presented and the speculation that sonar was a causative factor is weakened. The Hanalei Bay incident does not share the characteristics observed with other mass strandings of whales coincident with sonar activity (e.g., specific traumas, species composition, etc.). In addition, the inability to conclusively link or exclude the impact of other environmental factors makes a causal link between sonar and the melon-headed whale event highly speculative at best.

1980- 2004 Beaked Whale Strandings in Japan (Brownell et al. 2004)

<u>Description</u>: Brownell et al. (2004) compare the historical occurrence of beaked whale strandings in Japan (where there are U.S. Naval bases), with strandings in New Zealand (which lacks a U.S. Naval base) and concluded the higher number of strandings in Japan may be related to the presence of the US. Navy vessels using mid-frequency sonar. While the dates for the strandings were well documented, the authors of the study did not attempt to correlate the dates of any navy activities or exercises with those stranding dates.

To fully investigate the allegation made by Brownell et al. (2004), the Center for Naval Analysis (CNA) in an internal Navy report, looked at past U.S. Naval exercise schedules from 1980 to 2004 for the water around Japan in comparison to the dates for the strandings provided by Brownell et al. (2004). None of the strandings occurred during or soon (within weeks) after any U.S. Navy exercises. While the CNA analysis began by investigating the probabilistic nature of any co-occurrences, the strandings and sonar use were not correlated by time. Given that there was no instance of co-occurrence in over 20 years of stranding data, it can be reasonably postulated that sonar use in Japan waters by U.S. Navy vessels did not lead to any of the strandings documented by Brownell et al. (2004).

2005 North Carolina Marine Mammal Mass Stranding Event (January 15-16, 2005)

<u>Description</u>: On January 15 and 16, 2005, 36 marine mammals consisting of 33 short-finned pilot whales, one minke whale, and two dwarf sperm whales stranded alive on the beaches of North Carolina (Hohn et al., 2006a). The animals were scattered across a 111-km area from Cape Hatteras northward. Because of

the live stranding of multiple species, the event was classified as a UME. It is the only stranding on record for the region in which multiple offshore species were observed to strand within a two- to three-day period.

The U.S. Navy indicated that from January 12-14 some unit level training with mid-frequency active sonar was conducted by vessels that were 93 to 185 km from Oregon Inlet. An expeditionary strike group was also conducting exercises to the southeast, but the closest point of active sonar transmission to the inlet was 650 km away. The unit level operations were not unusual for the area or time of year and the vessels were not involved in antisubmarine warfare exercises. Marine mammal observers on board the vessels did not detect any marine mammals during the period of unit level training. No sonar transmissions were made on January 15-16.

The National Weather Service reported that a severe weather event moved through North Carolina on January 13 and 14. The event was caused by an intense cold front that moved into an unusually warm and moist air mass that had been persisting across the eastern United States for about a week. The weather caused flooding in the western part of the state, considerable wind damage in central regions of the state, and at least three tornadoes that were reported in the north central part of the state. Severe, sustained (one to four days) winter storms are common for this region.

Over a two-day period (January 16-17), two dwarf sperm whales, 27 pilot whales, and the minke whale were necropsied and tissue samples collected. Twenty-five of the stranded cetacean heads were examined; two pilot whale heads and the heads of the dwarf sperm whales were analyzed by CT.

Findings: The pilot whales and dwarf sperm whale were not emaciated, but the minke whale, which was believed to be a dependent calf, was emaciated. Many of the animals were on the beach for an extended period of time prior to necropsy and sampling, and many of the biochemical abnormalities noted in the animals were suspected of being related to the stranding and prolonged time on land. Lesions were observed in all of the organs, but there was no consistency across species. Musculoskeletal disease was observed in two pilot whales and cardiovascular disease was observed in one dwarf sperm whale and one pilot whale. Parasites were a common finding in the pilot whales and dwarf sperm whales but were considered consistent with the expected parasite load for wild odontocetes. None of the animals exhibited traumas similar to those observed in prior stranding events associated with mid-frequency sonar activity. Specifically, there was an absence of auditory system trauma and no evidence of distributed and widespread bubble lesions or fat emboli, as was previously observed (Fernández et al., 2005).

Sonar transmissions prior to the strandings were limited in nature and did not share the concentration identified in previous events associated with mid-frequency active sonar use (Evans and England, 2001). The operational/environmental conditions were also dissimilar (e.g., no constrictive channel and a limited number of ships and sonar transmissions). NMFS noted that environmental conditions were favorable for a shift from up-welling to down-welling conditions, which could have contributed to the event. However, other severe storm conditions existed in the days surrounding the strandings and the impact of these weather conditions on at-sea conditions is unknown. No harmful algal blooms were noted along the coastline.

Conclusions: All of the species involved in this stranding event are known to occasionally strand in this region. Although the cause of the stranding could not be determined, several whales had preexisting conditions that could have contributed to the stranding. Cause of death for many of the whales was likely due to the physiological stresses associated with being stranded. A consistent suite of injuries across species, which was consistent with prior strandings where sonar exposure is expected to be a causative mechanism, was not observed.

NMFS was unable to determine any causative role that sonar may have played in the stranding event. The acoustic modeling performed, as in the Hanalei Bay incident, was hampered by uncertainty regarding the location of the animals at the time of sonar transmissions. However, as in the Hanalei Bay incident, the response of the animals following the cessation of transmissions would imply a flight response that persisted for many hours after the sound source was no longer operational. In contrast, the presence of a severe weather event passing through North Carolina during January 13 and 14 is a possible, if not likely, contributing factor to the North Carolina UME of January 15. Hurricanes may have been responsible for mass strandings of pygmy killer whales in the British Virgin Islands and Gervais' beaked whales in North Carolina (Mignucci-Giannoni et al. 2000; Norman and Mead 2001).

F.1.6.3 Causal Associations for Stranding Events

Several stranding events have been associated with Navy sonar activities but relatively few of the total stranding events that have been recorded occurred spatially or temporally with Navy sonar activities. While sonar may be a contributing factor under certain rare conditions, the presence of sonar it is not a necessary condition for stranding events to occur. In established range areas such as those in Hawaii and Southern California where sonar use has been routine for decades, there is no evidence of impacts from sonar use on marine mammals.

A review of past stranding events associated with sonar suggest that the potential factors that may contribute to a stranding event are steep bathymetry changes, narrow channels, multiple sonar ships, surface ducting and the presence of beaked whales that may be more susceptible to sonar exposures. The most important factors appear to be the presence of a narrow channel (e.g. Bahamas and Madeira Island, Portugal) that may prevent animals from avoiding sonar exposure and multiple sonar ships within that channel. There are no narrow channels (less than 35 nm wide and 10 nm in length) in the MAA and the ships would be spread out over a wider area allowing animals to move away from sonar activities if they choose. In addition, beaked whales may not be more susceptible to sonar but may favor habitats that are more conducive to sonar effects. There have been no mass strandings in GOA attributed to Navy sonar during any of the prior Northern Edge exercises or as the result of ay Navy sonar use.

F.1.7 Stranding Section Conclusions

Marine mammal strandings have been a historic and ongoing occurrence attributed to a variety of causes. Over the last 50 years, increased awareness and reporting has lead to more information about species effected and raised concerns about anthropogenic sources of stranding. While there has been some marine mammal mortalities potentially associated with mid-frequency sonar effects to a small number of species (primarily limited numbers of certain species of beaked whales), the significance and actual causative reason for any impacts is still subject to continued investigation.

By comparison and as described previously, potential impacts to all species of cetaceans worldwide from fishery related mortality can be orders of magnitude more significant (100,000s of animals versus tens of animals) (Culik, 2002; ICES, 2005b; Read et al., 2006). This does not negate the influence of any mortality or additional stressor to small, regionalized sub-populations which may be at greater risk from human related mortalities (fishing, vessel strike, sound) than populations with larger oceanic level distribution or migrations. ICES (2005a) noted, however, that taken in context of marine mammal populations in general, sonar is not a major threat, nor is it a significant portion of the overall ocean noise budget.

In conclusion, a constructive framework and continued research based on sound scientific principles is needed in order to avoid speculation as to stranding causes, and to further our understanding of potential effects or lack of effects from military mid-frequency sonar (Bradshaw et al., 2005; ICES, 2005b; Barlow and Gisiner, 2006; Cox et al., 2006).

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Appendix G

Public Participation

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G PUBLIC PARTICIPATION

This appendix includes information about the public's participation in the development of the Gulf of Alaska (GOA) Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). The first part of this appendix summarizes the public scoping process that began with the publication of the Notice of Intent (NOI) in the *Federal Register* in March 2008. The scoping period allowed a variety of opportunities for the public to comment on the scope of the EIS/OEIS, and included three public scoping meetings.

The second part of this appendix addresses the public's involvement in reviewing and commenting on the Draft EIS/OEIS. This section includes a summary of the Navy's public involvement efforts, including information about public hearings, media advertisements and notifications, letters to stakeholders, and meeting flyers. As part of this phase of public involvement, the Navy received comments to the Draft EIS/OEIS from individuals, agencies, elected officials, organizations, and tribes. These comments and the Navy's response to them are addressed in Appendix I, *Pubic Comments and Responses*.

G.1 PROJECT WEBSITE

A public website was established specifically for this project, http://www.gulfofalaskanavyeis.com/ and went active on March 14th, 2008. This website address was published in the initial Notice of Intent and has subsequently been re-printed in all newspaper advertisements, agency letters, and public postcards for both the Notice of Intent to Prepare an Environment Impact Statement and Notice of Availability of the Draft Environmental Impact Statement. The Draft EIS/OEIS, Scoping Meeting Fact Sheets, and various other materials have been available on the project website throughout the course of the project.

G.2 GENERAL SUMMARY OF THE SCOPING PERIOD

The scoping period for the Navy Training Activities in the GOA EIS/ OEIS began with publication of a Notice of Intent in the Federal Register on 17 March 2008. The scoping period began on this date and lasted 45 days, concluding on 30 April 2008. Three public scoping meetings were held on April 1, 2 and 3 in the cities of Kodiak, Anchorage, and Cordova, Alaska, respectively. The scoping meetings were held in an open house format, with informational posters and written information provided to participants and Navy staff and project experts were available to answer participants' questions. Additionally, a tape recorder was available to record participants' oral comments. The interaction during the information sessions was productive and helpful to the Navy.

Scoping participants could submit comments in five ways:

- Oral statements at the public meetings (as recorded by the tape recorder);
- Written comments at the public meetings;
- Written letters (received any time during the public comment period);
- Electronic mail (received any time during the public comment period); and
- Comments submitted directly on the project website (received any time during the public comment period).

G.2.1 Public Scoping Notification

The Navy made significant efforts at notifying the public to ensure maximum public participation during the scoping process. A summary of these efforts follows.

G.2.1.1 Federal Register Notice

A Notice of Intent and Notice of Public Scoping Meetings was published in the *Federal Register* on March 17, 2008.

G.2.1.2 Newspaper Display Advertisements

Advertisements were made to announce the scoping meetings in the following newspapers on the dates indicated below:

Anchorage Daily News
Tuesday, March 18th 2008
Wednesday, March 19th 2008
Thursday, March 20th 2008
Tuesday, April 1st 2008
Wednesday, April 2nd 2008 (Day of Meeting)

Peninsula Clarion
Tuesday, March 18th 2008
Wednesday, March 19th 2008
Thursday, March 20th 2008
Tuesday, April 1st 2008
Wednesday, April 2nd 2008 (Day of Meeting)

Kodiak Daily Mirror
Tuesday, March 18th 2008
Wednesday, March 19th 2008
Thursday, March 20th 2008
Monday, March 31st 2008
Tuesday, April 1st 2008 (Day of Meeting)

Cordova Times
Tuesday, March 18th 2008
Wednesday, March 19th 2008
Thursday, March 20th 2008
Thursday, March 27th 2008
Thursday, April 3rd 2008 (Day of Meeting)

G.2.1.3 Scoping Notification Letters

Notice of Intent/Notice of Scoping Meeting Letters were distributed on March 17, 2008 and included the notice of intent to prepare an EIS/OEIS and notification of scoping meetings. Recipients included:

<u>Tribes and Nations</u>

- Kaguyak Village
- Lesnoi Village
- Native Village of Afognak
- Native Village of Chenega
- Native Village of Eyak
- Native Village of Old Harbor
- Native Village of Ouzinkie
- Native Village of Port Graham
- Native Village of Port Lions
- Native Village of Tatitlek
- Shoonaq Tribe of Kodiak
- Yakutat Tlingit Tribe

<u>Elected Officials</u>

<u>Federal:</u>

- U.S. Senator, Alaska
- U.S. Senator, Alaska
- U.S. Representative, Alaska

State:

- Governor of Alaska
- Alaska State Senator, Alaska District A
- Alaska State Senator, Alaska District B
- Alaska State Senator, Alaska District C
- Alaska State Senator, Alaska District D
- Alaska State Senator, Alaska District E
- Alaska State Senator, Alaska District F
- Alaska State Senator, Alaska District G
- Alaska State Senator, Alaska District H
- Alaska State Senator, Alaska District I
- Alaska State Senator, Alaska District J
- Alaska State Senator, Alaska District K
- Alaska State Senator, Alaska District L
- Alaska State Senator, Alaska District M
- Alaska State Senator, Alaska District N
- Alaska State Senator, Alaska District O
- Alaska State Senator, Alaska District P
- Alaska State Senator, Alaska District Q
- Alaska State Senator, Alaska District R
- Alaska State Senator, Alaska District S
- Alaska State Senator, Alaska District T
- Alaska State Representative, Alaska District 1
- Alaska State Representative, Alaska District 2
- Alaska State Representative, Alaska District 3
- Alaska State Representative, Alaska District 4
- Alaska State Representative, Alaska District 5
- Alaska State Representative, Alaska District 6
- Alaska State Representative, Alaska District 7
- Alaska State Representative, Alaska District 8
- Alaska State Representative, Alaska District 9
- Alaska State Representative, Alaska District 10
- Alaska State Representative, Alaska District 11
- Alaska State Representative, Alaska District 12
- Alaska State Representative, Alaska District 13
- Alaska State Representative, Alaska District 14
- Alaska State Representative, Alaska District 15
- Alaska State Representative, Alaska District 16
- Alaska State Representative, Alaska District 17
- Alaska State Representative, Alaska District 18
- Alaska State Representative, Alaska District 19
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- Alaska State Representative, Alaska District 31
- Alaska State Representative, Alaska District 32
- Alaska State Representative, Alaska District 33
- Alaska State Representative, Alaska District 34
- Alaska State Representative, Alaska District 35
- Alaska State Representative, Alaska District 36
- Alaska State Representative, Alaska District 37
- Alaska State Representative, Alaska District 38
- Alaska State Representative, Alaska District 39
- Alaska State Representative, Alaska District 40

Local:

- Mayor, Fairbanks North Star Borough
- Mayor, Kenai Peninsula Borough, Mayor
- Mayor, Kodiak Island Borough
- Mayor, Matanuska-Susitna Borough
- Mayor, Municipality of Anchorage
- Mayor, City of Cordova
- Mayor, City/Borough of Juneau

Federal Regulatory and Government Agencies

- Federal Aviation Administration
    - Washington D.C. headquarters
    - Alaska Region
    - Navy Liaison Officer
- Marine Mammal Commission
- National Oceanic and Atmospheric Administration
- National Marine Fisheries Service
    - Washington D.C. headquarters
    - Alaska Region
    - Office of Protected Resources
    - Habitat Conservation Division
    - Alaska Fisheries Science Center
- North Pacific Fisheries Management Council
- U.S. Army Corps of Engineers
    - Alaska District
- U.S. Department of the Air Force
- U.S. Department of the Army
    - Environmental Resources Division
- U.S. Coast Guard
    - Headquarters Office of Operating and Environmental Standards
    - District 17
- U.S. Department of the Interior
    - Bureau of Indian Affairs
    - Bureau of Land Management

    - Environmental Policy & Compliance Department
    - Minerals Management Service, Alaska Outer Continental Shelf Region
    - National Park Service, Glacier Bay
    - U.S. Fish & Wildlife Service, Alaska Region
    - U.S. Geological Survey, Alaska Science Center and Western Fisheries Research Center
- U.S. Environmental Protection Agency
    - Washington D.C. headquarters
    - Region X
- U.S. Fish and Wildlife Service
- U.S. Department of Agriculture
    - U.S. Forest Service, Alaska Region
- U.S. Department of Commerce

State Regulatory and Government Agencies

- Alaska Department of Fish and Game
- Alaska Department of Natural Resources
- Alaska Department of Commerce and Economic Development
- Alaska Department of Environmental Conservation
- Alaska Department of Transportation & Public Facilities
- Alaska Office of History and Archaeology
- Regulatory Commission of Alaska
- Alaska Department of Military and Veterans Affairs

G.2.2 Public Scoping Comments

In total, the Navy received comments from 77 individuals or organizations. These comments included 52 comments via the website, 18 comments via mail, and 7 comments made in person during the public scoping meetings. This summary gives an overview of comments received during the scoping period. Comments are organized by issue area.

G.2.2.1 Air Quality

Comments in this category expressed concern about the effects of military activities on air quality, specifically from carbon dioxide (CO_2) and greenhouse gases and their effects on global warming. Additional commenters expressed concerns with black carbon exhaust emissions from Navy vessels and their warming impact in the Arctic. Compliance with the Clean Air Act (CAA) was also mentioned. Commenters noted that the EIS/OEIS should discuss which areas do not meet National Ambient Air Quality Standards.

G.2.2.2 Alternatives

Comments regarding alternatives suggested that the Navy consider other sites to conduct its activities. Several commenters expressed that, of the three alternatives, they could only support the No Action Alternative. Additional comments expressed general disappointment with use of the term "No Action Alternative" to refer to continuing activities at current levels.

G.2.2.3 Biological Resources – Marine Mammals, Fish, Birds and Marine Habitat

The majority of comments received in this focus area expressed concerns about impacts to marine life. Many of these comments specifically raised concerns about the effect of Navy sonar on marine life, such as marine mammals, fish, sea turtles, sea invertebrates and zooplankton. Numerous comments were made about the number of endangered species in the GOA, particularly whales (seven whale species in total) and the North Pacific Right Whale specifically, and the presence of North Pacific Right Whale critical habitat in the GOA. Participants frequently requested that the EIS/OEIS consider alternative technologies to mid-frequency active (MFA) sonar, while others stated that MFA and other forms of sonar are not required for training and should not be used within the GOA based upon "common knowledge" of the effects of sonar. Other commenters quoted previous EIS/OEIS's such as the Hawaii Range Complex Supplemental Draft EIS to state that the Navy, in this EIS, "…found that the use of MFA sonar and high-frequency active (HFA) sonar was harassment to a variety of whale species which included the endangered blue whale, fin whale, humpback and sperm, also Stellar Sea Lion." Several comments addressed protective and mitigation measures that are used now and that could be used for marine mammals when sonar is in use. Still, other comments voiced concern over the effects of all forms of sonar on migration patterns of whales, marine mammals, fish, and birds. A few comments expressed concern about potential negative impacts from sonar, both short- and long-term, to fish and the developing eggs/embryos of salmon and other commercial species (halibut, herring, haddock, pollock and crab). Other comments concerned sonar effects on the marine mammal food chain, including fish and zooplankton.

Several comments expressed general concern about Navy impacts, other than sonar, such as habitat quality and water quality, on marine life, while others identified specific policies that must be considered in the Navy's analysis, such as the Marine Mammal Protection Act, the Endangered Species Act, the Coastal Zone Management Act, the Magnuson-Stevens Fisheries Conservation Management Act, the Migratory Bird Treaty Act, and Executive Order 13158.

G.2.2.4 Biological Resources—Onshore

A few comments suggested that the EIS/OEIS should also evaluate impacts on plant species and habitats, and indirect impacts outside the defined project boundary. Several comments addressed the protection of birds, including shorebirds, seabirds and migratory birds. Potential stressors to birds mentioned in the comments included noise disturbance. Among other terrestrial issues were general concerns about impacts to Alaska's ecosystem and resources.

G.2.2.5 Cultural Resources

Participants commenting on cultural resources were primarily concerned with preserving the integrity of sport and subsistence activities to include native subsistence. A few comments also addressed the issue of pollution and potential damage to ancestral homelands.

G.2.2.6 Cumulative Impacts

Comments in this category expressed concern about the overall impact of past and present military activity in the GOA. One specific commenter asked "how the cumulative impact of noise from other sources (military, fisheries, ship traffic and other commercial and industrial sources) can be measured and monitored while the Navy sonar exercises are going on." Another commenter asked that the "…cumulative impacts on local communities, subsistence, endangered species, marine mammals, fish, birds, and the ecosystem, among others, to include the EXXON Valdez oil spill, be fully evaluated and presented to the public". Finally, one commenter noted that cumulative impacts should include the consideration of how Navy actions may impact climatic changes, given concerns about how climate change may already be stressing many species.

G.2.2.7 Environmental Justice

Commenters requested that the EIS/OEIS disclose what efforts were taken to meet environmental justice requirements consistent with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income/Populations. These commenters also requested information describing the methodology and criteria for identifying low-income and minority populations as well as sources and references used within the DEIS analysis. Comments were also made in reference to making a complete analysis of impacts, including cumulative impacts, to low-income and minority communities, as well as methods of input for low-income populations and the means of outreach to these potentially affected communities.

G.2.2.8 Hazardous Materials/Hazardous Waste

Of the comments regarding hazardous materials and waste, the primary concerns articulated were over spills, specifically fuel oil, other toxic liquids, wastewater ballast and other bilge water discharges. Another area of concern was the effects of depleted uranium use in munitions on the environment in general. Other comments were in regard to chemical composition of the munitions that would be released. Additionally, a few individuals commented on World War II dump sites that are designated on some marine charts. These individuals want these areas to be re-identified, the types and quantities of materials and containers revealed to the public, and this information factored in to the DEIS analysis as previous military impacts on top of present and future proposed activities, as well as used to establish a baseline for cumulative impacts analysis.

G.2.2.9 Health and Safety

One comment expressed concern about safety implications to recreational swimmers and divers from mid-frequency active sonar.

G.2.2.10 Noise

Several commenters expressed concern about noise from ordnance, mid-frequency sonar, sonar jamming signals, low-frequency communication and surveillance sonar, mid- and high- frequency communication sonars and mechanical noises associated with warfare exercises, to include engine noises, explosions and munitions firing. Another commenter wanted to know what the seismic and sonic noise impacts will be to marine mammals, especially whales, walrus, and seals, and to fish and birds. Another commenter stated that the EIS should describe the impacts of noise on human and wildlife health and behavior, as well as the measures that will be employed to mitigate those impacts, such as physical controls, operations plans and flight corridors. Commenters stated that noise analysis methodologies should be explained and the single-event and cumulative noise metrics utilized in the analysis should be defined. One commenter was concerned about air or noise pollution in ancestral homelands – on or off shore.

G.2.2.11 Miscellaneous

Several comments were received that stated that the Navy was, in effect, moving to Alaska to conduct training, specifically sonar training, because "Court orders and lawsuits ran the Navy out of both California and Hawaii for similar tests and now you are making (a) move on our Alaskan waters." One commenter wanted to inform the Navy of vital telecommunication cables on the seafloor and indicated that Navy activities must be conducted away from these cables.

G.2.2.12 Mitigation Measures

Most comments regarding mitigation measures focused on marine mammals. For example, several comments expressed concern that spotting marine mammals is extremely difficult for even expert observers, and those commenters doubted that shipboard lookouts could detect animals in adverse sea conditions and especially at night. One commenter proposed that the Navy should use infrared imaging devices at night. Other commenters expressed concern about the effectiveness of the Navy's training program for spotting animals. One commenter believed that it would be impossible to avoid encounters with whales and other marine animals no matter how many lookouts the Navy utilizes or what time of the year training is conducted. Others questioned how the Navy is going to mitigate sonar's possible adverse impacts on marine mammals. Additionally, others asked that the Navy aggressively consider ways to expand, improve, and employ better protective measures in future sonar exercises, such as conducting more monitoring and enforcing larger safety zones around ships. Finally, comments were made that the Navy needs to better identify clear monitoring goals and objectives with specific parameters for measuring success and provide a feedback mechanism for the public to view information on mitigation effectiveness and monitoring results.

G.2.2.13 Meetings/National Environmental Policy Act Process

Comments on the National Environmental Policy Act (NEPA) process included several that felt the information available during the scoping process was inadequate to provide informed comments or that the "poster" session was not the best format. Other commenters desired a more open forum type format, where all questions voiced could be heard by all. One commenter was disappointed that the Navy chose to hold scoping sessions in only three Alaska communities. Another requested that an additional scoping meeting be held in Homer, Alaska. Still other commenters desired the Navy to shift its meetings to later in the year (August), when there is less activity in the various fisheries.

G.2.2.14 Recreation

One comment expressed concern about preserving the integrity of commercial, sport and subsistence activities, including fishing and traditional harvesting of animals. Another comment concerned the possibility of being subjected to sonar while diving. Still others mentioned whale watching activities and how Navy activities might affect them.

G.2.2.15 Socioeconomics

Comments regarding socioeconomic concerns included questions about the effects and impacts on commercial fishing, tourism, and the economy in general.

G.2.2.16 Sonar and Underwater Detonations

Many comments mentioned concerns about the effect of Navy sonar on marine life, such as marine mammals, fish, sea turtles, and invertebrates. Others mentioned recent reports that fish suffer from hearing loss and widespread disorientation following loud noise intrusions and that catch rates of commercial species of fish have plummeted in the vicinity of noise sources. Some specific references to additional studies were received via comments. Others said that noise has been shown in several cases to kill, disable or disrupt the behavior of invertebrates and that little is known about the effects of MFAS on lower marine trophic levels such as phytoplankton and zooplankton. Participants frequently requested that the EIS/OEIS consider alternative technologies to sonar. Many felt that sonar activity is not necessary or appropriate for Alaska waters and that training could be accomplished through simulation and/or use of alternate technologies. Several comments addressed protective and mitigation measures for marine mammals when sonar is used. A few comments specifically mentioned concerns about possible acute and/or chronic effects on benthic and pelagic marine life from munitions discharges and explosions. Some commenters also discussed that analysis of possible impacts to the seafloor from expended materials during training exercises would need to be discussed.

G.2.2.17 Water Resources

Comments regarding water resources included general concerns about the potential effects on quality of both fresh and marine waters, not only in the designated training areas, but also in the land-based areas utilized for logistical support of the exercises, and areas adjacent to the training areas to be affected by military activities. Of specific concern were graywater (waste water from sinks, baths, showers, laundry, etc) and blackwater (waste water from human body wastes) that will be discharged from all vessels engaged in Northern Edge exercises, to include ballast water drawn from areas that may contain invasive species. A few of these comments quoted specific provisions of the Clean Water Act.

G.2.2.18 Summary of Comments

Table G-1 provides a breakdown of areas of concern based on comments received during scoping. Because most commenters provided comments on several issues, and because some commenters chose to comment via multiple means, with only slight variations in their comments, the total count well exceeds the total number of 77 comments received.

Table G-1: Breakdown of Scoping Comments by Resource Area

Resource Area	Count	Percent of Total
Biological Resources - Marine Mammals	88	19.04%
Sonar and Underwater Detonations	74	16.01%
Biological Resources - Fish & Marine Habitat	45	9.74%
Mitigation	36	7.79%
Policy/NEPA	31	6.70%
Threatened and Endangered Species	30	6.49%
Commercial Fishing	27	5.84%
Alternatives	26	5.62%
Hazardous Materials / Hazardous Waste	24	5.19%
Socioeconomics	15	3.24%
Cumulative Impacts	11	2.38%
Water Resources	10	2.16%
Air Quality	8	1.73%
Biological Resources - Onshore	7	1.51%
Noise	6	1.29%
Miscellaneous	6	1.29%
Cultural Resources	5	1.08%
Proposed Action	5	1.08%
Coastal Zone Management Act	3	0.64%
Recreation	2	0.43%
Health and Safety	2	0.43%
Environmental Justice	1	0.21%
TOTAL	462	

G.3 PUBLIC REVIEW OF THE DRAFT EIS/OEIS

G.3.1 Federal Register Notice

On December 11, 2009, a Notice of Availability of the Draft EIS/OEIS was published in the *Federal Register*. This notice announced the availability of the Draft EIS/OEIS for public review. A news release was also issued and two media briefings were conducted to inform the public of the impending Notice publication. The Notice of Availability was the start of the public comment period for the Draft EIS/OEIS. The 45 day public comment period ended on January 25, 2010.

G.3.2 Public Notification

The Navy made significant efforts at notifying the public to ensure maximum public participation during the public hearing process. The public could submit comments in five ways:

- Oral statements at the public meetings (as recorded by the tape recorder);

- Written comments at the public meetings;
- Written letters (received any time during the public comment period);
- Electronic mail (received any time during the public comment period); and
- Comments submitted directly on the project website (received any time during the public comment period).

A summary of the Navy's public notification efforts follows.

G.3.2.1 Project Website

The Navy provided a public website that has been active since the NOI was published in March 2008. On the day of the public release of the Draft EIS/OEIS, this website made available an electronic (PDF) version of the Draft EIS/OEIS for download and review. A comment form could be downloaded from the website to allow the public to submit written comments. The website also provided a paperless capability for members of the public to enter a comment directly.

G.3.2.2 Newspaper Display Advertisements

Advertisements were made to announce the availability of the Draft EIS/OEIS and to announce the schedule and locations for public hearings as follows:

Anchorage Daily News
Monday, 14th December 2009
Tuesday, 15th December 2009
Wednesday, 16th December 2009
Monday, 28th December 2009
Wednesday, 6th January 2010
Thursday, 7th January 2010
Friday, 8th January 2010
Sunday, 10th January 2010
Monday, 11th January 2010

Peninsula Clarion
Monday, 14th December 2009
Tuesday, 15th December 2009
Wednesday, 16th December 2009
Monday, 28th December 2009
Wednesday, 30th December 2009
Wednesday, 6th January 2010
Thursday, 7th January 2010
Friday, 8th January 2010

Kodiak Daily Mirror
Monday, 14th December 2009
Tuesday, 15th December 2009
Wednesday, 16th December 2009
Monday, 28th December 2009
Tuesday, 5th January 2010
Wednesday, 6th January 2010
Thursday, 7th January 2010

Juneau Empire
Monday, 14th December 2009
Monday, 28th December 2009
Friday, 8th January 2010
Sunday, 10th January 2010
Monday, 11th January 2010
Cordova Times(Thursday only)
Thursday, 17th December 2009
Thursday, 24th December 2009
Thursday, 31th December 2009
Thursday, 7th January 2010

G.3.2.3 News Releases

Two news releases were distributed by the Commander, Navy Region Northwest Environmental Public Affairs Officer (CNRNW EPAO) to media outlets, elected officials and other potentially interested parties. The first news release was distributed on 11 December 2009, and announced the availability of the Draft EIS/OEIS. This news release included details on the Proposed Action, public hearings dates, locations, times and comment information.

A second news release was distributed by the CNRNW EPAO on 31 December 2009, and announced the Navy's upcoming public hearings. This news release, meant to encourage the public to attend the open houses and presentation/oral comment sessions, provided detailed information on the location, dates, and times of the public hearings, in addition to comment information and details on the Proposed Action.

G.3.2.4 **Public Service Announcement (PSA)**

A PSA was distributed twice by CNRNW EPAO (31 December 2009, and 4 January 2010), announcing the public hearing locations, dates, time, close of comment period, and project Web site.

G.3.2.5 Postcard Mailers

Postcards announcing the availability of the Draft EIS/OEIS, comment information, and the public hearing dates, times, and locations were sent out to 691 individuals on the project mailing list on 23 December 2009.

G.3.2.6 Fliers

Fliers announcing the public open houses and presentation/oral comment sessions for each of the five public hearings locations were distributed to 45 locations.

G.3.2.7 Stake Holder Letters

DEIS Distribution/Public Hearings Letters were distributed 11 December 2009 and included the notification of public hearings and notice of availability of Draft EIS/OEIS (CD or hard copy of EIS included).

Following is a list of public officials, government agencies, Native American Tribes and Nations, organizations, and individuals who attended the public scoping meetings, provided comments during the scoping process, or have been identified by the Navy to be on the distribution list for the Gulf of Alaska Navy Training Activities Draft EIS/OEIS.

Federal and state regulatory agencies and project information repositories (noted below with an asterisk*) received both one (1) hard copy version and one (1) CD-ROM version of the Gulf of Alaska Navy Training Activities Draft EIS/OEIS. Stakeholders who specifically requested a hard copy version also received one, along with a CD-ROM version. All other stakeholders received one (1) CD-ROM version. Additional hard copies and/or CD-ROM versions of the Draft EIS/OEIS were made available when requested.

Information Repositories*

Loussac Library, Anchorage, AK

Alaska State Library, Juneau, AK

A. Holmes Johnson Memorial Library, Kodiak, AK

University of Alaska Fairbanks, Rasmussen Library, Fairbanks, AK

Cordova Public Library, Cordova, AK

Copper Valley Community Library, Glennallen, AK

Seward Community Library, Seward, AK

Humboldt Homer Public Library, Homer, AK

Federal Regulatory Agencies

Federal Aviation Administration
- Washington D.C. headquarters
- Alaska Region
- Navy Liaison Officer*

Marine Mammal Commission*

National Oceanic and Atmospheric Administration

National Marine Fisheries Service
- Washington D.C. headquarters*
- Alaska Region*
- Office of Protected Resources
- Habitat Conservation Division
- Alaska Fisheries Science Center

North Pacific Fisheries Management Council*

U.S. Army Corps of Engineers
- Alaska District

U.S. Department of the Air Force*

U.S. Department of the Army
-Environmental Resources Division*

U.S. Coast Guard
- Headquarters Office of Operating and Environmental Standards*
- District 17

U.S. Department of the Interior
- Bureau of Indian Affairs
- Bureau of Land Management
- Environmental Policy & Compliance Department*
- Minerals Management Service, Alaska Outer Continental Shelf Region*
- National Park Service, Glacier Bay*
- U.S. Fish & Wildlife Service, Alaska Region*
- U.S. Geological Survey, Alaska Science Center and Western Fisheries Research Center*

U.S. Environmental Protection Agency
- Washington D.C. headquarters*
- Region X*

U.S. Fish and Wildlife Service

U.S. Department of Agriculture
-U.S. Forest Service, Alaska Region

U.S. Department of Commerce

State Regulatory Agencies

Alaska Department of Fish and Game

Alaska Department of Natural Resources

Alaska Department of Commerce and Economic Development

Alaska Department of Environmental Conservation

Alaska Department of Transportation & Public Facilities

Alaska Office of History and Archaeology

Regulatory Commission of Alaska

Alaska Department of Military and Veterans Affairs

Native American Tribes and Nations*

Kaguyak Village

Lesnoi Village

Native Village of Afognak

Native Village of Chenega

Native Village of Eyak

Native Village of Old Harbor

Native Village of Ouzinkie

Native Village of Port Graham

Native Village of Port Lions

Native Village of Tatitlek

Shoonaq Tribe of Kodiak

Yakutat Tlingit Tribe

Federal Elected Officials

U.S. Representative
Hon. Donald Young, AK

U.S. Senator
Hon. Lisa Murkowski, AK

U.S. Senator
Hon. Mark Begich, AK

State Elected Officials

Governor of Alaska
Hon. Sean Parnell

Alaska State Senator
Hon. Bert Stedman
AK District A

Alaska State Senator
Hon. Dennis Egan
AK District B

Alaska State Senator
Hon. Albert Kookesh
AK District C

Alaska State Senator
Hon. Joe Thomas
AK District D

Alaska State Senator
Hon. Joe Paskvan
AK District E

Alaska State Senator
Hon. Gene Therriault
AK District F

Alaska State Senator
Hon. Linda Menard
AK District G

Alaska State Senator
Hon. Charlie Huggins
AK District H

Alaska State Senator
Hon. Fred Dyson
AK District I

Alaska State Senator
Hon. Bill Wielechowski
AK District J

Alaska State Senator
Hon. Bettye Davis
AK District K

Alaska State Senator
Hon. Johnny Ellis
AK District L

Alaska State Senator
Hon. Hollis French,
AK District M

Alaska State Senator
Hon. Lesil McGuire
AK District N

Alaska State Senator
Hon. Kevin Meyer
AK District O

Alaska State Senator
Hon. Con Bunde
AK District P

Alaska State Senator
Hon. Thomas Wagoner
AK District Q

Alaska State Senator
Hon. Gary Stevens
AK District R

Alaska State Senator
Hon. Lyman Hoffman
AK District S

Alaska State Senator
Hon. Donald Olson
AK District T

Alaska State Representative
Hon. Kyle Johansen
AK District 1

Alaska State Representative
Hon. Peggy Wilson
AK District 2

Alaska State Representative
Hon. Beth Kerttula
AK District 3

Alaska State Representative
Hon. Cathy Munoz
AK District 4

Alaska State Representative
Hon. Bill Thomas, Jr.
AK District 5

Alaska State Representative
Hon. Woodie Salmon
AK District 6

Alaska State Representative
Hon. Mike Kelly
AK District 7

Alaska State Representative
Hon. David Guttenberg
AK District 8

Alaska State Representative
Hon. Scott Kawaski
AK District 9

Alaska State Representative
Hon. Jay Ramras
AK District 10

Alaska State Representative
Hon. John Coghill
AK District 11

Alaska State Representative
Hon. John Harris
AK District 12

Alaska State Representative
Hon. Carl Gatto
AK District 13

Alaska State Representative
Hon. Wes Keller
AK District 14

Alaska State Representative
Hon. Mark Neuman
AK District 15

Alaska State Representative
Hon. Bill Stoltze
AK District 16

Alaska State Representative
Hon. Anna Fairclough,
AK District 17

Alaska State Representative
Hon. Nancy Dahlstrom
AK District 18

Alaska State Representative
Hon. Pete Peterson
AK District 19

Alaska State Representative
Hon. Max Gruenberg
AK District 20

Alaska State Representative
Hon. Harry Crawford
AK District 21

Alaska State Representative
Hon. Sharon Cissna
AK District 22

Alaska State Representative
Hon. Les Gara
AK District 23

Alaska State Representative
Hon. Berta Gardner
AK District 24

Alaska State Representative
Hon. Mike Doogan
AK District 25

Alaska State Representative
Hon. Lindsey Holmes
AK District 26

Alaska State Representative
Hon. Bob Buch
AK District 27

Alaska State Representative
Hon. Craig Johnson
AK District 28

Alaska State Representative
Hon. Chris Tuck
AK District 29

Alaska State Representative
Hon. Charisse Millet
AK District 30

Alaska State Representative
Hon. Bob Lynn
AK District 31

Alaska State Representative
Hon. Mike Hawker
AK District 32

Alaska State Representative
Hon. Kurt Olson
AK District 33

Alaska State Representative
Hon. Mike Chenault
AK District 34

Alaska State Representative
Hon. Paul Seaton
AK District 35

Alaska State Representative
Hon. Alan Austerman
AK District 36

Alaska State Representative
Hon. Bryce Edgmon
AK District 37

Alaska State Representative
Hon. Bob Herron
AK District 38

Alaska State Representative
Hon. Richard Foster
AK District 39

Alaska State Representative
Hon. Reggie Joule
AK District 40

Local Elected Officials

Fairbanks North Star Borough
Hon. Luke Hopkins
Mayor

Kenai Peninsula Borough
Hon. David R. Carey
Mayor

Kodiak Island Borough
Hon. Jerome M. Selby
Mayor

Matanuska-Susitna Borough
Hon. Talis Colberg
Mayor

Municipality of Anchorage
Hon. Dan Sullivan
Mayor

City of Cordova
Hon. Timothy L. Joyce
Mayor

City/Borough of Juneau
Hon. Bruce Botelho
Mayor

Individuals

Tom Anderson
Cordova, AK

Claudia Anderson
Kodiak, AK

Brad Barr
Kodiak, AK

Wendy Beck
Kodiak, AK

Robert Berceli
Cordova, AK

Allison Bidlack
Cordova, AK

Cheryl Boehlan
Kodiak, AK

Richard Brenner
Cordova, AK

Bruce Cain
Cordova, AK

Mark Cammrys
Cordova, AK

Madelene Caselli
Palmer, AK

Al Clayton
Anchorage, AK

Taral Clayton
Anchorage, AK

Trevor Clayton
Anchorage, AK

Mark Cummings
Cordova, AK

Terry Cummings
Anchorage, AK

Dean Cwrzah
Kodiak, AK

Tess Dietrich
Kodiak, AK

Don Dunn
Kodiak, AK

James Fisher
Soldotna, AK

Robert Fisher
Kingwood, TX

Susan Glinton
Nassau, Bahamas

Lavonne Heacock
Rhododendron, OR

Pat Heitman
Kodiak, AK

Carolyn Heitman*
Kodiak, AK

Leona Heitsch
Bourbon, MI

Pat Holmes
Kodiak, AK

Deb Jaros
Kodiak, AK

Joanna Kappele
Chicago, IL

Lee Keller
Seward, AK

Kimberly Kopanuk
Anchorage, AK

Robert Kopchak
Cordova, AK

Aldone Kowenta
Kodiak, AK

Kurt Krieter
Palmer, AK

Alexis Kwachka
Kodiak, AK

Dave Lacey
Fairbanks, AK

Ann Mallard
Fairbanks, AK

Craig Matkin
Homer, AK

Irene Miramontes
Nassau, Bahamas

Maria Nasif
Tuscon, AZ

Susan Payne
Kodiak, AK

Geneneiva Pearson
Kodiak, AK

Susan Peehl
Cold Springs, NY

Barbara Sachau Florham Park, NJ	Joan Stempniak Homer, AK	Hans Tscherich Cordova, AK
Mike Sirofchruk Kodiak, AK	Dany Stihl Kodiak, AK	Keith Van den Broek Cordova, AK
Ralph Sirofchruk Kodiak, AK	Delores Stokes Kodiak, AK	Barbara Volpe Kodiak, AK
Michael Sirofchuck Kodiak, AK	John F. Thomas Cordova, AK	Elise Wolf Fritz Creek, AK
Erin Starr-Hollow Kodiak, AK	Kip Thomet Kodiak, AK	

G.3.3 Public Hearings

During the public comment period the Navy held public hearings to present information from the EIS/OEIS and to solicit public comments. Public hearings were held on the following dates and locations in Alaska: 7 January 2010, Kodiak; 8 January 2010, Anchorage; 9 January 2010, Homer, Alaska; 11 January 2010, Juneau; 12 January 2010, Cordova. Staffed poster stations with detailed information about the project and the Draft EIS/OEIS results were open for each meeting from 5:00 to 7:00 PM. During this time, Navy experts were available to answer questions and receive comments from members of the public. At 7 PM during each meeting a more formal, structured public hearing began in which the Navy presented a briefing on the Draft EIS/OEIS and the study conclusions. Following that presentation, individuals provided oral comments. All oral comments were captured by a court reporter and have been reproduced later in this appendix. In addition to oral comments, the Navy received written comments during these hearings.

G.3.3.1 Public Hearing Comments

In total, the Navy received comments from 213 individuals or organizations. These comments included 140 comments via the website, 38 comments via mail, and 64 comments made in person during the public hearing meetings. Comments were further broken out into 1,127 comment issues to best respond to each concern of the individual or organization.

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Appendix H

Acoustic Systems Descriptions

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H ACOUSTIC SYSTEMS DESCRIPTIONS

H.1 GENERAL SUMMARY OF ACOUSTIC SYSTEMS

Various active acoustic sources that may or may not affect the local marine mammal population are deployed by platforms during various training activities, exercises and maintenance events. The following sections discuss the acoustic sources that could be present during such training activities, exercises, and maintenance events.

H.1.1 Surface Ship Sonars

- AN/SQS-53 – a computer-controlled, hull-mounted surface-ship sonar that has both active and passive operating capabilities, providing precise information for anti-submarine warfare (ASW) weapons control and guidance. The system is designed to perform direct-path ASW search, detection, localization, and tracking from a hull-mounted transducer array. The AN/SQS-53 (Figure H-1) is characterized as a mid-frequency active (MFA) sonar, operating from 1 to 10 kilohertz (kHz); however, the exact frequency is classified. The AN/SQS-53 sonar is the major component to the AN/SQQ-89 sonar suite, and it is installed on Arleigh Burke Class guided missile destroyers (DDGs), and Ticonderoga Class guided missile cruisers (CGs).

Figure H-1. Arleigh Burke Class DDG equipped with AN/SQS-53 (L); Ticonderoga Class CG showing AN/SQS-53 (R)

- AN/SQS-53 Kingfisher – a modification to the AN/SQS-53 sonar system that provides the surface ship with an object detection capability. The system uses MFA sonar, although the exact frequency range is classified. This sonar system is installed on Arleigh Burke Class DDGs, and Ticonderoga Class CGs.
- AN/SQS-56 – a hull-mounted sonar that features digital implementation, system control by a built-in mini computer, and an advanced display system. The sonar is an active/passive, preformed beam, digital sonar providing panoramic active echo ranging and passive digital multibeam steering (DIMUS) surveillance. The sonar system is characterized as MFA sonar, although the exact frequency range is classified. The AN/SQS-56 (Figure H-2) is the major component of the AN/SQQ-89 sonar suite and is installed on Oliver Hazard Perry Class frigates (FFGs).

Figure H-2. Oliver Hazard Perry Class FFG equipped with AN/SQS-56

- AN/SQR-19 – a tactical towed array sonar (TACTAS) that is able to passively detect adversary submarines at a very long range. The AN/SQR-19, which is a component of the AN/SQQ-89 sonar suite, is a series of passive hydrophones towed from a cable several thousand feet behind the ship. This sonar system is a passive sensing device; therefore, it is not analyzed in this Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS). The AN/SQR-19 (Figure H-3) can be deployed by Arleigh Burke Class DDGs, Ticonderoga Class CGs, and Oliver Hazard Perry Class FFGs.

Figure H-3. AN/SQR-19

H.1.2 Surface Ship Fathometer

The surface ship fathometer (AN/UQN-4) is used to measure the depth of water from the ship's keel to the ocean floor for safe operational navigation. Fathometers are operated from all classes of United States (U.S.) Navy surface ships and are considered MFA sonar, although the exact frequency range is classified.

H.1.3 Submarine Sonars

- AN/BQQ-5 – a bow- and hull-mounted passive and active search and attack sonar system. The system includes the TB-16 and TB-23 or TB-29 towed arrays and Combat Control System (CCS) MK 2. This sonar system is characterized as MFA, although the exact frequency range is classified. The AN/BQQ-5 (Figure H-4) sonar system is installed on Los Angeles Class nuclear attack submarines (SSNs) and Ohio Class ballistic missile nuclear submarines (SSBNs), although the AN/BQQ-5 systems installed on Ohio Class SSBNs do not have an active sonar capability. The AN/BQQ-5 system is being phased out on all submarines in favor of the AN/BQQ-10 sonar. The operating parameters of both systems with regard to sound output in the ocean are almost identical. For these reasons, these systems will be referred to as AN/BQQ-10 in this EIS.

Figure H-4. AN/BQQ-5

- AN/BQQ-10 (also known as Advanced Rapid Commercial-Off-the-Shelf Insertion [ARCI]) – a four-phase program for transforming existing submarine sonar systems (i.e., AN/BQQ-5) from legacy systems to more capable and flexible active and passive systems with enhanced processing using commercial-off-the-shelf (COTS) components. The system is characterized as MFA, although the exact frequency range is classified. The AN/BQQ-10 (Figure H-5) is installed on Seawolf Class SSNs, Virginia Class SSNs, Los Angeles Class SSNs, and Ohio Class SSBN/nuclear guided missile submarines (SSGNs). The BQQ-10 systems installed on Ohio Class SSBNs do not have an active sonar capability.

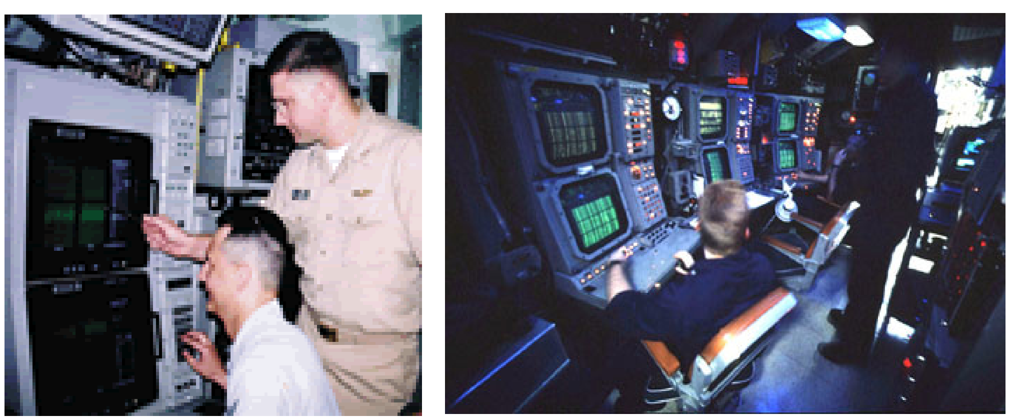

Figure H-5. Sailors operating AN/BQQ-10

H.1.4 Submarine Auxiliary Sonar Systems

- AN/BQS-15 – an under-ice navigation and mine-hunting sonar (Figure H-6) that uses both mid- and high-frequency (i.e., greater than 10 kHz) active sonar, although the exact frequencies are classified. Later versions of the AN/BQS-15 are also referred to as Submarine Active Detection Sonar (SADS). The Advanced Mine Detection System (AMDS) is being phased in on all ships and will eventually replace the AN/BQS-15 and SADS. These systems are installed on Seawolf Class SSNs, Virginia Class SSNs, Los Angeles Class SSNs, and Ohio Class SSGNs.

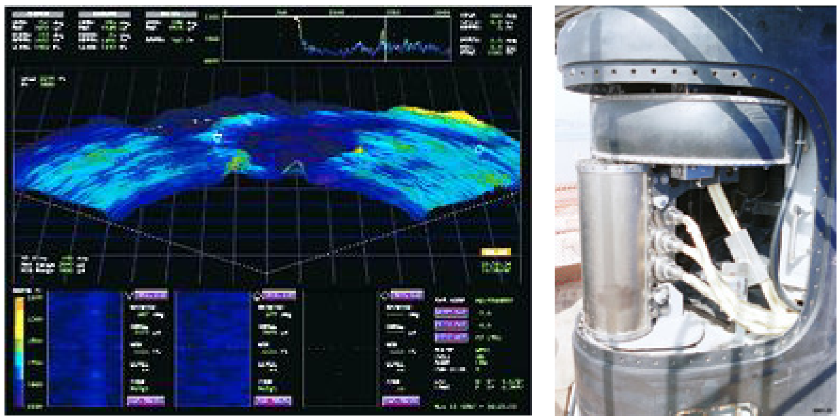

Figure H-6. AN/BQS-15 display (L), and sensor components (R)

- AN/WQC-25 – an MFA sonar underwater communications system that can transmit either voice or signal data in two bands, 1.5 to 3.1 kHz or 8.3 to 11.1 kHz. The AN/WQC-2 (Figure H-7), also referred to as the "underwater telephone" (UWT), is on all submarines and most surface ships, and allows voice and tonal communications between ships and submarines.

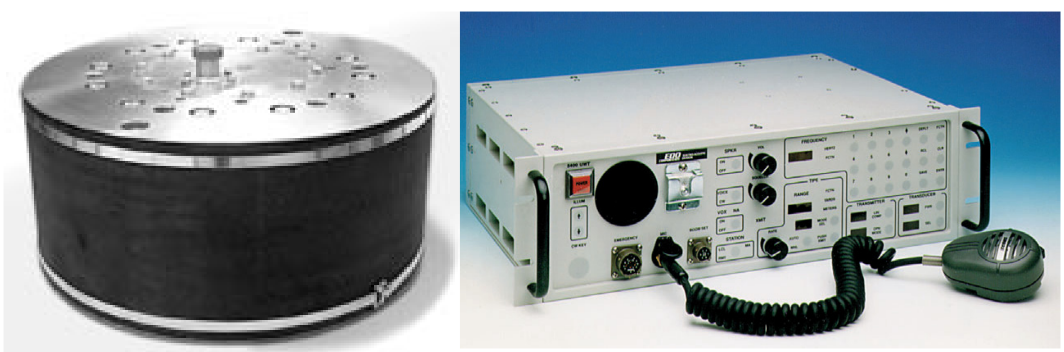

Figure H-7. AN/WQC-2 transducer (L), and control unit (R)

H.1.5 Aircraft Sonar Systems

Aircraft sonar systems that could be deployed during active sonar events include sonobuoys (tonal [active], listening [passive], and extended echo ranging [EER] or improved extended echo ranging [IEER]) and dipping sonar (AN/AQS-13/22 or AN/AOS-22). Sonobuoys may be deployed by Marine Patrol Aircraft (MPA) or MH-60R helicopters. A sonobuoy is an expendable device used by aircraft for the detection of underwater acoustic energy and for conducting vertical water column temperature measurements. Most sonobuoys are passive, but some can generate active acoustic signals as well as listen passively. Dipping sonars are used by MH-60R helicopters. Dipping sonar is an active or passive sonar device lowered on cable by helicopters to detect or maintain contact with underwater targets. A description of various types of sonobuoys and dipping sonar is provided below.

- AN/AQS-13 Helicopter Dipping Sonar – an active scanning sonar that detects and maintains contact with underwater targets through a transducer lowered into the water from a hovering helicopter. It operates at mid-frequency, although the exact frequency is classified. The AN/AQS-13 (Figure H-8) is operated by MH-60R helicopters.

Figure H-8. AN/AQS-13 being deployed by a Navy helicopter

- AN/AQS-22 Airborne Low-Frequency Sonar (ALFS) – the U.S. Navy's dipping sonar system for the MH-60R helicopter Light Airborne Multi-Purpose System III (LAMPS III), which is deployed from aircraft carriers, cruisers, destroyers, and frigates. It operates at mid-frequency, although the exact frequency is classified. The AN/AQS-22 (Figure H-9) employs both deep- and shallow-water capabilities.

Figure H-9. AN/AQS-22 being deployed by a Navy helicopter

- AN/SSQ-62C Directional Command Activated Sonobuoy System (DICASS) – sonobuoy that operates under direct command from ASW fixed-wing aircraft or MH-60R helicopters (Figure H-10). The system can determine the range and bearing of the target relative to the sonobuoys position and can deploy to various depths within the water column. The active sonar operates at mid-frequency, although the exact frequency range is classified. After water entry, the sonobuoy transmits sonar pulses (continuous waveform [CW] or linear frequency modulation [LFM]) upon command from the aircraft. The echoes from the active sonar signal are processed in the buoy and transmitted to the receiving station onboard the launching aircraft.

Figure H-10. AN/SQS-62 (L); MPA equipped with AN/SQS-62 sonobuoys (R)

- AN/SSQ-110A Explosive Source Sonobuoy – a commandable, air-dropped, high source level explosive sonobuoy. The AN/SSQ-110A explosive source sonobuoy (Figure H-11) is composed of two sections, an active (explosive) section and a passive section. The upper section is called the "control buoy" and is similar to the upper electronics package of the AN/SSQ-62 DICASS sonobuoy. The lower section consists of two signal underwater sound (SUS) explosive payloads of Class A explosive weighing 1.9 kg (4.2 lbs) each. The arming and firing mechanism is hydrostatically armed and detonated. Once in the water, the SUS charges explode, creating a loud acoustic signal. The echoes from the explosive charge are then analyzed on the aircraft to determine a submarine's position. The AN/SSQ-110A explosive source sonobuoy is deployed by MPA.

Figure H-11. MPA deploying AN/SSQ-110A

- AN/SSQ-53D/E Directional Frequency Analysis and Recording (DIFAR) – a passive sonobuoy deployed by MPA aircraft and MH-60R helicopters. The DIFAR sonobuoy (Figure H-12) provides acoustic signature data and bearing of the target of interest to the monitoring unit(s) and can be used for search, detection, and classification. The buoy uses a hydrophone with directional detection capabilities in the very low frequency, low frequency, and mid-frequency ranges, as well as an omnidirectional hydrophone for general listening purposes.

Figure H-12. AN/SSQ-53 (L); AN/SSQ-53 being loaded onto MPA (R)

H.1.6 Torpedoes

Torpedoes are the primary ASW weapon used by surface ships, aircraft, and submarines. When torpedoes operate actively, they transmit an active acoustic signal to ensonify the target and use the received echoes for guidance.

- MK 48 and MK 48 Advanced Capability (ADCAP) (Figure H-13) are heavyweight torpedoes deployed on all classes of Navy submarines. MK 48 and MK 48 ADCAP torpedoes are inert and considered HF sonar, but the frequency ranges are classified. Due to the fact that both torpedoes are essentially identical in terms of environmental interaction, they will be referred to collectively as the MK48 in this EIS.

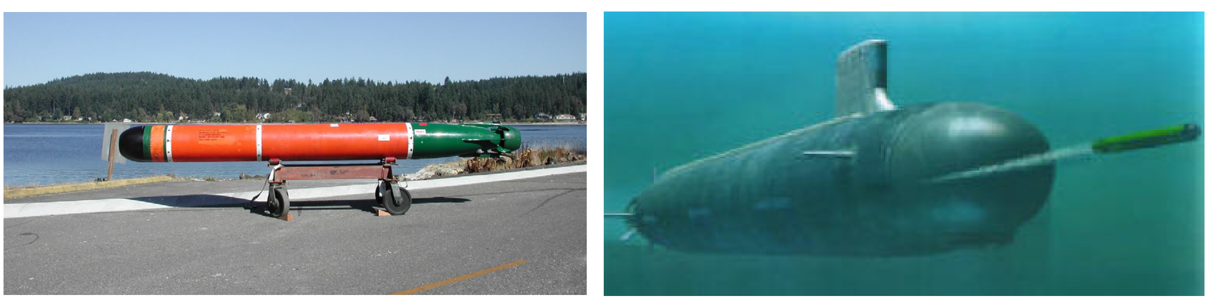

Figure H-13. MK 48/MK 48 ADCAP (L); Seawolf Class SSN launching MK-48/MK-48 ADCAP (R)

H.1.7 Exercise Training Targets

There are two types of training targets, the MK 30 Acoustic Target and the MK 39 Expendable Mobile ASW Training Target (EMATT) (Figure H-14). ASW training targets simulate submarines as an ASW target in the absence of participation by a submarine in an exercise. They are equipped with acoustic projectors emanating sounds to simulate submarine acoustic signatures, and echo repeaters to simulate the characteristics of the reflection of a sonar signal from a submarine.

Figure H-14. MK 39 EMATT (L) and MK 30 (R)

In addition, surface targets such as "sleds" (aluminum catamarans), seaborne powered targets (radio-controlled high-speed boats), and target drone units (TDUs) could also be deployed during training exercises.

H.1.8 Tracking Pingers, Transponders, and Acoustical Communications (ACOMs)

Tracking pingers are installed on training platforms to track the position of underwater vehicles. The pingers generate a precise, preset, acoustic signal for each target to be tracked. ACOMs and transponders provide the communication link between sensor packages and base platform allowing information to be exchanged.

- MK 84 Pinger Signal, Underwater Sound (SUS) – an air or surface dropped noisemaking device (Figure H-15) that emits one of five mid-frequency tonal patterns using two MFA sonars with frequencies at 3.1 and 3.5 kHz; it is used to provide prearranged signal communications to submerged submarines.

Figure H-15. MK 84

H.1.9 Portable Undersea Training Range (PUTR)

The Portable Undersea Training Range (PUTR) is a self-contained, portable, undersea tracking capability that employs modern technologies to support coordinated USW training for Forward Deployed Naval Forces (FDNF). PUTR will be available in two variants to support both shallow and deep water remote operations in keeping with Navy requirements to exercise and evaluate weapons systems and crews in the environments that replicate the potential combat area.

PUTR-D, shown below in Figure H-16, consists of a set of transponders which will be deployed by a ship of opportunity and anchored to the ocean bottom. Once deployed a survey is conducted by a range vessel to determine the transponder locations and to test tracking accuracy. The transponder is activated by utilizing an acoustic command signal during operations and commanded into sleep mode when not in use. Operational lifetime, due to transponder battery life, will meet the key performance parameters, including the operating objective of actual tracking time. The transponders can remain deployed for up to 12 months in a dormant state. Transponders will be recovered for battery/buoy maintenance or for range recovery by transmitting an acoustic command which releases the transponder electronics/floatation buoy package from the anchor. The ship of opportunity will then retrieve the transponders leaving the anchor *in-situ*.

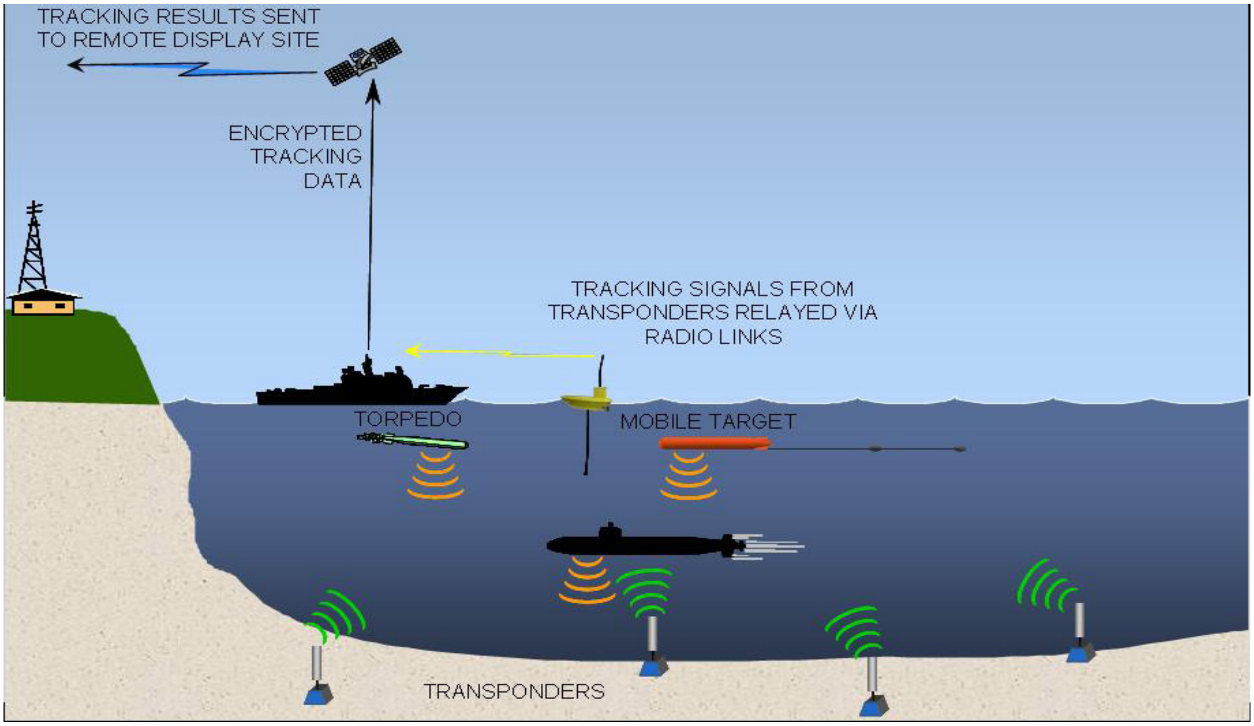

Figure H-16. Portable Undersea Training Range Deep (PUTR-D) Transponder Configuration

H.1.10 Advanced Extended Echo Ranging (AEER)

The Advance Extended Echo Ranging program examines improvements in both long-range shallow and deep water ASW search using active sources (Air Deployable Low Frequency Projector (ADLFP), Advance Ranging Source (ARS)) and passive sonobuoy receivers (Air Deployable Active Radar Receiver (ADAR)). The signal processing is provided by research conducted under Advanced Multi-static Processing Program (AMSP).

The AEER system is similar to the IEER system in that it uses the AN/SSQ-101 Air Deployed Active Receiver (ADAR) sonobuoy. But instead of the SSQ-110A Extended Echo Range Sonobuoy it is coupled with the SSQ-125 Air Deployable Coherent Source Sonobuoy. The SSQ-125 system is in the R&D stage with two types of sensor technology being considered (the ADLFP and ARS). The buoy is intended to provide the user with a sonobuoy with an improved bi-static acoustic source and better signal processing for harsh water environments. Table H-1 below is a comparison of the echo ranging systems.

Table H-1. Echo Ranging Systems

	Current System	Current System	Future System
Aircraft System =	EER	IEER	AEER
Buoys = (Source)	SSQ-110 (EER)	SSQ-110 (EER)	SSQ-125 (ADLFP)
Buoys = (Receiver)	SSQ-77 (VLAD)	SSQ-101 (ADAR)	SSQ-101 (ADAR)
Area of use =	Deep Water Only	Littoral &Deep Water	Enhanced Littoral & Deep Water
Used by	P-3C	P-3C (IOC)	P-3C/MH-60R

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Appendix I

Public Comments and Responses

TABLE OF CONTENTS

I PUBLIC COMMENTS

The Navy received public comments on the Draft Environmental Impact Statement / Overseas Environmental Impact Statement (EIS/OEIS) via three media; written comments, website comments, and oral comments. Regardless of the medium, all comments have been treated equally. The comments are from the public comment period for the document, December 11, 2009 through January 25, 2010.

Written comments were mailed directly to the Navy. Website comments were submitted to the Navy via the project website. Oral comments were taken directly from the official court reporter transcripts. To allow side-by-side review of the comments and the Navy responses, all comments have been converted to text and entered into a table format that follows, with the comment in one column and the Navy's response in the next column. The comments have been reproduced verbatim and accurately to the extent as possible. In some cases, the editors may have made minor errors in the translation of some handwritten letters. For this reason, a copy of each written comment has been placed at the end of Appendix I. Appendix I also contains the official court transcripts of one complete public hearing, and the oral comments made at each of the public hearings. Website comments were electronically submitted and copied directly into this Appendix, so no other reproduction was necessary.

In preparing the Gulf of Alaska (GOA) Navy Training Activities Draft EIS/OEIS, each resource section was prepared and reviewed by numerous qualified individuals, each specialists in their respective fields, to ensure that the resources and issues received a rigorous and thorough assessment. The best available scientific data and the latest peer-reviewed studies were considered.

In this Final EIS/OEIS, the Navy has made changes to the Draft EIS/OEIS, based on comments received during the public comment period. These changes include factual corrections, additions to existing information, and improvements or modifications to the analyses in the Draft EIS/OEIS. This section presents the public comments received and the Navy's responses to these comments. The changes made to the document based on comments do not result in any significant modifications to the proposed action, the alternatives considered, the affected environment or the environmental effects analyses of the Draft EIS/OEIS that would require further public participation.

Although all comments have been read and considered, some comments were not specific regarding the analyses or the alternatives in the Draft EIS/OEIS and, therefore, could not be given specific responses. As stated in the Council on Environmental Quality's (CEQ) Regulations for Implementing the National Environmental Policy Act (NEPA), 40 CFR Part 1503.3(a), "Comments on an environmental impact statement or on a proposed action shall be as specific as possible and may address either the adequacy of the statement or the merits of the alternatives discussed or both."

I.1 WRITTEN COMMENTS

The comments in this section were received in written form by organizations, agencies, tribes and individuals. The first part of the section is a copy of each of the individual comments received by the Navy. This is followed by a second section that has a consolidated table with comments in alphabetical order by commenter's name. If an organization or affiliation name was submitted, then the comment was listed under that name, not the individual.

I.1.1 ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
INDUSTRY PREPAREDNESS PROGRAM
Marine Vessels Section

SEAN PARNELL, GOVERNOR

555 Cordova Street
Anchorage, AK 99501
PHONE: (907) 269-3094
FAX: (907) 269-7687
http://www.dec.state.ak.us

January 6, 2010

File No. 207.50 (USN)

Commander
United States Pacific Fleet
250 Makalapa Drive
Pearl Harbor, HI 96860-3131

Attention: D.A. McNair

Subject: **Department of the Navy letter 50590, Ser N01CE1/1333 dated, December 4, 2009**

Dear Mr. McNair:

The Alaska Department of Environmental Conservation has reviewed the information in the subject letter and the referenced websites regarding United States Navy training intentions within the described temporary Maritime Exercise Area in the Gulf of Alaska. It has been determined that the temporary Maritime Training Area is not within Alaska State waters. Therefore, there is no regulatory jurisdiction within the proposed training area under the provisions of Title 18, Alaska Administrative Code, Chapter 75, Oil and Other Hazardous Substances Pollution Control.

Thank you for inquiry with the Alaska Department of Environmental Conservation. If you have any questions regarding this correspondence please contact Martin Farris at (907) 269 8487 or martin.farris@alaska.gov or John Kotula at (907) 835 3037 or john.kotula@laska.gov.

Sincerely,

Betty Schorr

Betty Schorr
Program Manager

Electronic cc:
John Kotula, ADEC
Larry Dietrick, ADEC
Martin Farris, ADEC

cc:
Project file

Printed on Recycled Paper

I.1.2 ALASKA DEPARTMENT OF MILITARY AND VETERAN AFFAIRS

STATE OF ALASKA

DEPARTMENT OF MILITARY AND VETERANS AFFAIRS

OFFICE OF THE COMMISSIONER

Sean Parnell, GOVERNOR

P. O. BOX 5800
Ft Richardson, ALASKA 99505-5800
PHONE: (907) 428-6003
FAX: (907) 428-6019

January 20, 2010

Naval Facilities Engineering Command Northwest
ATTN: Mrs. Amy Burt – Gulf of Alaska EIS/OEIS Project Manager
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

Dear Mrs. Burt:

As the Commissioner of Alaska's Department of Military and Veterans Affairs, I can assure you that the Parnell Administration fully supports "Alternative 2" proposed by the U. S. Navy in its Draft "Gulf of Alaska Navy Training Activities Environmental Impact Statement / Overseas Environmental Impact Statement" (EIS/OEIS) This Administration supports the "increase training activities to include the use of active sonar, accommodate force structure changes to include new platforms, weapon systems, and training enhancement instrumentation, and conduct one additional summertime CSG exercise annually."[1] The Parnell Administration's support of Alternative 2 is steadfast given that the U.S. Navy has an excellent track record in caring for Alaska's land, sea, and air.

As you realize, the Gulf of Alaska is very important to the people of our state who rely on this area for their livelihood and subsistence needs. These areas are home to a vast array of marine mammals and the largest and most diverse fisheries in the United States. We understand that protecting the marine environment of the Gulf of Alaska is an important goal for the Navy. We appreciate the Navy following detailed programs to care for the environment and realize that the Navy continues to improve these programs as they learn more about the ocean and marine species. We also clearly understand and support the purpose of the Navy's Proposed Action is to achieve and maintain Fleet readiness using the Alaska Training Areas to support and conduct current, emerging, and future training activities. The air, land, and sea spaces of the Alaska Training Areas have and continue to provide a realistic training environment for the men and women in uniform. The State of Alaska supports this training as it provides for defense of the nation and our state. In many ways Alaska has been historically on the front lines and has provided a position of importance in strategic defense plans of our nation.

[1] GULF OF ALASKA NAVY TRAINING ACTIVITIES DRAFT EIS/OEIS DECEMBER 2009

The State of Alaska supports the Proposed Action and is confident the Navy is committed to the protection of our maritime and other natural resources. Analysis of the proposed action indicates there is no risk to public safety, human health, or the environment. Alaska has considerable experience working cooperatively with the Navy and this history shows us that the Navy is responsive to the concerns of Alaska.

Sincerely,

Thomas H. Katkus

Brigadier General Thomas H. Katkus
Commissioner

I.1.3 ALASKA MARINE CONSERVATION COUNCIL

Alaska Marine Conservation Council

Submitted by mail

Amy Burt
Gulf of Alaska EIS/OIES Project Manager
Naval Facilities Engineering Command Northwest
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101
Tel.: (360) 396-0924

January 25, 2010

Re: *Draft Environmental Impact Statement/Overseas Environmental Impact Statement for the Gulf of Alaska Navy Training Activities*

The Alaska Marine Conservation Council (AMCC) is a community-based organization dedicated to protecting the integrity of Alaska's marine ecosystems. Please accept these comments on behalf of our board and members who include commercial and sport fishermen, subsistence harvesters, and coastal residents throughout Alaska. These individuals and their families are culturally and economically dependent on a healthy marine and coastal environment.

AMCC submits these comments in addition to verbal testimony provided at the hearing on the Draft EIS in Kodiak, Alaska on January 7, 2010.

After review of the Draft EIS, AMCC remains concerned about the proposed increase in Navy training activities in the Gulf of Alaska (GOA). Particularly of concern are the effects of underwater noise on living marine resources, especially noise resulting from the use of sonar in this productive and important marine environment.

AMCC supports the no action alternative which would maintain current training activities and does not involve the use of sonar. The alternatives listed in the analysis are inadequate to explore a range of options for increased training potential without the use of sonar, and thereby reduce options for consideration only to the no action alternative.

Overall, the proposed action would result in dramatic changes in the acoustic marine environment inside and adjacent to the operating area that could have significant impacts on fish and marine mammals inhabiting these waters.

Designated critical habitat for the North Pacific right whale, the world's most endangered whale, is located directly adjacent to the training area, a mere 12 miles away. This is a major concern given that this population is literally teetering on the brink of extinction. Waters in the Gulf of Alaska provide vital feeding habitat particularly suited to the right whale's biological needs. Underwater noise related to the proposed Navy training activities could drive the right whales away from these feeding grounds, potentially resulting in major impacts to the North Pacific right whale population and species.

In response to measures to mitigate impacts on marine mammals with use of on board visual monitors in the form of personnel with binoculars as the primary means to reduce impact, we

healthy oceans ... healthy communities

PO Box 101145 Anchorage, AK 99510 www.akmarine.org
tel 907.277.5357 fax 907.277.5975 email amcc@akmarine.org

believe these measures to be inadequate. The proposed measures rely on observations to enact the 1,000 yard power down and the 200 yard shut down.

Fishermen can share endless stories about looking for gear in this area. Boats can spend hours and even days searching for a flag and buoy they know is there, with the benefit of locating coordinates, before spotting the gear. Studies show that visual monitoring only spots about 5% of marine mammals.

In addition, it is quite possible the Navy underestimates the number of marine mammals and fish that may be harassed, injured or killed due to lack of density estimates needed to accurately make this determination. For many reasons, there a simply no reliable estimates for current or historical abundance numbers for many of the affected marine mammals in this region.

Another factor that has not been considered in the EIS is the habituation of sperm whales with commercial fishing vessels. In recent years, interactions between commercial fishing vessels prosecuting the halibut and sablefish fisheries have had increased interactions with sperm whales as the whale approach the boats looking for an easy meal. A whale may seek out the sound of a boat to explore the vessel's activity, thereby further decreasing the effectiveness of proposed mitigation measures and increasing the whale's exposure to noise resulting from training activities.

The Draft EIS is majorly lacking in a robust analysis of fish habitat and fishing grounds that occur in the geographic area considered for training activities, which precludes any effective analysis of the potential impacts to fish and commercial fishing activities from the proposed activities. For example, the Draft EIS does not include an adequate discussion of salmon migratory routes in the Gulf of Alaska and therefore lacks a robust analysis of impacts to migrating salmon species in the region.

The Draft EIS is lacking a thorough analysis of the potential impacts to halibut and the halibut fishery. **The document includes no discussion or maps showing the major halibut regulatory area that directly overlaps the training area nor does it discuss halibut habitat in the area- this information must be added to the Draft EIS.**

The proposed training activities area overlaps Gulf of Alaska Slope Habitat Conservation Areas that are not mentioned in the Draft EIS (see: http://www.fakr.noaa.gov/habitat/efh/goashca.pdf). The Draft EIS should include maps showing the overlap of designated EFH and other important fish habitat in the Gulf of Alaska such as the Slope Habitat Conservation Areas.

Additionally, while the Draft EIS admits that "…the effects of sound on fish are largely unknown" (3.6-4.3), it concludes that the proposed activities including sonar will not adversely affect fish. AMCC advises the Navy to utilize a precautionary approach to potential impacts in data poor environments, especially when dealing with highly valuable commercial fish stocks or endangered marine mammals populations.

The Draft EIS also lacks a thorough assessment of the overlap with fishing areas, and the conclusion that there will be no socioeconomic impacts from the proposed action (including fishing) is impossible to predict without comprehensive answers to the above mentioned comments.

In addition to concerns regarding effects on marine mammals and fish as a result of the use of sonar and an increase in underwater noise from training activities, AMCC is also

Alaska Marine Conservation Council

concerned about expended, hazardous wastes expected to result from the proposed training activities. The Navy concludes in the Draft EIS, without sufficient data, that, "In general, ordnance constituents appear to pose little risk to the marine environment (3.2-5). Again, there is no specific analysis of the benthic communities where these expended materials settle, and they may include EFH as well as Habitat Areas of Particular Concern (HAPCs), or important habitat for bottom-dwelling halibut.

AMCC is dismayed that the Navy only provided the bare minimum 45-day review for the Draft EIS and did so over the holidays, leaving insufficient time for the public to review and comment on the proposed action. This lack of consideration for the public's ability to comment is unacceptable given the scope of the proposed activities. AMCC requested an extension of the Draft EIS comment period and we do so again here in our written comments.

Furthermore, new research points to the disturbing trend of ocean acidification occurring in our marine waters, with high latitude seas particularly at risk. Reduced pH levels already measured in the Gulf of Alaska pose a new and potentially significant source of stress on the food web (J. Mathis. 8/11/09. Ocean Acidification in Alaska: New findings show increased ocean acidification in Alaska waters. University of Alaska Fairbanks, School of Fisheries and Ocean Sciences. Press release. http://www.sfos.uaf.edu/oa/). Alarmingly, studies have also demonstrated that noise travels farther underwater as pH reduces, creating concern for acoustic changes in the marine environment to have an even greater impact on marine species that previously thought. (Hester, et al. 2008. Unanticipated consequences of ocean acidification: A noisier ocean at lower pH. Geophysical Research Letters. Vol. 35. http://iod.ucsd.edu/courses/sio278/documents/hester_et_al_08_ocean_noisier_pH_jrl.pdf). The Navy must consider this research and the impacts of ocean acidification on the marine environment in the EIS, especially within the cumulative impacts section.

In closing, we again urge the selection of the No Action Alternative. The proposed increase in Naval training activities in the Gulf of Alaska lies squarely within some of the most productive marine waters in the United States and the world. The Gulf is home to a myriad of marine mammals, fish and other marine species that contribute to a rich and productive tapestry of life here. Important fish habitat and fishing grounds overlaps and lies adjacent to the area proposed for training, and coastal communities rimming the Gulf of Alaska continue to rely on the health of these fisheries for their economic and cultural well-being.

Given the high stakes to the living marine resources and surrounding communities, we strongly reiterate that this is an inappropriate location for increasing Naval training exercises and introducing the use of sonar.

Sincerely,

Theresa Peterson
Kodiak Outreach Coordinator
Alaska Marine Conservation Council

Kelly Harrell
Executive Director
Alaska Marine Conservation Council

healthy oceans ... healthy communities

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I.1.4 ANDREW BAKKE

United States Navy

Public Hearing Comment Form

Gulf of Alaska Navy Training Activities
Draft Environmental Impact Statement/
Overseas Environmental Impact Statement

Please record your comments on this form to let the U.S. Navy know what concerns and comments you have on the Gulf of Alaska Navy Training Activities Draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). You may submit your comments by:

1) Depositing this form at the Comment Table before you leave tonight.
2) Submitting your comments via the project Web site at **www.GulfofAlaskaNavyEIS.com**
3) Mailing this form to:
   Naval Facilities Engineering Command Northwest
   ATTN: Mrs. Amy Burt – Gulf of Alaska EIS/OEIS Project Manager
   1101 Tautog Circle, Suite 203
   Silverdale, WA 98315-1101

☐ *Please check the box if you would like to receive a CD copy of the Final EIS/OEIS. Provide your mailing address below.*

All comments must be received or postmarked no later than January 25, 2010, to be considered in the Final EIS/OEIS.

Name: ANDREW N. BAKKE

Organization/Affiliation:

Address:* Box 3162

City, State, Zip Code: HOMER AK 99603

Comments: I am complety against this unnessary program !!!

Andrew N. Bakke

Visit www.GulfofAlaskaNavyEIS.com for project information.

I.1.5 BASEL ACTION NETWORK (BAN)

From: Colby Self
To: Burt, Amy E CIV NAVFAC NW, EV1
Subject: GOA Draft EIS - Comment
Date: Monday, May 10, 2010 21:04:18

Ms. Amy Burt,

I write on behalf of the Basel Action Network (BAN) to submit comment on the Navy's Draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) for proposed Gulf of Alaska (GOA) training exercises. BAN requests consideration of the comments because they present new information that was not previously available during the comment period.

While the comment period for the draft EIS has closed, the comments provided in the attachment contain new information showing that the proposed GOA training exercises will affect the quality of the environment in a significant manner not addressed under the draft EIS. Therefore, BAN requests consideration of this new information in the final EIS or through a supplemental EIS. See 40 C.F.R. §1502.9(c)(1)(ii); Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 374 (1989).

Please find comment attached. Your acknowledgment of receipt of this e-mail and its attached comment are much appreciated.

Sincerely,

Colby Self
Basel Action Network
206.250.5652

basel action network

turn back the toxic tide

122 S. Jackson St., Suite 320
Seattle, Washington 98104
Telephone 206 652-5555 Web: www.ban.org

Mrs. Amy Burt
Gulf of Alaska EIS/OEIS Project Manager
Naval Facilities Engineering Command Northwest
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

May 10, 2010

RE: Comment on Gulf of Alaska Navy Training Exercises Draft Environmental Impact Statement/Overseas Environmental Impact Statement

Request for Comment Consideration

The Basel Action Network (BAN) submits these comments on the Navy's Draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) for proposed Gulf of Alaska (GOA) training exercises. BAN requests consideration of the comments because they present new information that was not previously available during the comment period.

The Florida Fish and Wildlife Conservation Commission released a report in May 2010, summarizing a five-year post-sinking monitoring study on PCB leaching from the sunken Ex-USS Oriskany. The study reveals PCB concentrations in fish caught at the Oriskany site at more than twice the EPA screening limits and above the Florida Department of Health's fish advisory limits. PCB sampling results are discussed below and are relevant to the environmental impacts of the Navy's SINKEX activity in the Gulf of Alaska.

While the comment period for the draft EIS has closed, the comments provided below contain new information showing that the proposed GOA training exercises will affect the quality of the environment in a significant manner not addressed under the draft EIS. Therefore, BAN requests consideration of this new information in the final EIS or through a supplemental EIS. See 40 C.F.R. §1502.9(c)(1)(ii); Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 374 (1989).

I. Comment: Impacts from SINKEX vessels.

The Draft EIS/OEIS acknowledges that Sinking Exercises (SINKEX) will occur in the Gulf of Alaska (GOA) Temporary Maritime Activities Area (TMAA); however, the long-term environmental impacts associated with SINKEX are not discussed in the Draft EIS/OEIS.

The Navy has in the past acknowledged the presence of hazardous materials remaining within the composition of scuttled naval vessels, including, but not limited to: polychlorinated biphenyls (PCBs), asbestos, iron, lead paint, antifouling paint containing tributyltin (TBT), and polybrominated diphenyl esters (PBDEs). Yet these materials and their effects on the environment, marine life and human health are not discussed in the Draft EIS/OEIS. We ask for additional assessment of the risks associated with the ocean disposal of these toxic materials in the GOA pursuant to the SINKEX program. The assessment should state the specific amounts of each material (mentioned above) expected to be left onboard scuttled vessels, as well as their expected impacts on the environment, marine life, and human health.

II. Comment: SINKEX impact assessment is based on inconclusive research.
While removal of liquid PCBs is required before a vessel is scuttled via SINKEX, the complete removal of all or most solid material containing PCBs is not. The SINKEX general permit issued under 40 CFR 229 states *"The Navy may leave in place wire cables, felt gaskets and other felt materials that are bonded in bolted flanges or mounted under heavy equipment, paints, adhesives, rubber mounts and gaskets and other objects in which the Navy has found PCBs…"* In effect, SINKEX vessels contain large quantities of PCBs which remain in the vessel during and following sinking and are thus exposed to the marine environment.

Current SINKEX remediation practices were developed 11 years ago (1998-1999) and were based on the Sunken Vessel Study that assessed the impacts of a single SINKEX vessel, the Ex-USS Agerholm, 17 years after the vessel's 1982 sinking. At the time of the assessment, solid PCBs were not believed to leach into the marine environment and little was known about PCB transport in an aqueous setting.

In fact, the EPA allowed SINKEX to operate solely under the General Permit (issued under the Marine Protection, Research and Sanctuaries Act) and exempt from the Toxic Substances Control Act, because there was a *"lack of evidence of unreasonable risk to human health or the environment…"* considering the type of PCB material involved (solid PCBs).[1] They stated *"Solid PCBs are not believed to be readily leachable to the marine environment."*[2] These conclusions are not supported by current scientific research. While further research is both necessary and appropriate to assess the environmental impacts of SINKEX vessels, particularly the impacts of PCBs on the environment, marine life and human health, continued reliance on out-dated research is not appropriate.

III. Comment: New study shows detrimental impacts from sunken naval vessel.
In the 11 years since this *Sunken Vessel Study* (Ex-USS Agerholm), new research confirms that solid PCBs leach into the marine environment, are taken up by marine organisms, and are transferred up the food chain.

The Ex-USS Oriskany was sunk as an artificial reef 23 nautical miles off the coast of Florida in 2006 and was prepared for sinking in much the same way as SINKEX vessels. All liquid PCBs were removed from the vessel prior to sinking; therefore all documented PCB leaching is from solid PCBs. 33% of all fish sampled post-sinking in the vicinity of the Oriskany had PCB concentrations above 20 parts per billion (ppb), the EPA screening level. 21% of all fish sampled post-sinking had PCB concentrations above 50 ppb, the Florida Department of Health fish advisory threshold. Total PCB concentrations in fish samples increased 1,446% on average from pre-sinking to post-sinking.

	Pre-Sinking Oriskany Site	Post-Sinking Oriskany Site
Red Snapper Samples	17	157
Red Snapper Mean PCB Concentration	2.36 ppb	54 ppb
Total Samples	62	180
Total Mean PCB Concentration	3.8 ppb	58.75 ppb
Total Fish Above 20 ppb (EPA Screening Level)	2 (gag & king mackerel)	60
Total Fish Above 50 ppb (Florida DoH Fish Advisory Threshold)	1 (king mackerel)	38

Note: gag and king mackerel fish were not sampled post-sinking.
Source: Table developed by Author based on data provided by the Florida Fish and Wildlife Conservation Commission Post-Sinking Monitoring Study

[1] *Official letter from Carol Browner, EPA Administrator, to Richard Danzig, Secretary of the Navy, September 13, 1999.*

[2] *IBID*

There were also two sampling events in 2008 on a control reef; these results were also recently released in May 2010. The control reef is a concrete bridge rubble reef that is 8 miles from the Oriskany site. The control reef samples were taken on the same days as the Oriskany samples in 2008. PCB concentrations in fish caught at the Oriskany site in 2008 were more than 932%, on average, higher than PCB concentrations in fish caught at the control reef.

	2008 Control Reef	2008 Oriskany Reef
Red Snapper Samples	45	60
Red Snapper Mean PCB Concentration	7.6 ppb	55.22 ppb
Total Samples	61	61
Total Mean PCB Concentration	7.89 ppb	81.44 ppb
Total Fish Above 20 ppb (EPA Screening Level)	5	16
Total Fish Above 50 ppb (Florida DoH Fish Advisory Threshold)	0	12

Source: Table developed by Author based on data provided by the Florida Fish and Wildlife Conservation Commission Post-Sinking Monitoring Study

The Oriskany sampling does not merely show fish contamination in the state of Florida; rather, it shows that more than 100 naval vessels intentionally sunk in the last 10 years alone (through SINKEX and artificial reefing) have placed the marine environment and human health at unreasonable risk of toxic exposure. These risks must be assessed in the GOA EIS.

IV. Comment: PCB transport via physical and biological means.
The Navy has long argued that PCB releases in the deep ocean from SINKEX vessels (6,000 feet or greater) do not pose adverse risks to marine life at that depth. Further, the Navy has suggested that the deep benthic environment has minimal chance of physical or biological transport to the shallow marine ecosystem. However, the Draft EIS/OEIS does not have any discussion or analysis of PCB releases in the deep ocean and possible transport mechanisms.

There are at least three scientifically acknowledged modes of material transport from the deep ocean to shallow waters:

1. Upwelling;
2. Meridional Circulation Overturning; and
3. Biographic Transport.

First, the physical marine transport process called *upwelling* routinely moves materials from deep water to surface water.[3] Upwelling can occur in coastal regions as well as the open ocean,[4] and can be wind or tide-induced. Both types of upwelling do not typically occur in isolation, but rather coexist.[5] Upwelling is a vital ecological process that delivers nutrients from the benthic zone (sea floor); however, this same process is also capable of delivering PCBs from sunken Navy vessels to shallow waters.

Second, deep ocean currents and water circulation produces dynamic uplift capable of delivering sediments, with which PCBs adhere, to surface waters. Traditionally, this is known as Meridional Circulation Overturning (ocean conveyer belt), in which currents driven by wind, thermohaline circulation, and atmospheric conditions transport deep water to shallow water.[6]

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[3] *Tomczak, M., 1998. Shelf and Coastal Oceanography. http://www.es.flinders.edu.au/~mattom/ShelfCoast/notes/chapter06.html*

[4] *http://oceanmotion.org/html/background/upwelling-and-downwelling.htm*

[5] *Tomczak, M., 1998. Shelf and Coastal Oceanography. http://www.es.flinders.edu.au/~mattom/ShelfCoast/notes/chapter06.html*

[6] *http://earthobservatory.nasa.gov/Newsroom/view.php?id=24124*

Finally, marine life that has taken up PCBs in deep water at the disposal site can transport PCB material via migration and predatory consumption to the shallow marine ecosystem, which can continue up the food chain to humans. Sunken vessels typically rest in the bathylpelagic zone (1,000-4,000 meters), just below the mesopelagic zone (200-1,000 meters), which exists below the epipelagic zone (200 – surface). Biographically speaking, organisms from each zone have contact with organisms from the zone above and below, allowing for food transfer and PCB uptake through the water column. "*Undoubtedly, there is considerable trophic interaction among these larger epipelagic fishes* [albacore, blue shark, swordfish, etc.] *and their meso- and bathypelagic counterparts during diel vertical migration.*"[7]

Additionally, the Deep Scattering Layer (DSL) is an assemblage of vertically migrating marine organisms that travel from the deep ocean to the shallows at night to feed, thus trophic interaction occurs.[8] DSLs have been recorded at all depths to 3,000 meters.[9]

The physicochemical properties of PCBs, including low solubility in water, very high bioconcentration factor, and very low degradation rates, determine their behavior in the environment.[10] And because PCBs are very hydrophobic (readily come out of solution), persistent, and highly lipophilic (partition into lipids and organic carbon) they readily adsorb onto particles and build up in the food chain (bio- and geoaccumulation).[11]

PCBs and other hazardous materials left on SINKEX vessels are in no way confined to the dumping site. PCBs can be transported great distances from the initial sink site via physical and biological means. The GOA EIS must include impact analysis of possible PCB transport mechanisms.

In closing, we thank you for the opportunity to submit comments on the draft EIS/OEIS and are hopeful that our concerns will be addressed in the final EIS. Should you have any questions please do not hesitate to contact me directly.

Sincerely,

Colby Self
Basel Action Network
206.250.5652

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[7] *Monterey Bay National Marine Sanctuary Site Characterization – Biological Communities and Assemblages – Pelagic Zone. http://montereybay.noaa.gov/sitechar/pelagic5.html*

[8] *IBID*

[9] *Opdal, A.F., Godo, O.R., Bergstad, O.A., Fiksen, O, 2007. Distribution, identity, and possible processes sustaining meso- and bathypelagic scattering layers on the northern Mid-Atlantic Ridge*

[10] *Mackay, D., W.Y. Shiu, and K.C. Ma, 1992. Illustrated handbook of physical-chemical properties and environmental fate for organic chemicals, Vol. I, Monoaromatic Hydrocarbons, Chlorobenzens, and PCBs. Lewis Publishers, Boca Raton, FL, 697pp.*

[11] *Froescheis, Oliver, Ralf Looser, Gregor M. Cailliet, Walter M. Jarman and Karlheinz Ballschmiter, 2000. The deep-sea as a final global sink of semivolatile persistent organic pollutants? Part I: PCBs in surface and deep-sea dwelling fish of the North and South Atlantic and the Monterey Bay Canyon (California), Chemosphere, Volume 40, Issue 6, March 2000, Pages 651-660.*

I.1.6 AMANDA BENTLEY

November 2010

Dear Mrs. Amy Burt,

I wish to express my concern regarding the Navy's use of mid-frequency active sonar in the Gulf of Alaska in the summer of 2011. I understand that it is the intention of the Navy to undergo extensive training exercises at that time. I also understand and respect the need to maintain a level of military readiness against any and all potential threats against the United States. However, my goal for writing this letter is to open your eyes to serious and fatal damage that the Navy may inflict upon innocent and endangered marine life.

All marine life thrives on the peacefully balanced acoustic environment underwater. Disruptions to this habitat can risk animal life. It is no secret that mid-frequency sonar in aquatic environments even 300 miles from the source retains an intensity of 140 decibels, equating to a hundred times more intense than the level known to alter the behavior of large whales. The use of mid-frequency active sonar is so detrimental that it causes whales and marine mammals to dramatically change their behavior and flee their aquatic habitat forcing them to surface too quickly. Surfacing too quickly causes "the bends" resulting in cranial hemorrhaging. On multiple occasions, whales and sea turtles, too many to count, have been the sacrifice of the Navy's training exercising. Originating from a very patriotic background, I understand and fully support military readiness. However, this sort of environmental harm seems out of control. Countless whales, porpoises and other mammals strand during naval exercises: in October of 1989, 20 whales of three species stranded during naval exercises near the Canary Islands.; in January of 2006, at least 34 whales beached themselves to avoid the sonar along the coast of the Outer Banks of North Carolina as training was carried out by a naval fleet.

In an article published in the Juneau Empire, in January of 2010, it states that the Navy plans to carry out one of three proposed procedures: 1. No action as the Navy would have already reached its status quo of annual training; 2. Called Alternative 1, where the Navy increases training to a 21-day period and includes the use of mid-frequency active sonar; lastly 3. Called Alternative 2 which includes Alternative 1 plus a sinking exercise during the three week training period. I urge you to commit to your first option and halt any and all training in the Gulf of Alaska; the Navy has already it meet its annual required training between April and October, according to Eric Morrison in "Concerns grow over Navy Sonar training in the Gulf of Alaska" in January, 2010. Even though Shelia Murray, the regional environmental public affairs officer for the Navy, states in the same article, "The Navy does a lot of things to avoid any type of interaction with any type of marine mammal" there still seems to be numerous fatal strandings of aquatic life. Can the death of innocent marine life be on the Navy's conscience? Can it be on yours?

As a citizen of the earth, we all have a responsibility to preserve the life it holds. Exterminating a species, or even endangering its well-being is a serious offense as this action could be irreversible. Every organism, animal and habitat is essential to the balance of the environment. I ask that this be taken into consideration during training exercises. I hope you will find it logical and moral to limit the training exercises using such dangerous technology as mid-frequency active sonar.

Thank you for your time,

Amanda Bentley
2000 East Henrietta Rd.
Rochester, NY 14623

Sunday, January 17, 2010
Story last updated at 1/17/2010
Concerns grow over Navy sonar training in Gulf of Alaska
Environmentalists say testing of technology could harm sea life

By Eric Morrison | JUNEAU EMPIRE

Environmentalists and Alaska residents are up in arms over U.S. Navy plans to train with controversial mid-frequency active sonar in the Gulf of Alaska beginning in the summer of 2011.

The Navy says the active sonar is necessary for national security. Environmentalists warn the technology could be extremely harmful to marine mammals in the area.

The Navy held meetings throughout Alaska last week to discuss its Gulf of Alaska Training Activities Environmental Impact Statement that lays out three options for the future of the annual training.

"Basically our ultimate proposed action is to accomplish Navy training in the Gulf of Alaska," said Amy Burt, a Navy environmental planner and the project manager for he GOA EIS. "The three alternatives are different ways to accomplish the proposed actions."

The first option is no action, which would maintain the status quo of annual Navy training that takes place during 14-day period between April and October. The second option, which the Navy is calling Alternative 1, would increase the training to a 21-day period between April and October and would include use of mid-frequency active sonar.

"So we would do more training exercises associated with active sonar and also Alternative 1 would accommodate some increased level of training for some new systems and ships that are coming into the fleet," Burt said.

The third option, called Alternative 2, would be the same as Alternative 1 but would include a second 21-day training exercise and the possibility of a sinking exercise during each three-week period. The Navy would take decommissioned ships and clean them to Environmental Protection Agency standards that would be used as live fire target practice at least 50 nautical miles from shore and sunk in at least 6,000 feet of water.

The Navy presently conducts a joint exercise each summer with the U.S. Army and U.S. Air Force that it calls the Northern Edge exercise. Part of the exercise takes place in an area designated as the Gulf of Alaska Temporary Maritime Activities Area that is the shape of a polygon and is approximately 300 nautical miles in length and 150 nautical miles in width located south of Prince William Sound and east of Kodiak Island.

The use of mid-frequency active sonar has become a highly controversial issue in environmental circles because it is believed to have detrimental effects on marine mammals, particularly whales.

"The active sonar is something that we're pretty concerned about," said Jon Warrenchuck, an ocean scientist for the nonprofit international marine conservation and advocacy organization. "These exercises are planned off of Kodiak and it's right beside critical habitat for Northern Right whales and there are about 100 of these left in Alaska, they estimate. They're, if not the rarest, probably one of the rarest marine mammals in the world. This is one of the areas they've identified as critical habitat for them. It's right beside the proposed training area."

Sheila Murray, the regional environmental public affairs officer for the Navy, said there is a possibility that the mid-frequency active sonar could have adverse effects on marine mammals but said the Navy tries to avoid any type of interaction with marine mammals wherever possible. The sailors go through extensive training and there are 29 protective measures in place to minimize impacts, which includes flyovers and turning off sonar within 200 yards of marine mammals, she said.

"The Navy does a lot of things to avoid any type of interaction with any type of marine mammal," Murray said.

Tina Brown, a wildlife activist who attended the meeting in Juneau last week, said many people have concerns about how damaging the sonar potentially is to marine mammals.

"Even the people who were at the hearing to give us information did not know for the sure the effect that Navy sonar testing would have on these animals," she said. "They know that whales have been beached in areas where sonar has taken place. They don't always know that sonar caused it."

Murray said there has been some misperception in the public from language used in the EIS that people interpret to mean that anywhere from thousands to millions of marine mammals could be harmed. The Marine Mammal Protection Act requires the Navy to estimate how many "takes" it expects with the sonar.

"It does not necessarily mean kill," she said. "It's anything that changes that marine mammal's behavior. That seems to be the one thing the public doesn't seem to understand. It's not Navy language, it's regulatory language."

Some people have estimated that millions of marine mammals could die from the sonar, which Murray said is not what the EIS actually says.

"People seem to think that that is the number of marine mammals that the Navy anticipates some type of mortality happening to and that's far from the truth," she said.

The mid-frequency active sonar is believed to scare whales and could cause them to run aground, but it has been difficult to prove in the past because the Navy hasn't always had a strong track record of disclosing what its been doing, Warrenchuck said.

"There's a lot of scientific evidence out there that this type of sonar can affect whales, and particularly those that have the big melons," he said. "And 'melon' is actually a biological term for kind of the protruding head of certain whales like sperm whales or some of the beaked whales. Basically they have this big fluid-filled organ that they use for echolocation and communication and navigation and things."

Warrenchuck and Brown also mentioned concerns about the increased pollution to the area if more training is approved and more military ordinance is used and discarded in the Gulf of Alaska.

Murray said the sonar is vital for the Navy to use to protect the country.

"It actually is the only effective method for detecting any kind of threats from any modern ultra quiet submarines that countries that may not be friendly with the United States may use," she said. "There are a lot of other subs out there that use it and that is the only way the Navy can actually detect them."

Brown said she is not opposed to the Navy training, she's just opposed to where, when and how it is planning to train.

"I understand we are at war," she said. "This is not the issue. The issue is choosing a place that has such an abundance of marine wildlife and choosing that place at the time when that wildlife is most abundant. In my view that is irresponsible."

The public comment period for the draft EIS ends Jan. 25 and will then be revised by the project team. A final EIS is expected sometime in the late fall or early winter, which will also have a public comment period. A Record of Decision is expected sometime in late 2010 or early 2011 that will decide on one of the three training options.

"The summer season of 2011 would be the first time we could do anything under the EIS," Burt said.

People can make comments online at www.gulfofalaskanavyeis.com until Jan. 25 or can send a letter to the Navy by that date.

Warrenchuck said he hopes the Navy will ultimately decide on the first option and not change its training to include sonar in the Gulf of Alaska.

"We're not at war with the whales and so we would really like the Navy to minimize their impact on whales and marine mammals," he said.

• Contact reporter Eric Morrison at 523-2269 or eric.morrison@juneauempire.com.

I.1.7 GREG BROWN

United States Navy
Public Hearing Comment Form
Gulf of Alaska Navy Training Activities
Draft Environmental Impact Statement/
Overseas Environmental Impact Statement

Please record your comments on this form to let the U.S. Navy know what concerns and comments you have on the Gulf of Alaska Navy Training Activities Draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). You may submit your comments by:

1) Depositing this form at the Comment Table before you leave tonight.
2) Submitting your comments via the project Web site at **www.GulfofAlaskaNavyEIS.com**
3) Mailing this form to:

Naval Facilities Engineering Command Northwest
ATTN: Mrs. Amy Burt - Gulf of Alaska EIS/OEIS Project Manager
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

☐ *Please check the box if you would like to receive a CD copy of the Final EIS/OEIS. Provide your mailing address below.*

All comments must be received or postmarked no later than January 25, 2010, to be considered in the Final EIS/OEIS.

Name: GREG R. BROWN
Organization/Affiliation:
Address:* 19400 Beardsley Way
City, State, Zip Code: Juneau, AK 99801
Comments: Attached.

Visit www.GulfofAlaskaNavyEIS.com for project information.

*Provide your mailing address to receive future notices about the Gulf of Alaska Navy Training Activities EIS/OEIS.

GREG R. BROWN
19400 Beardsley Way
Juneau, AK 99801

From: tmbrown3@aol.com
To: Brown_greg@Yahoo.com
Cc: TMBrown3@aol.com
Subject: GOA Navy Sonar Reasons for Concern
Date: Wed, Jan 20, 2010 3:53 pm

Marine Mammals

The Situation: The Navy has been authorized to take two million mammals per year for the next five years during its training exercises in Hawaii, the west coast, the Gulf of Mexico, and the entire Eastern seaboard; in fact, the Navy wants to deploy sonar in 80% of the world's oceans. Obviously, this issue greatly affects all of Alaska.

The immediate Alaskan concern, however, involves proposed Navy training activities in the Gulf of Alaska (GOA). All public comments must be received or postmarked no later than January 25, 2010, so time is of the essence. You may comment online at www.GulfofAlaskaNavyEIS.com. Please see below for points on which to comment.

Marine Mammals

1. According to the Marine Mammal Commission, "The Gulf of Alaska supports a diversity of marine mammals, a number of which are listed as endangered or threatened under the Endangered Species Act or designated as depleted under the Marine Mammal Protection Act. They include pinnipeds (Stellar sea lions, northern fur seals, and sea otters) and cetaceans (AT1 killer whales, eastern North Pacific right whales, Cook Inlet beluga whales), humpback whales, fin whales, sperm whales, and sei whales....Several of them are in especially critical conditions....

2. The Ocean Mammal Institute, a federal agency created to help protect marine mammals, stated serious concerns about the effects of the Navy's use of LFAS, explaining that the possible effects on marine mammals could include the following:

- death from trauma
- hearing loss
- disruption of feeding, nursing, sensing and communication (Abandoned calves have been reported in affected areas.)
- stress (making animals more vulnerable to disease and predation)
- changes in distribution and abundance of important marine mammal prey species
- subsequent decreases in marine mammal survival and productivity.

All of these effects have been witnessed in the past. See the Ocean Mammal Institute's publication "US Navy's Misinformation To Congress About LFAS." Additionally, MSNBC reported that "A National Oceanic and Atmospheric Administration study said the Navy's use of sonar contributed to the beaching of 16 whales and two dolphins in the Bahamas in 2000. Eight of those whales died, showing hemorrhaging around their brains and ear bones, possibly because they were exposed to loud noise."

3. Many scientists believe that animals seen stranded on the beach as a result of Navy sonar testing represent only a small portion of the technology's toll because severely injured animals rarely come to shore. In fact, scientists believe that mid-frequency sonar blasts may drive

certain whales to change their dive patterns in ways their bodies cannot handle, causing debilitating and even fatal injuries; these symptoms are akin to a several case of "the bends." (NRDC) In fact, the true effects of Navy sonar testing on marine wildlife remains unknown.

4. The June, 2010, issue of Scientific American reported that the U.S. Navy's sonar generates "slow-rolling sound waves topping out at around 235 decibels, equivalent to the intensity of a Saturn rocket; the world's loudest rock bands top out at only 130. The Navy confirms that these sound waves can travel for hundreds of miles under water, and can retain an intensity of 140 decibels (100 times more intense than the level known to alter the behavior of large whales) as far as 300 miles from their source."

5. The Navy does not consider the potential cumulative impacts from multiple sound exposures. For example whales in the GOA migrate to Hawaii. The Navy seeks to cover 80% of the world's oceans with its sonar testing, including the west coast of the U.S. as well as Hawaii. Over time, multiple exposures could lead to impaired hearing abilities, as studies on the effects of sound on terrestrial mammals has shown. Too, feeding behavior and other vital behavior could be altered repeatedly, the cumulative effects of which could prove fatal.

6. The Navy does not consider the marine animals that may be affected by sonar at a significant distance from the source.

7. The Navy does not take into account the added noise pollution caused by the increase in vessel traffic during training.

8. The Navy does not consider the possibility of strikes by sub-surface submarines during transit and/or operations. The Navy lacks any evidence that passive listening is a reliable means of detecting nearby marine life.

9. Although the risk of surface vessel strikes is heightened by its operations, the Navy does not note the many limitations on the ability to see and avoid collisions with marine mammals, instead repeatedly touting lookouts as an effective means to avoid collisions with whales. The limited effectiveness of using lookouts is widely documented, yet the Navy fails to take into account the difficulty to see animals as well as the fact that many marine mammals remain under water for considerable periods of time. Beaked whales, for example, can spend up to an hour under the surface, with only short and intermittent surface intervals.

10. The Navy fails to consider the adverse impact of the massive amounts of debris that will be disposed of in the oceans during its training periods. Entanglements are serious concerns for marine mammals, often resulting in death.

11. Clearly it is likely that certain impacts on marine mammals from the Navy operations may fall within the category of Level A Harassment.

Fish and Other Marine Wildlife

12. The Navy has not evaluated the consequences of its sonar on marine fish.

12. The Navy does not provide analysis of the cumulative effects of sonar testing on commercial fishing, yet the National Marine Fisheries Service believes that sonar testing could directly and indirectly impact federally managed fishery species in North Carolina. (North

Carolinians for Responsible Use of Sonar)

13. Not everything is known about the effects of sonar on fish, but studies show that intense sound can damage fish's ears, reduce the viability of eggs and harm larvae, and retard growth. Intense sound can also cause fish to change their behavior, disrupt their navigation, communication, foraging, and schooling - and dramatically reduce catch rates. (NC Coastal Federation)

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17. The reproductive functions of shrimp and crabs may also be affected by intense underwater noise. (NC Coastal Federation)

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19. The Navy has not addressed the issue of sea pollution. Humans cannot survive without a healthy ocean, and already the North Pacific is known for the North Pacific Gyre, a plastic "graveyard" at least twice the size of Texas; some believe it to be as large as the entire continental United States.

20. The Navy has not addressed the issue of air pollution.

Closing

- In October 2004 the European Parliament called for a ban in European waters of military sonar equipment and asked its twenty-five member states to stop deploying high-intensity active naval sonar. (Marine Connection)

- In November 2004, delegates at the meeting of the parties to ACCOBAMS (the United Nations Environment Program's Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area) adopted a resolution recognizing that ocean noise generated by humans is a dangerous pollutant to marine life. (Marine Connection)

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**** Alaskans depend on the sea for food, for income, and for pleasure. Clearly the Navy needs to train, but choosing training areas in some of the most prolific marine wildlife regions in the United States, if not the world, particularly at a time when migrating marine life is present, is, at best, irresponsible. We therefore support the "No Action Alternative," which provides for the continuation of training activities within the Alaska area at the current levels.***

Additional sources: Southern Environmental Law Center, Atlanta, Georgia

Turning the Tides, Sitka, Alaska, Chapter, Lynn Wilbur

I.1.8 TINA BROWN

United States Navy

Public Hearing Comment Form

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Draft Environmental Impact Statement/
Overseas Environmental Impact Statement

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   ATTN: Mrs. Amy Burt - Gulf of Alaska EIS/OEIS Project Manager
   1101 Tautog Circle, Suite 203
   Silverdale, WA 98315-1101

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All comments must be received or postmarked no later than January 25, 2010, to be considered in the Final EIS/OEIS.

Name: Tina M. Brown

Organization/Affiliation:

Address:* 19400 Beardsley Way

City, State, Zip Code: Juneau, AK 99801

Comments: Attached.

Visit www.GulfofAlaskaNavyEIS.com for project information.

*Provide your mailing address to receive future notices about the Gulf of Alaska Navy Training Activities EIS/OEIS.

Tina M. Brown
19400 Beardsley Way
Juneau, AK 99801

From: tmbrown3@aol.com
To: Brown_greg@Yahoo.com
Cc: TMBrown3@aol.com
Subject: GOA Navy Sonar Reasons for Concern
Date: Wed, Jan 20, 2010 3:53 pm

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Additional sources: Southern Environmental Law Center, Atlanta, Georgia

Turning the Tides, Sitka, Alaska, Chapter, Lynn Wilbur

I.1.9 CIVIL AIR PATROL

United States Navy

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Name: 2Lt Daniel Holt CAP

Organization/Affiliation: Civil Air Patrol

Address:* 8391 Airport Blvd.

City, State, Zip Code: Juneau, AK 99801

Comments: How can CAP be involved, help with your training activities?

Visit www.GulfofAlaskaNavyEIS.com for project information.

*Provide your mailing address to receive future notices about the Gulf of Alaska Navy Training Activities EIS/OEIS.

I.1.10 CORDOVA DISTRICT FISHERMAN UNITED

Cordova District Fishermen United
P.O. Box 939
Cordova, AK 99574

January 24, 2010

Naval Facilities Engineering Command Northwest
Attn: Mrs. Amy Burt
Gulf of Alaska EIS/OEIS Project Manager
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

Dear Mrs. Burt,

I am writing in response to the Draft Environmental Impact Statement relating to the Gulf of Alaska Navy Training activities. Cordova District Fishermen United (CDFU) would like to clearly state for the record that we support the U.S. Navy in their efforts to defend our great country, however we are strongly opposed to an increase in U.S Navy training exercises in the Gulf of Alaska (GOA), and in particular the use of mid-frequency sonar. We support the No Action Alternative and support a review of existing practices.

CDFU is a nonprofit political advocacy organization that directly represents the commercial fishing interests of over 1,000 fishermen in Prince William Sound, and indirectly supports the economic livelihood of the community of Cordova. For over 75 years, CDFU has strived to protect the health and sustainability of species that inhabit our waters and errs on the side of caution when assessing potential risks to these species.

As you should be aware through your extensive EIS process, Alaska has one of the richest ocean environments in the world, and the sustainability of our fisheries resources is of highest priority to our State – both from an economic and cultural perspective.

Thank you for the opportunity to comment on the Draft EIS. CDFU looks forward to reviewing the Final EIS and requests inclusion on the Navy postal mailing list to receive a full, printed copy when it is published.

Additionally, CDFU would like to request that the comment period for the Final EIS be increased to provide sufficient time for Alaska communities to respond – longer than the timeframe given during the comment period for the draft EIS, and at least 90 days.

Sincerely,

Rochelle van den Broek
Executive Director

CDFU comments on Gulf of Alaska Navy Training Activities Draft EIS/OIS Page 1 of 4 1/25/10

CDFU COMMENTS

Section: 4.1.3.1 Fishing & Section 2.6 FISH

During the explanation of commercial fishing activities there is a vague mention that a number of fisheries are at very depressed levels or are closed (referencing Richardson and Erickson 2005). The remainder of this section goes on to describe those fisheries that are currently in operation.

As acknowledged in the Draft EIS, Pacific Herring (Clupea Pallasii) are present in the GOA.

Despite the fact that this commercial fishery is currently not in operation, Pacific Herring are an ecologically and commercially significant species in the Gulf of Alaska and Prince William Sound ecosystem. Few species are of greater combined ecological and economic importance in Prince William Sound (and in many other coastal ecosystems) than is the Pacific herring[1].

Pacific Herring are central to the marine food web; providing food to marine mammals, birds, invertebrates and other fish. The Exxon Valdez Oil Spill Trustee Council (EVOSTC), a council charged with overseeing the restoration of the injured ecosystem through the use of the $900 million civil settlement and which consists of three state and three federal trustees (or their designees), has classified Pacific Herring as damaged and "Not Recovering"[2]. Pacific herring have not met their recovery objective. No strongly successful year class has been recruited into the population and health indices suggest that herring in the Sound are not fit.

Pacific herring are the subject of ongoing Trustee Council-funded research. Through this research, and the work of the Alaska Department of Fish and Game, Prince William Sound communities are hopeful for the return of a viable herring fishery in the future and are actively working towards this goal.

The collapse of the Pacific Herring fishery following the *ExxonValdez* oil spill indicates that this species is not particularly resilient to changes in their immediate marine environment. CDFU is concerned that the effects of mid-frequency sonar use in the GOA will stress an already weakened population and do not feel that this species was adequately addressed in the Draft EIS.

Acoustic Effects of Underwater Sounds to Fish

Despite their lack of resilience to changes in their environment, Pacific Herring

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[1] Brown ED and MG Carls. 1998. Pacific Herring *Clupea Pallasi*. Restoration Notebook, Sept. 1998. Exxon Valdez Oil Spill Trustee Council.

[2] Exxon Valdez Oil Spill Trustee Council. Nov, 2006. Exxon Valdez Oil Spill Restoration Plan. Update on Injured Resources and Services 2006.

(Clupeidae) have the highest hearing range indicated of all marine species identified in the GOA, at 5 kHz. Some studies, however, demonstrate that the hearing range of the Pacific Herring is in fact much greater. Wilson and Dill (2002) reported that Pacific herring (Clupea pallasii) responded to sounds up to 140 kHz. As hearing "specialists", Pacific Herring have the ability to hear over a much wider frequency range than most other fish.

Of grave concern to CDFU is the lack of available research that demonstrates the short and long term impacts to fish and marine mammals. It is apparent that there is very limited research available that focuses on the impacts of mid-frequency sonar use to fish, Pacific Herring in particular and the limited research that is available suggests that there is not only variation in effects of intense sound sources on different species of fish, but that there may also be differences based on genetics or development. Indeed, one can go even further and suggest that there may ultimately be differences in effects of sound on fish (or lack of effects) that are related to fish age as well as development and genetics, as was demonstrated by Popper et al. (2005).

Many references included in this section cite data based on freshwater fish, species not included in the GOA, and entirely different environmental conditions. These references do not fully describe the impacts to GOA specific species as there simply is not research available in this area.

Since the collapse of the herring fishery in 1996, millions of dollars have been expended to help scientists understand more about the inability of Pacific Herring to fully recover from the impacts of the *ExxonValdez* oil spill. The ultimate goal of this research is to work towards the restoration of the Pacific Herring fishery returning it to its former abundance.

The lack of adequate research on mid-frequency sonar on Pacific Herring, and other fish species in the Gulf of Alaska is alarming. It is incomprehensible that a Department of U.S. Government (EPA or the DOD) would support any alternative other than the No Action alternative based on this lack of information and available research.

4.2.8.2 Ship Strikes

This section states that releasing individual expended materials would not have any significant effects on the environment, but does not indicate whether the cumulative effect of adding specific contaminants into the marine environment was fully analyzed. Elevated concentrations of certain chemicals can cause adverse effects on aquatic biota including reduced survival, impaired reproduction, and reduced growth. Release of toxic substances in the water may be quickly diluted; however, some toxic substances have the potential to bioaccumulate in the food chain.

Information included in the Draft EIS is not sufficient to detail the myriad of toxic chemicals that will be released into GOA waters, and the tendency of each specific chemical to bioaccumulate. A table describing each chemical's tendency to bioaccumulate (or not) would more accurately demonstrate the long-term environmental impacts of the proposed training activities. Currently, this area is severely lacking despite the extreme quantities of foreign chemicals that are proposed to be expended in the GOA. It is likely that this too is an area where research is lacking.

Table 3.2-2: Failure and Low-Order Detonation Rates of Military Ordnance

The failure rate of guns, grenades, rockets, etc. ranges from 1.78% to 8.23%. Representation as a percentage does not clearly articulate the amount of ordnance that is left in an unexploded state. As indicated in the Draft EIS, the training activities will take place in an area frequented by commercial fishermen. An increase in training activities will increase the percentage of unexploded ordnance left on the ocean floor. While the training area is large, there is no way to predict where a commercial fisherman will place their net. The fishing process can include dragging nets across the ocean floor. Unstable, unexploded ordnance poses the potential for significant risk to commercial fishermen. It is incomprehensible that the Draft EIS does not include any information on this inherent risk to public safety.

3.7.8 At-Sea Explosions

Mitigation measures used to protect marine mammals may be inadequate. The Navy uses visual inspection and passive sonar to detect marine mammals prior to and during training activities. Passive sonar does not indicate the location of marine mammals, only that they are in the vicinity. The Navy will not cease training activities simply because they detect a marine mammal on the passive sonar; they will primarily rely on visual inspections to detect marine mammals and will only cease activities if the marine mammal comes within 200 yards. Marine mammals will only be detected when they come to the water's surface, thus they may have already entered the critical threshold area before they are spotted. Migration patterns should be studied and training exercises should occur outside of their migration routes.

Ordnance cannot be released and explosives cannot be detonated until the target area is determined to be clear. Training activities are halted immediately if cetaceans, pinnipeds, or sea turtles are observed in the target area. The Gulf of Alaska is prone to extreme weather and severe storms occurring regularly during the intended training exercise timeframe. The Draft EIS is lacking information relating to adverse weather conditions and how this would significantly impede Navy's ability to visually detect marine mammals and large schools of fish. This topic is briefly mentioned in *Operating Procedures & Collision Avoidance* however mitigation in this scenario is not well defined.

Other

Information on the migration patterns of fish is not sufficient. More information is needed in this area to fully describe the potential impact an increase in training activities might have to salmon returning to Prince William Sound and the Copper River.

CDFU comments on Gulf of Alaska Navy Training Activities Draft EIS/OIS Page 4 of 4 1/25/10

I.1.11 DOUGLAS DOBYNS

United States Navy

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Name: Douglas E. Dobyns, MS env science

Organization/Affiliation:

Address:* c/o DIA 1107 West 8th St., #3

City, State, Zip Code: Juneau, AK 99801

Comments: In conducting exercises under either Alternative 1 or 2, it would be good to have monitoring of the distributions and population densities of marine mammals — in study times of before, during, and afterwards of equal durations — to assess whether the mammals have been herded into particular areas.

The concern for this comment is that feeding of these marine mammals might be concentrated in areas where their ecosystem impacts are unusually concentrated. The longer-term impacts to commercial fishing should be known, if there are any. Also, inter-species of marine mammal behavior should be assessed to find if exercises have caused changes.

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I.1.12 EPA REGION 10

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

JAN 2 5 2010

OFFICE OF
ECOSYSTEMS, TRIBAL AND
PUBLIC AFFAIRS

Ms. Amy Burt, Environmental Planner
Naval Facilities Engineering Command Northwest
1101 Tautog Circle, Suite 203
Silverdale, Washington 98315-1101

RE: EPA Comments on the DOD Draft EIS/OEIS for the Gulf of Alaska Navy Training Activities, EPA # 089-028-DOD

Dear Ms. Burt:

EPA has reviewed the above-referenced document (CEQ No. 20090424) in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. Section 309 specifically directs EPA to review and comment in writing on the environmental impacts associated with all major federal actions. Under our policies and procedures, we assign a rating to the Draft EIS/OEIS (herein EIS) based on the environmental impacts of the proposed action and the document's adequacy in meeting NEPA requirements.

The EIS evaluates the potential impacts associated with current and proposed Navy training activities within the Temporary Maritime Activities Area (TMAA) located in the Gulf of Alaska (GOA). The TMAA covers an area of 42,146 square nautical miles (nm^2) of surface and subsurface ocean training area and overlying airspace. The No Action Alternative evaluates the current level of Navy training in the TMAA, which entails an annual exercise of one joint force exercise occurring over a period of no more than 14 days during the summer months. Alternative 1 includes the activities under the No Action Alternative, as well as anti-submarine warfare training, use of active sonar, and incorporation of additional training activities to incorporate force structure changes. The period for training would also increase up to 21 days. Alternative 2, the Navy's Preferred Alternative, would essentially double the activity under Alternative 1 as well as incorporate a SINKEX exercise, up to 2 times per year.

Overall we find the document to be well-organized, and the tables and maps that are included are very helpful to the reader. We recognize the short-term nature of these activities, and applaud the Navy for developing an EIS in an attempt to fully evaluate the impacts of these activities. We also appreciate that the Navy considered to the extent possible other influences and stressors on resources in the TMAA, such as climate change, and went to great lengths to include a quantitative comparison of alternatives that clearly identifies the differences in impacts amongst those alternatives.

We do have concerns, however, regarding the limited range of alternatives considered, the analysis and disclosure of impacts, lack of analysis of wastewater discharges, impacts from munitions, impacts to marine mammals from mid-range active sonar, and the limited discussion

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regarding mitigation activities (such as turtle-free zones). We also offer some suggestions we believe would improve the analysis, such as incorporating more detailed information on EPA's general permit and the related Letter Agreement for SINKEX, and current information for the PM 2.5 designation for the Fairbanks area, for your inclusion in the Final EIS (Enclosure 1).

We have assigned a rating of "EC-2" (Environmental Concerns-Insufficient Information) to the Gulf of Alaska Navy Training Activities Draft EIS. A copy of EPA's rating system criteria used in conducting our environmental review is enclosed (Enclosure 2). Our rating and a copy of our comments will be published in the *Federal Register*.

Thank you for the opportunity to review and provide written comments on the Gulf of Alaska Navy Training Activities Draft EIS/OEIS. If you have any questions regarding this letter, please do not hesitate to contact Jennifer Curtis of my staff at (907) 271-6324 or curtis.jennifer@epa.gov.

Sincerely,

Christine B. Reichgott

Christine B. Reichgott, Manager
Environmental Review and Sediment Management Unit

Enclosures

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EPA REGION 10 DETAILED COMMENTS ON THE GULF OF ALASKA NAVY TRAINING EXERCISES DRAFT EIS/OEIS

Limited Range of Alternatives

The EIS evaluates a limited range of alternatives. We believe the alternatives analysis would be much improved by including alternatives that represent a more diverse level and mix of training instead of evaluating alternatives that simply build upon one another. The inclusion of an alternative with additional appropriate mitigation (40 CFR 1502.14(f)) would also expand the range of alternatives. The use of geographic and/or temporal exclusions, even within the current timeframe and TMAA, can potentially be effective in reducing impacts to marine resources. We note that the DEIS considers this suggestion in the section discussing alternatives considered but dismissed (Section 2.3.2), but does not consider restrictions within the TMAA or identified timeframe. EPA supports the selection of alternatives that minimize the impacts to the environment while meeting the project's purpose and need. For this project, we identify Alternative 1 as the action alternative with the least impacts.

Recommendation

EPA recommends that an alternative with additional mitigation measures be developed in the Final EIS, possibly incorporating geographic and/or temporal exclusions. We recommend the identification of geographic areas where training restrictions would be especially beneficial to environmental resources, such as the Seamounts and other areas with substantial upwelling, and additional discussion of how excluding such an area would affect training goals and the underlying purpose and need. We also recommend that the Navy reconsider its selection of Alternative 2 as its Preferred Alternative as it is the alternative with the greatest impacts to resources and the environment.

Analysis and Disclosure of Impacts

We are concerned that the some of the potential impacts from project activities are not properly disclosed in the EIS. Conclusions of "no substantial effect" are not always adequately demonstrated and, on some occasions, the lack of knowledge regarding resource impacts seems to be presented as justification for a conclusion of no substantial impact. This approach is frequently in the impacts analysis, and may result in some impacts being underestimated. A possible reason for these deficiencies could be the lack of data or understanding of resources and systems in the GOA. In addition, the EIS tends to assume an even distribution of resources and impacts, which does not accurately reflect the natural distribution of aquatic resources, or the likely nature of distribution and disbursement of impacts. As a result of the approach taken, the EIS seems to have averaged the impacts over the TMAA and concluded that localized impacts would be minimal and temporary, and thus not substantial. This may not be accurate, even in the open ocean.

The following are specific examples of the above concerns:

<u>Water quality impacts</u>. The EIS acknowledges unavoidable effects on ocean and surface water quality, including the introduction of hazardous materials from munitions, yet

concludes that no long-term impacts to water resources would occur, and short-term impacts are not addressed.

Sonar impacts on fish. The EIS acknowledges that the "effects of sound on fish are largely unknown" and that there is a "dearth of empirical information on the effects of exposure to sound, let alone sonar, for the vast majority of fish." However, the EIS documents a study that showed a statistically significant post-exposure mortality of 20 to 30% from simulated Naval sonar signals, and another that found the use of continuous-wave transmissions within the frequency band corresponding to swim bladder resonance will escalate this impact by an order of magnitude, resulting in affects to 0.6 percent of the total stock of juvenile fish. There is no discussion, however, that continuous-wave transmissions at such frequency will not be employed, nor is there discussion regarding the avoidance measures in response to identification of populations of fish at more vulnerable life stages. The EIS concludes, however, that "limited information currently available suggests that populations of fish are unlikely to be affected by the projected rates and areas of use of military sonar."

Recommendation

We recommend the conclusions drawn in the impact analysis be reevaluated and where impacts are unknown or potentially more substantial, the EIS be revised to reflect this. We also recommend that the assumption of even distribution/disbursement or resources and impacts be reconsidered and revised, if possible, to more accurately reflect the actual spatial and temporal distribution of both.

Wastewater Discharges

The EIS states that discharges from military vessels are not considered point source discharges under the Clean Water Act but that there are Uniform National Discharge Standards for 25 discharges for military vessels up to 12 nm. Since the EIS only considers activities beyond 12 nm, it is unclear why this information was included, particularly since there is no discussion of what the anticipated wastewater discharges (type and volume) will actually occur. There is also no discussion of the impacts that will result from the wastewater discharges.

Recommendation

EPA recommends that the Final EIS clearly identify any applicable restrictions to wastewater discharges (if any) for the proposed action, the projected types and volumes of discharges, and the anticipated impacts to marine resources from those discharges. We also recommend that the Navy consider additional appropriate mitigation measures to minimize the discharges and subsequent impacts of those discharges.

Impacts from Munitions

The EIS identifies the potential for contamination from munitions components including various heavy metals releases from sonobuoys, leaching of hazardous bomb materials, release of cyanide from torpedoes, various explosives compounds such as ammonium perchlorate, picric acid, etc., and organic chemicals from underwater detonations. The EIS concludes that there would be no long-term or substantial degradation of water resources and no short-term impacts because contaminants would be diluted in the ocean and metal materials would corrode, thus preventing the deterioration of certain objects.

We understand the assumption regarding ocean dilution; however, we believe the assumption should be substantiated with monitoring data, particularly since such activates have been occurring for nearly a decade, and are expected to continue (and possibly increase in frequency and duration) into the foreseeable future. Because of the cumulative impacts to ocean water quality, good stewardship can no longer assume that the size of the ocean will dilute and disperse all pollutants to safe levels, especially considering that metals such as copper and lead bioaccumulate in marine organisms.

Recommendation

We recommend the development and implementation of a monitoring program for the GOA to validate the Navy's conclusions that impacts would not result in long-term degradation of water resources. The Navy should conduct the necessary monitoring to substantiate the assumptions being made regarding the lack of impacts from munitions releases into the ocean environment.

Impacts to Marine Mammals from Mid-frequency Active (MFA) Sonar

We have concerns regarding impacts to marine mammals from MFA sonar in an area that historically has not had MFA sonar activity, or such activity is not disclosed in the EIS. The EIS estimates that the Preferred Alternative will result in a total of 425,551 Level B harassments from active sonar and other non-sonar acoustic sources, and possibly one Level A harassment, affecting all species of marine mammals, including all seven listed species.

We are also concerned that the impact assessment methodology (derivation of marine mammal density) assumes a uniform distribution of animals although the EIS clearly states that this is "rarely likely true". The EIS recognizes that there are many unknowns in assessing the effects and significance of marine mammal responses to sound exposures but makes no judgment based on the estimated number of harassments as to whether these impacts are anticipated to significantly affect the species. The Council on Environmental Quality (CEQ) Regulations list criteria for assessing significance: the degree to which the effects on the quality of the human environment are likely to be highly controversial, the degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks, and the degree to which the action may adversely affect endangered or threatened species (40 CFR 1508.27(4),(5) and (9) respectively). When considered in this light, impacts of MFA sonar on marine mammals may be considered significant under NEPA. We understand the Navy is working with the National Marine Fisheries Service to obtain a Letter of Authorization under the Marine Mammal Protection Act.

Recommendation

We recommend the Navy consider the scientific controversy, uncertain/unknown risks, and presence of threatened and endangered species in assessing significance of impacts from MFA sonar on marine resources. EPA recommends the Navy operate sonar at the lowest practicable level to achieve mandated training levels. We recommend the approach taken for the Hawaii Range Complex be utilized, where an additional alternative was created for the Final EIS that held sonar use at minimal (existing) levels while increasing training activity.

Mitigation Discussion and Effectiveness

Although the EIS dedicates a full chapter to mitigation, and incorporates mitigation discussion in the impact analysis, there are several instances where the mitigation measure is not clearly identified or defined, and the relevance of the measure to actual impacts is not explained. There are also references to best management practices, Navy policies and standard operating procedures, but specific actions are not always identified, and when they are, no discussion of the anticipated effectiveness of mitigation occurs. It is important that mitigation measures be discussed, especially if they are the basis for concluding that impacts will not be substantial or will not occur at all. Results of monitoring of training impacts would also be helpful to include in mitigation discussions.

Recommendation

EPA recommends further refinement of mitigation measures to include clear identification of the measure (i.e. turtle-free zone), a discussion of the anticipated effectiveness and likelihood of implementation. Monitoring efforts should be included.

General Comments

Discussion regarding SINKEX

The EIS states that the sinking exercise (SINKEX) activities will be "conducted under the auspices of a permit from the USEPA". We recognize that this is a reference to the general permit issued by EPA under the Marine Protection, Research, and Sanctuaries Act (MPRSA) for the SINKEX. However the EIS presents very little information about the requirements and conditions of this permit, or the related August 1999 Letter Agreement between the Navy and EPA.

In addition, the EIS refers to the potential for floating non-hazardous expended material to be lost (to become persistent seabed litter) or washed ashore as flotsam. It should be noted that the SINKEX general permit states that "Before sinking, appropriate measures shall be taken by qualified personnel at a Navy or other certified facility to remove **to the maximum extent practicable** all materials which may degrade the marine environment, including without limitation removing from the hulls other pollutants and all readily detachable material capable of creating debris or contributing to chemical pollution." If the sinking exercise could create floating non-hazardous expended material that will create persistent marine debris or has the potential to wash ashore, the Navy must attempt to remove such material from the marine environment. While disposal of materials during SINKEX is a permitted activity, the EIS should disclose the amount of polychlorinated biphenyls (PCBs) that would be disposed into the ocean under each of the project alternatives.

Recommendation

We recommend that the Final EIS include additional discussion to inform the reader of the conditions with the permit and agreement, including but not limited to: the removal of all PCB transformers and large capacitors; the removal of all small capacitors to the greatest extent practical; removal of readily detachable solid PCB items; the cleaning of petroleum from

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tanks; piping and reservoirs, as well as the removal of trash, floatable materials, and mercury or fluorocarbon containing materials. The Final EIS should clearly note that the requirements of both the 1999 EPA/Navy agreement and the SINKEX General Permit under 40 CFR 229.2 are to be met in order to comply with the MPRSA SINKEX General Permit. For material that is expected to become flotsam or beach debris, we recommend the consideration of additional mitigation, such as supporting marine debris cleanup efforts in areas potentially affected by such debris.

PM2.5 Designation for Fairbanks

EPA recently finalized its rule to designate portions of the Fairbanks North Star Borough as non-attainment for PM2.5. The EIS currently contains information that is now out-of-date.

Recommendation

We recommend that the Final EIS be updated to reflect the current designation as discussed in the final rule. Please see Final Rule at: (http://frwebgate6.access.gpo.gov/cgibin/PDFgate.cgi?WAISdocID=104316123081+4+2+0&WAISaction=retrieve).

Evaluation of World War II Dumps in the GOA

During scoping, commenters identified concerns regarding past dumpsites from the World War II era, and requested that the Navy reidentify those and consider them in the analysis. There does not appear to be any discussion regarding these sites in the document outside of the scoping summary.

Recommendation

While specific information relating to the existence, location and possible constituents of past marine dump sites may not be readily available, we recommend that any reliable information (e.g. information from the marine charts referenced by the commenter) currently available be reviewed and any conclusions, even general, regarding these sites be included in the cumulative impacts assessment in the Final EIS, if possible.

Programmatic Nature of EIS

Although the document is not currently identified as a Programmatic EIS, it does appear that the EIS is programmatic in nature as it identifies, for an unknown period of time, activities that could occur within a specified range in magnitude, scale, and timeframe. As such, it may beneficial for the Navy to identify the document as programmatic and also set an estimated timeframe for which these activities re anticipated to occur (i.e. 5 or 10 years) before reevaluation, regardless of changes to the activities. We believe that reevaluation at regular intervals is important given the complexity of the marine dynamics as well as the substantial changes being observed in the GOA.

Recommendation

We recommend that the Navy consider identifying the document as a Programmatic EIS and determine a timeframe for reevaluation.

Consideration of MPRSA

The MPRSA is not currently listed in several lists or discussions of environmental laws applicable to this project, even though it is quite relevant to the SINKEX activities.

Recommendation

We recommend including the MPRSA in lists and discussions of environmental laws throughout the document where appropriate.

ENCLOSURE 2

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements Definitions and Follow-Up Action*

Environmental Impact of the Action

LO – Lack of Objections
The U.S. Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC – Environmental Concerns
EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO – Environmental Objections
EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU – Environmentally Unsatisfactory
EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 – Adequate
EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 – Insufficient Information
The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 – Inadequate
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

I.1.13 NINA FAUST AND EDGAR BAILEY

P.O. Box 2994
Homer AK 99603

January 15, 2010

Naval Facilities Engineering Command Northwest
Attn: Mrs. Amy Burt, Gulf of Alaska EIS/OEIS Project Manager
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

Comments RE: Gulf of Alaska Navy Training Activities EIS/OEIS

Dear Sirs:

We are appalled at the proposal to expand Navy Training Activities in the Gulf of Alaska. The fact that the Navy even does any training exercises in the spring and summer in this richly biodiverse area when many whale species are migrating north and other species are spawning or giving birth, is biologically insensitive and ecologically adverse. We are strongly opposed to any proposals to expand these operations in the Gulf of Alaska.

Alaska has a long history of toxic military waste that has recently come to light. Some of this waste will affect Alaskan waters for a long time to come. The Navy's proposal to increase ocean pollution here with the enormous addition of expended hazardous material is unconscionable, especially considering the dependency of Alaskans on salmon, crab, pollock, cod and other important seafood harvested by our fishing fleets. Adding the proposed toxins from exploded ordinances threatens Alaska's clean water and fishery resources. Considering the mess left by the bombing range at the mouth of Eagle River, we know all too well how toxic exploded ordinances are.

The Sonar testing is of grave concern to the marine mammals in Gulf of Alaska waters. It is well known and well documented that sonar can disrupt marine mammals and even kill them. The Navy knows the research. We oppose the active sonar training proposals due to the very sensitive populations of marine mammals. Populations of sea otters and sea lions have fallen dramatically in the past decade, threatening their viability. Adding the stress of sonar testing to populations that are already in trouble should not be allowed.

We do not support the proposed alternatives in the EIS/OEIS. At the very least, the exercises should stay status quo. At the best, we would like to see a cease and desist of all of these exercises in these very important marine mammal and fishery areas. The cumulative effects of the added stresses the Navy is proposing may be the too much for already stressed marine mammal populations. In Alaska, our wild resources are important for our security and that should be respected.

Sincerely,

Nina Faust Edgar Bailey

Nina Faust Edgar Bailey

I.1.14 CAROLYN HEITMAN

Sent by 'certified' mail on January 25, 2010

FROM: Carolyn Heitman
P.O. Box 2303
Kodiak, Alaska 99615
cheitman@acsalaska.net

TO: Naval Facilities Engineering Command Northwest
Attn: Mrs. Amy Burt, Gulf of Alaska EIS/OEIS Project Manager
1101 Tautog Circle, Suite 203
Silverdale, WA. 98315-1101
Phone: 360-396-0924

Enclosed are additional comments on the GOA Draft EIS/OEIS to be included with my oral comments on January 7, 2010.

I found the DEIS to be completely ***inadequate and lacking*** in the Navy's analysis of mid-frequency active sonar impacts to humans, fish and marine life (endangered North Pacific right whales e.g.) in, or near the GOA TMAA- including inland/overland areas which could potentially be affected by the Navy, Air Force and Army joint training exercises. The Navy seems to be focusing mainly on mid-frequency active sonar use in the DEIS, but there are other sonar frequencies that could be just as hazardous to marine life (and humans), such as low-frequency (LF) and extremely –low frequency (ELF) transmissions, which the Navy uses on a regular basis in various areas. If the Navy is also proposing the use of LF and ELF in the GOA TMAA or over land area, that information needs to be included in the FEIS along with the hazardous transmission effects on marine/life-mammals and humans. Also, it states in the DEIS that the Navy does not know the hazards to birds from mid-frequency active sonar at long ranges. What about the risks to humans from long range MFA sonar? Taking into consideration all of the scientific research and studies that have been done by Navy scientists and others, I suspect the hazards are known but the Navy did not want to list them in the DEIS. The hazards to humans, birds, mammals and sea life needs to be included in the FEIS/OEIS.

The GOA DEIS is mainly focused on the use of mid-frequency active sonar and some evaluations and information was omitted in the draft which should have been included for public comment. **Section 3.14-Public Safety and Section 3.14-7-Aircraft Overflights** in the GOA DEIS *very briefly* mentions potential risks to the public from ship or aircraft electromagnetic transmissions. However, in a October 22, 2008 Elmendorf Air Force-Alaska briefing by Major Rob Peck, Airspace & Range Operations Team Chief, 611 AOC Combat Operations Division, he stated that the GOA EIS is mainly a subsurface evaluation and that although the Navy was looking at airspace, there would be no airspace proposal or rulemaking associated with the EIS. Why was an airspace evaluation not done for warfare training exercises?

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I am requesting that a ***Supplemental GOA DEIS*** be done as soon as possible, so that the public has time to comment on it, even if it means a delay in releasing the FEIS. Since the Navy, Air Force and Army are cooperating and doing combat training exercises together in the GOA and elsewhere in Alaska, the *Supplemental* GOA DEIS should include all air training exercise locations, military training routes (MTR), including the two new ones which are being proposed to be added this year, all radars/sensors which will participating in future combat exercises in or near the GOA or over-land areas, including their transmission, frequency and power levels. Some examples: (a) Sea-based X-band radar (b)Cordova HAARP substation (c)Juneau AN/TPY-2 (Transportable X-band Radar) (d)Shemya radar (e)HAARP in Gakona (f) Kodiak Dual-use High-power Microwave (g) King Salmon Microwave (h)Airborne Laser Plane. Some of these sensors/radars have transmission power levels which pose a health risk to humans and animals alike. The Sea-based X-Band will be coming under the jurisdiction of the Navy later this year (MDA spokesman Richard Lehner) and if the Navy is proposing to bring the radar to Alaska for home-porting or participate in future GOA training exercises, this information also needs to be included in a GOA Supplemental DEIS as the radar's transmission power levels are extremely hazardous to humans, birds and wildlife.

The Navy assumes there will be no significant impacts to any marine life in the GOA TMAA but has no documentation in the DEIS to back up its conclusion. Very relevant 2009 Navy and Air Force documentation which *should* have been referenced and included in the GOA DEIS for public comments but is lacking, is the **May 2009 'Northern Edge Joint Training Exercise 2009' Final EA/OEA** (Elmendorf Air Force document) and the Naval Postgraduate School funded **'Cruise Report for the April 2009 Gulf of Alaska Line-Transect Survey (GOALS) in the Navy Training Exercise Area' (June 2009)**, in which scientists (including some Navy), on the NOAA ship Oscar Dyson documented marine mammal species and biological resources that would be potentially affected by Navy GOA training exercises.

Information contained in the Elmendorf Air Force document, determined that there are 37 Endangered Species Act (ESA)-listed species that potentially occur within or near the GOA Exercise Area, including 28 fish species and 7 marine mammals. **Section 3.4.1.2.3-Conclusions on Effects of Sound on Fish** in the Elmendorf AF document stated: "The data obtained to date on effects of sound on fish are very limited both in terms of number of well-controlled studies and in number of species tested. Moreover, there are significant limits in the range of data available for any particular type of sound source. Finally, most of the data currently available has little to do with actual behavior of fish in response to sound in their normal environment. There is also almost nothing known about stress effects of any kind(s) of sound on fish." The document also states that aside from a few field studies, there are no data on the most critical questions regarding behavior effects of fish and that the more critical issue is the effect of human-generated sound on the behavior of wild animals.

The Navy concedes in the **GOA DEIS/OEIS** that the effects on fish could include direct physical injury including potential death from mid-frequency active sonar, and since the GOA is a major commercial fishing area, the Navy, Air Force and Army should refrain

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from using mid-frequency active sonar or any other sonar (LFA, ELF) which has potential to kill fish, marine life or animals, and it should go without saying--the potential risks to humans. Low Frequency Active (LFA) sonar has also been known to kill fish. What exactly are the Navy's Shutdown Procedures for Schools of Fish in the GOA? That is, if Schools of Fish can be detected at all.

Another concern of the Navy's use of MFA sonar (or LFA sonar) is the fact that more than 95% of the seabirds breeding in the Continental United States nest in colonies in the Gulf of Alaska and Bering and Chukchi Seas (1992 US Fish and Wildlife Service). Approximately 60 million birds of 40 species breed in the Gulf of Alaska, plus another 50 million visit the area during the summer. According to the U.S. Geological Survey Department, some seabird populations damaged by the EXXON Valdez oil spill have not recovered. In fact, as a whole, the Gulf of Alaska has not recovered from the oil spill. It is unacceptable and unnecessary for the Navy to put further contaminations in the GOA waters and stressors on marine life and birds.

The Navy's GOA TMMA boundary line extends beyond the Aleutian Trench. The DEIS did not address what activities would take place in the trench or sonar impacts to sea life living in the trench, so this information needs to be included in the FEIS.

From the information given in the DEIS, there are no environmental benefits from GOA warfare testing. Rather the opposite is true-- the Navy's presence and activities pose potential environmental risks, especially to the endangered and threatened species found in or along the Gulf of Alaska coastline. These species have no tolerance for additional risks factors. The Navy has not proven that it can ensure the protection of marine mammals, marine life and birds in the GOA. Nor can it guarantee the safety to humans from mid-frequency transmissions.

According to a 2008 National Oceanic and Atmospheric Association (NOAA) report, increasing evidence suggests that exposure to intense underwater sound in some settings may cause certain marine mammals to strand and ultimately die. Some of these strandings are associated with mid-frequency active (MFA) military sonar."

According to recently released NATO documents, low frequency active (LFA) sonar has been used as high as 240 decibels, which is considered to be millions of times higher than the level that causes damage to humans and animals. The Navy has tested its LFA sonar on divers in the 120 to 160 decibel range, which resulted in hospitalization of the subjects. The Navy has experimented with its sonar on humpback and blue whales around Hawaii and the above levels are enough to cause permanent damage and death even for short periods of exposure. In Navy training exercises off the Bahamas, low frequency sonar levels of up to 235 decibels was used. Decibels in the 120 to 150 range caused the whales to abandon the area.

In June 2004, six beaked whales stranded in Alaska after active sonar testing during the Navy's Northern Edge exercises in the GOA. Information is limited on this event and did not come from NOAA or the Navy but from legal discovery.

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Whether or not it had anything to with the Navy's 2009 summer Northern Edge Exercises in the GOA, a 2-year old humpback whale carcass was found washed ashore on a Kodiak Island beach on August 19. It was presumed to have been dead for approximately 4 weeks, but it's possible it could have been longer. Coincidentally, Northern Edge Exercise in the GOA took place from June 15-27. The 'Red Flag Alaska' exercise (jamming frequencies) was going on from July 27-August 7. If there were any over flight exercises near the GOA, certain air activity using various transmission/ frequencies may also have interfered with the whale, as some transmissions can reach long distances.

Section 3.6.1.3-Subsistence in the previously noted **Elmendorf AF 'Northern Edge Training Exercise'** document, it states that a number of communities that could potentially be affected by air activities are either partly or entirely dependent on subsistence activities and that because of the dependence of many Alaskans on subsistence activities, low-level military overflights and their potential impact on wildlife are a particular concern. Since there was no detailed information given in the GOA DEIS/OEIS, exactly what communities (coastal or inland) has the potential to be affected by air or ship warfare activities? List them in the FEIS.

As of January 5, 2009 (Federal Register), the National Marine Fisheries Service is adjusting the total allowable catch (TAC) amounts for the Gulf of Alaska Pollock and Pacific Cod fisheries. **(Fisheries of the Exclusive Economic Zone off Alaska; Inseason Adjustment to the 2009 Gulf of Alaska Pollock and Pacific cod Total Allowable Catch Amounts.)** The reason for this adjustment is because the endangered Steller sea lions occur in the same location as the Pollock and cod fisheries and cod and Pollock are the primary prey species source for the Steller sea lions in the GOA. The seasonal apportionment of Pollock and Pacific cod harvest is necessary to ensure the ground fish fisheries are not likely to cause jeopardy of extinction or adverse modification of critical habitat for Steller sea lions. This decision by NMFS will no doubt affect commercial fishermen in the GOA but is necessary to help with the Steller sea lions survival.

Additionally, Steller sea lions lives are being jeopardized by Killer whales in the Eastern GOA (Alaska Sea Life Conservation Science Center). If restrictions are being placed on Alaska fishermen, it is only fair that restrictions also be placed on the Navy, Air Force and Army by not allowing *any warfare training exercises in the Gulf of Alaska.* The Navy has other long-time training areas such as Point Mugu off the California coast and does not need to continually impact other environmentally sensitive areas for training exercises; nor should the Navy be doing military exercises that are likely to cause jeopardy of extinction or adverse modification of critical habitat for Steller sea lions or any other endangered species. The Navy has already received a Permit of Authorization from National Marine Fisheries Service (NMFS) to incidentally take ***2 million*** marine mammals per year for the next 5 years during its training exercises in Hawaii, the West Coast, Gulf of Mexico and the entire East Coast. Currently the Navy is proposing to do training exercises off of Guam.

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According to Sheila Murray, Navy Public Relations Officer, the Navy already is conducting warfare testing programs in various U.S. locations and within the last two years has issued almost identical environmental impact statements for Warfare Training Range Complexes in the Mariana Islands, the Hawaiian Islands, Jacksonville Florida, Cherry Point, North Carolina, Southern California, and now the Navy is proclaiming that the Gulf of Alaska is the best location for realistic training exercises. The Navy has a detrimental affect on marine life wherever it goes, and then does not want to accept responsibility for its actions. The Navy should be doing its part to protect and support federally threatened and endangered species in the Gulf of Alaska, Bering Sea, the Aleutian Chain and other geographic locations, rather than applying for federal exemptions to the Marine Mammal Protection Act and Bird Migratory Act, which it is consistently doing. Also, the Navy should adhere to and be in compliance with the Alaska Coastal Zone Management Plan when Navy ships and submarines are in Alaska waters.

Information contained in the previously mentioned Navy's **GOALS** document for the GOA survey, stated that although marine mammals are present year-round in the GOA, the greatest number of animals occurs during the spring and summer. The humpback, fin and possibly the right whales, feed in the outer continental shelf and slope waters during the summer into fall, while blue, sei and sperm whale species are thought to be more pelagic (Berzin and Rovnin 1966, Rice 1974). In 1980 a survey conducted and described by Rice and Wolman 1982, it was determined that the populations of all great whales in the GOA had been severely depleted. Since that time some of these species have shown signs of recovery; however, only the eastern North Pacific gray whale has experienced a complete population recovery (Rough *et al.* 2005).

The Navy's **GOALS** project identified fin, humpback, gray, minke, and killer whales. Dall's and harbor porpoise, Pacific white-sided dolphins and Steller sea lions, harbor seals and sea otters in the GOA. There were also 36 sightings (46 individuals) of unidentified large whales, dolphins, and pennipeds.
It needs to be noted that scientist observers on the Oscar Dyson NOAA ship had to use the towed acoustic array to collect vocalizations from all acoustically active cetaceans at times when no visual survey was possible due to high seas and winds or darkness. Under these types of weather conditions it would also be impossible for ship observers to keep visual track of whales and marine life in the GOA during Navy/Air Force, Army training exercises, which could then lead to the Navy having to use potentially harmful/life-threatening Low-frequency active (LFA) sonar in an attempt to locate marine life.

In the **GOA DEIS/OEIS,** the Navy believes that the impacts of active sonar on marine mammals, turtles and birds can be decreased by using on-ship 'spotters' with high-powered binoculars, aircraft spotters, and sonar technicians, but the Navy doesn't give any detailed information on the difficulty of spotting whales at any great distance. Many whales spend more time diving than they do at the surface. Biologists have said that the Navy's abilities to spot these whales any further than 1 kilometer in more than slight winds is 'zero'.

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GOA DEIS- Table 3.14-1-Training Activities Affecting Public Safety
This section lists (1) Chaff (2) Anti-Air Warfare (AAW) Surface to Air Missile Exercise (3) EC Exercises (4) Counter Targeting Exercises
There should have been more detailed information listed on the hazards of these activities to the public and the information needs to be included in the FEIS. Chaff has caused problems in the past from Navy activities. As an example, in 1985 the Federal Aviation Administration (FAA) tracked and timed a chaff-cloud path that correlated with a Navy exercise which caused a large power outage in San Diego. The Navy paid the electric company $49,000 in damages caused by the Navy's dropping of chaff, which is made up of hair-fine particles of aluminum and fiberglass.

In a September 22, 1998 United States General Accounting Office National Security and International Affairs Division-Department of Defense report on Chaff, the report identified some unintended side effects of chaff. Chaff (a) can affect safety by interfering with air traffic control radar (b) can affect weather radar observations and the operations of friendly radar systems (c) has been reported to cause power outages and damage electrical equipment (d) has the potential chance of collecting in reservoirs and causing chemical changes that may affect water and species that use it.

Using chaff in the GOA or inland areas could have a potential life-threatening effect on marine life/ wildlife and possibly pose a health hazard risk to humans who might possibly come into contact with chaff in any situation (inhaling the aluminum/fiberglass particles or drinking them in their water supply e.g.).

Chaff can not be dispensed if prevailing winds will carry the chaff into FAA air traffic control areas or into designated high and low altitude air routes (**Standard Electronic Attack Clearance Request For Ranges'- Nov. 2002 White Sands Missile Range Army Manual**). In spite of the Navy having knowledge of chaff hazards, the Navy and Air Force continues using it in warfare training exercises and are its leading users.

Aside from the previously mentioned hazards from chaff use, another major concern is any potential risks to the electrical equipment of small or commercial aircraft in Alaska's heavily-used airspace, possibly causing the engines to fail. Rather than jeopardize the safety of humans and marine/wildlife, the use of chaff should be permanently discontinued by the Navy, Air Force and Army.

The GOA DEIS did not state if Depleted Uranium or White or Red Phosphorus use is being proposed for use in the GOA or inland areas. Include this information in the FEIS. The deposition of washout of White Phosphorus, especially in water bodies may create exposure risks to resident fish, invertebrates and waterfowl, even if the resultant White Phosphorus concentrations are in the low ppb range (**Berkowitz et.al 1981)**).
White Phosphorus is highly toxic to both experimental animals and man and is highly toxic to aquatic animals (**'Mammalian Toxicology and Toxicity to Aquatic Organism of White phosphorus and Phossy Water'** by Authors Dickinson Burrows; Jack C. Dacre: AWARE INC. Nashville TN).

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A map in the GOA DEIS **(Page 2-4)** shows Kodiak Island within a large 'restricted area' (outlined in red). Since the DEIS refers to 'activity outside the training area', but does not give further details, is Kodiak Island being proposed as a future Military Training Route (MTR) or 'restricted area' as part of future GOA warfare training exercises? Considering the fact that the Kodiak Launch Complex has access to the 'Gulf of Alaska Maritime Exercise Area' and the Air Force and Army have used the launch complex for their missile tests in past years, then it is reasonable to assume that the Navy would want to include Kodiak Island in future GOA training exercises, if a missile(s) were to be launched from the launch complex, tracked and intercepted/destroyed by whatever means during a training exercise. If Kodiak is going to be a part of future GOA warfare training exercises, the information needs to be included in the FEIS and shown on the included Alaska Military Airspace map(s).

Section 3.14-Public Safety states the public could be at risk from ship and aircraft activities and from the emissions of acoustic and electromagnetic energy (e.g. sonar and radar), but no specifics are given as to what radar or sonar systems. This needs to be discussed in further detail in the FEIS. Which radars/sensors will be transmitting into air space as part of warfare training exercises? The DEIS mentioned lasers, radio frequency and particle beam weapons, but no detailed information. Also mentioned but not discussed was 'new weapon systems'. In the FEIS list the weapon systems, their locations, maximum power levels, and transmission hazards to the public.

Through the University of Alaska-Fairbanks, the Navy funds the Kodiak High Power Microwave Array (located in Chiniak). The microwave fits into the category of what the Navy calls an 'Electromagnetic Warfare Weapon' System (the transmission power levels having the ability to interrupt the electronics on a plane or missile, causing them to "stop dead in their tracks", according to Department of Defense documents). The microwave antenna field has been upgraded since the radar was first installed and the sensors operate individually in various directions and frequencies and is a substation of the Navy's HAARP facility in Gakona. If the Navy is proposing to use the Kodiak microwave in future warfare training exercises, then it needs to be included in the FEIS along with potential transmitting hazards to the public, since many small/commercial aircraft use the airspace around Kodiak Island and also the airspace between Kodiak and other Alaska communities.

The Navy stated in the GOA DEIS that the Gulf of Alaska was the best place for the Navy, Air Force and Army to do their combined Electronic Combat training exercises. That is a fallacy because the **Nellis Range Complex-Nellis Air Force Range** in Nevada supports Department of Defense and Department of Energy '*Advanced Electronic Combat*' training and testing. Therefore, no Electronic Combat Exercises need to be tested in the Gulf of Alaska or inland areas.

Finally, the 'No Action Alternative' is not a ***true*** alternative because if the public chooses that first alternative, the Navy will continue doing Gulf of Alaska activities at the current levels. In the Elmendorf 'Final EA/OEA-Northern Edge Joint Training Exercise' (Proposed Action and Alternatives), five alternatives were evaluated and under the 'No

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Action Alternative', joint training exercises in the Gulf of Alaska would *not* be conducted. The GOA DEIS should also have included a 'true' No Action Alternative which would have discontinued Gulf of Alaska training exercises, as the 'No Action Alternative' also poses environmental hazards and risks. Rather than having to choose an Alternative that is really *NOT* an option, I am requesting that the Navy discontinue its environmentally damaging presence in the Gulf of Alaska.

Carolyn Heitman

Carolyn Heitman

I.1.15 ROBERTA HIGHLAND AND ROBERT ARCHIBOLD

United States Navy

Public Hearing Comment Form

Gulf of Alaska Navy Training Activities
Draft Environmental Impact Statement/
Overseas Environmental Impact Statement

Please record your comments on this form to let the U.S. Navy know what concerns and comments you have on the Gulf of Alaska Navy Training Activities Draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). You may submit your comments by:

1) Depositing this form at the Comment Table before you leave tonight.
2) Submitting your comments via the project Web site at **www.GulfofAlaskaNavyEIS.com**
3) Mailing this form to:
   Naval Facilities Engineering Command Northwest
   ATTN: Mrs. Amy Burt - Gulf of Alaska EIS/OEIS Project Manager
   1101 Tautog Circle, Suite 203
   Silverdale, WA 98315-1101

☒ *Please check the box if you would like to receive a CD copy of the Final EIS/OEIS. Provide your mailing address below.*

All comments must be received or postmarked no later than January 25, 2010, to be considered in the Final EIS/OEIS.

Name: Roberta Highland + Robert Archibold

Organization/Affiliation:

Address:* P.O. Box 2460

City, State, Zip Code: Homer, AK 99603

Comments: We are very concerned at the proposal of expanding Navy Training activities (NTA'S) in the Gulf of AK. We oppose any expansion of these activities. However, we actually oppose any NTA'S in this richly biodiverse area. The NTA'S will pollute + cause disturbance to many species of mammals + fish.

We cannot think of any Alaskan H20'S that are already so polluted; except for Cook Inlet which has already been sacrificed to irresponsible development + a Critical Habitat is presently being considered; that NTA'S would not adversely affect.

We did not know of NTA'S already occurring

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*Provide your mailing address to receive future notices about the Gulf of Alaska Navy Training Activities EIS/OEIS.

(over)

in this area & were shocked to discover they had been going on for 10 yrs – especially in May & June, which is the worst time frame for any such activities. However, as you heard at the public hearing, there is no "good" time for the whales.

Active Sonar testing has been well documented to be extremely adverse to mammals, esp. whales & may possibly affect the incredible system fish use to return to "whence they came."

Humans have to do a better job of respecting our precious oceans & we have grave concerns about ocean acidification. Please see the film "Sea Change"

We understand the need for the NTA's, though it is a sad state of affairs – but reality is harsh. The Navy is is in a tough position when looking for H_2O's to practice NTA's. The use of any under H_2O explosives over the continental shelf could have dire consequences for any migratory mammals & fish, thus we reiterate – we are opposed to any increase in NTA's & any activities of this nature in this rich body of H_2O.

Sincerely,
Roberta Highland & Robert Archibald

P.S. Consider using the 4E'S for decision making: Economy, Environment, Energy, Ethics

I.1.16 BOBBIE IVANOFF

United States Navy

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   1101 Tautog Circle, Suite 203
   Silverdale, WA 98315-1101

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All comments must be received or postmarked no later than January 25, 2010, to be considered in the Final EIS/OEIS.

Name: Bobbie Ivanoff

Organization/Affiliation:

Address:* Pob 2394

City, State, Zip Code: Kodiak, AK 99615

Comments:

It is clear that the LOCATION OF current proposed Temporary Maritime Activities Area is directly in the path of micrating whales. Also ~~the~~ sonar is well known to negatively affect whales, dolphins.

Why does alternate plans include moving - redirecting the Activity area away from./.especially the path of migrating wales

Visit www.GulfofAlaskaNavyEIS.com for project information.

*Provide your mailing address to receive future notices about the Gulf of Alaska Navy Training Activities EIS/OEIS.

I.1.17 KACHEMAK BAY CONSERVATION SOCIETY

Naval Facilities Engineering Command Northwest
Attn: Mrs. Amy Burt, Gulf of Alaska EIS/OEIS Project Manager
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

January 25, 2010

The Kachemak Bay Conservation Society (KBCS) requests that the public comment period be extended for the Proposed Gulf of Alaska Navy Training Project.

The community closest to the proposed training site was left out of the public hearings, although this community would be the most likely affected. Also, notification in the newspapers was insufficient in the small communities most affected, including Homer, Kodiak, and Cordova.

KBCS reluctantly supports the **No Action Alternative**. After careful review of the DEIS, KBCS concludes that the Navy has not provided sufficient evidence or support for their claims of minimal or no impacts in a multitude of aspects. KBCS also concludes that the Navy DEIS fails to consider or completely ignores impacts that would cause incredible harm to the health and well-being of Alaska's people, wildlife, and environment.

The proposed testing area is adjacent to the eastern Kenai Peninsula and just south of the Prince William Sound. These areas are renowned tourist and fishing destinations because they are some of the world's biologically richest. The shallow shelf that skirts the edges of the GOA is highly productive, creating an abundance of prey foods for marine life large and small. Choosing to conduct testing in this area threatens the short and long-term health of the wildlife, people, and ocean in this region.

Socioeconomic Impacts:

1) In the discussion of impacts to both Socioeconomics and Fish, the Navy does not provide research into effects of its proposed activities on the types of fish that are harvested commercially (sport or commercial fishing) in this region. The DEIS makes broad discussions of generalist and specialist types of hearing among fish, and makes the claim that "most" fish are generalists. The DEIS does not state whether halibut, herring, rockfish, or salmon are generalists or specialists. Thus, they cannot make the claim of "no significant impacts."

   The DEIS does state that fish are known worldwide to avoid areas where sonar testing is being conducted. Thus, from the DEIS's own statements in this document one could reasonably conclude that the fish in the testing area would in fact avoid the area. As a result, there would be impacts on the fish.

   Given the likelihood of impacts on the fish, above, then one could reasonably conclude that the commercial fishers fishing in the proposed test area may be affected. Given that commercial fishing for some species is set to occur only at prescribed times according to federal and state laws (called "openers"), then the impacts from the testing could cause great harm to fishers who were unable to find fish or fish during times with Navy testing overlapped an opener.

   In addition, sonar testing, according to the DEIS, can cause harm to fish, thus, any harm to the fish that reduced the numbers of these fish due to disorientation, physical harm, or other aspects, could cause a reduction in the harvest of fish for that season. This would be a socioeconomic harm.

2) The DEIS also does not take into consideration the socioeconomic impacts for the tourist industry for the entire area, Seward to Homer, that are likely with the proposed alternatives. The DEIS states that for Alternative 2 the NMFS "takes" would likely be 425,551 marine mammals, much of those dolphin. In Alternative 1, this number is 215,519.

   The number of takes predicted by the DEIS is likely to cause a drop in the number of marine mammals in the area. Given that one of the primary economic businesses in the area, Seward, is whale watching, it is likely that any reduction in these animals will cause harm to the businesses that depend on the marine life in the area. Notably, the proposed testing area is immediately adjacent to the Kenai Fjords National Park, a Park that draws nearly 300,000 people every year.

Marine Mammal Impacts:

3) There is much discrepancy between how the Navy DEIS evaluates noise impacts and how other reputable marine mammal scientists evaluate these impacts. There are numerous instances of impacts on whales and dolphins by sonar testing.

   Here is a list compiled by other environmental organizations:

- **January 2006** At least four beaked whales strand in the Gulf of Almeria, Spain, while sonar exercises take place offshore.
- **January 2005** At least 34 whales of three species strand along the Outer Banks of North Carolina as Navy sonar training goes on offshore.
- **July 2004** Four beaked whales strand during naval exercises near the Canary Islands.
- **July 2004** Approximately 200 melon-headed whales crowd into the shallow waters of Hanalei Bay in Hawaii as a large Navy sonar exercise takes place nearby. Rescuers succeed in directing all but one of the whales back out to sea.
- **June 2004** As many as six beaked whales strand during a Navy sonar training exercise off Alaska.
- **May 2003** As many as 11 harbor porpoises beach along the shores of the Haro Strait, Washington State, as the USS Shoup tests its mid-frequency sonar system.
- **September 2002** At least 14 beaked whales from three different species strand in the Canary Islands during an anti-submarine warfare exercise in the area. Four additional beaked whales strand over the next several days.
- **May 2000** Three beaked whales strand on the beaches of Madeira during NATO naval exercises near shore.
- **October 1999** Four beaked whales strand in the U.S. Virgin Islands during Navy maneuvers offshore.
- **October 1997** At least nine Cuvier's beaked whales strand in the Ionian Sea, with military activity reported in the area.
- **May 1996** Twelve Cuvier's beaked whales strand on the west coast of Greece as NATO ships sweep the area with low- and mid-frequency active sonar.
- **October 1989** At least 20 whales of three species strand during naval exercises near the Canary Islands.
- **December 1991** Two Cuvier's beaked whales strand during naval exercises near the Canary Islands.

These issues should be addressed honestly and with a goal of conducting legitimate, unbiased research. Creating science that simply downplays the real effects of potentially lethal activities is morally imprudent and does not give the U.S. citizen the right to an educated choice.

4) The DEIS does not address potential impacts to marine mammals that feed primarily on the seafloor. Gray whales could easily scoop up spent debris and pollution from the proposed testing activities.

Toxicity

5) There will be an inordinate amount of toxins dumped into a region known worldwide as being particularly clean. This could have impacts on the health of all life in the ocean and economic impacts for commercial and sports fishers.

Cumulative Effects

6) The DEIS does not take into consideration elements of climate change that directly effect the proposed tests. In particular, the new scientific evidence that is showing that ph changes (acidification) of the oceans increases the transfer of sound through the ocean.

7) There is a profound lack of attention to the cumulative effects of all the toxins that the testing will discharge into the water.

8) The DEIS fails to take into consideration the impacts of the Exxon Valdez Oil Spill, particularly in regards to salmon returns and otters.

Mitigation

9) The proposed mitigation measures would fail to protect any marine life. It is wholly unreasonable to expect anyone aboard a ship to spot a whale that is more than a few yards away from the ship. The Gulf of Alaska is known to have frequent high seas, winds, and rain that would make it nearly impossible for scouts to observe whales. It is ludicrous that this mitigation measure is even proposed. The Navy was sued by NRDC over these measures, with the court finding stating that the measures were "woefully inadequate and ineffectual." According to research, only 5% of marine mammals are able to be spotted this way.

10) The DEIS eliminates important mitigation measures they were required to use elsewhere. A region as biologically rich and as economically dependent on marine life as the proposed testing region warrants much more diligent attempts at reasonable and functional mitigation measures.

11) Comparing impacts from the southern ocean region near San Diego, as was done by a representative at a public comment period, with the GOA is not logical. These are two very different ocean ecosystems. And, there is no viable commercial fishery in the region the Navy "usually" tests in, unlike the GOA.

Please reconsider your plans. Thank you for taking our comments.
Elise Wolf, KBCS

I.1.18 KACHEMAK BAY ORGANIZATION

United States Navy

Public Hearing Comment Form

Gulf of Alaska Navy Training Activities
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   1101 Tautog Circle, Suite 203
   Silverdale, WA 98315-1101

☐ *Please check the box if you would like to receive a CD copy of the Final EIS/OEIS. Provide your mailing address below.*

All comments must be received or postmarked no later than January 25, 2010, to be considered in the Final EIS/OEIS.

Name: Roberta Highland

Organization/Affiliation: Kachemak Bay Organization

Address:* P.O. Box 2460

City, State, Zip Code: Homer, AK 99603

Comments:
Please include a question + answer 1/2° to 1° ~~at~~ before the public meeting/ comment time - so our questions can be answered as a group + everyone can hear the answer + learn. In the future

Visit www.GulfofAlaskaNavyEIS.com for project information.

*Provide your mailing address to receive future notices about the Gulf of Alaska Navy Training Activities EIS/OEIS.

I.1.19 RYAN KINGSBERY

January 19, 2010

Naval Facilities Engineering Command Northwest
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101
Attn: Amy Burt, Gulf of Alaska EIS/OEIS Project Manager

Dear Amy Burt,

I am writing to voice my concern with two specific aspects of the recently released Gulf of Alaska Navy Training Activities Draft EIS/OEIS (December 2009). My personal background is weighted in northern fur seal (*Callorhinus ursinus*) population biology and marine debris entanglement, particularly in the Bering Sea/Pribilof Island region. I am currently pursuing an M.S. in Environmental Science at Alaska Pacific University in Anchorage, Alaska.

My first concern takes issue with the listing of the northern fur seal population trend as "increasing" as is stated on page 328 in Table 3.8-1 and indicated at the bottom of page 386 under section 3.8.5.4 Northern Fur Seal: Population Size and Trends. According to the Alaska Fisheries Science Center: National Marine Mammal Laboratory (NMML) 2008 Quarterly Report, pup production in the Pribilof Islands has declined at an annual rate of 5.2% since 1998.[1] Towel et al. (2006) also notes that between 1998 and 2004 pup production on the Pribilofs has declined by 6% each year.[2] I therefore contend that the listing of the northern fur seal population trend as increasing as is stated in the EIS/OEIS, is not accurate and runs counter to current population studies.

Secondly, I agree with public concerns outlined in Table 1.1: Public Scoping Comment Summary on page 69, more specifically the effects of harmful levels of noise on whales particularly both species of beaked whales (*Berardius bairdii, Ziphius cavirostris*) and endangered species such as the North Pacific Right Whale (*Eubalaena robustus*). I disagree with the statement found on page 362 under section 3.8.4.1: Impacts of Human Activity, that says there is new evidence that beaked whales are not sensitive to Navy sonar. There is sufficient evidence in the form of well-documented cases that link certain sonar frequency levels with beaked whale strandings.[3] Also, on page 349 under section 3.8.3.4: Acoustics there is mention of adverse behavioral changes observed when Right Whales are submitted to noise levels between 133 and 148 dB, but beyond this there is no other research indicated. This species in particular is the most vulnerable whale present in the TMAA due to current population numbers and therefore I think it demands special attention. In summary, I think there needs to be more convincing research and additional mitigation that takes into account the sensitivity of the aforementioned species.

Thank you for allowing me to comment on this EIS/OEIS. I look forward to your response.

Sincerely,

Ryan Kingsbery

Ryan Kingsbery

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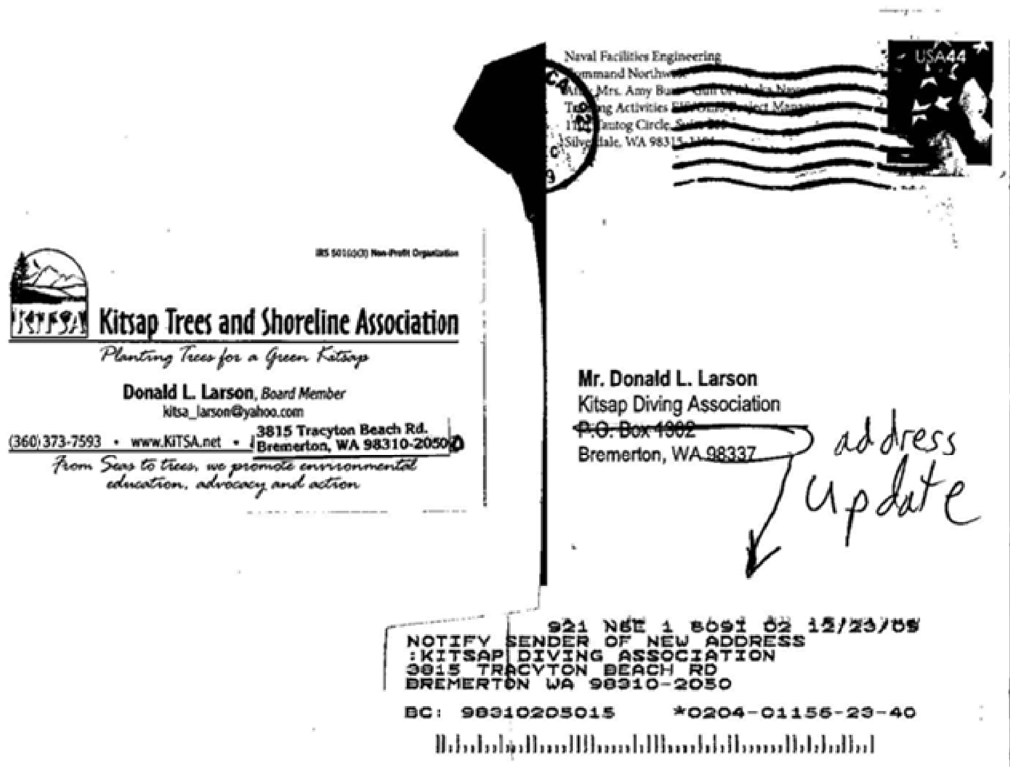
[1] Alaska Fisheries Science Center: National Marine Mammal Laboratory Quarterly Research Report (2008), PDF downloadable at http://www.afsc.noaa.gov/Quarterly/ond2008/tocNMML.htm, P.13 [website last accessed 1/18/10]

[2] Towell RG, Ream RR, York AE (2006) Decline in fur seal (Callorhinus ursinus) pup production on the Pribilof Islands. Mar Mamm Sci 22:486-491

[3] National Research Council (2003) Ocean Noise and Marine Mammals. The National Academies Press, Washington, D.C., accessed by way of University of Rhode Island, Office of Marine Programs, http://www.dosits.org/animals/effects/e1a-d.htm. [website last accessed 1/18/10]

Ryan Kingsbery 825 P Street, Anchorage, AK 99501 rkingsbery@alaskapacific.edu

I.1.20 KITSAP TREES AND SHORELINE ASSOCIATION


IRS 501(c)(3) Non-Profit Organization

Kitsap Trees and Shoreline Association

Planting Trees for a Green Kitsap

Donald L. Larson, Board Member
kitsa_larson@yahoo.com
(360) 373-7593 • www.KITSA.net • 3815 Tracyton Beach Rd. Bremerton, WA 98310-2050

From Seas to trees, we promote environmental education, advocacy and action

Naval Facilities Engineering Command Northwest
Attn: Mrs. Amy Burt
Training Activities
Tautog Circle
Silverdale, WA 98315

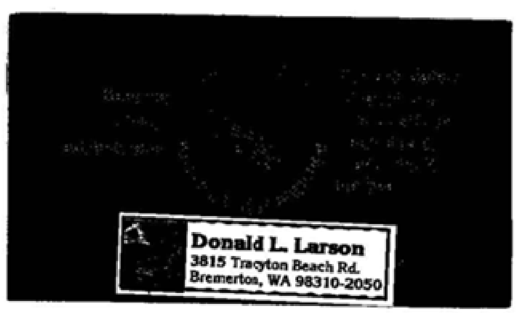
USA44

Mr. Donald L. Larson
Kitsap Diving Association
~~P.O. Box 1902~~
Bremerton, WA 98337

address Update

921 NBE 1 8091 02 12/23/09
NOTIFY SENDER OF NEW ADDRESS
:KITSAP DIVING ASSOCIATION
3815 TRACYTON BEACH RD
BREMERTON WA 98310-2050

BC: 98310205015 *0204-01156-23-40


Donald L. Larson
3815 Tracyton Beach Rd.
Bremerton, WA 98310-2050

I.1.21 WHITNEY LOWE

The Navy has a history of poor environmental stewardship including dumping high volumes of garbage into the ocean as well as toxic materials from explosive ordinance. Consequently it is difficult to believe what they might say about being responsible with environmental impacts of their actions.

In these times of international terrorism it is easy to throw out the fear card and say all these training exercises are necessary to keep our country safe. Trumping up people's fears has routinely led to trading off the health and safety of human and other animal habitats because supposedly it was going to make us safer. At some point it would be great to think that we might learn that the answer to making us safer doesn't result from bigger and more powerfully destructive weapons, nor from destroying our surroundings in the pursuit of those weapons.

At the present moment, we have a situation of drastic concern with our worldwide fisheries and marine environment. A November 2006 article in the journal *Science* suggested there will be virtually nothing left to fish from the seas by the middle of the century if current trends of catastrophic fish populations declines continue. The primary culprits involve overfishing, pollution, and other environmental factors.

In the face of these issues it is totally irresponsible to increase military training which involves toxic dumping and tactics known to kill and injure marine life. We should be going to great lengths to do anything we can to not only mitigate our current practices that are causing that precipitous decline, but to reverse this trend. To engage further military exercises in this region that is extremely rich in sensitive marine life is a blunder of serious proportions and represents incredibly poor judgment.

Our children and descendants, in whose hands we leave this critically injured world, will be asking... What were they thinking?... We can't afford to participate in this process as it represents the epitome of irresponsibility and drastically poor judgment.

Whitney Lowe
PO Box 15303
Fritz Creek, AK 99603
wlowe97@gmail.com
907-235-2348

I.1.22 MARINE MAMMAL COMMISSION

MARINE MAMMAL COMMISSION

27 January 2010

Ms. Amy Burt
Gulf of Alaska DEIS/OEIS Project Manager
Naval Facilities Engineering Command Northwest
1101 Tautog Circle, Suite 203
Silverdale WA 98315-1101

Dear Ms. Burt:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the Draft Environmental Impact Statement/Overseas Environmental Impact Statement (DEIS) referenced in the Navy's 15 December 2009 *Federal Register* notice (74 Fed. Reg. 65761) regarding proposed activities in the Gulf of Alaska. On 22 April 2008 the Commission commented on the Navy's Notice of Intent to prepare an environmental impact statement for those activities. The recommendations and rationale that follow either reinforce or expand upon those earlier comments.

RECOMMENDATIONS

The Marine Mammal Commission recommends that the Navy—

- revise its DEIS to ensure that (1) all activities included under the no-action alternative have been evaluated, (2) the alternatives evaluated and presented to decision-makers and the public include a reduction in activity level, and (3) the scope of decision-making is not constrained unnecessarily;
- resolve inconsistencies, omissions, and errors in the DEIS and either reissue it or use some other mechanism to allow decision-makers and the public to review and respond to the revised information;
- withdraw the current section of the DEIS dealing with Cook Inlet beluga whales, conduct the essential analysis of effects on this endangered stock, and reissue at least that section of the amended DEIS;
- provide explicit and detailed descriptions of the measures that will be used to avoid risks to certain species or stocks of special concern (i.e., eastern population of North Pacific right whales, western population of Steller sea lions, AT1 pod of killer whales in and around Prince William Sound [although occasionally ranging more widely], sperm whales, humpback whales, fin whales, and sei whales);
- expand the description of marine mammal habitat use in the Gulf of Alaska by reviewing the considerable body of information on species-specific distribution and movement patterns obtained from whaling records, scientific research, and other sources over the past century;
- evaluate the anticipated effectiveness of monitoring and mitigation measures; and
- require vessel commanders to retain vessel logs and reports for a minimum of three years.

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www.mmc.gov

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RATIONALE

The Commission offers the following rationale for its recommendations.

No-Action Alternative

The Marine Mammal Commission continues to believe that an action agency should use the "No-Action" alternative to represent continued activity at the same level only if those activities already have been evaluated in a previous environmental analysis. Further, a previous analysis may not be adequate for that purpose if the activities that were initially evaluated have since changed. To fulfill their purpose of fully informing decision-makers, environmental impact statements must include or at least reference evaluations of all the activities in the proposed alternatives, whether those activities are ongoing or new.

A hypothetical example may help explain the shortcomings of the Navy's current approach. If the Navy initiated activities in the Gulf of Alaska 10 years ago by conducting two exercises of one type each year, it should have completed an environmental analysis of the effects of those two exercises. If, over the past 10 years, the Navy increased its activities so that it now conducts five exercises of that type and three exercises of yet another type, then an environmental analysis based on historical data would be inadequate to describe the effects of all the Navy's current activities because the historical record does not in fact reflect the current level of activity. This undermines the intent of the National Environmental Policy Act.

The Marine Mammal Commission also continues to believe that it is inappropriate for the Navy to exclude alternatives that result in a reduction in its activities in the Gulf. By doing so, the Navy essentially limits the scope of decision-making because decision-makers are not presented with information about the consequences of possible reductions in training activities. Such an approach constrains rather than empowers decision-makers to make fully informed decisions and thereby undermines the intent of the National Environmental Policy Act.

For those reasons, the Marine Mammal Commission recommends that the Navy revise its DEIS to ensure that (1) all activities included under the no-action alternative have been evaluated, (2) the alternatives evaluated and presented to decision-makers and the public include a reduction in activity level, and (3) the scope of decision-making is not constrained unnecessarily.

Inconsistent Descriptions of the Alternatives and Other Errors

Certain inconsistencies, omissions, and errors in this DEIS are likely to misguide decision-makers and the public and therefore warrant attention. The following are four examples of such shortcomings.

- The description of the three alternatives on page E-1 does not match the more detailed descriptions on page ES-9 and in the body of the DEIS. In particular, the Portable Undersea

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Training Range is included only in Alternative 2 on page E-1 but is included in Alternative 1 in all subsequent discussions.

- The DEIS does not provide an adequate description of SSQ-125 (Multi-Static Active Coherent or MAC), the replacement for the SSQ-110 non-explosive sound source. Although the specific source characteristics may be classified, sufficient unclassified information must be provided to permit verification in at least a general sense of the anticipated risk posed by what is obviously going to be a very loud and widely used source in Navy training.
- The DEIS does not describe the specifications for the Killer Tomato target simulator. Although it appears by inference to be some kind of smoke or optical beacon, the DEIS does not describe the device or its function or identify it with an official designation (e.g., Mk-85, TALD or LUU-2B/B) so that the reader is able to seek additional information from other resources.
- In the next to last paragraph of page 3.8-111, the DEIS includes what we believe is a typographical error in which the word *constructed* appears in place of the apparently intended word *constricted*.
- In the same paragraph, the DEIS cites speculation in Tyack (2009) that beaked whales may avoid all sounds equally. Indeed, this is just speculation on Tyack's part, and he identifies it as such. The Commission believes it is inappropriate and unreasonable to infer that sonars pose no greater risk than other sound sources when, in fact, the little evidence available on this subject indicates otherwise.

To ensure that decision-makers and the public are accurately informed about the activities proposed in this DEIS, the Marine Mammal Commission recommends that the Navy resolve inconsistencies, omissions, and errors in the DEIS and either reissue it or use some other mechanism to allow decision-makers and the public to review and respond to the revised information.

Cook Inlet Beluga Whales

The Navy excludes consideration of Cook Inlet beluga whales from analysis in the DEIS. It justifies this exclusion by citing a 1995 Air Force environmental impact statement as the appropriate document for analysis of this stock. However, the Air Force environmental impact statement does not contain an analysis of effects of aircraft noise on beluga whales in Cook Inlet and, even if it did, that analysis would be out of date. Since preparation of the 1995 statement, the Navy appears to have changed the number of aircraft and associated traffic patterns as part of an increase in joint activities with other armed forces, as noted in the current DEIS. Furthermore, since preparation of the 1995 statement, the Cook Inlet beluga whale stock has declined markedly to approximately 300 to 400 individuals, has been designated as depleted under the Marine Mammal Protection Act, and has been listed as endangered under the Endangered Species Act. Thus, neither the 1995 statement nor the DEIS under consideration provides adequate analysis of the potential effects of the proposed activities on this endangered beluga whale stock. The Marine Mammal Commission considers this a serious oversight and recommends that the Navy withdraw the current section of

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the DEIS dealing with Cook Inlet beluga whales, conduct the essential analysis of effects on this endangered stock, and reissue at least that section of the amended DEIS.

Other Species or Stocks of Special Concern

As it did in its 22 April 2008 letter, the Marine Mammal Commission also recommends that the Navy provide explicit and detailed descriptions of the measures that will be used to avoid risks to certain species or stocks of special concern. These include the eastern population of North Pacific right whales, which has been reduced to fewer than 100 individuals and is vulnerable to disturbance and vessel strikes (based on data from the closely related North Atlantic right whale). Cook Inlet beluga whales were mentioned previously in this letter. Although outside the Navy's designated operating area, they are exposed to increased activity at Elmendorf Air Force Base and possibly other joint service exercises in Cook Inlet and coastal areas within the stock's range. Steller sea lions, AT1 killer whales in and around Prince William Sound (although occasionally ranging more widely), sperm whales, humpback whales, fin whales, and sei whales also were mentioned in our 22 April 2008 letter. The Commission concurs that sea otters are unlikely to enter the Navy training range area due to the distance from shore.

Habitat Analyses

With regard to marine mammals, the habitat analyses in the DEIS focus almost entirely on areas designated as critical habitat for those species that are listed as endangered or threatened under the Endangered Species Act. Such areas clearly are important and warrant extra protection, but they also are insufficient in two important respects. First, critical habitat for listed species often is poorly understood, so key habitat areas for those species may not be included. For example, critical habitat for the North Pacific right whale includes two areas, one in the southeastern Bering Sea and one off Kodiak Island in the Gulf of Alaska. The right whales that use these two areas are not thought to represent separate populations; rather, they likely move back and forth between the Gulf (and other areas of the North Pacific) and Bering Sea through certain important passes in the Aleutian Islands (e.g., Unimak, Akutan, Umnak, and Sequam Passes). These areas also may be vital to protect as they must funnel or concentrate the whales during their seasonal movements. Second, a number of species in the Gulf area are not listed under the Endangered Species Act but still use and depend on specific habitat. In fact, the records of marine mammal habitat use in the Gulf of Alaska are extensive, dating back to the 1800s. For example, northern fur seals appear to use and depend on offshore areas south of the Yakutat area. C. H. Townsend described the use of this "Fairweather Sealing Ground" and other important seal habitat in the late 1800s based on records of pelagic seal harvests. Both pinnipeds and cetaceans use the Gulf extensively. More recently, much of this information is being collected and archived and is available for management purposes. Products from the OBIS SEAMAP are available from a Web-based data archive, which also comes with a toolkit for analysis. In fact, the Navy notes on page 1-6 that the Gulf of Alaska is a complex system of shelf edges, canyons, seamounts, and freshwater intrusions, all features that are of great relevance and attractive to marine mammals and other critical ecosystem components. Although this statement generally is correct, a thorough review of existing data on marine mammal distribution and movements in the North Pacific would give the Navy much more insight into habitat use and

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the kinds of measures that might be needed to protect that habitat. With that in mind, the Marine Mammal Commission recommends that the Navy expand the description of marine mammal habitat use in the Gulf of Alaska by reviewing the considerable body of information on species-specific distribution and movement patterns obtained from whaling records, scientific research, and other sources over the past century. The Commission recognizes that this represents a considerable amount of work, but we note that the thorough literature research already completed for the "Affected Species" portions of the DEIS will probably also provide most of the information needed to define and plot the typical habitats used by each species and then factor that information into an analysis of places of special concern.

Effectiveness of Proposed Mitigation Measures

The Marine Mammal Commission repeats its now frequent recommendation that the Navy evaluate the effectiveness of its monitoring and mitigation measures. Performance tests for monitoring and mitigation measures are both technically feasible and economically reasonable. Such tests could either strengthen the Navy's position that its existing measures are adequate or, more likely, point toward steps needed to improve them. Both outcomes would provide useful information for managers responsible for ensuring the protection of marine mammals and their habitat. The Navy subjects all tactical systems to performance evaluation and doing so with its environmental systems also is necessary for the Navy to meet its commitment to good environmental stewardship.

Retention of Vessel Logs and Records

The DEIS proposes (page 5-10) that logs and records relevant to marine mammal sightings and mitigation efforts, and other critical environmental data will be destroyed after 30 days. The Marine Mammal Commission believes that destruction of such records is entirely contrary to efforts by the Navy, the regulatory agencies (primarily the National Marine Fisheries Service), the Marine Mammal Commission, and all parties interested in better characterization of interactions between Navy operations and marine mammals. Navy activities pose a variety of risks to marine mammals including, but not limited to, those emanating from the introduction of noise (e.g., sonar), blasting (e.g., ship-shock trials, weapons testing and training), and ship strikes (e.g., especially those that involve endangered large whales). Records of Navy interactions with marine mammals are critical to characterizing those risks, evaluating the efficacy of monitoring methods, evaluating the utility of mitigation measures, and identifying alternatives for avoiding unnecessary risks. To understand the effects of Navy operations, investigators must be able to reconstruct the circumstances surrounding events such as those that occurred in Haro Strait in 2003, Haro Strait in 2004, and Hanalei Bay in 2004. Destruction of vital Navy records precludes such reconstruction and undermines efforts to identify solutions that allow the Navy to conduct its exercises while ensuring that marine mammals are protected. For that reason, and because investigation of marine mammal interactions can take several years, the Marine Mammal Commission recommends that the Navy require its vessel commanders to retain vessel logs and reports for a minimum of three years.

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We hope that you find these recommendations and rationale helpful. Please contact us if you have any questions or wish to discuss them.

Sincerely,

Timothy J. Ragen

Timothy J. Ragen, Ph.D.
Executive Director

I.1.23 KATHERINE MCLAUGHLIN

To: Naval Facilities Engineering Command Northwest
Attention: Mrs. Amy Burt,
Gulf of Alaska Navy Training Activities EIS/OEIS Project Manager
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

RE: Public Comment

DEPARTMENT OF DEFENSE
Department of the Navy

Notice of Public Hearings for the Draft Environmental Impact Statement/Overseas Environmental Impact Statement for the Gulf of Alaska Navy Training Activities

---

Thank you for the opportunity to comment on this draft EIS by the Department of Defense. As an environmental educator, a humpback whale researcher who works with NOAA on abundance and behavior patterns of these unique cetaceans, and a board member for Prince William SoundKeeper, a citizen water quality advocacy organization for Prince William Sound, the proposed actions by the department of defense are a great concern for me over the potential and real harm that will take place upon marine mammals, and for the amount of environmental damage that may be caused to the marine environment in general with the amount and type of ordinance and activity listed in the request.

I believe the EIS submitted by the Navy is seriously flawed. It is my belief that the U.S. Navy can conduct its exercises while safeguarding the unique and precious ecosystem of the North Gulf of Alaska without jeopardizing the safety and security of our Country.

For clarity and conciseness, the concerns outlined below were prepared by the NRDC, but speak for me as to my own personal concerns as well. Please include these comments in the administrative record.

Sincerely, Kath a McLaughlin

Mrs. Katherine McLaughlin
Environmental Consultant
McLaughlin Environmental Services
PO Box 8043
Chenega Bay, AK 99574

*The Navy estimates an extraordinary amount of spent material will result from its Preferred Alternative (Alternative 2) in the GOA, including (1) a large increase in the weight of expended materials (352,000 lbs) and (2) 10,300 pounds of expended hazardous material. The Navy uses a quirky calculation to estimate that hazardous materials would account for approximately 1.2 lb per square nautical mile (assuming the materials are spread over

20% of the TMAA, and that ocean currents will rapidly disperse the expended materials, neither of which is a valid assumption).

*The Navy estimates that its sonar training exercises in the GOA from its Preferred Alternative (Alternative 2) will result in more than 425,000 marine mammal "takes" (behavioral impacts, harassment, injury, death) every year - that's over 2.125 million takes during the course of the Marine Mammal Protection Act permit it must seek from NOAA.

*In all, the Navy expects to "take" more than 20 different species of marine mammals, including 7 endangered species, in the GOA.

*Nearly all of the mitigation measures that the Navy has proposed for the GOA concern the operation of a small "safety zone" around the sonar ship. Yet it is widely agreed in the scientific community that this measure is inadequate given the far-reaching effects of Navy sonar and the difficulty of spotting marine mammals from fast-moving vessels.

*The Navy has not proposed to establish any protection areas in the GOA, despite the broad recognition that geographic protection zones are the most effective available means to mitigate sonar's impacts on marine wildlife.

*For example, no protection areas are proposed for harbor porpoises, which are acutely sensitive to sound; for endangered gray whales, which migrate directly through the TMAA; for endangered humpback whales and blue whales, which gather to feed in the TMAA; for the critically endangered North Pacific right whale, who's critical habitat is directly adjacent to the TMAA; or for any other species or habitat.

With regard to our specific concerns/question, we obviously have huge concerns with the impacts of the Navy's proposed increase in training, including:

*The Navy does not properly analyze environmental impacts. For instance, it completely disregards the serious impacts its sonar training will have on the critically endangered North Pacific right whales, whose critical habitat is only 12 nautical miles from the TMAA or the endangered gray whales, which migrate through the TMAA.

*The Navy underestimates the number of marine mammals (and fish) that will be harassed, injured and killed because it simply does not have the density estimates needed in order to accurately make this determination. The National Environmental Policy Act (NEPA) specifically requires federal agencies to obtain the data necessary to their analysis. The simple assertion that "no information exists" will not suffice; unless the costs of obtaining the information are exorbitant, NEPA requires that it be obtained. See 40 C.F.R. § 1502.22(a). Here, the Navy failed to obtain data that is essential to its analysis. The Navy itself admits that it has no density estimates for endangered blue whales, North Pacific right whales, and sei whales. In addition, there are simply no reliable estimates for current or historical abundance numbers for many of the affected marine mammals in the GOA. Despite the lack of survey/density data, the Navy simply estimates that only 1 blue whale, 1 North Pacific right whale and 4 sei whales may be harmed by its use of sonar because of the "rareness" of those whales. NEPA requires more. It requires these surveys to be completed and included in the impacts analysis.

*In addition, the Navy's acoustics impact analysis ignores scientific studies contrary to its interests and uses methodologies not supported by the scientific community. Thus, the thresholds it sets for permanent injury, temporary injury (hearing loss) and behavioral change (which we would argue are too high and thus completely underestimate the actual number of wildlife that will be impacted) are invalid as a matter of science. For instance, in setting its thresholds at 195 dB for harassment and temporary injury and 215 dB for permanent injury and death, the Navy ignores a 2004 study by Nowachek et al which found that right whales respond to mid-frequency sound below 140 dB (the sound caused them to stop eating and ascend rapidly to just below the surface, making them extremely vulnerable to ship strikes).

*The Navy's cumulative impacts analysis is inadequate. Chapter 4 of the DEIS simply lists projects that could have potential cumulative impacts on the Northwest Range without actually analyzing what those impacts will be.

*The Navy's alternative analysis is also inadequate. The Navy only presents three options - maintain the status quo, add more training, or add even more training. It does not consider - or blithely dismisses - any other alternatives, some employed by the Navy itself in other training exercises and ranges.

*Finally - and most critically - the Navy does not set forth adequate measures to mitigate the harmful effects of sonar. Its proposed mitigation measures basically boil down to "safety zones" (1,000 yard power-down and 200 yard shut down) around the sonar maintained primarily by on-board visual monitors. These are the same measures that federal courts have found to be "woefully inadequate and ineffectual." (For instance, studies show that visual monitoring only spots about 5% of marine mammals. Statistically, a 5% "success" rate clearly does not cut it.) The Navy's refusal to employ better mitigation measures is astounding, because it has used more protective measures during previous training. As NRDC discovered during previous litigation against the Navy (and as our recent settlement agreement has allowed us to make public), the Navy has adopted, during previous exercises, some of the same mitigation measures we have repeatedly beseeched it to employ and which it now claims it cannot employ. These measures include siting exercises beyond the continental shelf and Gulf Stream, relocating exercises out of important habitat and to avoid certain species, and using a technique called "simulated geography" to avoid canyons and near-shore areas on at least three of its major ranges. It also restricted sonar use at night when marine mammals are harder to detect, as well as minimized the use of sonar from multiple sources at the same time. Although in Chapter 5 of the DEIS the Navy goes to some pain to describe "alternative mitigation measures considered but eliminated" - primarily for "training effectiveness" reasons - its previous adoption of the exact same measures belies its argument. The Navy's claim that it cannot implement more protective mitigation measures is therefore completely disingenuous.

I.1.24 NATIONAL DATA BUOY CENTER

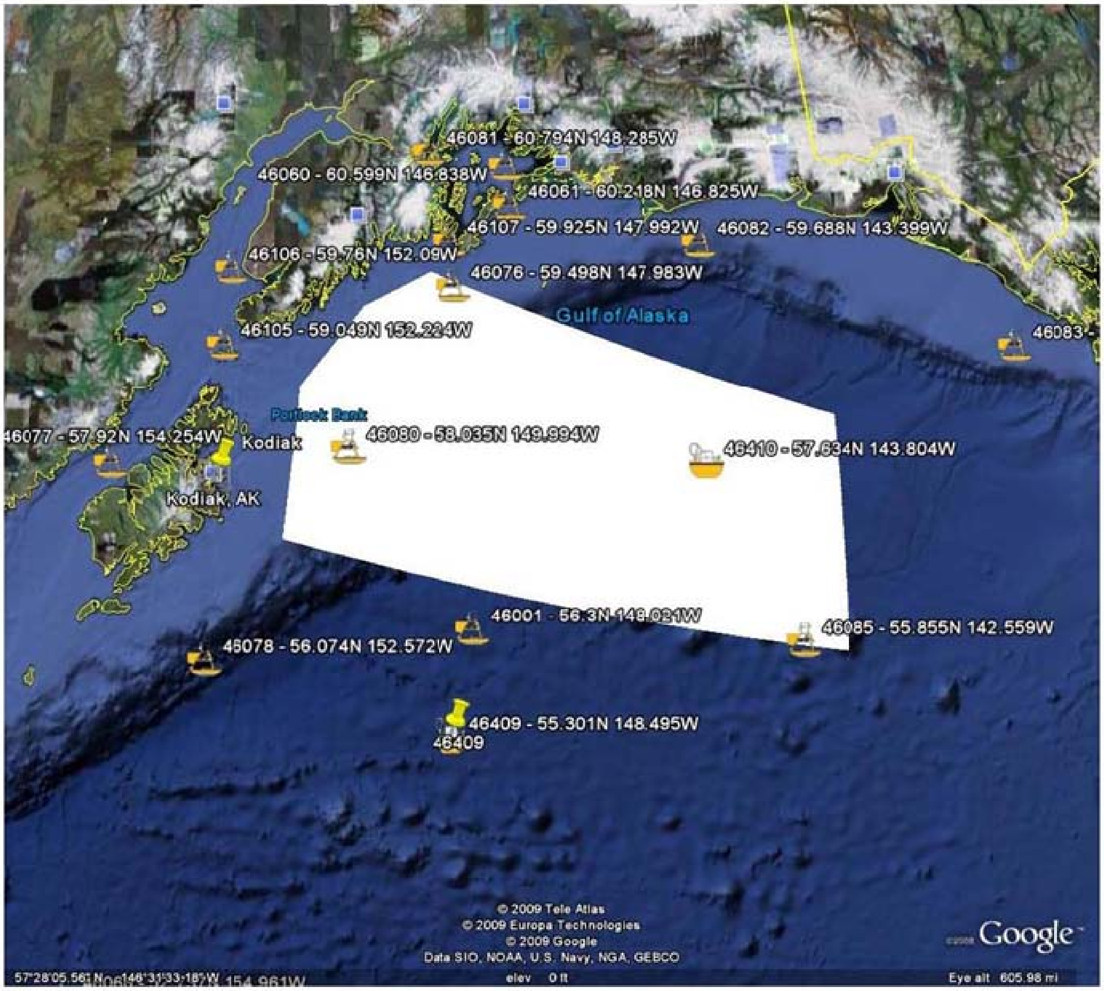
From: Craig Kohler
To: Burt, Amy E CIV NAVFAC NW, EV1
Cc: Amy.B.Cox@noaa.gov; Christian Meinig; Stephen Cucullu; Cheryl Hickey; Chung-Chu Teng
Subject: Re: Navy activities in GOA/DART
Date: Friday, January 22, 2010 8:25:32
Attachments: GOA Naval Exercise.pdf
Craig_Kohler.vcf

Graphic now attached...

Amy (Burt),
NDBC has identified the buoys/moorings that are potentially in the GOA exercise operating area. The attached graphic lists these stations, positions and watch circle radii that need to be avoided. Additional information is contained on our website (http://www.ndbc.noaa.gov/) but please don't hesitate to contact me if you have any questions.
Best regards,
Craig

Amy B. Cox wrote:
> Craig,
> We will include this information in our comments to the Navy. We are
> submitting informal comments this month as a cooperating agency on the
> project. I also spoke to the Navy contact Amy Burt today. She
> mentioned that you had already contacted her. I am glad to hear that
> coordination is in the works.
> Thank you for your time and assistance.
> Have a good weekend,
> Amy
>
>
>
> Craig Kohler wrote:
>> Amy,
>> Thank you for providing the National Data Buoy Center (NDBC) this
>> information. We were not aware of the proposed naval training
>> exercise in the GOA. I ask that you include statement that they need
>> to avoid interference with The National Data Buoy Center's DART
>> (Deep-ocean Assessment and Reporting of Tsunamis) and our automated
>> weather reporting buoys and moorings in the exercise area. These
>> networks provide critical weather and tsunami warning data to the
>> American public. For specific locations of the buoys/moorings in
>> this area, please refer to http://www.ndbc.noaa.gov/. We will also
>> provide this information to the Navy contact you provided below.
>> Best regards,
>> Craig
>>
>>
>> Amy B. Cox wrote:
>>> Hello Craig,
>>> I am writing from the NMFS Anchorage field office. We are
>>> reviewing the Navy draft environmental impact statement for the
>>> purposed training activities in the Gulf of Alaska. Matt Eagleton
>>> in our office suggested checking with Chris about your equipment in
>>> the GOA area. We just wanted to make sure that you are aware of the
>>> proposed exercises. I did not notice anything in the draft about
>>> needing to be cautious or avoid any buoys and such. They have
>>> various exercises and such planned which include explosions, live
>>> fire, vessel sinkings, etc.. The website with this information is

>>> http://www.gulfofalaskanavyeis.com/OtherResources.aspx We are
>>> writing comments to the Navy about essential fish habitat. We can
>>> mention something to the effect of:
>>> The NOAA Office of Oceanic and Atmospheric Research, Pacific Marine
>>> Environmental Lab Tsunami Program (Christian Meinig, Division Chief)
>>> maintains a tsunami monitoring network placed throughout the GOA and
>>> North Pacific. NMFS offers that coordination should be made to
>>> ensure this world-wide integrated network is not falsely activated
>>> or real-time tsunami monitoring equipment become damaged. See
>>> http://nctr.pmel.noaa.gov/Dart/index.html You may already be
>>> working with the Navy to ensure that your equipment isn't damaged.
>>> If not though, you may wish to contact them directly also. They are
>>> accepting comments until Jan. 25th for the final EIS.
>>> The contact person is
>>> Amy Burt, Environmental Planner
>>> Naval Facilities Engineering Command Northwest
>>> 1101 Tautog Circle, Suite 203
>>> Silverdale, WA 98315-1101
>>> (360) 396-0924
>>> If you need any more information please just let me know. Also,
>>> if you can let me know if you are already working with the Navy that
>>> would be great. I will not include the above comment in our letter
>>> if it is redundant then.
>>> Thank you,
>>> Amy
>>>
>>>
>>> Christian Meinig wrote:
>>>> Hello Amy:
>>>>
>>>> Thanks for the phone message regarding Navy activities possibly
>>>> affecting the DART array in GOA. The DART array is now operational
>>>> and the contact is:
>>>>
>>>> Craig Kohler
>>>> Craig.Kohler@noaa.gov
>>>>
>>>> in Stennis, MS. He is cc'd above. The locations of the buoys can
>>>> be found here: http://www.ndbc.noaa.gov/
>>>>
>>>> --cheers, Chris
>>>>
>>>
>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46082 - 59.688N 143.399W
46106 - 59.76N 152.09W
46076 - 59.498N 147.983W
Gulf of Alaska
46105 - 59.049N 152.224W
46083
Portlock Bank
46077 - 57.92N 154.254W
Kodiak
46080 - 58.035N 149.994W
46410 - 57.634N 143.804W
Kodiak, AK
46001 - 56.3N 148.021W
46085 - 55.855N 142.559W
46078 - 56.074N 152.572W
46409 - 55.301N 148.495W
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I.1.25 NATIVE VILLAGE OF AFOGNAK

Native Village of Afognak To embrace, protect, develop, and enhance Alutiiq culture, protect our traditional use areas and encourage unity among the Alutiiq of the Kodiak Archipelago

January 22nd, 2010

Naval Facilities Engineering Command Northwest
ATTN: Mrs. Amy Burt- Gulf of Alaska EIS/OEIS Project Manager
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

Department of the Navy:

On behalf of the Native Village of Afognak, a federally recognized tribe of the Kodiak Archipelago, whose mission is to protect our traditional use areas for our tribal members, we are writing in response to the Draft Environmental Impact Statement for Navy Training Activities in the Gulf of Alaska.

We would like to state that we do not support activities that may adversely affect the marine life in the proposed TMAA. Not only do our members rely on the ocean for subsistence, but also many make their living from the ocean.

In closing, we understand the importance of the Navy being prepared, but not at the expense of our marine life and our ocean environment. The Native Village of Afognak strongly supports the No Action Alternative.

Sincerely,

Melissa Borton
Tribal Administrator

115 Mill Bay Road, Suite 201 * Kodiak, AK 99615 * phone 907-486-6357 * fax 907-486-6529

I.1.26 NATIVE VILLAGE OF EYAK

Native Village of Eyak
P.O. Box 1388
Cordova, Alaska 99574
Ph (907) 424-7738 * Fax (907) 424-7739

January 22, 2010

Navy Facilities Engineering Command Northwest
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

Attn: Mrs. Amy Burt – Gulf of Alaska EIS/OEIS Project Manager

Re: Comments on Gulf of Alaska Navy Training Activities EIS/OEIS

Dear Mrs. Burt,

I am writing on behalf of the Native Village of Eyak (NVE) to comment on the Gulf of Alaska Navy Training Activities EIS/OEIS. NVE is a federally recognized tribe with our traditional use area primarily in the Prince William Sound, the Copper River, and the Gulf of Alaska. We are based in Cordova, Alaska, where most of our members currently reside. Since Cordova is an isolated rural community accessible only by air or water, the cost of living is extremely high. For that reason, the majority of our people rely heavily on subsistence hunting, fishing, and gathering for their survival. Consequently, it is imperative that we manage the environment and aquatic resources in the most sustainable and judicious manner. The health and productivity of our environment is in direct correlation with the health and productivity of our community.

The Native Village of Eyak supports the mission of the Navy and the need for readiness training. However, we are very concerned about the North Pacific and Gulf of Alaska ecosystems and encourage the Navy to take every possible precaution to protect this environment. The Gulf of Alaska and Prince William Sound are very important parts of our traditional homeland. NVE deems it vitally important to ensure that the Navy training activities do not adversely impact our aquatic resources. NVE has several concerns in relation to the training activities.

The proposed activities would release a substantial amount of hazardous materials into the marine environment. While the draft EIS contains information on the hazardous content and the pounds of hazardous materials in the individual weapons expended under each alternative, the FEIS should include a table listing the specific content and amounts of the hazardous materials contained in the total expended materials under each alternative. The EIS states that releasing individual expended materials would not have a significant effect on the environment, but does not mention whether the cumulative effect of adding those contaminants into the marine environment was analyzed. Release of toxic substances in the water may be quickly diluted; however, some toxic substances have the potential to bioaccumulate in the food chain. Will the Navy be able to ensure that our subsistence foods will still be safe to eat?

The Gulf of Alaska supports habitats of threatened and endangered populations of marine mammals and salmon. These populations have already been impacted by the Exxon Valdez Oil Spill and have just recently begun to recover. Marine mammals and fish may be physiologically or behaviorally

I.1.27 NATURAL RESOURCE DEFENSE COUNCIL - 1

NRDC
THE EARTH'S BEST DEFENSE

NATURAL RESOURCES DEFENSE COUNCIL

By Facsimile and Federal Express

January 4, 2010

Mrs. Amy Burt
Gulf of Alaska EIS/OIES Project Manager
Naval Facilities Engineering Command Northwest
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101
Tel.: (360) 396-0924
Fax: (360) 396-0857

Re: *Petition for Extension of Public Comment Period on the Draft Environmental Impact Statement/Overseas Environmental Impact Statement for the Gulf of Alaska Navy Training Activities*

Dear Mrs. Burt:

On behalf of the Natural Resources Defense Council ("NRDC") and our 1.3 million members and activists, I am writing to petition the Navy for an extension of the public comment period on its Draft Environmental Impact Statement/Overseas Environmental Impact Statement for the Gulf of Alaska Navy Training Activities ("GOA DEIS").

Notice of the comment period was published in the Federal Register on December 11, 2009. See 74 Fed. Reg. 65761. The public has been given only 45 days – over religious and New Years holidays – to submit comments by January 25, 2010 on over 900 pages of dense information. In light of the voluminous information provided by the Navy in justifying its plans and the extensive range of activity proposed, we respectfully request an extension to submit written comments of at least 30 days until February 25, 2010.

Such an extension is necessary to fully protect the public interest by giving citizens the time to thoroughly analyze the Navy's proposal and submit comments on the critical issues raised therein. The Navy's GOA DEIS raises many issues that the public has never been able to address before. Notably, some of the Navy's activities may take place in critical habitat for North Pacific right whales and may affect humpback whale feeding grounds and gray whale migration routes. The public, as well as the scientific

www.nrdc.org

1314 Second Street
Santa Monica, CA 90401
TEL 310-434-2300 FAX 310-434-2399

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Mrs. Amy Burt
January 4, 2010
Page 2

community, needs sufficient time to identify, analyze, and comment on the scope of the proposed activities and on the Navy's analysis thereof.

The Navy appropriately extended its initial comment periods for the Northwest Training Range Complex DEIS and its Undersea Warfare Training Range DEIS, thus providing an additional 30 days for the public to comment due to the sheer size of, and the many issues raised in, those DEISs. We believe at the very least that a similar extension is warranted here. Therefore, we strongly urge you to grant this petition and extend the comment period. As always, we would welcome discussion with the Navy at any time.

Very truly yours,

Taryn G. Kiekow
Staff Attorney, Marine Mammal Protection Project
Natural Resources Defense Council

Cc: Michael Payne, Chief
Permits, Conservation and Education Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Senator Mark Begich
Peterson Tower
510 L St, Suite 750
Anchorage, AK 99501-1954

Senator Lisa Murkowski
Peterson Tower
510 L Street, Suite 550
Anchorage, AK 99501-1954

Representative Don Young
Peterson Tower
510 L St, Suite 580
Anchorage, AK 99501-1954

I.1.28 NATURAL RESOURCE DEFENSE COUNCIL - 2

NRDC
THE EARTH'S BEST DEFENSE

NATURAL RESOURCES DEFENSE COUNCIL

By Overnight Delivery

January 25, 2010

Mrs. Amy Burt
Gulf of Alaska EIS/OIES Project Manager
Naval Facilities Engineering Command Northwest
1101 Tautog Circle, Suite 203
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Tel.: (360) 396-0924
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Re: *Draft Environmental Impact Statement/Overseas Environmental Impact Statement for the Gulf of Alaska Navy Training Activities*

Dear Mrs. Burt:

On behalf of the Natural Resources Defense Council ("NRDC"), Alaska Community Action on Toxics, Alaska Marine Conservation Council, Center for Biological Diversity, Cook Inletkeeper, International Fund for Animal Welfare, Juneau Group Sierra Club, Kodiak Audubon, North Gulf Oceanic Society, Oceana, Ocean Futures Society, Prince William Soundkeeper, Sierra Club Alaska Chapter, The Kodiak Gray Whale Project, Turning the Tides, and Jean-Michel Cousteau, and our millions of members and activists, thousands of whom reside in Alaska, we appreciate the opportunity to submit comments regarding the Navy's Draft Environmental Impact Statement/ Overseas Environmental Impact Statement ("DEIS") for its Training Activities in the Gulf of Alaska ("GOA"). *See* 74 Fed. Reg. 65761 (Dec. 11, 2009). Please include these comments and attachments in the administrative record.[1]

While our organizations recognize the Navy's important role in ensuring national security, we also value the security a clean and healthy environment provides. National security and environmental integrity are not mutually exclusive, and we encourage the Navy to train in a way that protects the valuable natural resources in the GOA. We are profoundly concerned, however, that Navy's DEIS falls short of ensuring such protection. As you are aware, the Navy's preferred alternative (Alternative 2) would

[1] We aware that comments may be submitted separately by government agencies, individual scientists, environmental organizations, and the public. All of these comments are hereby incorporated by reference.

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dramatically increase the amount of training in the Temporary Maritime Activity Area ("TMAA") in the GOA between April and October every year. The TMAA extends across 42,146 square nautical miles across the GOA south of Prince William Sound and east of Kodiak Island. The Navy plans to introduce – for the first time – extensive sonar training in the GOA.[2] Its preferred alternative would use many different sources of active sonar, totaling over 1,160 hours of sonar use every year. DEIS at 3.8-146. These training exercises would also employ a battery of other acoustic sources and explosives detonations in ocean surface and undersea areas, special use airspace, and training land areas. In addition, the Navy plans to use a Portable Undersea Tracking Range, add a second carrier strike group exercise and conduct sinking exercises in the TMAA. DEIS at ES-1.

The Navy also plans to abandon at least 352,000 pounds of spent material (both hazardous and non hazardous) in the TMAA every year, including 360 bombs, 66 missiles, 644 targets and pyrotechnics, 26,376 gunshells, 11,400 small caliber rounds, and 1,587 sonobuoys. Over 10,300 pounds of this expended material is hazardous. DEIS at ES-15 to 28; 3.2-28 to 34; 3.6-34.

These proposed training activities would pose significant risk to whales, fish, and other wildlife that depend on sound for breeding, feeding, navigating, and avoiding predators—in short, for their survival. Under Alternatives 1 and 2, the Navy would employ mid-frequency active sonar, which has been implicated in mass injuries and mortalities of whales around the globe.[3] The same technology is known to affect marine mammals in countless other ways, inducing panic responses, displacing animals,

[2] The DEIS states that no active mid-frequency sonar is used in the GOA (or at least from exercises involving carrier-strike groups). DEIS at ES-11 (describing the no Action Alternative). While it may be true that scripted exercises during Northern Edge or other major events do not currently involve mid-frequency sonar, that does not mean that individual units do not use sonar opportunistically while in the area, or that sonar is not used for sustainment training, unit-level exercises, equipment testing or calibration, or other purposes. We request that the Navy review activity over a reasonable time period to establish an actual baseline for analysis.

In previous requests to the Navy NRDC asked the Pacific Fleet review its logs for active sonar use occurring in the GOA between June 1, 2004 and July 20, 2004 – which corresponded to an unusual mortality of beaked whales in the area – and indicate in its DEIS whether mid-frequency sonar was used. The Navy did review the 2004 event in Appendix F of the DEIS and concluded that "[t]here was no ASW component to the exercise…There were no events in the Alaska Shield/Northern Edge exercise that could have caused or been related to any of the strandings…" DEIS at F-27. As noted above, just because the exercises during Northern Edge did not involve mid-frequency sonar does not mean that individual units were not using sonar opportunistically or for other purposes. We request that the Navy disclose whether ANY sonar is or has been used in the GOA over a reasonable time period (at least as far back as 2004), including for sustainment training, unit-level exercises, equipment testing or calibration, or any other purpose.

[3] Military sonar generates intense sound that can induce a range of adverse effects in whales and other species – from significant behavioral changes to injury and death. The most widely reported and dramatic of these events are the mass strandings of beaked whales and other marine mammals that have been associated with military sonar use. A brief summary of the stranding record appears in Appendix B.

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and disrupting crucial behavior such as foraging. By the Navy's own estimates, sonar training exercises from its preferred alternative will result in more than 425,000 marine mammal "takes" (behavioral impacts, harassment, injury) every year – over 2.125 million takes during the course of the permit it must obtain under the Marine Mammal Protection Act. DEIS at 3.8-148. In all, the Navy expects to "take" more than 20 different species of marine mammals, including 7 endangered species, in the TMAA. DEIS at 3.8-1 to 4. The GOA training activities would also affect fisheries and essential fish habitat and release a large amount of hazardous and expended materials into the waters. *See* Appendices A and B for a detailed discussion of impacts.

The National Environmental Policy Act ("NEPA") requires the Navy to employ rigorous standards of environmental review, including a full explanation of potential impacts, a comprehensive analysis of all reasonable alternatives, a fair and objective accounting of cumulative impacts, and a thorough description of measures to mitigate harm.

Unfortunately, the DEIS released by the Navy falls far short of these mandates and fails to satisfy the Navy's legal obligations under NEPA. Before issuing a final EIS, the Navy must revise the environmental impacts, alternatives, cumulative impacts and mitigation analysis in the DEIS (described in detail in Appendix A). It must also fully address the considerable scientific record that has developed around sonar and whale injury and mortality, and adjust its acoustic impacts analysis and assessment model accordingly (discussed in Appendices B and C). A few additional concerns are highlighted below.

One of our primary concerns is the paucity of survey data necessary to estimate marine mammal density or distribution. Without these estimates, it is impossible to adequately evaluate the impacts on marine mammals or to estimate harm, as required by NEPA. Nor can the Navy support its environmental analysis and take estimates. A closely related concern is the Navy's failure to protect any area within the TMAA from sonar training activities. There is a general consensus among the scientific community that "[p]rotecting marine mammal habitat is…the most effective mitigation measure currently available" to reduce the harmful impacts of mid-frequency sonar on marine mammals.[4] Nonetheless, the DEIS does not even consider establishing any protection areas in the TMAA where sonar training would be limited or excluded.

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[4] See Letter from Jane Lubchenco, Under Secretary of Commerce for Oceans and Atmosphere to Nancy Sutley, Chair, Council on Environmental Quality dated Jan. 19, 2010, *available at* http://www.nrdc.org/media/docs/100119.pdf; see also Agardy, T., Aguilar Soto, N., Cañadas, A., Engel, M., Frantzis, A., Hatch, L., Hoyt, E., Kaschner, K., LaBrecque, E., Martin, V., Notarbartolo di Sciara, G., Pavan, G., Servidio, A., Smith, B., Wang, J., Weilgart, L., Wintle, B., and Wright, A. A global scientific workshop on spatio-temporal management of noise. Report of workshop held in Puerto Calero, Lanzarote, (June 4-6, 2007); ECS Working Group: Dolman, S., Aguilar Soto, N., Notabartolo di Sciara, G., Andre, M., Evans, P., Frisch, H., Gannier, A., Gordon, J., Jasny, M., Johnson, M., Papanicolopulu, I., Panigada, S., Tyack, P., and Wright, A. Technical report on effective mitigation for active sonar and beaked whales. Working group convened by European Cetacean Society, (2009); OSPAR Commission, Assessment of the environmental impact of underwater noise. OSPAR Biodiversity Series, (2009);

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Until sufficient information on the density and distribution of marine mammals is obtained – and any salient protection areas established – the Navy should not increase sonar training in the GOA. We recommend that the Navy: (1) obtain additional data on marine mammal density and distribution in the TMAA, (2) re-analyze its impacts analysis, take estimates, and alternatives and mitigation analysis accordingly, and (3) reissue its DEIS. Should the Navy proceed before obtaining sufficient density and distribution information, we believe the law requires the adoption of the No Action Alternative until sufficient information is obtained.

The Navy Has Not Taken a "Hard Look" Under NEPA

NEPA requires that the potential environmental impacts of any "major Federal actions significantly affecting the quality of the human environment" be considered through the preparation of an environmental impact statement ("EIS"). *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 348 (1989); 42 U.S.C. § 4332. The fundamental purpose of an EIS is to compel decision-makers to take a "hard look" at a particular action – both at the environmental impacts it will have and at the alternatives and mitigation measures available to reduce those impacts – *before* a decision to proceed is made. 40 C.F.R. §§ 1500.1(b), 1502.1; *Baltimore Gas & Electric v. NRDC*, 462 U.S. 87, 97 (1983); *Robertson*, 490 U.S. at 349. While NEPA "does not commend the agency to favor an environmentally preferable course of action," an agency may only make a decision to proceed after taking a "hard look" at environmental consequences. *Sabine River Auth. v. Dep't of Interior*, 951 F.2d 669, 676 (5th Cir. 1992)(internal citations omitted). This "hard look" requires agencies to obtain high quality information and accurate scientific analysis. 40 C.F.R. § 1500.1(b).

It is impossible to characterize the DEIS as taking a "hard look" because of the Navy's failure to obtain information regarding marine mammal densities and distribution. The flaws stemming from this failure reverberate throughout the DEIS, most notably in the Navy's impacts analysis, take estimates and mitigation proposals.

The Navy Lacks Sufficient Information

NEPA requires agencies to ensure the "professional integrity, including scientific integrity" of material relied upon in an EIS. 40 C.F.R. § 1502.24. To that end, agencies must make every attempt to obtain and disclose data necessary to their analysis. The simple assertion that "no information exists" will not suffice; unless the costs of obtaining the information are exorbitant, NEPA requires that it be obtained. 40 C.F.R. § 1502.22(a).

The Navy simply has not obtained the required information. The Navy is unable to establish densities for many marine mammal populations in the TMAA, including blue

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Parsons, E.C.M., Dolman, S.J., Wright, A.J., Rose, N.A., and Burns, W.C.G. Navy sonar and cetaceans: just how much does the gun need to smoke before we act? Marine Pollution Bulletin 56: 1248-1257 (2008).

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whales, North Pacific right whales and sei whales – all of which are endangered. DEIS at 3.8-2. Nor is it able to estimate the density of harbor porpoises, which are particularly vulnerable to acoustic impacts. DEIS at 3.8-3. The Navy argues that blue whales, North Pacific right whales and sei whales are "too few in number to allow for quantitative analysis," but it cannot escape its responsibilities under NEPA simply by claiming that whales are "very rare." DEIS 3.8-2, 5, 9. The "rareness" and low abundance of those whales, if anything, should warrant additional monitoring (including acoustic and visual), safeguards and protections – particularly of North Pacific right whales, one of the most endangered species of whales on the planet. And although the DEIS claims that blue whales are "rare" in the GOA, a 2009 study presents new evidence indicating that as the northeastern Pacific population recovers from whaling, blue whales increasingly may be returning to former GOA feeding grounds. These whales appear to be part of the same stock that is seen off of California.[5]

The Navy further acknowledges that the existing information for other species and habitat in the GOA is extremely "limited" and "localized." DEIS at 3.8-9. For instance, with the exception of Rone et al. (2009), none of the surveys focused on the TMAA itself – most surveyed nearshore areas outside the TMAA. DEIS at 3.8-9. In addition, some of the surveys were designed to count species other than those targeted in the density estimate.[6] Recognizing the dearth of data, the Navy did fund a targeted 10-day marine mammal line-transect survey conducted by Rone et al. in April 2009 that yielded the most direct data available on fin whales and humpback whales in the TMAA.[7] But that survey – hampered by several "challenges" including "limited survey time, a large survey area, inclement weather, and the lack of arrival of sonobuoys" [8] – is inadequate to establish abundance and density estimates for most marine mammals in the TMAA or to identify important marine mammal habitat. Despite these challenges, however, the survey encountered an "unexpectedly large number" of sightings of marine mammals.[9] This suggests that the TMAA represents rich habitat for cetaceans, particularly in continental shelf and slope waters, that requires further study.

Having sufficient data is essential for the Navy to meet its responsibilities under NEPA. The Navy cannot issue a final EIS (nor can the National Marine Fisheries issue a Biological Opinion under the Endangered Species Act or an incidental take permit

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[5] See Calambokidis J, Barlow J, Ford JKB, Chandler TE, Douglas AB. 2009. Insights into the population structure of blue whales in the eastern North Pacific from recent sightings and photographic identification. Marine Mammal Science 25:816-832.

[6] For example, the Moore et al survey of gray whales was designed to measure pinnipeds. See Moore, S.E., K.M. Wynne, J. Clement-Kinney, and J.M. Grebmeier, 2007. Gray whale occurrence and forage southeast of Kodiak Island, Alaska. Marine Mammal Science 23(2):419–428.

[7] See Rone, B., A. Douglas, P. Clapham, A. Martinez, L. Morse and J. Calambokidis. 2009. Cruise Report for the April 2009 Gulf of Alaska Line-Transect Survey (GOALS) in the Navy Training Exercise Area. Report issued by National Marine Mammal Laboratory and Cascadia Research. Naval Postgraduate School Tech Report # NPS-OC-09-007.

[8] Id. at 15.
[9] Id.

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under the Marine Mammal Protection Act) without adequate information on densities and distributions of marine mammals in the TMAA. Until the Navy collects the necessary information, it may be significantly underestimating marine mammal densities and thereby affecting its impact analysis and take estimates. To meet its responsibilities under NEPA, Navy should sponsor a multi-year, multi-seasonal survey effort within the TMAA that can serve as a basis for both improved environmental assessment and mitigation. Based on the results of those surveys, the Navy may need to revise its alternative analysis and site at least some of its proposed exercises in lower value marine mammal habitat elsewhere in the GOA, or adopt the No-Action Alternative. Until then, the Navy's NEPA analysis remains arbitrary and capricious.

The Navy Fails to Consider Effective Mitigation

There is general consensus that protection areas – in which the use of mid-frequency sonar would not occur – represent the most effective means currently available to reduce the impacts of mid-frequency sonar on marine mammals.[10] The National Oceanic Atmospheric Administration ("NOAA") recently completed a review of the Navy's sonar mitigation. It concluded that "ongoing mitigation efforts, in our view, must do more" to address uncertainties and protect marine mammals.[11] NOAA emphasized the importance of habitat identification and avoidance, stating that "[p]rotecting important marine mammal habitat is generally recognized to be the most effective mitigation measure currently available."[12] Yet the Navy makes no provision whatsoever for protection areas in the TMAA.

Appendix A contains a detailed description of mitigation measures that the Navy can – and should – adopt. At a minimum, however, the Navy must assess the value of marine mammal habitat[13] both in the TMAA itself and the broader GOA, and protect any higher-value areas identified. We recognize that predictive habitat modeling to determine potential marine mammal hotspots is hindered by the lack of survey data in the TMAA, which is why additional surveys absolutely must be undertaken before the Navy issues a final EIS. The survey data can then be used to generate a predictive habitat model upon which appropriate mitigation can be based.

Already there exists important marine mammal habitat that can be readily identified. The TMAA is only 16 nautical miles west of critical habitat for the highly endangered North Pacific right whale (DEIS at 3.8- 22, 23) and directly adjacent to critical habitat

[10] Supra, note 4.

[11] See Letter from Jane Lubchenco, Under Secretary of Commerce for Oceans and Atmosphere to Nancy Sutley, Chair, Council on Environmental Quality dated Jan. 19, 2010, *available at* http://www.nrdc.org/media/docs/100119.pdf

[12] Id.

[13] NOAA has committed to conduct a series of workshops to learn more about marine mammal "hotspots," particularly through available predictive models. Based on the results of these workshops, NOAA will consider additional measures to reduce harm from sonar, in future rulemakings and authorizations under the Marine Mammal Protection Act.

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for Steller sea lions (DEIS 3.8-34). The North Pacific right whale is among the most endangered species of cetaceans in the world.[14] Mid-frequency sound below 140 dB has been shown to disrupt foraging in right whales and cause them to ascend rapidly to just below the surface where they face a significantly greater risk of ship strike.[15] At a minimum, the Navy should establish a sufficient buffer between these critical habitats and the TMAA. In addition, the Navy should protect feeding grounds for humpback whales and gray whale migratory routes.[16] The Navy should also protect areas of high bathymetric relief, where there are likely to be high concentrations of beaked whales and other deep diving species.

Conclusion

For the reasons set forth above and in greater detail in the Appendices below and attached critique by Dr. David Bain, we urge the Navy to satisfy its obligations under NEPA and other applicable laws. To that end, the Navy should conduct multi-year, multi-seasonal surveys to obtain adequate information on densities and distributions of marine mammals in the TMAA. These surveys would serve as a basis for predictive habitat modeling and protective mitigation. Once the Navy obtains additional data on marine mammal density and distribution, it should re-analyze its impacts analysis, take estimates and mitigation measures accordingly and reissue its DEIS. Until this additional information is obtained, the Navy should only consider the No Action Alternative.

Thank you for your consideration of our comments, and we welcome the opportunity to discuss this matter with you at any time.

Sincerely,

Taryn Kiekow

Taryn Kiekow
Staff Attorney

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[14] See, e.g., Committee on the Status of Endangered Wildlife in Canada (COSEWIC), COSEWIC Assessment and Update Status Report on the North Pacific Right Whale Eubalaena japonica in Canada (2004).

[15] See D.P. Nowacek, M.P. Johnson, and P.L. Tyack, North Atlantic Right Whales (Eubalaena glacialis) Ignore Ships but Respond to Alerting Stimuli, 271 Proceedings of the Royal Society of London, Part B: Biological Sciences 227 (2004).

[16] Gray whales migrate through this area twice a year. While they usually maintain a distance of less than 2km to the shore, they are known to move further offshore south of Kodiak Island. Peak abundance is generally in April through May for the northbound migration, and November through December for the southbound migration. In addition, some groups of gray whales form resident feeding aggregations that maintain a presence in the GOA throughout the summer feeding season off of Kodiak Island, peaking in September through November. See Moore SE, Wynne KM, Kinney JC, Grebmeier JM, Gray whale occurrence and forage southeast of Kodiak Island, Alaska. Marine Mammal Science 23:419-428 (2007).

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APPENDIX A

THE NAVY'S DEIS IS FATALLY FLAWED AND FAILS TO COMPLY WITH THE BASIC REQUIREMENTS OF NEPA

As set forth below, the Navy's DEIS does not meet the rigorous standards set forth in the National Environmental Policy Act. We urge the Navy to reissue its EIS and substantially alter the approach it has taken thus far. The Navy's scope of review must be expanded, its alternatives analysis broadened, its mitigation plan significantly improved, and its impact assessment revised to reflect the scientific evidence of mid-frequency sonar's effects on marine life. These critical steps must be undertaken if the Navy's EIS is to comply with federal law.

I. Legal Framework: The National Environmental Policy Act

The National Environmental Policy Act of 1969 ("NEPA") "declares a broad national commitment to protecting and promoting environmental quality." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 348 (1989). NEPA establishes a national policy to "encourage productive and enjoyable harmony between man and his environment" and "promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man." 42 U.S.C. § 4321. In order to achieve its broad goals, NEPA mandates that "to the fullest extent possible" the "policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with [it]." 42 U.S.C. § 4332.

Central to NEPA is its requirement that, before any federal action that "*may* significantly degrade some human environmental factor" can be undertaken, agencies must prepare an EIS. *Steamboaters v. F.E.R.C.*, 759 F.2d 1382, 1392 (9th Cir. 1985) (emphasis in original). The requirement to prepare an EIS "serves NEPA's action-forcing purpose in two important respects." *Robertson*, 490 U.S. at 349. First, "the agency, in reaching its decision, will have available, and will *carefully consider, detailed information* concerning significant environmental impacts[,]" and second, "the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision." *Id.* (emphasis added). As the Supreme Court explained: "NEPA's instruction that all federal agencies comply with the impact statement requirement…'to the fullest extent possible' [cit. omit.] is neither accidental nor hyperbolic. Rather the phrase is a deliberate command that the duty NEPA imposes upon the agencies to consider environmental factors not be shunted aside in the bureaucratic shuffle." *Flint Ridge Development Co. v. Scenic Rivers Ass'n*, 426 U.S. 776, 787 (1976).

The fundamental purpose of an EIS is to force the decision-maker to take a "hard look" at a particular action – at the agency's need for it, at the environmental consequences it will have, and at more environmentally benign alternatives that may substitute for it – before the decision to proceed is made. 40 C.F.R. §§ 1500.1(b), 1502.1; *Baltimore Gas & Electric v. NRDC*, 462 U.S. 87, 97 (1983). This "hard look" requires agencies to

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obtain high quality information and accurate scientific analysis. 40 C.F.R. § 1500.1(b). "General statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided." *Klamath-Siskiyou Wilderness Center v. Bureau of Land Management*, 387 F.3d 989, 994 (9th Cir. 2004) (*quoting Neighbors of Cuddy Mountain v. United States Forest Service*, 137 F.3d 1372, 1380 (9th Cir. 1998)). The law is clear that the EIS must be a pre-decisional, objective, rigorous, and neutral document, not a work of advocacy to justify an outcome that has been foreordained.

In nearly every respect, the Navy's DEIS fails to meet the high standards of rigor and objectivity required under NEPA. The Navy has failed to conduct the "hard look" necessary to thoroughly examine the many environmental consequences of its proposed action.

II. The Navy Fails to Properly Analyze Impacts on Marine Mammals

The Navy's DEIS does not properly analyze the environmental impacts. Its analysis also substantially understates the potential effects of sonar on marine wildlife. For instance, the Navy fails to acknowledge risks posed to a wide range of marine species – including the highly endangered North Pacific right whale – from its training activities. The DEIS concludes that only one Dall's porpoise would suffer serious injury or die during the many hours of proposed sonar training. DEIS at 3.8-148. The Navy reaches this conclusion by excluding relevant information adverse to its interests, using approaches and methods that are unacceptable to the scientific community and ignoring entire categories of impacts. As discussed in detail in Appendix C and the attached critique by Dr. David Bain, the Navy's assessment of acoustic impacts is also highly problematic.

A. Acoustic Impacts on Marine Mammals

NEPA requires agencies to ensure the "professional integrity, including scientific integrity," of the discussions and analyses that appear in EISs. 40 C.F.R. § 1502.24. To that end, they must make every attempt to obtain and disclose data necessary to their analysis. *See* 40 C.F.R. § 1502.22(a). Agencies are further required to identify their methodologies, indicate when necessary information is incomplete or unavailable, acknowledge scientific disagreement and data gaps, and evaluate indeterminate adverse impacts based upon approaches or methods "generally accepted in the scientific community." 40 C.F.R. §§ 1502.22(2), (4), 1502.24. Such requirements become acutely important in cases where, as here, so much about a program's impacts depend on newly emerging science.

In this case, the Navy's assessment of impacts is consistently undermined by its failure to meet these fundamental responsibilities of scientific integrity, methodology, investigation, and disclosure. As set forth in greater detail in Appendix C and the attached critique by Dr. Bain, the DEIS disregards a great deal of relevant information adverse to the Navy's interests, uses approaches and methods that would not be

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acceptable to the scientific community, and ignores whole categories of impacts. In short, it leaves the public with an analysis of harm—behavioral, auditory, and physiological—that is at odds with established scientific authority and practice. The Navy must revise its acoustic impacts analysis, including its thresholds and risk function, to comply with NEPA.

B. Other Impacts on Marine Mammals

The activities proposed for the GOA may have impacts that are not limited to the effects of ocean noise. Unfortunately, the Navy's analysis of these other impacts is cursory and inadequate.

First, the Navy fails to adequately assess the impact of stress on marine mammals, a serious problem for animals exposed even to moderate levels of sound for extended periods.[17] DEIS at 3.8-72 to 73. As the Navy has previously observed, stress from ocean noise—alone or in combination with other stressors, such as biotoxins—may weaken a cetacean's immune system, making it "more vulnerable to parasites and diseases that normally would not be fatal."[18] Moreover, according to studies on terrestrial mammals, chronic noise can interfere with brain development, increase the risk of myocardial infarctions, depress reproductive rates, and cause malformations and other defects in young—all at moderate levels of exposure.[19] Because physiological stress responses are highly conservative across species, it is reasonable to assume that marine mammals would be subject to the same effects. Yet despite the potential for stress in marine mammals and the significant consequences that can flow from it, the Navy unjustifiably assumes that such effects would be minimal.

Second, the Navy fails to consider the risk of ship strikes with large cetaceans, as exacerbated by the use of active acoustics. DEIS at 3.8.3 and 3.8.4 generally. For example, right whales have been shown to engage in dramatic surfacing behavior, increasing their vulnerability to ship strikes, on exposure to mid-frequency alarms

[17] See National Research Council, Ocean Noise and Marine Mammals.

[18] Navy, Hawaii Range Complex Draft Environmental Impact Statement/ Overseas Environmental Impact Statement at 5-19 to 5-20 (2007). Additional evidence relevant to the problem of stress in marine mammals is summarized in A.J. Wright, N. Aguilar Soto, A.L. Baldwin, M. Bateson, C.M. Beale, C.Clark, T. Deak, E.F. Edwards, A. Fernández, A. Godinho, L. Hatch, A. Kakuschke, D. Lusseau, D. Martineau, L.M. Romero, L. Weilgart, B. Wintle, G. Notarbartolo di Sciara, and V. Martin, Do marine mammals experience stress related to anthropogenic noise?, 20 International Journal of Comparative Psychology, 274-316 (2007); see also T.A. Romano, M.J. Keogh, C. Kelly, P. Feng, L. Berk, C.E. Schlundt, D.A. Carder, and J.J. Finneran, Anthropogenic Sound and Marine Mammal Health: Measures of the Nervous and Immune Systems Before and After Intense Sound Exposure, 61 Canadian Journal of Fisheries and Aquatic Sciences 1124, 1130-31 (2004).

[19] See, e.g., E.F. Chang and M.M. Merzenich, Environmental Noise Retards Auditory Cortical Development, 300 Science 498 (2003) (rats); S.N. Willich, K. Wegscheider, M. Stallmann, and T. Keil, Noise Burden and the Risk of Myocardial Infarction, European Heart Journal (2005) (Nov. 24, 2005) (humans); F.H. Harrington and A.M. Veitch, Calving Success of Woodland Caribou Exposed to Low-Level Jet Fighter Overflights, 45 Arctic vol. 213 (1992) (caribou).

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above 133 dB re 1 μPa (SPL)—a level of sound that can occur many tens of miles away from the sonar systems slated for the GOA.[20] DEIS 3.8-96. A conservative approach would assume that other large whales (which, as the DEIS repeatedly notes, are already highly susceptible to vessel collisions) are subject to the same hazard. For instance, fin whales also occur within the GOA and appear to be particularly vulnerable to ship strikes.[21] Indeed, in a recent 16-year survey of ship strikes in Washington State waters, fin whales "had the highest incidence of ante-mortem ship strike" of the seven species of large whales examined.[22] Even the DEIS finds that "[w]orldwide historical records indicate fin whales were the most likely species to be struck by vessels." DEIS at 3.8-16. But the DEIS then dismisses the effects of vessel strikes on fin whales based solely on an "unpublished preliminary summary of opportunistically collected reports." DEIS at 3.8-16. The DEIS fails to discuss even the potential for mortality or injury to fin whales from ship strikes. NEPA's hard look requires the Navy to undertake a far more detailed examination of this potentially significant source of mortality for fin whales under even the No Action Alternative, as well as from the increase in vessel traffic that would occur under Alternatives 1 and 2.

Third, in the course of its training activities, the Navy would release a host of toxic chemicals, hazardous materials and waste into the marine environment that could pose a threat to marine mammals over the life of the range. Under its preferred alternative, the Navy also plans to abandon at least 352,000 pounds of spent material (both hazardous and non hazardous) in GOA waters every year, including 360 bombs, 66 missiles, 644 targets and pyrotechnics, 26,376 gunshells, 11,400 small caliber rounds, and 1,587 sonobuoys. Over 10,300 pounds of this expended material is hazardous. DEIS at ES-15 to 28; 3.2-28 to 34; 3.6-34. Nonetheless, the DEIS fails to adequately consider the cumulative impacts of these toxins on marine mammals from past, current, and proposed training exercises. Careful study is needed into the way toxins might disperse and circulate within the area and how they may affect marine wildlife. The Navy's assumption that expended materials and toxics would dissipate or become buried in sediment leads to a blithe conclusion that releases of hazardous material would have no adverse effects. Given the amount of both hazardous and nonhazardous materials, this discussion is inadequate under NEPA.

Fourth, the Navy does not adequately analyze the potential for and impact of oil spills. As evidenced by the 1989 *ExxonValdez* oil spill, there is a significant existing risk of an oil spill in the GOA. This risk is exacerbated by increasing the tempo and intensity of Navy training, which will involve more vessels, more transits, and longer missions

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[20] Nowacek et al., North Atlantic Right Whales, 271 Proceedings of the Royal Society of London, Part B: Biological Sciences at 227. The North Pacific right whale is an endangered species closely related to the studied North Atlantic right whale.

[21] See http://www.cascadiaresearch.org/WestportBm20090113.htm

[22] Annie B. Douglas, Incidence of ship strikes of large whales in Washington State, Journal of the Marine Biological Association of the United Kingdom, 2008, 88(6), 1121–1132, *available at* http://www.cascadiaresearch.org/reports/Douglas%20et%20al%202008-Incidence%20of%20ship%20strikes%20of%20large%20whales.pdf.

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throughout the TMAA.[23] In light of this history and the extraordinarily valuable and sensitive natural resources that occur in the GOA, the Navy must evaluate its spill response plan and station salvage equipment accordingly.

Finally, the Navy's analysis cannot be limited only to direct effects, *i.e.*, effects that occur at the same time and place as the training exercises that would be authorized. 40 C.F.R. § 1508.8(a). It must also take into account the activity's indirect effects, which, though reasonably foreseeable (as the DEIS acknowledges), may occur later in time or are further removed. 40 C.F.R. § 1508.8(b). This requirement is particularly critical in the present case given the potential for sonar exercises to cause significant long-term impacts not clearly observable in the short or immediate term (a serious problem, as the National Research Council has observed).[24] Thus, for example, the Navy must not only evaluate the potential for mother-calf separation but also the potential for indirect effects—on survivability—that might arise from that transient change. 40 C.F.R. § 1502.16(b).

Without further consideration of these impacts, and mitigation and alternatives developed to address those impacts, the DEIS does not pass NEPA muster.

C. Other Impacts on Wildlife

The same concerns that apply to marine mammals – such as injury or death from mid-frequency active sonar, collisions with ships, bioaccumulation of toxins, and stress – apply to sea turtles, birds and other biota as well. The Navy must adequately evaluate impacts and propose mitigation for each category of harm. 40 C.F.R. §§ 1502.14, 1502.16.

The effects of mid-frequency active sonar on sea turtles are glossed over on the grounds that their best hearing range appears to occur below 1 kHz. DEIS at 3.7-5 to 6. But having their best acoustic sensitivity in this range does not mean that sea turtles are oblivious to noise at higher frequencies. As the Navy admits, juvenile and adult loggerheads hear sounds all the way up to 1 kHz, suggesting that they continue to detect sounds at higher levels, including potentially the lower end of the intense mid-frequency sources intended for the range. Furthermore, they have been shown to engage in startle and escape behavior – behavior that may involve diving and surfacing – and to experience heightened stress in response to vessel noise. Thus, a more rigorous analysis of potential impacts of mid-frequency sonar is necessary.

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23 We note that the Navy should include in its analysis and disclose to the public a chart that shows how its operating areas overlap shipping lanes, recommended routes, and Areas to Be Avoided as an indication of the potential for conflict with other vessels.

24 "Even transient behavioral changes have the potential to separate mother-offspring pairs and lead to death of the young, although it has been difficult to confirm the death of the young." National Research Council, Ocean Noise and Marine Mammals at 96.

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Nor is the Navy's reasoning with regard to seabirds any more sound. Although the Navy acknowledges that "little is known about the general hearing or underwater hearing capabilities of birds" (DEIS at 3.9-7), it then inexplicably concludes that because ther is "no evidence that birds utilize sound underwater to forage or locate prey…[any] effects were unlikely". DEIS at 3.9-8. Such reasoning does not bear up to any serious scrutiny. Seabirds occur in the GOA, dive underwater (in some cases to depths of hundreds of feet), and are sensitive to same frequencies used by the Navy's acoustic sources. They must receive further analysis in the DEIS, both for the direct impacts they may suffer on exposure to the Navy's acoustic sources and for the impacts they may incur indirectly through depletion of prey species and hard bottom habitat. 40 C.F.R. § 1502.16(a), (b).

Without further consideration of these species, the Navy's review is incomplete.

III. The Navy Failed to Analyze the Impacts on Fish and Fisheries

The GOA is a highly productive region for fish populations. It supports some of the most productive and commercially important fisheries in the United States (including salmon, halibut, crab, shrimp, pollock, Pacific cod, and mackerel fisheries). The TMAA supports six species of salmonoids – five of which are designated as "endangered" or "threatened" (Chinook, coho, chum, pink, and sockeye salmon and steelhead trout). The TMAA also supports hundreds of other species, including Pacific halibut, groundfish (walleye pollock, Pacific, sablefish, rockfishes, rex sole, Dover sole, arrowtooth flounder, etc.), dungeness crab, and scallops. In addition, 68 fish and invertebrate species with federally designated essential fish habitat occur in the TMAA.

In its DEIS, the Navy fails to acknowledge the impacts of anthropogenic sound on fish, fisheries and essential fish habitat. On the one hand, the Navy claims that there is a "dearth of empirical information on the effects of exposure to sound, [especially] sonar…." DEIS at 3.6-43. Yet on the other hand it ignores a wide-range of scientific studies on the impacts of noise on fish, claiming the studies "would be very difficult to extrapolate" and "focused on behavior of individuals of a few species and it is unlikely their responses are representative of the wide diversity of other marine fish species." DEIS at 3.6-27, 43. The Navy is therefore able to conclude — without basis —that noise from its training activities – including both mid-frequency active sonar and underwater detonations – would have no significant impact on fish, fisheries and essential fish habitat.

The Navy's conclusion not only contradicts the available scientific literature on noise but also ignores the valid concerns of fishermen. For example, fisherman concerned with declining catch rates wrote letters opposing the Navy's proposal to build an Undersea Warfare Training Range off the coast of North Carolina in 2005. Those fishermen reported sharp declines in catch rates in the vicinity of Navy exercises.

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A. Decline in Catch Rates

For years, fisheries in various parts of the world have complained about declines in their catch after intense acoustic activities (including naval exercises) moved into the area, suggesting that noise is seriously altering the behavior of some commercial species.[25] A group of Norwegian scientists attempted to document these declines in a Barents Sea fishery and found that catch rates of haddock and cod (the latter known for its particular sensitivity to low-frequency sound) plummeted in the vicinity of an airgun survey across a 1600-square-mile area. In another experiment, catch rates of rockfish were similarly shown to decline.[26] Drops in catch rates in these experiments range from 40 to 80 percent.[27] A variety of other species, herring, zebrafish, pink snapper, and juvenile Atlantic salmon, have been observed to react to various noise sources with acute alarm.[28]

In their comments on the Navy's Draft Environmental Impact Statement for the proposed Undersea Warfare Training Range off the coast of North Carolina, several fishermen and groups of fishermen independently reported witnessing sharp declines in catch rates of various species when in the vicinity of Navy exercises.[29] These reports are also indicative of behavioral changes –such as a spatial redistribution of fish within the water column – that could similarly affect the fisheries in the GOA.

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[25] See "'Noisy' Royal Navy Sonar Blamed for Falling Catches," Western Morning News, Apr. 22, 2002 (sonar off the U.K.); Percy J. Hayne, President of Gulf Nova Scotia Fleet Planning Board, "Coexistence of the Fishery & Petroleum Industries," www.elements.nb.ca/theme/fuels/percy/hayne.htm (accessed May 15, 2005) (airguns off Cape Breton); R.D. McCauley, J. Fewtrell, A.J. Duncan, C. Jenner, M.-N. Jenner, J.D. Penrose, R.I.T. Prince, A. Adhitya, J. Murdoch, and K. McCabe, Marine Seismic Surveys: Analysis and Propagation of Air-Gun Signals, and Effects of Air-Gun Exposure on Humpback Whales, Sea Turtles, Fishes, and Squid 185 (2000) (airguns in general).

[26] A. Engås, S. Løkkeborg, E. Ona, and A.V. Soldal, Effects of Seismic Shooting on Local Abundance and Catch Rates of Cod (Gadus morhua) and Haddock (Melanogrammus aeglefinus), 53 Canadian Journal of Fisheries and Aquatic Sciences 2238-49 (1996); J.R. Skalski, W.H. Pearson, and C.I. Malme, Effects of Sound from a Geophysical Survey Device on Catch-Per-Unit-Effort in a Hook-and-Line Fishery for Rockfish (Sebastes spp.), 49 Canadian Journal of Fisheries and Aquatic Sciences 1357-65 (1992). See also S. Løkkeborg and A.V. Soldal, The Influence of Seismic Exploration with Airguns on Cod (Gadus morhua) Behaviour and Catch Rates, 196 ICES Marine Science Symposium 62-67 (1993).

[27] Id.

[28] See J.H.S. Blaxter and R.S. Batty, The Development of Startle Responses in Herring Larvae, 65 Journal of the Marine Biological Association of the U.K. 737-50 (1985); F.R. Knudsen, P.S. Enger, and O. Sand, Awareness Reactions and Avoidance Responses to Sound in Juvenile Atlantic Salmon, Salmo salar L., 40 Journal of Fish Biology 523-34 (1992); McCauley et al., Marine Seismic Surveys at 126-61.

[29] See comments compiled by the Navy and posted on the Undersea Warfare Training Range EIS site, *available at* http://www.projects.earthtech.com/USWTR (e.g., comments of S. Draughon, S. Fromer, L. and F. Gromadzki, D. Pendergrast, and North Carolina Watermen United).

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B. Permanent Injury and Mortality

The Navy's conclusion that underwater noise will result in only "minimal harm" to fish ignores the scientific literature. A number of studies, including one on non-impulsive noise, show that intense sound can kill eggs, larvae, and fry outright or retard their growth in ways that may hinder their survival later.[30] Significant mortality for fish eggs has been shown to occur at distances of 5 meters from an airgun source; mortality rates approaching 50 percent affected yolksac larvae at distances of 2 to 3 meters.[31] With respect to mid-frequency sonar, the Navy itself has noted that "some sonar levels have been shown [in Norwegian studies] to be powerful enough to cause injury to particular size classes of juvenile herring from the water's surface to the seafloor."[32] Also, larvae in at least some species are known to use sound in selecting and orienting toward settlement sites.[33] Acoustic disruption at that stage of development could have significant consequences.[34] Although the Navy acknowledges that eggs and larvae may be more susceptible to sound, it caveats that acknowledgement with the excuse that "more well-controlled studies are needed." DEIS at 3.6-43. However, federal law does not allow the Navy to ignore the valid scientific studies that have already been conducted simply because they are contrary to its interest.

As the Navy is aware after recently completing consultation with both NMFS (for salmon) and the U.S. Fish and Wildlife Service (for bull trout) over its Explosive Ordinance Disposal ("EOD") training exercises in Puget Sound, underwater explosions are responsible for high direct mortality to fish species present in the area. Indeed, the underwater detonation of just five pounds of plastic explosives has been observed to kill over 5,000 fish with swim bladders, with more accurate estimates ranging as high as 20,000 fish. There are a variety of live-fire training exercises, some of which involve underwater explosions of torpedoes and other ordnance that will take place in the GOA. Given the variety of fish and fisheries inhabiting these waters, the Navy's failure to analyze these effects in significant detail is stunning.

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[30] See, e.g., C. Booman, J. Dalen, H. Leivestad, A. Levsen, T. van der Meeren, and K. Toklum, Effecter av luftkanonskyting på egg, larver og yngel (Effects from Airgun Shooting on Eggs, Larvae, and Fry), 3 Fisken og Havet 1-83 (1996) (Norwegian with English summary); J. Dalen and G.M. Knutsen, Scaring Effects on Fish and Harmful Effects on Eggs, Larvae and Fry by Offshore Seismic Explorations, in H.M. Merklinger, Progress in Underwater Acoustics 93-102 (1987); A. Banner and M. Hyatt, Effects of Noise on Eggs and Larvae of Two Estuarine Fishes, 1 Transactions of the American Fisheries Society 134-36 (1973); L.P. Kostyuchenko, Effect of Elastic Waves Generated in Marine Seismic Prospecting on Fish Eggs on the Black Sea, 9 Hydrobiology Journal 45-48 (1973).

[31] Booman et al., Effecter av luftkanonskyting på egg, larver og yngel at 1-83.

[32] Navy, Draft Environmental Impact Statement/ Overseas Environmental Impact Statement for the Southern California Range Complex 3.7-66 to 3.7-67 (2008). In the GOA, the Navy would operate sonar at higher levels than those used in the Norwegian studies.

[33] S.D. Simpson, M. Meekan, J. Montgomery, R. McCauley, R., and A. Jeffs, Homeward Sound, 308 Science 221 (2005).

[34] Popper, Effects of Anthropogenic Sounds at 27.

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C. Hearing Loss

One series of recent studies showed that passing airguns can severely damage the hair cells of fish (the organs at the root of audition) either by literally ripping them from their base in the ear or by causing them to "explode."[35] Fish, unlike mammals, are thought to regenerate hair cells, but the pink snapper in these studies did not appear to recover within approximately two months after exposure, leading researchers to conclude that the damage was permanent.[36] It is not clear which elements of the sound wave contributed to the injury, or whether repetitive exposures at low amplitudes or a few exposures at higher pressures, or both, were responsible.[37] As with marine mammals, sound has also been shown to induce temporary hearing loss in fish. Even at fairly moderate levels, noise from outboard motor engines is capable of temporarily deafening some species of fish, and other sounds have been shown to affect the short-term hearing of a number of other species, including sunfish and tilapia.[38] For any fish that is dependent on sound for predator avoidance and other key functions, even a temporary loss of hearing (let alone the virtually permanent damage seen in snapper) will substantially diminish its chance of survival.[39]

D. Breeding Behavior

NMFS has observed that the use of mid-frequency sonar could affect the breeding behavior of certain species, causing them, for example, to cease their spawning choruses, much as certain echolocation signals do.[40] The repetitive use of sonar and other active acoustics could thus have significant adverse behavioral effects on some species of fish and those who depend on them.

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[35] R. McCauley, J. Fewtrell, and A.N. Popper, High Intensity Anthropogenic Sound Damages Fish Ears, 113 Journal of the Acoustical Society of America 640 (2003).

[36] Id. at 641 (some fish in the experimental group sacrificed and examined 58 days after exposure).

[37] Id.

[38] A.R. Scholik and H.Y. Yan, Effects of Boat Engine Noise on the Auditory Sensitivity of the Fathead Minnow, Pimephales promelas, 63 Environmental Biology of Fishes 203-09 (2002); A.R. Scholik and H.Y. Yan, The Effects of Noise on the Auditory Sensitivity of the Bluegill Sunfish, Lepomis macrochirus, 133 Comparative Biochemisty and Physiology Part A at 43-52 (2002); M.E. Smith, A.S. Kane, & A.N. Popper, Noise-Induced Stress Response and Hearing Loss in Goldfish (Carassius auratus), 207 Journal of Experimental Biology 427-35 (2003); Popper, Effects of Anthropogenic Sounds at 28.

[39] See Popper, Effects of Anthropogenic Sounds at 29; McCauley et al., High Intensity Anthropogenic Sound Damages Fish Ears, at 641.

[40] Letter from Miles M. Croom, NMFS Southeast Regional Office, to Keith Jenkins, Navy (Jan. 31, 2006); see also J.J. Luczkovich, "Potential Impacts of the U.S. Navy's Proposed Undersea Warfare Training Range on Fishes" (2006) (presentation to Navy).

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In sum, the Navy arbitrarily dismisses the potential for adverse impacts on fish. The Navy also capriciously dismisses the notion that fisheries in the area would suffer economic loss, even though – judging by the comments from North Carolina fishermen in 2005 – its training activities appear to have disrupted fishing in the past. Just like the training proposed in North Carolina, the available evidence here underscores the need for a more serious and informed analysis than the Navy currently provides. To comply with the requirements of NEPA, the Navy should rigorously analyze the potential for behavioral, auditory, and physiological impacts on fish, including the potential for population-level effects, using models of fish distribution and population structure and conservatively estimating areas of impact from the available literature. 40 C.F.R. § 1502.22. The Navy must also meaningfully assess the economic consequences of reduced catch rates on commercial and recreational fisheries (as well as on marine mammal foraging) in the GOA. It should also consider avoiding essential fish habitat, spawning grounds and other areas of important habitat for fish species, especially hearing specialists. Notably, as with marine mammals, the Navy does not consider exclusion of important fish habitat or fisheries in the TMAA.

IV. The Navy's Proposed Mitigation Measures Fail to Protect Marine Wildlife

To comply with NEPA, an agency must discuss measures designed to mitigate its project's impact on the environment. *See* 40 C.F.R. § 1502.14(f). There is a large and growing set of options for the mitigation of noise impacts to marine mammals and other marine life, some of which have been imposed by foreign navies[41]—and by the Navy itself, in other contexts—to limit harm from high-intensity sonar exercises. Yet here the Navy does little more than set forth an abbreviated set of measures, dismissing effective measures out of hand.

All of the mitigation that the Navy has proposed for sonar impacts boils down to the following: a very small safety zone around the sonar source, maintained primarily with visual monitoring by personnel with other responsibilities, with aid from shipboard passive monitoring when personnel are already using such technology. Under the proposed scheme, operators would power-down the system if a marine mammal is detected within 1,000 yards and shut-down the system if a marine mammal is detected within 200 yards. DEIS at 5-8 to 13.

This mitigation scheme disregards the best available science on the significant limits of visual monitoring. Visual detection rates for marine mammals generally approach only 5 percent. Moreover, the species perhaps most vulnerable to sonar-related injuries, beaked whales, are among the most difficult to detect because of their small size and diving behavior. It has been estimated that in anything stronger than a light breeze, only one in fifty beaked whales surfacing in the direct track line of a ship would be

[41] See S.J. Dolman, C.R. Weir, and M. Jasny, Comparative Review of Marine Mammal Guidance Implemented during Naval Exercises, __ Marine Pollution Bulletin __ (Dec. 12, 2008).

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sighted; as the distance approaches 1 kilometer, that number drops to zero.[42] Right whales are also notoriously hard to detect, and the Navy plans to train next to critical habitat for the highly endangered North Pacific right whale. Right whales are uniquely vulnerable to ship strikes because they often hover on or near the surface of the water. Due to their dark coloration and lack of a dorsal fin, however, they are difficult to detect. The Navy's reliance on visual observation as the mainstay of its mitigation plan is therefore profoundly misplaced.

Further, the Navy's assurances that it will consider when planning exercises, several conditions that contribute to marine mammal stranding events provides no reassurance. Among the conditions the Navy will "consider" include: (1) areas of 1,000 m depth near a shoreline where there is a rapid change in bathymetry; (2) multiple ships or submarines operating sonar; (3) chokepoints and embayments; and (4) the historical presence of strong surface ducting conditions. DEIS at 5-12 to 13. While we applaud the Navy for recognizing these conditions of concern, NEPA requires more. The Navy must impose concrete mitigation measures rather than rhetorical issues of concern.

The Navy's ineffective mitigation measures are all the more remarkable given its adoption of more protective measures during previous training. For example, the Atlantic Fleet has repeatedly sited exercises beyond the continental shelf and Gulf Stream, relocated exercises out of important habitat and to avoid certain species, and used a technique called "simulated geography" to avoid canyons and near-shore areas on at least three of its major ranges. It has also restricted sonar use at night when marine mammals are harder to detect, as well as minimized the use of sonar from multiple sources at the same time.[43]

In this light, the Navy's claims that it cannot implement more protective mitigation measures ring false. DEIS at 5-28 to 41. Although the Navy goes to some pain to describe "alternative mitigation measures considered but eliminated" —primarily for "training effectiveness" reasons—its previous adoption of the same measures belies its argument. Clearly the Navy has done more to mitigate the harmful effects of sonar in previous exercises than what it proposes for the GOA. It can, and must, do more to mitigate the harm on marine wildlife.

A. Protection Zones

As discussed above, there is scientific consensus that geographic mitigation represents the most effective means currently available to reduce the impacts of mid-frequency

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[42] J. Barlow and R. Gisiner, Mitigating, Monitoring, and Assessing the Effects of Anthropogenic Noise on Beaked Whales, 7 Journal of Cetacean Research and Management 239-249 (2006).

[43] Final Comprehensive Overseas Environmental Assessment for Major Atlantic Fleet Training Exercises February 2006, Prepared for United States Fleet Forces Command in accordance with Chief of Naval Operations Instruction 5090.1B pursuant to Executive Order 12114; *See also* Atlantic Fleet Exercises Using Mid-Frequency Sonar Mitigation Chart.

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sonar on marine mammals.[44] The Navy should obtain additional data on marine mammal density and distribution in the TMAA, which would serve as a basis for predictive habitat modeling. Based on that additional information, the Navy should consider adopting protection zones in the GOA where sonar activity will be banned.

B. Mitigation of Navy Debris and Expended Material

The DEIS fails to set forth any mitigation measures concerning the massive amount of discarded debris and expended materials associated with the increased training in the GOA. The Navy claims that ocean currents will rapidly disperse the expended materials and thus no mitigation is required. "In NEPA's demand that an agency prepare a detailed statement on 'any adverse environmental effects which cannot be avoided should the proposal be implemented,' is an understanding that the EIS will discuss the extent to which adverse effects can be avoided." *Robertson*, 490 U.S. at 352-53. The Navy's "all-or-nothing approach" is not a sufficient discussion of how the adverse impacts of expended material can be avoided. By failing to explore mitigation measures for expended materials, the Navy does not even attempt to avoid, minimize, rectify, reduce, or compensate for its dumping of debris – all of which are options included in the CEQ regulation's definition of "mitigation." 40 C.F.R. § 1508.20.

C. Other Mitigation Measures

In addition to considering protection zones and mitigation for expended materials, the Navy should adopt the following measures:

1) Seasonal avoidance of marine mammal feeding grounds, calving grounds, and migration corridors;

2) Avoidance of, or extra protections in, marine protected areas;

3) Avoidance of bathymetry likely to be associated with high-value habitat for species of particular concern, including submarine canyons and large seamounts, or bathymetry whose use poses higher risk to marine species;

4) Avoidance of fronts and other major oceanographic features, such as areas with marked differentials in sea surface temperatures, which have the potential to attract offshore concentration of animals, including beaked whales;[45]

5) Avoidance of areas with higher modeled takes or with high-value habitat for particular species;

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[44] Supra, note 4.

[45] See, e.g., Carretta et al., U.S. Pacific Marine Mammal Stock Assessments: 2007 at 142 (reporting that "Baird's beaked whales have been seen primarily along the continental slope from late spring to early fall.").

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6) Concentration of exercises to the maximum extent practicable in abyssal waters and in surveyed offshore habitat of low value to species;

7) Use of sonar and other active acoustic systems at the lowest practicable source level, with clear standards and reporting requirements for different testing and training scenarios;

8) Expansion of the marine species "safety zone" to a 4km shutdown, reflecting international best practice, or 2 km, reflecting the standard prescribed by the California Coastal Commission;[46]

9) Suspension of relocation of exercises when beaked whales or significant aggregations of other species are detected by any means within the orbit circle of an aerial monitor or near the vicinity of an exercise;

10) Use of simulated geography (and other work-arounds) to reduce or eliminate chokepoint exercises in near-coastal environments, particularly within canyons and channels, and use of other important habitat;

11) Avoidance or reduction of training during months with historically significant surface ducting conditions, and use of power-downs during significant surface ducting conditions at other times;

12) Use of additional power-downs when significant surface ducting conditions coincide with other conditions that elevate risk, such as during exercises involving the use of multiple systems or in beaked whale habitat;

13) Planning of ship tracks to avoid embayments and provide escape routes for marine animals;

14) Suspension or postponement of chokepoint exercises during surface ducting conditions and scheduling of such exercises during daylight hours;

15) Use of dedicated aerial monitors during chokepoint exercises, major exercises, and near-coastal exercises;

16) Use of dedicated passive acoustic monitoring to detect vocalizing species, through established and portable range instrumentation and the use of hydrophone arrays off instrumented ranges;

17) Modification of sonobuoys for passive acoustic detection of vocalizing species;

[46] California Coastal Commission, Adopted Staff Recommendation on Consistency Determination CD-08606 (2007); Approved Letter from M. Delaplaine, California Coastal Commission, to Rear Adm. Len Hearing, Navy (Jan. 11, 2007).

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18) Suspension or reduction of exercises outside daylight hours and during periods of low visibility;

19) Use of aerial surveys and ship-based surveys before, during, and after major exercises;

20) Use of all available range assets for marine mammal monitoring;

21) Use of third-party monitors for marine mammal detection;

22) Establishment of long-term research, to be conducted through an independent agent, on the distribution, abundance, and population structuring of protected species in the GOA, with the goal of supporting adaptive geographic avoidance of high-value habitat. Notably, additional critical habitat is likely to be identified in the GOA, and research should be undertaken to identify this critical habitat;

23) Application of mitigation prescribed by state regulators, by the courts, by other navies or research centers, or by the U.S. Navy in the past or in other contexts;

24) Avoidance of fish spawning grounds and of important habitat for fish species potentially vulnerable to significant behavioral change, such as wide-scale displacement within the water column or changes in breeding behavior;

25) Evaluating before each major exercise whether reductions in sonar use are possible, given the readiness status of the strike groups involved;

26) Dedicated research and development of technology to reduce impacts of active acoustic sources on marine mammals;

27) Establishment of a plan and a timetable for maximizing synthetic training in order to reduce the use of active sonar training;

28) Prescription of specific mitigation requirements for individual classes (or sub-classes) of testing and training activities, in order to maximize mitigation given varying sets of operational needs; and

29) Timely, regular reporting to NOAA, state coastal management authorities, and the public to describe and verify use of mitigation measures during testing and training activities.

Consideration of these measures is minimally necessary to satisfy the requirements of NEPA, and we note that similar or additional measures may be required under the Marine Mammal Protection Act, Endangered Species Act, and other statutes.

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V. The Navy Fails to Properly Analyze Cumulative Impacts

In order to satisfy NEPA, an EIS must include a "full and fair discussion of significant environmental impacts." 40 C.F.R. § 1502.1. It is not enough, for purposes of this discussion, to consider the proposed action in isolation, divorced from other public and private activities that impinge on the same resource; rather, it is incumbent on the Navy to assess cumulative impacts as well, including the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future significant actions." *Id.* § 1508.7. A meaningful cumulative impact analysis must identify (1) the area in which the effects of the proposed project will be felt; (2) the impacts that are expected in that area from the proposed project; (3) other actions—past, present, proposed, and reasonably foreseeable—that have had or are expected to have impacts in the same area; (4) the impacts or expected impacts from these other actions; and (5) the overall impact that can be expected if the individual impacts are allowed to accumulate. *Grand Canyon Trust v. FAA*, 290 F.3d 339, 345 (D.C. Cir. 2002) (quotation and citation omitted). The Navy "cannot treat the identified environmental concern in a vacuum." *TOMAC v. Norton*, 433 F.3d 852, 863 (D.C. Cir. 2006) (*quoting Grand Canyon Trust*, 290 F.3d at 345).

The Navy's cumulative impact analysis fails to meet these basic requirements. Nowhere in its cumulative impact analysis does the Navy consider—let alone reach the conclusion—that the *sum* of the various environmental impacts that are enumerated will be limited. DEIS at 4-1 to 27. The Navy's analysis cannot provide such support because the Navy fails to explain what the sum of these impacts is expected to be. NEPA requires more than just a recital of possible impacts: it requires the Navy to actually analyze the overall impact of the accumulation of individual impacts. *Grand Canyon Trust*, 290 F.3d at 345. The DEIS fails to make this analysis.

The Navy must also consider the full effects of its sonar training. It simply assumes that all behavioral impacts are short-term in nature and cannot affect individuals or populations through repeated activity—even though the anticipated takes at its preferred alternative would affect the same populations.

Nor does the Navy consider the potential for acute synergistic effects from sonar training. Although the DEIS discusses the potential for ship strike in the training area (DEIS 4-20 to 21), it does not consider the greater susceptibility to vessel strike of animals that have been temporarily harassed or disoriented by certain noise sources. The absence of analysis is particularly glaring in light of the Haro Strait incident, in which killer whales and other marine mammals were observed fleeing away from the sonar vessel at high speeds.[47] Neither does the Navy consider the synergistic effects of

[47] Christopher Dunagan, Navy Sonar Incident Alarms Experts, Bremerton Sun, May 8, 2003.

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noise with other stressors in producing or magnifying a stress-response.[48] For these reasons alone, the Navy should have concluded that the cumulative and synergistic impacts from sonar training are significant and focused its efforts to analyze and develop mitigation measures to avoid those impacts.

The Navy acknowledges that the GOA is crowded with human and military activities, many of which introduce noise, chemical pollution, debris, and vessel traffic into the habitat of protected species. DEIS at 4-1 to 7; 4-18-27. Yet it inexplicably fails to conclude what the cumulative effects will be for all those activities.

Given the scope of the proposed action, the deficiencies of the Navy's cumulative impacts assessment represents a critical failure of the DEIS. At a minimum, the Navy must evaluate the potential for cumulative impacts on populations that would occur in and near the GOA, clearly define the extent of expected cumulative impacts, and assess the potential for synergistic adverse effects (such as from noise in combination with ship-strikes).

VI. The Navy Fails to Properly Analyze Reasonable Alternatives

NEPA requires agencies to consider alternatives to their proposed actions. To comply with NEPA, an EIS must "inform decision-makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." 40 C.F.R. § 1502.1. This alternatives requirement has been described in regulation as "the heart of the environmental impact statement." *Id.* § 1502.14. The courts describe the alternatives requirement equally emphatically, citing it as the "linchpin" of the EIS. *Monroe County Conservation Council v. Volpe*, 472 F.2d 693 (2d Cir. 1972). The agency must therefore "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." 40 C.F.R. § 1502.14(a). Consideration of alternatives is required by (and must conform to the independent terms of) both sections 102(2)(C) and 102(2)(E) of NEPA. Here, the Navy's alternatives analysis misses the mark.

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[48] A.J. Wright, N. Aguilar Soto, A.L. Baldwin, M. Bateson, C.M. Beale, C.Clark, T. Deak, E.F. Edwards, A. Fernández, A. Godinho, L. Hatch, A. Kakuschke, D. Lusseau, D. Martineau, L.M. Romero, L. Weilgart, B. Wintle, G. Notarbartolo di Sciara, and V. Martin, Do marine mammals experience stress related to anthropogenic noise?, 20 International Journal of Comparative Psychology, 274-316 (2007); see also Andrew J. Wright, Natacha Aguilar Soto, Ann L. Baldwin, Melissa Bateson, Colin M. Beale, Charlotte Clark, Terrence Deak, Elizabeth F. Edwards, Antonio Fernández, Ana Godinho, Leila Hatch, Antje Kakuschke, David Lusseau, Daniel Martineau, L. Michael Romero, Linda Weilgart, Brendan Wintle, Giuseppe Notarbartolo-di-Sciara, and Vidal Martin, Anthropogenic noise as a stressor in animals: a multidisciplinary perspective, 20 International Journal of Comparative Psychology, 250-273 (2007).

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A. Failure to Identify Environmental Impact-Based Alternatives

The Navy claims it "considers potential environmental impacts" while executing its responsibilities under federal law, including NEPA. DEIS at 1-1. But the Navy's alternatives were not selected to "inform decision-makers and the public" of how the Navy could "avoid or minimize adverse impacts or enhance the quality of the human environment." 40 C.F.R. § 1502.1. Instead, as discussed in the DEIS and below, the Navy chose alternatives based on factors unrelated to the proposed action's environmental impacts.

Further, at no point in the DEIS does the Navy discuss how the alternatives pose different environmental choices for the public and decisionmakers. The DEIS fails entirely to comply with NEPA's regulations, requiring the Navy to "present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among option by the decisionmaker and the public." 40 C.F.R. § 1502.14. The Navy fails to sharply define the environmental issues applicable to each alternative and include these differences in a comparison of alternatives. There is simply no comparison of the risks and benefits of each alternative site showing what is and is not known and what species and habitats would be most at risk from each alternative.

B. Identification of Alternative Sites

The DEIS does not include any discussion of alternative sites, instead proposing a No Action alternative (maintaining the current level of activities), Alternative 1 (increasing training activities, including sonar training), and the preferred Alternative 2 (increasing training activities, sonar training, additional strike exercises and range enhancements). The Navy's analysis is devoid of geographic alternatives. The information the Navy does include indicates that factors of convenience and cost dominated the decision. Factors of mere convenience alone cannot dictate an agency's choice of alternatives to evaluate in an EIS. An agency must discuss all reasonable alternatives—those that will accomplish the purpose and need of the agency and are practical and feasible—not simply those it finds most convenient. 40 C.F.R. § 1502.14. "The primary purpose of the impact statement is to compel federal agencies to give serious weight to environmental factors in making discretionary choices." *I-291 Why? Ass'n v. Burns*, 372 F.Supp. 233, 247 (D. Conn. 1974). If an agency is permitted to consider and compare the environmental impacts of its proposed action with only equally convenient alternatives—and permitted to omit from such analysis any alternatives that are less convenient, no matter that they might result in significant environmental benefits—this purpose would be thwarted.

Carefully siting the activities proposed to occur in the range to avoid concentrations of vulnerable and endangered species and high abundances of marine life is the most critical step the Navy can take in reducing the environmental impacts of this project. Because the Navy has failed to undertake an alternatives analysis that allows it to make an informed siting choice, however, the DEIS is inadequate and must be revised.

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C. Other Reasonable Alternatives

The DEIS fails to consider any alternatives beyond increasing the level of training. Therefore, many reasonable alternatives are missing from the Navy's analysis that might fulfill that purpose while reducing harm to marine life and coastal resources. For example:

(1) The DEIS fails entirely to consider avoiding seasonal habitat, or any other seasonal variation in marine life abundance (such as migration routes). Omitting even the mere *consideration* of any alternative that recognizes the need to protect endangered and sensitive marine life is unacceptable.

(2) The DEIS fails to include a range of mitigation measures among its alternatives. Many such measures have been employed by the U.S. Navy in other contexts, as discussed above; and there are many others that should be considered. Such measures are reasonable means of reducing harm to marine life and other resources on the proposed range, and their omission from the alternatives analysis renders that analysis inadequate.

(3) The Navy's statement of purpose and need contains no language that would justify the limited set of alternatives that the Navy considers (or the alternative it ultimately prefers). Yet it is a fundamental requirement of NEPA that agencies preparing an EIS specify their project's "purpose and need" in terms that do not exclude full consideration of reasonable alternatives. 40 C.F.R. § 1502.13; *City of Carmel-by-the-Sea v. United States Dep't of Transp.*, 123 F.3d 1142, 1155 (9th Cir. 1997) (*citing Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 196 (D.C. Cir. 1991)). "The existence of a viable but unexamined alternative renders an environmental impact statement inadequate," *Idaho Conservation League v. Mumma*, 956 F.2d 1508, 1519 (9th Cir. 1992), and an EIS errs when it accepts "as a given" parameters that it should have studied and weighed. *Simmons v. U.S. Army Corps of Eng'rs*, 120 F.3d 664, 667 (7th Cir. 1997).

In sum, the DEIS shortchanges or omits from its analysis reasonable alternatives that might achieve the Navy's core aim of testing and training while minimizing environmental harm. For these reasons, we urge the Navy to revise its DEIS to adequately inform the public of all reasonable alternatives that would reduce adverse impacts to whales, fish, and other resources. 40 C.F.R. § 1502.1.

VII. The Navy Fails to Analyze the Impacts on Wildlife Viewing Interests and Recreation

Just as it fails to consider the direct, indirect, and cumulative impacts of increased training in the GOA on the region's marine mammals and other fish and wildlife, the DEIS does not adequately consider the effects on wildlife viewing and other wildlife-

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dependent recreational interests. The DEIS makes no mention of the value lost from the harm to marine mammals that attract a number of our organizational members and members of the public to the potentially affected areas of the GOA. Nor does it address the potential economic value lost from decreased tourism (*e.g.,* whale watching, cruise ships, etc.), particularly those areas centered on observing whales and other marine mammals in their natural habitats.

One of NEPA's explicit purposes is to "assure esthetically and culturally pleasing surroundings," 42 U.S.C. 4331(b)(2), and caselaw makes clear that an agency must adequately consider such recreational impacts in its NEPA analysis. *See, e.g., Lujan v. NWF*, 497 U.S. 871, 887 (1990) ("no doubt that recreational use and aesthetic enjoyment are among the sorts of interests NEPA [was] specifically designed to protect"); *LaFlamme v. FERC*, 852 F.2d 389, 401 (1988) (because "there were substantial questions raised regarding whether the project may significantly affect recreational use in the project area, and that FERC failed to explain or discuss" these impacts, the court found that "this record reflects a decision which is neither 'fully informed or well-considered,'" and therefore concluded the agency's decision not to prepare an EIS was unreasonable).

VIII. Project Description and Meaningful Public Disclosure

Disclosure of the specific activities contemplated by the Navy is essential if the NEPA process is to be a meaningful one. *See, e.g., LaFlamme v. F.E.R.C.*, 852 F.2d 389, 398 (9th Cir. 1988) (noting that NEPA's goal is to facilitate "widespread discussion and consideration of the environmental risks and remedies associated with [a proposed action]").

For meaningful public input, the Navy must describe source levels, frequency ranges, duty cycles, and other technical parameters relevant to determining potential impacts on marine life. The DEIS provides some of this information, but it fails to disclose sufficient information about active sonobuoys, acoustic device countermeasures, training targets, or range sources that would be used during the exercises. DEIS at Appendix H. And the DEIS gives no indication of platform speed, pulse length, repetition rate, beam widths, or operating depths—that is, most of the data that the Navy used in modeling acoustic impacts.

The Navy—despite repeated requests—has not released or offered to release CASS/GRAB or any of the other modeling systems or functions it used to develop the biological risk function or calculate acoustic harassment and injury. *See, e.g.,* DEIS at Appendix D.

In addition, the Navy has also ignored repeated Freedom of Information Act requests regarding information and reports cited in the DEIS.

These models, reports, and requests for information must be made available to the public, including the independent scientific community, for public comment to be

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meaningful under NEPA and the Administrative Procedure Act. 40 C.F.R. §§ 1502.9(a), 1503.1(a) (NEPA); 5 U.S.C. § 706(2)(D) (APA). In addition, guidelines adopted under the Data (or Information) Quality Act also require their disclosure. The Office of Management and Budget's guidelines require agencies to provide a "high degree of transparency" precisely "to facilitate reproducibility of such information by qualified third parties" (67 Fed. Reg. 8452, 8460 (Feb. 22, 2002)); and the Defense Department's own data quality guidelines mandate that "influential" scientific material be made reproducible as well. We encourage the Navy to contact us immediately to discuss how to make this critical information available.

IX. Compliance With Other Applicable Laws

A number of other statutes and conventions are implicated by the proposed activities. Among those that must be disclosed and addressed during the NEPA process are the following:

(1) The Marine Mammal Protection Act ("MMPA"), 16 U.S.C. § 1361 et seq., which requires the Navy to obtain a permit or other authorization from NMFS or the U.S. Fish and Wildlife Service prior to any "take" of marine mammals. The Navy must apply for an incidental take permit under the MMPA, and NRDC will submit comments regarding the Navy's application to NMFS at the appropriate time.

(2) The Endangered Species Act, 16 U.S.C. § 1531 et seq., which requires the Navy to enter into formal consultation with NMFS or the U.S. Fish and Wildlife Service, and receive a legally valid Incidental Take Permit, prior to its "take" of any endangered or threatened marine mammals or other species, including fish, sea turtles, and birds, or its "adverse modification" of critical habitat. *See, e.g.*, 1536(a)(2); *Romero-Barcelo v. Brown*, 643 F.2d 835 (1st Cir. 1981), *rev'd on other grounds*, *Weinberger v. Romero-Carcelo*, 456 U.S. 304, 313 (1982). Given the scope and significance of the actions and effects it proposes, the Navy must engage in formal consultation with NMFS and the U.S. Fish and Wildlife over the numerous endangered and threatened species in the GOA.

(3) The Coastal Zone Management Act, and in particular its federal consistency requirements, 16 U.S.C. § 1456(c)(1)(A), which mandate that activities that affect the natural resources of the coastal zone—whether they are located "within or outside the coastal zone"—be carried out "in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs." The Navy must fulfill its CZMA commitments along the Alaska coast.

(4) The Magnuson-Stevens Fisheries Conservation and Management Act, 16 U.S.C. § 1801 et seq. ("MSA"), which requires federal agencies to "consult with the Secretary [of Commerce] with respect to any action authorized, funded, or

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undertaken, or proposed to be authorized, funded, or undertaken" that "may adversely affect any essential fish habitat" identified under that Act. 16 U.S.C. § 1855 (b)(2). In turn, the MSA defines essential fish habitat as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." 16 U.S.C. § 1802 (10). The GOA contains such habitat. As discussed at length above, anti-submarine warfare exercises alone have the significant potential to adversely affect at least the waters, and possibly the substrate, on which fish in these areas depend. Under the MSA, a thorough consultation is required.

(5) The Marine Protection, Research and Sanctuaries Act, 33 U.S.C. § 1401 et seq., which requires federal agencies to consult with the Secretary of Commerce if their actions are "likely to destroy, cause the loss of, or injure any sanctuary resource." 16 U.S.C. § 1434(d)(1). Since the Navy's exercises would cause injury and mortality of species, consultation is clearly required if sonar use takes place either within or in the vicinity of the sanctuary or otherwise affects its resources. Since sonar may impact sanctuary resources even when operated outside its bounds, the Navy should indicate how close it presently operates, or foreseeably plans to operate, to such sanctuary and consult with the Secretary of Commerce as required.

In addition, the Sanctuaries Act is intended to "prevent or strictly limit the dumping into ocean waters of any material that would adversely affect human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities" (33 U.S.C. § 1401(b)), and prohibits all persons, including Federal agencies, from dumping materials into ocean waters, except as authorized by the Environmental Protection Agency. 33 U.S.C. §§ 1411, 1412(a). The Navy has not indicated its intent to seek a permit under the statute.

(6) The Migratory Bird Treaty Act, 16 U.S.C. § 703 et seq. ("MBTA"), which makes it illegal for any person, including any agency of the Federal government, "by any means or in any manner, to pursue, hunt, take, capture, [or] kill" any migratory birds except as permitted by regulation. 16 U.S.C. § 703. After the District Court for the D.C. Circuit held that naval training exercises that incidentally take migratory birds without a permit violate the MBTA, (see *Center for Biological Diversity v. Pirie*, 191 F. Supp. 2d 161 (D.D.C. 2002) (later vacated as moot)), Congress exempted some military readiness activities from the MBTA but also placed a duty on the Defense Department to minimize harms to seabirds. Under the new law, the Secretary of Defense, "shall, in consultation with the Secretary of the Interior, identify measures-- (1) to minimize and mitigate, to the extent practicable, any adverse impacts of authorized military readiness activities on affected species of migratory birds; and (2) to monitor the impacts of such military readiness activities on affected species of migratory birds." Pub.L. 107-314, § 315 (Dec. 2, 2002). As the Navy acknowledges, many migratory birds occur within the GOA. The Navy must therefore consult with the Secretary of the Interior regarding measures to

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minimize and monitor the effects of the proposed range on migratory birds, as required.

(7) Executive Order 13158, which sets forth protections for marine protected areas ("MPAs") nationwide. The Executive Order defines MPAs broadly to include "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." E.O. 13158 (May 26, 2000). It then requires that "[e]ach Federal agency whose actions affect the natural or cultural resources that are protected by an MPA shall identify such actions," and that, "[t]o the extent permitted by law and to the maximum extent practicable, each Federal agency, in taking such actions, shall avoid harm to the natural and cultural resources that are protected by an MPA." *Id.* The Navy must therefore consider and, to the maximum extent practicable, must avoid harm to the resources of all federally- and state-designated marine protected areas.

The proposed activities also implicate the Clean Air Act and Clean Water Act as well as other statutes protecting the public health. The Navy must comply with these and other laws.

X. Conflicts with Federal, State and Local Land-Use Planning

NEPA requires agencies to assess possible conflicts that their projects might have with the objectives of federal, regional, state, and local land-use plans, policies, and controls. 40 C.F.R. § 1502.16(c). The Navy's training and testing activities may affect resources in the coastal zone and within other state and local jurisdictions, in conflict with the purpose and intent of those areas. The consistency of Navy operations with these land-use policies must receive more thorough consideration.

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APPENDIX B

IMPACTS OF SONAR

Strandings and Mortalities Associated with Sonar

Scientists agree, and the publicly available scientific literature confirms, that the intense sound generated by active sonar can induce a range of adverse effects in whales and other species, from significant behavioral changes to stranding and death. By far the most widely-reported and dramatic of these effects are the mass strandings of beaked whales and other marine mammals that have been associated with military sonar use.

Over the last decade, the association between military active sonar and whale mortalities has become a subject of considerable scientific interest and concern. That interest is reflected in the publication of numerous papers in peer-reviewed journals, in reports by inter-governmental bodies such as the IWC's Scientific Committee, and in evidence compiled from a growing number of mortalities associated with sonar. Yet the DEIS only glosses over these stranding incidents.

In March 2000, for example, sixteen whales from at least three species— including two minke whales—stranded over 150 miles of shoreline along the northern channels of the Bahamas. The beachings occurred within 24 hours of Navy ships using mid-frequency sonar in those same channels.[49] Post-mortem examinations found, in all whales examined, hemorrhaging in and around the ears and other tissues related to sound conduction or production, such as the larynx and auditory fats, some of which was debilitative and potentially severe.[50] It is now accepted that these mortalities were caused, through an unknown mechanism, by the Navy's use of mid-frequency sonar.

The Bahamas event is merely one of numerous mortality events coincident with military activities and active sonar that have now been documented, only some of which the Navy discusses:[51]

(1) Canary Islands 1985-1991 – Between 1985 and 1989, at least three separate mass strandings of beaked whales occurred in the Canary Islands, as reported in *Nature*.[52] Thirteen beaked whales of two species were killed in the

[49] Commerce and Navy, Joint Interim Report at iii, 16.

[50] Id.

[51] The following is not a complete list, as other relevant events have been reported in Bonaire, Japan, Taiwan, and other locations. See, e.g., R.L. Brownell, Jr., T. Yamada, J.G. Mead, and A.L. van Helden, Mass Strandings of Cuvier's Beaked Whales in Japan: U.S. Naval Acoustic Link? (2004) (IWC SC/56E37); J.Y. Wang and S.-C. Yang, Unusual Cetacean Stranding Events of Taiwan in 2004 and 2005, 8 Journal of Cetacean Research and Management 283-292 (2006); P.J.H. van Bree and I. Kristensen, On the Intriguing Stranding of Four Cuvier's Beaked Whales, Ziphius cavirostris, G. Cuvier, 1823, on the Lesser Antillean Island of Bonaire, 44 Bijdragen tot de Dierkunde 235-238 (1974).

[52] M. Simmonds and L.F. Lopez-Jurado, Whales and the Military, 337 Nature 448 (1991).

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February 1985 strandings, six whales of three species stranded in November 1988, and some twenty-four whales of three species stranded in October 1989—all while naval vessels were conducting exercises off shore.[53] An additional stranding of Cuvier's beaked whales, also coinciding with a naval exercise, occurred in 1991.[54] It was reported that mass live strandings occurred each time exercises took place in the area.[55]

(2) Greece 1996, 1997 – In 1996, twelve Cuvier's beaked whales stranded along 35 kilometers on the west coast of Greece. The strandings were correlated, by an analysis published in *Nature*, with the test of a low- and mid-frequency active sonar system operated by NATO.[56] A subsequent NATO investigation found the strandings to be closely timed with the movements of the sonar vessel, and ruled out all other physical environmental factors as a cause.[57] The following year saw nine additional Cuvier's beaked whales strand off Greece, again coinciding with naval activity.[58]

(3) Virgin Islands 1999 – In October 1999, four beaked whales stranded in the U.S. Virgin Islands as the Navy began an offshore exercise. A wildlife official from the Islands reported the presence of "loud naval sonar."[59] When NMFS asked the Navy for more information about its exercise, the Department's response was to end the consultation that it had begun for the exercise under the Endangered Species Act.[60] In January 1998, according to a NMFS biologist, a beaked whale "stranded suspiciously" at Vieques as naval exercises were set to commence offshore.[61]

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[53] Id.

[54] V. Martín, A. Servidio, and S. Garcia, Mass Strandings of Beaked Whales in the Canary Islands, in P.G.H. Evans and L.A. Miller, Proceedings of the Workshop on Active Sonar and Cetaceans 33-36 (2004).

[55] Simmonds and Lopez-Jurado, Whales and the Military, 337 Nature at 448.

[56] A. Frantzis, Does Acoustic Testing Strand Whales? 392 Nature 29 (1998).

[57] See SACLANT Undersea Research Center, Summary Record, La Spezia, Italy, 15-17 June 1998, SACLANTCEN Bioacoustics Panel, SACLANTCEN M-133 (1998).

[58] Id.; A. Frantzis, The First Mass Stranding That Was Associated with the Use of Active Sonar (Kyparissiakos Gulf, Greece, 1996), in P.G.H. Evans and L.A. Miller, Proceedings of the Workshop on Active Sonar and Cetaceans 14-20 (2004).

[59] Personal communication of Dr. David Nellis, U.S. Virgin Island Department of Fish and Game, to Eric Hawk, NMFS (Oct. 1999); personal communication from Ken Hollingshead, NMFS, to John Mayer, Marine Acoustics Inc. (March 19, 2002).

[60] Letter from William T. Hogarth, Regional Administrator, NMFS Southeast Regional Office, to RADM J. Kevin Moran, Navy Region Southeast (undated); personal communication from Ken Hollingshead, NMFS, to John Mayer, Marine Acoustics Inc. (March 19, 2002).

[61] Personal communication from Eric Hawk, NMFS, to Ken Hollingshead, NMFS (Feb. 12, 2002).

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(4) Bahamas 2000 – As described above.

(5) Madeira 2000 -- In May 2000, four beaked whales stranded on the beaches of Madeira while several NATO ships were conducting an exercise near shore. Scientists investigating the stranding found that the whales' injuries—including "blood in and around the eyes, kidney lesions, pleural hemorrhage"—and the pattern of their stranding suggest "that a similar pressure event [*i.e.*, similar to that at work in the Bahamas] precipitated or contributed to strandings in both sites."[62]

(6) Canary Islands 2002 – In September 2002, at least fourteen beaked whales from three different species stranded in the Canary Islands. Four additional beaked whales stranded over the next several days.[63] The strandings occurred while a Spanish-led naval exercise that included U.S. Navy vessels and at least one ship equipped with mid-frequency sonar was conducting anti-submarine warfare exercises in the vicinity.[64] The subsequent investigation, as reported in the journals *Nature* and *Veterinary Pathology*, revealed a variety of traumas, including emboli and lesions suggestive of decompression sickness.[65]

(7) Washington 2003 – In May 2003, the U.S. Navy vessel USS *Shoup* was conducting a mid-frequency sonar exercise while passing through Haro Strait, between Washington's San Juan Islands and Canada's Vancouver Island. According to one contemporaneous account, "[d]ozens of porpoises and killer whales seemed to stampede all at once . . . in response to a loud electronic noise echoing through" the Strait.[66] Several field biologists present at the scene reported observing a pod of endangered orcas bunching near shore and engaging in very abnormal behavior consistent with avoidance, a minke whale "porpoising" away from the sonar ship, and Dall's porpoises fleeing the vessel in large numbers.[67] Eleven harbor porpoises—an abnormally high number

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[62] D.R. Ketten, Beaked Whale Necropsy Findings 22 (2002) (paper submitted to NMFS); L. Freitas, The Stranding of Three Cuvier's Beaked Whales Ziphius Cavirostris in Madeira Archipelago—May 2000, in P.G.H. Evans and L.A. Miller, Proceedings of the Workshop on Active Sonar and Cetaceans 28-32 (2004).

[63] Vidal Martin et al., Mass Strandings of Beaked Whales in the Canary Islands, in Proceedings of the Workshop on Active Sonar and Cetaceans 33 (P.G.H. Evans & L.A. Miller eds., 2004); Fernández et al., 'Gas and Fat Embolic Syndrome', 42 Veterinary Pathology at 446-57.

[64] Fernández et al., 'Gas and Fat Embolic Syndrome', 42 Veterinary Pathology at 446; K.R. Weiss, Whale Deaths Linked to Navy Sonar Tests, L.A. Times, Oct. 1, 2002, at A3.

[65] Fernández et al., 'Gas and Fat Embolic Syndrome', 42 Veterinary Pathology at 446-57; Jepson et al., Gas-Bubble Lesions, 425 Nature at 575-76.

[66] Christopher Dunagan, Navy Sonar Incident Alarms Experts, Bremerton Sun, May 8, 2003.

[67] NMFS, Assessment of Acoustic Exposures at 6, 9.

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given the average stranding rate of six per year—were found beached in the area of the exercise.[68]

(8) Kauai 2004 – During the Navy's conduct of a major training exercise off Hawaii, called RIMPAC 2004, some 150-200 whales from a species that is rarely seen near shore and had never naturally mass-stranded in Hawaii came into Hanalei Bay, on the island of Kaua'i. The whales crowded into the shallow bay waters and milled there for over 28 hours. Though the whales were ultimately assisted into deeper waters by members of a local stranding network, one whale calf was left behind and found dead the next day. NMFS undertook an investigation of the incident and concluded that the Navy's nearby use of sonar in RIMPAC 2004 was the "plausible, if not likely" cause of the stranding.[69]

(9) Canary Islands 2004 – In July 2004, four dead beaked whales were found around the coasts of the Canary Islands, within one week of an NATO exercise. The exercise, Majestic Eagle 2004, was conducted approximately 100 kilometers north of the Canaries. Although the three whale bodies that were necropsied were too decomposed to allow detection of gas embolisms, systematic fat embolisms were found in these animals.[70] The probability that the whales died at sea is extremely high.[71]

(10) North Carolina 2005 – During and just after a U.S. training exercise off North Carolina, at least thirty-seven whales of three different species stranded and died along the Outer Banks, including numerous pilot whales (six of which were pregnant), one newborn minke whale, and two dwarf sperm whales. NMFS investigated the incident and found that the event was highly unusual,

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[68] NMFS, Preliminary Report: Multidisciplinary Investigation of Harbor Porpoises (Phocoena phocoena) Stranded in Washington State from 2 May – 2 June 2003 Coinciding with the Mid-Range Sonar Exercises of the USS Shoup 53-55 (2004) (conclusions unchanged in final report). Unfortunately, according to the report, freezer artifacts and other problems incidental to the preservation of tissue samples made the cause of death in most specimens difficult to determine; but the role of acoustic trauma could not be ruled out. Id.

[69] B.L. Southall, R. Braun, F.M.D. Gulland, A.D. Heard, R.W. Baird, S.M. Wilkin, and T.K. Rowles, Hawaiian Melon-Headed Whale *(Peponacephala electra)* Mass Stranding Event of July 3-4, 2004 (2006) (NOAA Tech. Memo. NMFS-OPR-31); See also R.L. Brownell, Jr., K Ralls, S. Baumann-Pickering and M.M. Poole, Behavior of melon-headed whales, *Pepnoncephalia electra*, near oceanic islands, Marine Mammal Science, (publication pending 2009).

[70] A. Espinosa, M. Arbelo, P. Castro, V. Martín, T. Gallardo, and A. Fernández, New Beaked Whale Mass Stranding in Canary Islands Associated with Naval Military Exercises (Majestic Eagle 2004) (2005) (poster presented at the European Cetacean Society Conference, La Rochelle, France, April 2005); A. Fernández, M. Méndez, E. Sierra, A. Godinho, P. Herráez, A. Espinosa de los Monteros, F. Rodríguez, F., and M. Arbelo, M., New Gas and Fat Embolic Pathology in Beaked Whales Stranded in the Canary Islands (2005) (poster presented at the European Cetaecan Society Conference, La Rochelle, France, April 2005).

[71] Id.

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> being the only mass stranding of offshore species ever to have been reported in the region, and that it shared 'a number of features' with other sonar-related mass stranding events (involving offshore species which stranded alive and were atypically distributed along the shore). NMFS concluded that sonar was a possible cause of the strandings and also ruled out the most common other potential causes, including viral, bacterial, and protozoal infection, direct blunt trauma, and fishery interactions.[72]
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> (11) Spain 2006 – Four Cuvier's beaked whales stranded on the Almerian coast of southern Spain, with the same suite of bends-like pathologies seen in the whales that stranded in the Canary Islands in 2002 and 2004.[73] A NATO response force was performing exercises within 50 miles at the time of the strandings.

Some observations can be drawn from these incidents. For example, beaked whales, a group of deep-water species that are seldom seen and may in some cases be extremely rare, seem to be particularly vulnerable to the effects of active sonar. A 2000 review undertaken by the Smithsonian Institution, and reported and expanded by the IWC's Scientific Committee and other bodies, supports this conclusion, finding that every mass stranding on record involving multiple species of beaked whales has occurred with naval activities in the vicinity.[74] Indeed, it is not even certain that some beaked whale species naturally strand in numbers.

But the full magnitude of sonar's effects on these species—or on other marine mammals—is not known. Most of the world lacks networks to identify and investigate stranding events, particularly those that involve individual animals spread out over long stretches of coastline, and therefore the mortalities that have been identified thus far are likely to represent only a subset of a substantially larger problem. For example, most beaked whale casualties (according to NMFS) are bound to go undocumented because of the remote siting of sonar exercises and the small chance that a dead or injured animal would actually strand.[75] It is well understood in terrestrial ecology that dead and dying animals tend to be grossly undercounted given their rapid assimilation into the environment, and one would of course expect profound difficulty where offshore

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[72] A.A. Hohn, D.S. Rotstein, C.A. Harms, and B.L. Southall, Multispecies Mass Stranding of Pilot Whales (Globicephala macrorhynchus), Minke Whale *(Balaenoptera acutorostrata)*, and Dwarf Sperm Whales *(Kogia sima)* in North Carolina on 15-16 January 2005 (2006) (NOAA Tech. Memo. NMFS-SEFSC-53).

[73] International Whaling Commission, Report of the Scientific Committee, Annex K at 28 (2006) (IWC/ 58/Rep1).

[74] Marine Mammal Program of the National Museum of Natural History, Historical Mass Mortalities of Ziphiids 2-4 (Apr. 6, 2000); see also 2 J. Cetacean Res. & Mgmt., Supp., Annex J at § 13.8 (2000) (report of the IWC Scientific Committee, Standing Working Group on Environmental Concerns).

[75] J.V. Carretta, K.A. Forney, M.M. Muto, J. Barlow, J. Baker, and M. Lowry, U.S. Pacific Marine Mammal Stock Assessments: 2006 (2007).

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marine species are concerned.[76] Along the eastern seaboard and in the Gulf of Mexico, all beaked whale sightings during NMFS shipboard surveys have occurred at considerable distances from shore.[77]

Furthermore, although the physical process linking sonar to strandings is not perfectly understood, the record indicates that debilitating and very possibly lethal injuries are occurring in whales exposed to sonar at sea—only some of which may then strand. As first reported in the journal *Nature*, animals that came ashore during sonar exercises off the Canary Islands, in September 2002, had developed large emboli in their organ tissue and suffered from symptoms resembling those of severe decompression sickness, or "the bends."[78] It has been proposed that the panic led them to surface too rapidly or pushed them to dive before they could eliminate the nitrogen accumulated on previous descents. This finding has since been supported by follow-on papers, by published work in other fields, and by expert reviews.[79] In any case, the evidence is considered "compelling" that acoustic trauma, or injuries resulting from behavioral responses, has in some way led to the deaths of these animals.[80]

Other Harmful Effects of Sonar

Strandings and mass mortalities, though an obvious focus of much reporting and concern, are likely only the tip of the iceberg of sonar's harmful effects. Marine mammals are believed to depend on sound to navigate, find food, locate mates, avoid

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[76] See, e.g., G. Wobeser, Investigation and Management of Disease in Wild Animals 13-15 (1994); P.A. Alison, C.R. Smith, H. Kukert, J.W. Deming, B.A. Bennett, Deep-Water Taphonomy of Vertebrate Carcasses: A Whale Skeleton in the Bathyal Santa Catalina Basin, 17 Paleobiology 78-89 (1991).

[77] G.T. Waring, E. Josephson, C.P. Fairfield, and K. Maze-Foley, eds., U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments—2006 at 232-33, 238, 288, 292, 296 (2007) (NOAA Tech. Memo. NMFS NE 201) (data from NMFS surveys, showing all beaked whales sightings at significant distances from shore).

[78] See P.D. Jepson, M. Arbelo, R. Deaville, I.A.P. Patterson, P. Castro, J.R. Baker, E. Degollada, H.M. Ross, P. Herráez, A.M. Pocknell, F. Rodríguez, F.E. Howie, A. Espinosa, R.J. Reid, J.R. Jaber, V. Martín, A.A. Cunningham, A. Fernández, Gas-Bubble Lesions in Stranded Cetaceans, 425 Nature 575-576 (2003); Fernández et al., 'Gas and Fat Embolic Syndrome', 42 Veterinary Pathology at 415.

[79] E.g., Cox et al., Understanding the Impacts. Of course it would be a mistake to assume that an animal must suffer bends-like injury or some other sort of acoustic trauma in order to strand. Some may die simply because the noise disorients them, for instance. See, e.g., NMFS, Assessment of Acoustic Exposures at 9-10.

[80] Cox et al., Understanding the Impacts; see also P.G.H. Evans and L.A. Miller, Concluding Remarks, in Proceedings of the Workshop on Active Sonar and Cetaceans 74 (2004); K.C. Balcomb and D.E. Claridge, A Mass Stranding of Cetacears Caused by Naval Sonar in the Bahamas, 8(2) Bahamas Journal of Science 1 (2001); D.E. Claridge, Fine-Scale Distribution and Habitat Selection of Beaked Whales (2006) (M.Sc. thesis); E.C.M. Parsons, S.J. Dolman, A.J. Wright, N.A. Rose, and W.C.G. Burns, Navy Sonar and Cetaceans: Just How Much Does the Gun Need to Smoke before We Act? 56 Marine Pollution Bulletin 1248 (2008).

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predators, and communicate with each other. Flooding their habitat with man-made, high-intensity noise interferes with these and other functions. In addition to strandings and non-auditory injuries, the harmful effects of high-intensity sonar include:

- temporary or permanent loss of hearing, which impairs an animal's ability to communicate, avoid predators, detect and capture prey, and avoid ship strikes;
- avoidance behavior, which can lead to abandonment of habitat or migratory pathways;
- disruption of biologically important behaviors such as mating, feeding, nursing, or migration, or loss of efficiency in conducting those behaviors;
- aggressive (or agonistic) behavior, which can result in injury;
- masking of biologically meaningful sounds, such as the call of predators or potential mates;
- chronic stress, which can compromise viability, suppress the immune system, and lower the rate of reproduction;
- habituation, causing animals to remain near damaging levels of sound, or sensitization, exacerbating other behavioral effects; and
- declines in the availability and viability of prey species, such as fish and shrimp.

Over the past 20 years, a substantial literature has emerged documenting the range of effects of ocean noise on marine mammals.[81]

Marine mammals are not the only species affected by undersea noise. Impacts on fish are of increasing concern due to several recent studies demonstrating hearing loss and widespread behavioral disruption in commercial species of fish and to reports, both experimental and anecdotal, of catch rates plummeting in the vicinity of noise sources. Further, the death of species not protected by federal law reduces prey available to listed species. And noise has been shown in several cases to kill, disable, or disrupt the behavior of invertebrates, many of which possess ear-like structures or other sensory mechanisms that could leave them vulnerable. It is clear that intense sources of noise are capable of affecting a wide class of ocean life.

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[81] For a review of research on behavioral and auditory impacts of undersea noise, see, e.g., L.S. Weilgart, The Impacts of Anthropogenic Ocean Noise on Cetaceans and Implications for Management, 85 Canadian Journal of Zoology 1091-1116 (2007); W.J. Richardson, C.R. Greene, Jr., C.I. Malme, and D.H. Thomson, Marine Mammals and Noise (1995); National Research Council, Ocean Noise and Marine Mammals (2003); Whale and Dolphin Conservation Society, Oceans of Noise (2004).

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APPENDIX C

CRITIQUE OF THE NAVY'S ACOUSTICS ANALYSIS

We urge the Navy to substantially alter the approach it has taken thus far. The Navy must revise its acoustic impact analysis to reflect the evidence of mid-frequency sonar's effects on marine life. Unfortunately, the Navy's current assessment of acoustic impacts disregards a great deal of relevant information adverse to its interests, uses approaches and methodologies that would not be acceptable to the scientific community, and ignores whole categories of impacts. Before issuing a final EIS, the Navy should (1) reduce its thresholds or risk function for marine mammal injury, hearing loss, and significant behavioral change, in accordance with the available science; (2) address the considerable scientific record that has developed around sonar and whale injury and mortality; and (3) revise its impact assessment model to take account of complex sound fields, synergistic effects from multiple sound sources, and the presence of vulnerable populations in the TMAA such as the North Pacific right whale, blue whale, fin whale, humpback whale, sei whale, sperm whale and Steller sea lion.

Thresholds of Injury, Hearing Loss and Behavioral Change

At the core of the Navy's assessment of acoustic impacts are the thresholds it has established for physiological and behavioral effects. There are gross problems with the Navy's thresholds, as discussed below.

1. Permanent Threshold Shift

The Navy sets the threshold for permanent threshold shift ("PTS"), which is the highest threshold for direct physical injury, at 215 dB re 1 $\mu Pa^2 \cdot s$ for cetaceans; 266 dB re 1 $\mu Pa^2 \cdot s$ for California sea lions, Steller sea lions, and Northern fur seals; and 224 dB re 1 $\mu Pa^2 \cdot s$ for Northern elephant seals. DEIS at 3.8-90. These thresholds are inconsistent with the scientific literature.

For instance, the Navy disregards data gained from actual whale mortalities. The best available scientific evidence, as reported in the peer-reviewed literature, indicates that sound levels at the most likely locations of beaked whales beached in the Bahamas strandings run far lower than the Navy's threshold for injury here: approximately 150-160 dB re 1 μPa for 50-150 seconds, over the course of the transit.[82] A further modeling effort, undertaken in part by the Office of Naval Research, suggests that the mean exposure level of beaked whales, given their likely distribution in the Bahamas' Providence Channels and averaging results from various assumptions, may have been

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[82] J. Hildebrand, "Impacts of Anthropogenic Sound," in T.J. Ragen, J.E. Reynolds III, W.F. Perrin, and R.R. Reeves, Conservation beyond Crisis (2005). See also International Whaling Commission, 2004 Report of the Scientific Committee, Annex K at § 6.3.

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lower than 140 dB re 1 μPa.[83] Factoring in duration, then, evidence of actual sonar-related mortalities would compel a *maximum* energy level threshold for serious injury on the order of 182 dB re 1 $\mu Pa^2 \cdot s$, at least for beaked whales. Indeed, to pay at least some deference to the literature, the Navy—under pressure from NMFS—has previously assumed that non-lethal injury would occur in beaked whales exposed above 173 dB re 1 $\mu Pa^2 \cdot s$.[84]

In addition, the DEIS glosses over – in a single paragraph – published research on bubble growth in marine mammals, which separately indicates the potential for injury and death at levels far lower than what the Navy proposes. DEIS at 3.8-94. According to the best available scientific evidence, as represented by multiple papers in flagship journals such as *Nature* and *Veterinary Pathology*, gas bubble growth is the causal mechanism most consistent with the observed injuries;[85] in addition, it was singularly and explicitly highlighted as plausible by an expert panel convened by the Marine Mammal Commission, in which the Navy participated.[86] The Navy concedes that "a popular hypothesis regarding a potential cause of [marine mammal] strandings is that tissue damage results from a 'gas and fat embolic syndrome'" (DEIS at 3.8-94), but then fails to actually evaluate the potential impacts. NEPA requires agencies to evaluate all "reasonably foreseeable" impacts, which, by definition, include "impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason." 40 C.F.R. § 1502.22. The scientific literature supporting bubble growth rises far above this standard, and the Navy's failure to incorporate it into its impact model is arbitrary and capricious. Thus, the Navy's refusal to consider these impacts is insupportable under NEPA. 40 C.F.R. §§ 1502.22, 1502.24.

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[83] J. Hildebrand, K. Balcomb, and R. Gisiner, Modeling the Bahamas Beaked Whale Stranding of March 2000 (2004) (presentation given at the third plenary meeting of the U.S. Marine Mammal Commission Advisory Committee on Acoustic Impacts on Marine Mammals, 29 July 2004).

[84] See, e.g., Navy, Joint Task Force Exercises and Composite Training Unit Exercises Final Environmental Assessment/ Overseas Environmental Assessment at 4-44, 4-46 to 4-47 (2007).

[85] See, e.g., A. Fernández, J.F. Edwards, F. Rodríguez, A. Espinosa de los Monteros, P. Herráez, P. Castro, J.R. Jaber, V. Martín, and M. Arbelo, 'Gas and Fat Embolic Syndrome' Involving a Mass Stranding of Beaked Whales (Family Ziphiidae) Exposed to Anthropogenic Sonar Signals, 42 Veterinary Pathology 446 (2005); P.D. Jepson, M. Arbelo, R. Deaville, I.A.P. Patterson, P. Castro, J.R. Baker, E. Degollada, H.M. Ross, P. Herráez, A.M. Pocknell, F. Rodríguez, F.E. Howie, A. Espinosa, R.J. Reid, J.R. Jaber, V. Martín, A.A. Cunningham, and A. Fernández, Gas-Bubble Lesions in Stranded Cetaceans, 425 Nature 575-576 (2003); R.W. Baird, D.L. Webster, D.J. McSweeney, A.D. Ligon, G.S. Schorr, and J. Barlow, Diving Behavior of Cuvier's (Ziphius cavirostris) and Blainville's (Mesoplodon densirostris) Beaked Whales in Hawai'i," 84 Canadian Journal of Zoology 1120-1128 (2006).

[86] T.M. Cox, T.J. Ragen, A.J. Read, E. Vos, R.W. Baird, K. Balcomb, J. Barlow, J. Caldwell, T. Cranford, L. Crum, A. D'Amico, G. D'Spain, A. Fernández, J. Finneran, R. Gentry, W. Gerth, F. Gulland, J. Hildebrand, D. Houser, T. Hullar, P.D. Jepson, D. Ketten, C.D. MacLeod, P. Miller, S. Moore, D. Mountain, D. Palka, P. Ponganis, S. Rommel, T. Rowles, B. Taylor, P. Tyack, D. Wartzok, R. Gisiner, J. Mead, and L. Benner, Understanding the Impacts of Anthropogenic Sound on Beaked Whales, 7 Journal of Cetacean Research & Management 177-87 (2006).

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Finally, the Navy's exclusive reliance on energy flux density levels ("ELs") as a unit of analysis is misplaced. DEIS at 3.8-91 to 93. It is appropriate for the Navy to set dual thresholds for behavioral effects, one based on ELs and one based on sound exposure levels ("SELs").

2. Temporary Threshold Shift

The DEIS sets its threshold for temporary hearing loss and behavioral effects, or "temporary threshold shift" ("TTS"), at 195 dB re 1 $\mu Pa^{2}\cdot s$ for cetaceans; 206 dB re 1 $\mu Pa^{2}\cdot s$ for California sea lions, Steller sea lions, and Northern fur seals; and 204 dB re 1 $\mu Pa^{2}\cdot s$ for Northern elephant seals. DEIS at 3.8-90. It bases its cetacean threshold primarily on a synthesis of studies on two species of cetaceans, bottlenose dolphins and beluga whales, conducted by the Navy's SPAWAR laboratory in San Diego and, to a lesser extent, by researchers at the University of Hawaii. DEIS at 3.8-85 to 86.

Notably, the Navy's extrapolation of data from bottlenose dolphins and belugas to all cetaceans is not justifiable. Given the close association between acoustic sensitivity and threshold shift, such an approach must presume that belugas and bottlenose dolphins have the best hearing sensitivity in the mid-frequencies of any cetacean. However, harbor porpoises and killer whales are more sensitive over part of the mid-frequency range than are the two species in the SPAWAR and Hawaii studies.[87] Furthermore, the animals in the studies may not represent the full range of variation even within their own species, particularly given their age and situation: the SPAWAR animals, for example, have been housed for years in a noisy bay.[88]

3. "Risk Function" for Behavioral Effects

There are many glaring problems with the Navy's adoption of an acoustic risk function to estimate the probability of behavioral effects. Dr. Bain sets forth a detailed critique, which is attached to this letter. Several problems are discussed below.

In contrast to the Navy's 2005 DEIS for the Undersea Warfare Training Range (which established a threshold of 190 dB re 1 $\mu Pa^{2}\cdot s$) and the threshold which NMFS insisted the Navy adopt during RIMPAC 2006 and subsequent exercises off California and Hawaii (173 dB re 1 $\mu Pa^{2}\cdot s$), here the Navy redefines its position by applying a dose-response risk function to measure behavioral effects that begins at 120 dB re 1 μPa and reaches its mean at 165 dB re 1 μPa. DEIS at 3.8-98 to 101. Agencies are not entitled to substantial deference under the Administrative Procedure Act when they reverse previously held positions. Some of the more significant problems with the Navy's new

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[87] Richardson et al., Marine Mammals and Noise at 209.

[88] M.L.H. Cook, Behavioral and Auditory Evoked Potential (AEP) Hearing Measurements in Odontocete Cetaceans (2006) (Ph.D. thesis).

position include misusing SPAWAR and Haro Strait data, as well as failing to include data from the Hanalei Bay incident.

Once again, the Navy relies on studies of temporary threshold shift in captive animals for its primary source of data. DEIS 3.8-95 to 98. Marine mammal scientists have long recognized the deficiencies of using captive subjects in behavioral experiments, and to blindly rely on this material, to the exclusion of copious data on animals in the wild, is not supportable by any standard of scientific inquiry. Cf. 40 C.F.R. § 1502.22. The problem is exacerbated further by the fact that the subjects in question, roughly two belugas and five bottlenose dolphins, are highly trained animals that have been working in the Navy's research program in the SPAWAR complex for years.[89] Indeed, the disruptions observed by Navy scientists, which included pronounced, aggressive behavior ("attacking" the source) and avoidance of feeding areas associated with the exposure, occurred during a research protocol that the animals had been rigorously trained to complete.[90] The SPAWAR studies have several other major deficiencies that NMFS, among others, has repeatedly pointed out. In relying so heavily on them, the Navy has once again ignored the comments of numerous marine mammal behaviorists on the Navy's USWTR DEIS, which sharply criticized the Navy for putting any serious stock in them.[91]

In addition, the Navy appears to have misused data garnered from the Haro Strait incident—one of only three data sets it considers—by including only those levels of sound received by the "J" pod of killer whales when the USS *Shoup* was at its closest approach. DEIS at 3.8-96 to 97. These numbers represent the maximum level at which the pod was harassed; in fact, the whales were reported to have broken off their foraging and to have engaged in significant avoidance behavior at far greater distances from the ship, where received levels would have been orders of magnitude lower.[92] Not surprisingly, then, the Navy's results are inconsistent with other studies of the effects of various noise sources, including mid-frequency sonar, on killer whales. We must insist that the Navy provide the public with its propagation analysis for the Haro Strait event.

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[89] See, e.g., S.H. Ridgway, D.A. Carder, R.R. Smith, T. Kamolnick, C.E. Schlundt, and W.R. Elsberry, Behavioral Responses and Temporary Shift in Masked Hearing Threshold of Bottlenose Dolphins, *Tursiops truncatus*, to 1-Second Tones of 141 to 201 dB re 1 μPa (1997) (SPAWAR Tech. Rep. 1751, Rev. 1).

[90] C.E. Schlundt, J.J. Finneran, D.A. Carder, and S.H. Ridgway, Temporary Shift in Masked Hearing Thresholds of Bottlenose Dolphins, Tursiops truncatus, and White Whales, Delphinapterus leucas, after Exposure to Intense Tones, 107 Journal of the Acoustical Society of America 3496, 3504 (2000).

[91] See comments from M. Johnson, D. Mann, D. Nowacek, N. Soto, P. Tyack, P. Madsen, M. Wahlberg, and B. Møhl, received by the Navy on the Undersea Warfare Training Range DEIS. These comments are hereby incorporated into this letter. See also Letter from Rodney F. Weiher, NOAA, to Keith Jenkins, Naval Facilities Engineering Command Atlantic (Jan. 30, 2006); Memo, A.R. document 51, NRDC v. Winter, CV 06-4131 FMC (JCx) (undated NOAA memorandum).

[92] See,. e.g., NMFS, Assessment of Acoustic Exposures on Marine Mammals in Conjunction with *USS Shoup* Active Sonar Transmissions in the Eastern Strait of Juan de Fuca and Haro Strait, Washington—5 May 2003 at 4-6 (2005).

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The Navy also fails to include data from the July 2004 Hanalei Bay event, in which 150-200 melon-headed whales were embayed for more than 24 hours during the Navy's Rim of the Pacific exercise. According to the Navy's analysis, predicted mean received levels (from mid-frequency sonar) inside and at the mouth of Hanalei Bay ranged from 137.9 dB to 149.2 dB.[93] The Navy has from the beginning denied any connection between its major international exercise and the mass stranding. However, the Navy's specious reasoning is at odds with the stranding behavior observed during the event and with NMFS' report on the matter, which ruled out every other known potential factor and concluded that sonar was the "plausible if not likely" cause.[94] The Navy's failure to incorporate these numbers into its methodology as another data set is unjustifiable.

Furthermore, the risk function should have taken into account the social ecology of some marine mammal species. For species that travel in tight-knit groups, an effect on certain individuals can adversely influence the behavior of the whole. (Pilot whales, for example, are prone to mass strand for precisely this reason; the plight of the 200 melon-headed whales in Hanalei Bay, and of the "J" pod of killer whales in Haro Strait, and the most recent stranding of melon-headed whales in the Philippines may be pertinent examples.) Should those individuals fall on the more sensitive end of the spectrum, the entire group or pod can suffer significant harm at levels below what the Navy would take as the mean. In developing its "K" parameter, the Navy must take account of such potential indirect effects. 40 C.F.R. § 1502.16(b).

We must also note that the Navy's exclusive reliance on sound pressure levels ("SPLs") in setting a behavioral threshold is misplaced. The discussion in the DEIS speaks repeatedly of uncertainty in defining the risk function and recapitulates, in its summary of the earlier methodology, the benefits implicit in the use of a criterion that takes duration into account. It is therefore appropriate for the Navy to set dual thresholds for behavioral effects, one based on SPLs and one based on energy flux density levels ("ELs").

Finally, the Navy's threshold is applied in such a way as to preclude any assessment of long-term behavioral impacts on marine mammals. It does not account, to any degree, for the problem of repetition: the way that apparently insignificant impacts, such as subtle changes in dive times or vocalization patterns, can become significant if experienced repeatedly or over time.[95]

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[93] Navy, 2006 Supplement to the 2002 Rim of the Pacific (RIMPAC) Programmatic Environmental Assessment D-1 to D-2 (May 2006).

[94] B.L. Southall, R. Braun, F.M.D. Gulland, A.D. Heard, R.W. Baird, S.M. Wilkin, and T.K. Rowles, Hawaiian Melon-Headed Whale *(Peponacephala electra)* Mass Stranding Event of July 3-4, 2004 (2006) (NOAA Tech. Memo. NMFS-OPR-31); See also R.L. Brownell, Jr., K Ralls, S. Baumann-Pickering and M.M. Poole, Behavior of melon-headed whales, *Pepnoncephalia electra*, near oceanic islands, Marine Mammal Science, (publication pending 2009).

[95] The importance of this problem for marine mammal conservation is reflected in a recent NRC report, which calls for models that, inter alia, translate such subtle changes into disruptions in key activities like feeding and breeding that are significant for individual animals. National Research

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In sum, the Navy has established thresholds and a risk function that are fundamentally inconsistent with the scientific literature on acoustic impacts and with marine mammal science in general. Indeed, using these thresholds to support a final EIS would violate NEPA.

Modeling of Acoustic Impacts

The Navy bases its calculation of marine mammal impacts on a series of models that determine received levels of sound within a limited distance of a sonar array and then estimate the number of animals that would therefore suffer injury or disruption. It is difficult to fully gauge the accuracy and rigor of these models with the limited information that the DEIS provides; but even from the description presented here, it is clear that they are deeply flawed. Among the non-conservative assumptions that are implicit in the model:

(1) As discussed above, the thresholds established for injury and behavioral effects are inconsistent with the available data and are based, in part, on assumptions not acceptable within the field;

(2) The Navy does not properly account for reasonably foreseeable reverberation effects (as in the Haro Strait stranding incident),[96] giving no indication that its modeling sufficiently represents areas in which the risk of reverberation is greatest;

(3) The model fails to consider the possible synergistic effects of using multiple sources, such as ship-based sonars, in the same exercise, which can significantly alter the sound field. It also fails to consider the combined effects of multiple exercises, which, as NMFS indicates, may have played a role in the 2004 Hanalei Bay strandings;[97]

(4) In assuming animals are evenly distributed, the model fails to consider the magnifying effects of social structure, whereby impacts on a single animal within a pod, herd, or other unit may affect the entire group;[98] and

(5) The model, in assuming that every whale encountered during subsequent exercises is essentially a new whale, does not address cumulative impacts on the breeding, feeding, and other activities of species and stocks.

Council. Marine Mammal Populations and Ocean Noise: Determining When Noise Causes Biologically Significant Effects 35-68 (2005).

[96] NMFS, Assessment of Acoustic Exposures on Marine Mammals in Conjunction with *USS Shoup* Active Sonar Transmissions in the Eastern Strait of Juan de Fuca and Haro Strait, Washington, 5 May 2003 (2005).

[97] Southall et al., Hawaii Melon-Headed Whale at 31, 45.

[98] The effects of this deficiency are substantially increased by the Navy's use of a risk function, rather than an absolute threshold, to estimate Level B harassment.

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Before issuing a final EIS, the Navy must revise its flawed modeling systems and make them available to the public.

CRITIQUE OF THE RISK ASSESSMENT MODEL EMPLOYED TO CALCULATE TAKES IN THE HAWAII RANGE COMPLEX SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT STATEMENT

David E. Bain, Ph.D.

Abstract

Rather than using a fixed received level threshold for whether a take is likely to occur from exposure to mid-frequency sonar, the Navy proposed a method for incorporating individual variation. Risk is predicted as a function of three parameters: 1) a basement value below which takes are unlikely to occur; 2) the level at which 50% of individuals would be taken; and 3) a sharpness parameter intended to reflect the range of individual variation. This paper reviews whether the parameters employed are based on the best available science, the implications of uncertainty in the values, and biases and limitations in the model. Data were incorrectly interpreted when calculating parameter values, resulting in a model that underestimates takes. Errors included failure to recognize the difference between the mathematical basement plugged into the model, and the biological basement value, where the likelihood of observed and predicted takes becomes non-negligible; using the level where the probability of take was near 100% for the level where the probability of take was 50%; and extrapolating values derived from laboratory experiments that were conducted on trained animals to wild animals without regard for the implications of training; and ignoring other available data, resulting in a further underestimation of takes. In addition, uncertainty, whether due to inter-specific variation or parameter values based on data with broad confidence intervals, results in the model being biased to underestimate takes. The model also has limitations. For example, it does not take into account social factors, and this is likely to result in the model underestimating takes. This analysis has important management implications. First, not only do takes occur at far greater distances than predicted by the Navy's risk model, the fact that larger areas are exposed to a given received level with increasing distance from the source further multiplies the number of takes. This implies takes of specific individuals will be of greater duration and be repeated more often, resulting in unexpectedly large cumulative effects. Second, corrections need to be made for bias, and corrections will need to be larger for species for which there are no data than for species for which there are poor data. Third, the greater range at which takes would occur requires more careful consideration of habitat-specific risks and fundamentally different approaches to mitigation. The value of the model is that it provides a focus for future research on the effects of noise on marine mammals. In particular, the sensitivity analysis indicates the primary need for data is determining response probabilities of a wide range of species when exposed to received levels near the level at which 50% of individuals respond.

Introduction

The Navy distinguishes two types of takes: Level A, in which there is immediate injury or death; and Level B, in which there is no immediate injury, but cumulative exposure may lead to harm at the population level. However, in certain contexts, Level B harassment may lead to Level A takes through indirect mechanisms.

The population effects of Level A takes on populations are relatively easy to assess, as individuals that are killed are obviously removed from the population, and those that are injured are more likely to die whenever the population is next exposed to stress.

Calculating the population effects of Level B takes is a topic of contemporary research (Trites and Bain 2000). For example, Bain (2002a) explored using energetic consequences of behavior change in conjunction with population dynamics models to estimate population effects of Level B takes. Stress concurrent with Level B harassment would have additional population consequences. Stress may occur in the absence of behavioral change, or the absence of change in significant behavioral patterns such as foraging or nursing, or exclusion from optimal habitat. Lusseau et al. (2006) concluded disturbance caused a decline in and posed a significant threat to the survival of the bottlenose dolphin population in Doubtful Sound, New Zealand. While they noted vessel strikes were occurring (Level A takes), cumulative behavioral effects (Level B takes) were believed to be the primary threat to the population.

Models relating acoustic exposure to takes thus are not sufficient by themselves to interpret the effects of noise on populations. It is likely that different magnitudes of effect, whether physical harm, behavioral change that leads to physical harm, disruption of significant behavioral activities, or behavioral changes that pose negligible risk to populations when they occur only rarely but can become significant when exposure is prolonged or repeated, will have different relationships to noise. The different magnitudes of takes will have different population consequences. Thus it will be challenging to synthesize results of multiple studies, as different measured endpoints may belong on different curves relating them to noise, and different endpoints will have different population consequences. Further, the population consequences can depend on the health of the population (Bain 2002a). All these factors need to be considered when evaluating the environmental consequences of exposing marine mammals to noise.

Unconditional effects

Temporary Threshold Shifts in captive marine mammals are commonly used as an index of physical harm (e.g., Nachtigall et al. 2003, Finneran et al. 2002 and 2005, Kastak et al. 2005). Limiting experimental noise exposure to levels that cause temporary effects alleviates ethical concerns about deliberately causing permanent injury. However, repeated exposure to noise that causes temporary threshold shifts can lead to permanent hearing loss. In fact, chronic exposure to levels of noise too low to cause temporary threshold shifts can cause permanent hearing loss. Animal models (e.g., rats, cats, monkeys, chinchillas) have been used for tests of noise causing permanent physical harm (Henderson et al. 1991, Gao et al. 1992, Blakeslee et al. 1978, Clark 1991). Damage to hearing from noise exposure is an example of unconditional injury from noise. OSHA (2007) requires limiting human exposure to noise at 115 dB above threshold (equivalent to 145 dB re 1 μPa for killer whales, Szymanski et al. 1999) to 15 minutes.

Stress reactions are another available index (e.g., Romano et al. 2004). Ayres (personal communication) found evidence suggesting that whale watching results in increased levels of stress hormones in wild killer whales.

Conditional effects

Changes in behavior resulting from noise exposure could result in indirect injury in the wild. A variety of mechanisms for Level B harassment to potentially lead to Level A takes have been identified.

Gas bubble lesions have been observed in beaked whales (Jepson et al. 2003, Fernandez et al. 2005, Cox et al. 2006). A variety of mechanisms have been proposed for this. While some have proposed these may be due to acoustically mediated bubble growth, and hence are an unconditional consequence of noise exposure (Crum and Mao 1996), it is more likely that these result from decompression sickness. That is, changes in dive behavior may prevent clearance of nitrogen gas from the body, resulting in larger bubbles than would occur in undisturbed dive patterns. One possible change is that beaked whales may remain submerged for an unusually long period of time, and then rapidly ascend. The rapid ascent is a change in behavior that prevents nitrogen from remaining in solution in the blood. Zimmer and Tyack (2007) questioned whether the rapid ascent mechanism would actually result in lesions, and proposed another behavior change that might occur is interruption of deep dives. Deep dives allow the lungs to collapse, preventing nitrogen from reaching the body. Further, a series of rapid breaths at the surface can be used to clear nitrogen absorbed under pressure. Interruption of the normal surface interval can allow nitrogen to build up over time. Changes in depths of dives are of more concern than rapid ascents as this mechanism would be applicable to a wide range of species, while if the rapid ascent mechanism is involved, it would be primarily a concern for deep diving species (Zimmer and Tyack 2007).

While failure to flee may lead to injury in beaked whales, flight may lead to injury in other species. Minke whales have been found stranded after sonar exercises (NOAA and Navy 2001). A minke whale was observed traveling at high speed during exposure to mid-frequency sonar in Haro Strait in 2003. It is easy to see how such behavior would lead to stranding when a beach is located in front of the whale, as minke whales lack echolocation and visibility is limited underwater. Exhaustion from rapid flight leading to heart or other muscle damage (Williams and Thorne 1996) could also account for increased mortality such as was observed in harbor porpoises following sonar exercises in Juan de Fuca and Haro Straits in April and May of 2003. Harbor porpoises, in contrast to

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Dall's porpoises, rarely engage in sustained high energy activities such as rapid swimming or bow riding, and hence are less adapted to long distance flight responses.

Even successful flight may have negative survival consequences. In the absence of disturbance, individuals will tend to occupy optimal habitat. Displacement from optimal habitat will have consequences that will depend on the duration of the displacement, the quality of the alternate habitat, and the condition of the individuals at the time of displacement.

Separation of individuals from social units is another consequence of noise exposure that may lead to mortality. In 2003 in Haro Strait, some killer whales responded to mid-frequency sonar by seeking shelter behind a reef. Others chose to flee, resulting in splitting of a pod that historically spent all of its time together as a single unit. While no deaths resulted from this particular incident, other killer whales have been observed separated from their social units resulting in death prior to reunion or requiring human intervention to restore the individual to its social unit (Schroeder et al. 2007).

Temporary threshold shifts may conditionally lead to harm. Impaired hearing ability increases vulnerability to ship strike. In 2003, blunt force trauma was identified as a cause of death in the investigation of harbor porpoise mortalities following exposure to mid-frequency sonar in Washington State. A minke whale was nearly struck by a research vessel in the area where one had been observed fleeing mid-frequency sonar exposure. These species are familiar with boats in that area, and normally avoid them by a wide margin when they can hear them coming.

Impaired auditory ability may also increase predation risk. For example, Dahlheim and Towell (1994) reported an attack by killer whales on white-sided dolphins. The approach by the whales went undetected due to the noise of the research vessel. Further, impaired hearing may impair foraging ability and communication (Bain and Dahlheim 1994).

The Risk Function Model

The risk function uses three parameters. B is the received level at which the most sensitive individuals start to respond with changes in significant behaviors such as foraging. K is the difference in received level between the level at which half of individuals respond and the level at which the most sensitive individuals respond. That is, B+K is the level at which 50% of individuals respond. A is a shape parameter that attempts to capture the variability in responsiveness of the population. That is, are essentially all the individuals the same and the bulk of them become responsive when the received level is near B+K, in which case a simple threshold model would provide a good approximation, or is there a lot of variation in the population, in which case many individuals become responsive when received levels are near B?

The model is based on the hypothesis that some individuals start to respond at lower levels than others. It anticipates that some individuals will hold out until very high levels before responding. The model includes parameters that allow it to be applied appropriately to species with differing noise tolerance. However, the Navy used one set of parameter values to predict the responses of all species. This paper reviews the accuracy of the choice of parameter values, the implications of using the wrong parameter values, and whether the model makes unbiased predictions when uncertainty in the parameter values exists.

Limitations

Like many models, the risk model has limitations. It fails to take into account social interactions. For example, the model anticipates that individuals may move away from a source at different exposure levels, but fails to recognize that this would result in individuals becoming separated from the group. This is likely to lead to the curve becoming asymmetrical, with the "holdouts" responding to the behavior of their schoolmates rather than the sound. As the area exposed to lower levels of noise is larger than the area exposed to higher levels of noise, this would result in more individuals being affected than the model predicts for social species.

The model does not account for multiple sources. Kruse (1991), Williams and Ashe (2007) and Bain et al. (2006) noted that killer whale responses to vessels varied with the number of vessels present. The magnitude of certain responses increased on the order of 10% per source, although Williams and Ashe (2007) noted that large numbers of sources could result in changes in the opposite direction of small numbers of sources, potentially canceling out the effect. That is, rather than a risk function that simply identifies how likely a response is to occur, one that takes into account the magnitude of the response would be ideal.

Pingers have been used to reduce entanglement in gillnets. Kraus et al. (1997) were able to reduce entanglement of harbor porpoises by 90%. Gearin et al. (1996, 2000) used more pingers, and were able to reduce entanglement by 95%. While this could be accounted for by the fact that more pingers increase the minimum sound level at the net (Bain 2002b), Laake et al. (1997, 1998, 1999) found porpoises typically remained much farther from the net than the spacing between pingers, even after the avoidance response declined due to habituation. Thus, the effect of multiple sources seems larger than the effect of fewer sources. Pingers have also been successful in protecting other species from nets (Barlow and Cameron, 1999; Cameron 1999, Stone et al. 1997).

In addition to quantitative changes in response to multiple sources, there may be a qualitative change in the response. For example, noise is used in drive fisheries of many odontocete species to cause stranding or near strandings. That is, multiple sources were used to displace individuals in a particular direction, and the consequences (stranding) were more serious than displacement from the source alone as would result from exposure to a single source.

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The risk to the population of qualitatively different responses varies not only with the type of response, but the circumstances. If the response is going ashore, fatalities are highly likely to result. If the response is slowly moving away for a short period of time, no fatalities are likely to result. However, if the response is to slowly move away from a prime feeding area for an extended period of time, and the population is food limited, fatalities may result, and the number is likely to be related directly to the duration of exclusion from the feeding area, and only indirectly to the cumulative sound energy received.

Finally, the model assumes that marine mammals behave independently from each other. This is not likely to be the case. Even species that are normally solitary, like harbor seals, have been observed to school in response to high energy noise (personal observation). To remain a member of a group, individuals must remain in geographic proximity to each other. As more sensitive individuals move away, others who are not sufficiently disturbed by the sound itself would need to move as well to remain members of the group. The result is likely to be a step function at moderate exposure levels rather than the gradual increase in risk predicted by the model. The result would be that risk is underestimated. The proportion of individuals necessary to lead all individuals to respond in a similar manner to noise is likely to vary among species, and propensity to mass strand may be a good predictor of the importance of this effect.

Datasets

The Navy chose to rely upon three datasets.

Captive cetaceans

Studies of captive marine mammals provide an excellent setting for identifying direct effects of sound. E.g., one of the datasets employed by the Navy consists of studies relating short-term exposure of bottlenose dolphins and belugas to high levels of noise to Temporary Threshold Shifts. The Navy (Dept. Navy 2008b, p 3-7) noted aggressive behavior toward the test apparatus, suggesting stress was another consequence of the test (see also Romano et al. 2004). Such effects would be unconditional results of noise exposure.

However, extrapolation of the level at which aggression was observed to the level at which behaviorally mediated effects might occur in the wild is problematic, as this depends on how well trained the subjects were. For example, the Navy has been a leader in training dolphins and other marine mammals to cooperate with husbandry procedures. Tasks like taking blood, stomach lavage, endoscopic examination, collection of feces, urine, milk, semen and skin samples, etc. once required removing individuals from the water and using several people to restrain them. With training, painful and uncomfortable procedures can be accomplished without restraint and with a reduction in stress that has significantly extended lifespans of captive marine mammals (Bain1988).

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That is, the absence of avoidance or aggressive behavior does not imply an absence of physical harm, much less the absence of potential for behavior changes that may lead to indirect harm.

Physical harm may occur in the wild without avoidance responses as well. Yano and Dahlheim (1995) found killer whales continued to predate on longlines despite being physically injured by deterrents such as gunshots. Reeves et al. (1996) reviewed other examples from fishery interactions of injurious approaches to deterrence failing.

If belugas and bottlenose dolphins are like killer whales, and the 50% risk level is about 15 dB below the 50% risk level for behavioral change in trained animals (see below), this would put their value around 170 dB re 1 μPa. Even this is likely to be an overestimate, as boat motors with a source level of 165 dB re 1 μPa can cause behavioral changes in bottlenose dolphins (Nowacek et al. 2001.) This new value, 170 dB re 1 μPa, averaged with the other Navy datasets, would drop the average 50% risk level to 160 dB re 1 μPa.

Killer whales

The second dataset is killer whales exposed to mid-frequency sonar from the USS Shoup in Haro Strait, Washington, in May, 2003. The level quoted in the HRC SDEIS (Dept. Navy 2008b) is an estimate of the received levels experienced when mid-frequency sonar was transmitted from about 3 km away. This level caused major behavioral changes in 100% of exposed whales (Risk=1 for Level B takes of a magnitude that in other contexts or species could lead indirectly to physical harm), but was not to believed to have caused Level A takes (the whales did not strand, and received levels were estimated to be too low to have caused threshold shifts, NMFS OPR 2005) in any individuals (Risk = 0). However, much more data are available from the May, 2003 Shoup incident. Behavioral changes were first observed at 47 km (where the received level was estimated to be 121 dB). The behavioral response was tail slapping by about 25% of the individuals observed, which is consistent with observed responses to vessel noise at a similar level. At a distance greater than 22 km, the direction of travel changed away from a feeding area, and hence foraging behavior was disrupted. At this distance, the received level may have increased to the neighborhood of 135 dB re 1 μPa with about 6 dB of reduced spreading loss and 6 dB reduced absorption. This would be comparable to a vessel traveling at low speed approaching to within 10 m, which is very difficult to accomplish without causing whales to turn away. 100% of killer whales responded by abandoning their feeding ground and moving away from the noise source at this received level. While vessels cause diversion from straight-line paths, they have not been observed to displace killer whales from feeding areas (vessels have been observed to displace killer whales from resting areas, but this is likely mediated by presence rather than noise, as the effect is observed in the presence of silent vessels, Trites et al. 1995). Thus it is not surprising that a qualitatively different behavioral response was exhibited. The peak exposure level was estimated to be 175 dB re 1 μPa (HRC SDEIS, although NMFS noted that estimated levels tended to overestimate measured levels by 1-10 dB [NMFS OPR 2005], so the peak exposure level may have been only 165 dB). In addition to changing

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travel patterns, the pod split, with approximately 50% of the pod continuing to shelter in an acoustic shadow zone, and the other 50% fleeing at high speed. Such behavior has not been observed in the presence of vessels alone. It should be emphasized that 100% of killer whales exhibited a disruption of a significant life process, foraging, at a level that may have been less than 135 dB re 1 μPa, in contrast to the value used in the SDEIS, 169.3 dB re 1 μPa for a 50% response.

Additional datasets are available for killer whale responses to noise. E.g., in Bain and Dahlheim's (1994) study of captive killer whales exposed to band-limited white noise in a band similar to that of mid-frequency sonar at a received level of 135 dB re 1 μPa, abnormal behavior was observed in 50% of the individuals. This is far lower than the level observed in bottlenose dolphins. In addition, Bain (1995) observed that 100% of wild killer whales appeared to avoid noise produced by banging on pipes (fundamental at 300 Hz with higher harmonics) to the 135 dB re 1 μPa contour. This indicates the difference between wild and captive killer whales (non-zero risk in captive marine mammals might correspond to 100% risk in wild individuals of the same species), as well as implying that risk of 100% may occur by 135 dB re 1 μPa for this genus in the wild.

Further, killer whales begin responding to vessel traffic at around 105-110 dB re 1 μPa with minor behavioral changes. By 135 dB re 1 μPa, disruption of foraging may approach 100%. Received level appears to be more important than proximity (Bain 2001). For risk to increase from near 0 at 105 dB re 1 μPa to near 100% by 135 dB re 1 μPa, with A=10, the 50% risk level would need to be about 120 dB re 1 μPa. Substituting 120 for 169 dB re 1 μPa reduces the average level for 50% risk by about 16 dB to 144 dB re 1 μPa. Substituting 135 dB re 1 μPa would reduce the average by 8 dB to 157 dB re 1 μPa.

Finally, the Navy's characterization of the killer whale dataset is incorrect. They indicate the effects observed in the presence of mid-frequency sonar in Haro Strait were confounded by the presence of vessels. However, the effects of vessels on killer whales have been extensively studied (e.g., Kruse 1991, Williams et al. 2002ab, Bain et al. 2006). Behavioral responses attributed to mid-frequency sonar are qualitatively different than those observed to vessels alone. While the observations are anecdotal, they were not inconsistent. The sonar signal was blocked from reaching the whales with full intensity by shallow banks or land masses during three segments of the observation period. The "inconsistencies" can be attributed to differences in behavior depending on whether there was a direct sound path from the Shoup to the whales. It should be noted there was extensive study of this population prior to exposure (see Bigg et al. 1990 and Olesiuk et al. 1990 for a description of typical research protocols), as well as extensive post-exposure monitoring (e.g., Bain et al. 2006).

Right whales

Similarly, the right whale data relied upon are of limited value. While they clearly illustrate that the value at which 50% of animals are influenced is below 135 dB re 1 μPa and are therefore helpful in determining the upper limits of the B+K value, they lack sufficient low level exposures needed to fit the low end of the curve. As with killer whales, the Navy misused the data. They averaged values which resulted in 100% response. Thus the average value exceeds the level resulting in a 50% risk.

Right whales exposed to alerting devices consistently responded when received levels were above 135 dB re 1 μPa. Due to the small sample size (six individuals), it is unclear whether this is close to the 50% risk, the 100% risk level, or both. These data do not allow identification of B, as lower exposure levels were not tested. In mysticetes exposed to a variety of sounds associated with the oil industry, typically 50% exhibited responses at 120 dB re 1 μPa. Thus right whales may be similar to killer whales.

The consequences of using incorrect values can be seen by comparing the observed results of the right whale exposures to alert signals (Nowacek et al. 2004) with those predicted by the Navy model. Using the values of B=120, K=45, and A=10 in the HRC SDEIS (Dept. Navy 2008b), the probability of responses for the exposed whales are shown in column two of Table 1. The formula underestimated the number of takes by a factor of over 500. The Navy proposed using A=8 for mysticetes in recognition of this, and the results are shown in column 3. While improved, the model still underestimated takes by a factor of 183. One could try B=105 and K=15. Using A=10 provides a reasonable approximation, overestimating takes by 20% (column 4). A better approximation is provided by A=2, which predicts the number of takes within 2% (column 5). While the probability of all four right whales exposed to the highest alert signals responding is much less than one in a billion based on the Navy model and allows one to unequivocally reject the Navy's choice of parameter values as applying to that species, numerous other combinations of parameter values would fit the data as well as the values shown in the table here. Substituting 120 dB re 1 μPa for 139 dB re 1 μPa results in an average 6 dB lower at 159 dB re 1 μPa.

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Table 1. Risk for right whales (model vs. observed)

Received Level (dB re 1 μPa)	RISK B=120,K=45,A=10	RISK B=120,K=45,A=8	RISK B=105,K=15,A=10	RISK B=105,K=15,A=2
Responded				
148	0.008647	0.022021	0.999973	0.891548
143	0.001217	0.004641	0.999908	0.86521
137	5.92E-05	0.000415	0.999488	0.819864
135	1.7E-05	0.000153	0.999026	0.800039
133	4.06E-06	4.86E-05	0.998059	0.777052
No Response				
134	8.52E-06	8.79E-05	0.998633	0.788974
Error Factor	502	183	0.83	1.01

Datasets not considered

The Navy incorrectly concludes that additional datasets are unavailable. In addition to the other killer whale datasets mentioned above, data illustrating the use of acoustic harassment and acoustic deterrent devices on harbor porpoises illustrate exclusion from foraging habitat (Laake et al. 1997, 1998 and 1999, Olesiuk et al. 2002). Data are also available showing exclusion of killer whales from foraging habitat (Morton and Symonds 2002), although additional analysis would be required to assess received levels involved. The devices which excluded both killer whales and harbor porpoises had a source level of 195 dB re 1 μPa, a fundamental frequency of 10 kHz, and were pulsed repeatedly for a period of about 2.5 seconds, followed by a period of silence of similar duration, before being repeated. Devices used only with harbor porpoises had a source level of 120-145 dB re 1 μPa, fundamental frequency of10 kHz, a duration on the order of 300 msec, and were repeated every few seconds. Harbor porpoises, which the Navy treats as having a B+K value of 120 dB re 1 μPa (with A large enough to yield a step function) in the AFAST DEIS (Dept.Navy 2008a), 45 dB lower than the average value used in the HRC SDEIS, may be representative of how the majority of cetacean species, which are shy around vessels and hence poorly known, would respond to mid-frequency sonar. Even if harbor porpoises were given equal weight with the three species used to calculate B+K, including them in the average would put the average value at 154 dB re 1 μPa instead of 165 dB re 1 μPa.

Harbor porpoise responses to various acoustic devices have been documented in captivity and the wild. Pingers with a source level of 130 dB re 1 μPa displace wild harbor porpoises to a distance of at least 100-1000 m, where the received level was likely in the

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neighborhood of 80-90 dB re 1 μPa. Studies of harbor porpoises in captivity also found responses to acoustic deterrent devices, but could not be tested at such distances due to limitations in facility size (Kastelein et al. 1997, 2001). This is another example of how studies with captive cetaceans can produce misleading results. Airmar devices with a source level of 195 dB re 1 μPa displaced an estimated 95% of harbor porpoises to a distance of 3 km. While received levels were not measured, they could have been in the neighborhood of 120-130 dB re 1 μPa. These findings are well modeled with a B value of 70 dB re 1 μPa, a K value of 25, and an A value of 4.

Many species are poorly known, due in part to difficulties approaching them from boats and in part because they do not fare well in captivity. Species that may exhibit vulnerability to noise comparable harbor porpoises include many species of Stenella (e.g., striped dolphins), beaked whales, sperm whales (which are best studied from sailboats rather than motorized vessels, and show disruption of foraging at levels below 130 dB re 1 μPa, Jochens et al. 2006), and numerous poorly known species. In contrast, Dall's porpoises are known to bow ride, and appear far less easily disturbed by noise from airguns than harbor porpoises (Calambokidis et al. 1998). They may be an example of a relatively noise tolerant species like the bottlenose dolphins included in the SDEIS.

There are also data that are based on other noise sources. E.g., effects of vessel traffic on whale and dolphin behavior could be interpreted in terms of received levels. While engine noise tends to be continuous rather than intermittent like sonar, in a reverberant environment, mid-frequency sonar may be received as a nearly continuous sound (personal observation).

Likewise, records of marine mammal responses to broadband noise sources like airguns are also likely to be informative. While it may be difficult to extrapolate levels resulting in takes due to potential differences in perception of broadband and narrowband signals, and pulses rather than continuous sounds, they can give an idea of the range of intra-specific and inter-specific variation in B and K values and be applicable to determining the A parameter.

E.g., Calambokidis et al. (1998) found harbor seal responses to airguns typically consisted of visually orienting at received levels from 143 to 158 dB re 1 μPa and moving away at received levels from 158 dB to 185 dB re 1 μPa. However, one harbor seal oriented at 163 dB re 1 μPa rather than moving away. The highest measured received levels for Dall's porpoises were about 170 dB re 1 μPa, but only about 142 dB re 1 μPa for harbor porpoises. Similarly, the highest received levels measured for California sea lions were about 180 dB re 1 μPa, but only about 160 dB re 1 μPa for Steller sea lions. The highest measured received level was also 160 dB re 1 μPa for gray whales. That is, closely related species pairs may differ in their responsiveness to noise by over 20 dB, and taxonomically diverse species pairs may exhibit similar responsiveness.

TTS data similar to those available for cetaceans have been collected from harbor and elephant seals, and California and Steller sea lions (Kastak et al. 1999, 2005). As with cetaceans, field data suggest the Navy parameter values will underestimate takes of some

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pinniped species, though they may provide a reasonable approximation for harbor seals and California sea lions (e.g., the data described above). Pinniped hearing in species studied to date is less sensitive than in cetaceans (e.g., California sea lions, Schusterman et al. 1972; Steller sea lions, Kastelein et al. 2005; harbor seals, Møhl 1968; northern fur seals, Moore et al. 1987; odontocetes, Au 1993), and it is commonly assumed they are less vulnerable to noise as a result. However, comparisons of Steller sea lions with Dall's porpoises and gray whales exposed to airgun noise indicates this is not always the case. A detailed consideration of pinnipeds is beyond the scope of this paper.

Using the datasets discussed above, 50% risk levels based on trained cetaceans may be 165 dB re 1 μPa, 120 dB re 1 μPa for killer and right whales, and 95 dB re 1 μPa for harbor porpoises. The average of 95, 120, 120 and 165 is 125 dB, 40 dB lower than the 50% risk value of 165 dB used in the Navy model. Even if one uses more stringent criteria for what constitutes takes (120 dB for harbor porpoises, 135 dB for killer and right whales, and 170 dB for bottlenose dolphins), the average would be 140 dB, which is 25 dB lower than the Navy model. Setting B to 100, K to 40, and A to 10 would result in roughly 40 times the number of takes than the model predicts using the Navy's parameter values.

Parameter values

The use of default values for model parameters is problematic. The available data are likely to be biased toward noise tolerant species. That is, species that are intolerant of noise are difficult to approach closely enough to study. They tend to fare poorly in captivity. E.g., spinner dolphins and harbor porpoises showed very poor survivorship in captivity, in contrast to bottlenose dolphins (Bain 1988). Thus averages based on available data are likely to underestimate effects on species for which data are not available.

While the Navy has proposed assuming noise tolerance is predictable along taxonomic lines, which correlate with hearing ability, empirical data do not support this assumption (Bain and Williams 2006). Likewise, there is interspecific variation in noise tolerance in fish (Kastelein 2008).

B Value

The basement value should be set low enough that the risk function predicts takes at the lowest of the level resulting in unconditional injuries, the level at which behaviorally mediated injuries are possible, and the level resulting in minor behavioral changes or stress that can have population level effects with sustained or repeated exposure.

An important property of the model is that the biologically observed basement value is different than the mathematical basement value. The Navy proposes using 120 dB re 1 μPa as the basement value. They indicate the selection of this value is because it was commonly found in noise exposure studies. However, 120 dB re 1 μPa has broadly been

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found as the value at which 50% of individuals responded to noise, not a small percentage. Further, a mathematical B of 120 dB corresponds to a risk of less than 2% at 150 dB (with K=45 and A=10), which would be difficult to detect in empirical studies. That is, the studies should be re-evaluated to determine the level at which a small percentage of individuals responded, and then a further correction for the difference between mathematical B and the empirically determined biological B would be needed.

However, further consideration should be given to the nature of the responses used in those studies to determine whether they represent significant behavioral changes or are only likely to have a population scale effect with sustained or repeated exposure.

For example, many looked at changes in migration routes resulting from noise exposure, and found that 50% of migrating whales changed course to remain outside the 120 dB re 1 µPa contour (Malme et al. 1983, 1984). These results might be interpreted in several ways. They could be seen as minor changes in behavior resulting in a slight increase in energy expenditure. Under this interpretation, they would not qualify as changes in a significant behavior, and are irrelevant to setting the basement value. They could be interpreted as interfering with migration, even though the whales did not stop and turn around, and hence 120 dB would make an appropriate B+K value rather than B value. Third, the change in course could have been accompanied by a stress response, in which case the received level at which the course change was initiated rather than the highest level received (120 dB re 1 µPa) could be taken as the biological basement value.

As discussed above, sensitive species like harbor porpoises may be significantly affected by levels below 100 dB re 1 µPa (Kastelein et al. 1997, 2000, 2001). Foraging behavior of killer whales can be disrupted by levels on the order of 105-110 dB re 1 µPa or less (Williams et al. 2002ab, data in Bain et al. 2006). These are far below the 120 dB re 1 µPa level proposed, and as mentioned above, the mathematical B value needed to predict detectable changes at 110 dB would be far lower than 110 dB. For example, B=80, K=45, and A=10 predicts a risk of less than 2% at 110 dB.

K Value

The K value reflects the difference between the mathematical B value and the level at which 50% of individuals respond. Since determining the B value has problems of its own, this critique will focus on determining the B+K value. The 50% risk level is relatively easy to determine, and has been commonly reported in the literature, as noted in the SDEIS. However, the most common value was 120 dB re 1 µPa, as noted in the SDEIS, yet these studies were not used to calculate B+K. Instead, other datasets were used, and the numbers derived were not the 50% risk levels. As mentioned above, there are problems with extrapolation of responses in trained animals to wild animals, and the right and killer whale values were based on levels that resulted in nearly 100% risk, not 50% risk. (It may not be possible to determine a level at which 50% risk occurred in killer whales, but perhaps collaboration among killer whale researchers, whale watch operators, and the Navy might identify the B+K level for that event).

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The 50% risk level is the median level at which individuals begin to respond, not the mean as calculated in the SDEIS. While there are data suggesting risk of threshold shift is related to duration of exposure, and hence the consequences of exposure to continuous noise sources would be different than exposure to intermittent sources, there are no such data for behaviorally mediated effects. Many species strongly avoid motorized vessels, and hence are more vulnerable to noise than the average of the species considered above. Such species are likely to include those in the sperm and beaked whale families, Pacific right whales, blue whales, melon-headed and pygmy killer whales, right whale dolphins, and Clymene, striped and rough-toothed dolphins. A smaller number of species, like Dall's porpoises, are more tolerant of noise sources than the average of the species considered above. Thus it is unlikely that the average value of B+K across cetacean species would be above 120 dB re 1 μPa, although the value would vary across species.

A value

While the A value is described as relating to the sharpness of the risk function, it also influences the symmetry of the function. As A increases, risk is redistributed from low noise levels to higher noise levels. The relative risk to the population, as opposed to risk to individuals, can be described as the risk to individuals at a given received level times the relative number of individuals receiving that level. As the sound spreads to larger areas, more individuals are exposed to lower levels of noise. The shape of the risk function and the spreading loss model determine the received level that poses the most risk to the population. At high received levels, the risk to the population may be small, because although the risk to individuals is high, the number of individuals likely to be exposed is small. At low levels, the risk to the population may be again small, because although the number of individuals exposed is high, the risk to those individuals is low. At intermediate values, the population experiences the most risk. When A is low, the risk to the population peaks near B, and at high A values, the risk is concentrated near B+K.

The choice of A value appears arbitrary. The Navy indicated they wanted to allow for more response at low levels, and adjusted the A value to accomplish this. However, this would have been better accomplished by lowering the B and B+K values as suggested above.

The significance of an A value underestimating the number of individuals responding to low levels of noise and overestimating the number of individuals responding to high levels of noise is that the area exposed to low levels of noise is larger than the area exposed to high levels of noise, so the calculation would lead to an underestimate of takes.

Calambokidis et al. (1998) employed an appropriate methodology for obtaining data for calculating A values of marine mammals exposed to airguns. They used a small vessel which moved toward and away from the seismic survey vessel, and hence were able to observe behavior and measure received values at distances of over 70 km as well as close

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to the seismic survey vessel. Thus they were able to observe normal behavior in the presence of low levels of noise, as well as identify levels above which 100% of individuals exhibited behavioral change, and note inter-specific variation in response curves.

Interaction of Terms

It appears that B+K is a stronger predictor of the number of takes than either factor separately. As a result, similar risk curves can be generated for many different pairs of B and K as long as the sum is held constant. K and A together determine the range over which risk rises from 5% to 95%. Similarly, pairs of K and A over a range of values can generate similar risk curves.

With B=120, K=45, and A=10, the risk function predicts risk is near zero at received levels near 120, and that over 99.9% of takes will occur above 138 dB re 1 μPa. Even with A = 8, 99.9% of takes occur at levels above 135 dB. With A values this large, B is better described as the level at which the risk function is undefined (it requires dividing by 0) rather than the level at which risk becomes negligible. That is, the mathematical basement value and the biological basement value are different. The level at which data from marine mammals show barely detectable risk will be far above the mathematical basement value when K is 45 and A is 8 or 10. When K or A are small, the mathematical and biological B values become similar.

Another way of looking at the difference between the mathematical and biological basement value is to ask how much risk is detectable. In field studies, it will be difficult to distinguish responses that occur in only 5% of individuals from baseline behavior. Even if a study were sensitive enough to detect this, the received level to cause 5% risk is more than 30 dB above the mathematical B value for B=120, K =45 and A=8 or 10. That is, if risk becomes biologically detectable at 120 dB, the B value used in the equation for risk should be far lower. When the model uses the biological B value as the mathematical B value, it does not accurately predict the observed pattern of takes.

Long range effects

The Navy expressed uncertainty over whether there would be long distance effects, even when sound levels were received that are known to cause effects at close range. While I am not aware of observations at 65 nautical miles, responses at over 20 miles have been observed in killer whales to mid-frequency sonar, as well as at over 15 miles to mid-frequency sonar in Dall's porpoises, and harbor porpoises appeared to respond to airguns at over 40 nm (personal observation). The porpoises were responding at distances greater than they would respond to natural predators (killer whales), which are not believed to be detectable at those ranges.

Further evidence of long range responses to noise can be seen in differences in detection rates of some species using acoustic means and ship-based observations. Such studies indicate that species like Pacific right whales and blue whales avoid motorized vessels at distances which place them over the horizon (Wade et al. 2006, Širović 2006).

Uncertainty and Bias

To assess the effects of uncertainty in the parameter values (B, K, and A) on bias in the estimated number of takes, the following method was used. Two spreading loss models were used. A spherical spreading loss model was used, although this was likely to underestimate received levels, particularly at long distances. The other was spherical spreading at close range followed by a cylindrical spreading loss at longer distances model. An accurate model would depend on actual conditions, which would vary from one sonar exercise to another, both as bottom topography varies from place to place and the structure of the water column varies from time to time. The two models chosen should bracket actual conditions, and will serve for purposes of illustration at this stage. In both models, absorption at 3.5 kHz was used to correct for excess attenuation (Richardson et al. 1995). A source level of 235 dB re 1 μPa was assumed for purposes of illustration.

Individuals were assumed to be distributed uniformly with distance from the source, although in practice, action areas will be large enough that density could reasonably be expected to vary. The action area was divided into concentric rings 10 meters across. As the diameter of the ring increased, the area within the ring increased:

$$A = \pi r_o^2 - \pi r_i^2$$

where r_o is the outer diameter and r_i is the inner diameter of the ring.

The risk was calculated for individuals within the ring using the Navy equation, and the relative number of individuals experiencing that risk level was based on the area of the ring. As in the equation for the individuals, the cumulative impact on the population was normalized to 1 based on the Navy default parameters. The effects of uncertainty were observed by allowing the parameters to vary above and below the default values.

Using this model, the contributions of the innermost rings were small, due to their small area, and the contribution of the outermost rings were small, due to the low risk experienced by individuals in those ring. Figures 1-20 show the shape of the risk function and the relative numbers of takes that would occur as a function of received level for a variety of parameter value combinations.

Selected values of B, K and A were used to calculate relative effects, and the results are shown in Table 2 for a spherical spreading model, and Table 3 for a model that assumes spherical spreading for the first 2 km and then cylindrical spreading after that. The default values are shown in bold. Take numbers are based on Alternative 3 in the Hawaii

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Range Complex SDEIS (Dept. Navy 2008b), which in turn is based on the No Action Alternative, Table 3.3.1-1. Where the number of takes approaches the size of the population, the actual number of takes will be smaller than shown in the table. However, individuals will be taken multiple times and the duration of takes will be longer than if the calculated number of takes were small. Presumably, longer and more frequent takes of individuals will have more impact on the population than takes due to single exposures.

Table 2. Sensitivity Analysis based on a spherical spreading model

B	K	A	Spreading Model	Relative Effect	Humpback takes	Striped Dolphin takes	Basis
80	45	10	Inv. Square	185.29	2,826,414	867,898	Vary B
90	45	10	Inv. square	75.25	1,147,864	352,471	Vary B
100	45	10	Inv. square	23.92	364,876	112,041	Vary B
110	45	10	Inv. square	5.68	86,643	26,605	Vary B
120	**45**	**10**	**Inv. square**	**1.00**	**15,254**	**4,684**	**SDEIS**
130	45	10	Inv. square	0.14	2,136	656	Vary B
140	45	10	Inv. square	0.02	305	94	Vary B
120	5	10	Inv. Square	167.18	2,550,164	783,071	Vary K
120	15	10	Inv. square	62.22	949,104	291,439	Vary K
120	25	10	Inv. square	18.33	279,606	85,858	Vary K
120	35	10	Inv. square	4.47	68,185	20,937	Vary K
120	**45**	**10**	**Inv. square**	**1.00**	**15,254**	**4,684**	**SDEIS**
120	55	10	Inv. square	0.23	3508	1077	Vary K
120	65	10	Inv. square	0.06	915	281	Vary K
120	75	10	Inv. square	0.01	153	47	Vary K
120	45	1	Inv. square	42.40	646,770	198,602	Vary A
120	45	5	Inv. square	3.27	49,881	15,317	Vary A
120	45	8	Inv. square	1.40	21,356	6,558	Vary A
120	**45**	**10**	**Inv. square**	**1.00**	**15,254**	**4,684**	**SDEIS**
120	45	12	Inv. Square	0.80	12,203	3,747	Vary A
120	45	20	Inv. Square	0.52	7,932	2,436	Vary A
120	45	100	Inv. Square	0.39	5,949	1,827	Vary A
120	**45**	**10**	**Inv. square**	**1.00**	**15,254**	**4,684**	**SDEIS**
105	15	10	Inv. square	251.39	3,834,703	1,177,511	*Orcinus*
105	15	8	Inv. square	250.96	3,828,144	1,175,497	
70	25	10	Inv. square	1070.25	16,325,594	5,013,051	*Phocoena*
70	25	8	Inv. square	1067.49	16,283,492	5,000,123	*Phocoena*

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Table 3. Sensitivity analysis based on a model with spherical spreading for 2 km followed by cylindrical spreading.

B	K	A	Spreading Model	Relative Effect	Humpback takes	Striped Dolphin takes	Basis
80	45	10	Hybrid	132.20	2,016,579	619,225	Vary B
90	45	10	Hybrid	65.31	996,239	305,912	Vary B
100	45	10	Hybrid	25.30	385,926	118,505	Vary B
110	45	10	Hybrid	6.67	101,744	31,242	Vary B
120	**45**	**10**	**Hybrid**	**1.00**	**15,254**	**4,684**	**SDEIS**
130	45	10	Hybrid	0.08	1,220	325	Vary B
140	45	10	Hybrid	.005	76	23	Vary B
120	5	10	Hybrid	127.23	1,940,771	595,947	Vary K
120	15	10	Hybrid	59.67	910,213	279,496	Vary K
120	25	10	Hybrid	21.39	326,238	100,177	Vary K
120	35	10	Hybrid	5.37	81,901	25,149	Vary K
120	**45**	**10**	**Hybrid**	**1.00**	**15,254**	**4,684**	**SDEIS**
120	55	10	Hybrid	0.18	2,724	836	Vary K
120	65	10	Hybrid	0.04	570	175	Vary K
120	75	10	Hybrid	0.01	143	44	Vary K
120	45	1	Hybrid	34.16	521,077	160,005	Vary A
120	45	5	Hybrid	3.65	55,665	17,093	Vary A
120	45	8	Hybrid	1.51	23,016	7,067	Vary A
120	**45**	**10**	**Hybrid**	**1.00**	**15,254**	**4,684**	**SDEIS**
120	45	12	Hybrid	0.73	11,103	3,409	Vary A
120	45	20	Hybrid	0.35	5,353	1,644	Vary A
120	45	100	Hybrid	0.17	2,593	796	Vary A
120	**45**	**10**	**Hybrid**	**1.00**	**15,254**	**4,684**	**SDEIS**
105	15	10	Hybrid	171.9	2,622,166	805,181	*Orcinus*
105	15	8	Hybrid	171.3	2,612,718	802,279	
70	25	10	Hybrid	516.41	7,877,318	2,418,864	*Phocoena*
70	25	8	Hybrid	514.46	7,847,573	2,409,731	*Phocoena*
80	45	10	Hybrid	132.20	2,016,579	619,225	"Average"species
100	40	10	Hybrid	40.88	623,525	191,464	Stringent criteria
120	45	10	Social75	1.004	15,315	4,703	75% step
120	45	10	Social50	1.06	16,169	4,965	50% step
120	45	10	Social25	1.49	22,728	6,979	25% step
120	45	10	Social10	3.02	46,067	14,146	10% step

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An interesting characteristic of the Navy model is that uncertainty causes it to be biased to underestimate risk. The reason for this bias is that the area receiving higher than the level of sound associated with a 50% risk based on default values is smaller than the area receiving lower levels. Thus if a species is 10 dB more sensitive than predicted (the B value), the cumulative risk is underestimated by a factor of 5.68, while if it is overestimated by 10 dB the correction is 0.14. Similarly, if the error is 20 dB, the correction factors are 23.92 and 0.02, respectively. However, the values average to 6.15, not 1 as would be the case if the default values provided an unbiased estimate. Errors in K show a similar pattern.

Likewise, if the default value of A is too low, it makes little difference in the estimated number of takes. However, if the default value of A is higher than the actual value, the effect on the population can be seriously underestimated when default values are used.

It should also be noted that the bias increases with increasing uncertainty.

Another source of uncertainty is propagation. As noted above, there is uncertainty over propagation that depends on the structure of the water column. Expectations can be based on historical measurements, and actual conditions can be measured to allow re-running propagation models with actual conditions. However, when received levels as a function of distance are higher than predicted, the result is asymmetrical relative to an error of the same magnitude in the opposite direction, as is the case for errors in the receiver parameters. E.g., when a sound channel forms, the area receiving enough noise to cause takes will dramatically increase.

Finally, the magnitude of the difference between parameter values based on reanalysis of the datasets used by the Navy (with harbor porpoises added, a species included in the AFAST Draft DEIS, Dept. Navy 2008a), and the Navy analysis should be emphasized. The number of takes predicted for an average species differs by a factor of more than 100. For humpbacks, this suggests individuals would be taken an average of about 250 times. Of course, when refresh times are taken into account, the number of retakes would be below this number, but the duration of takes would go up as a result. The cumulative effect on the population is likely to be far higher with the increased number and duration of takes predicted when more realistic parameters are used than when the Navy parameters are used.

SEL vs. SPL

Studies with captive marine mammals suggest that SEL provides a good predictor of Temporary Threshold Shift. That is, there is a tight relationship among signal strength, duration, and TTS. However, for behaviorally mediated effects, this relationship is likely to be different. SPL is likely to qualitatively determine the response for signals longer than 1 ms in duration. As long as signals are produced sufficiently often, the duration from the first signal to the last is likely to be more important than the SEL. That is, for

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low received levels, one second signals produced every 40 seconds for 120 minutes are likely to have more impact than a continuous signal that lasts 10 minutes, even though the latter contains far more sound energy (600 seconds versus 180 seconds), as a behavioral response will be sustained for hours rather than minutes.

When attempting to predict effects of takes on the population, a take table with multiple columns should be developed. One based on SEL could be used to characterize direct effects such as threshold shifts. The next two should be based on SPL. The first of these should be analyzed to evaluate the total number of individuals that would change their behavior as a result of noise exposure, with particular attention paid to exposure in high risk areas (canyons, near shore, near shipping lanes) for potential indirect injuries. The third analysis would consider duration of exposure (in hours of exercise rather than in the SEL sense) to determine whether factors such as stress, displacement from preferred habitat, changes in foraging success and predation risk, etc., would result in cumulative effects that would alter population growth in a manner equivalent to lethal removals (Bain 2002a).

Summary

In summary, development of a function that recognizes individual variation is a step in the right direction. However, the selected equation is likely to produce underestimates of takes. This is due both to social factors increasing the likelihood of a response at low exposure levels, and asymmetries in the number of individuals affected when parameters are underestimated and overestimated due to uncertainty. Thus it will be important to use the risk function in a precautionary manner.

The sensitivity analysis reveals the importance of using as many datasets as possible. First, for historical reasons, there has been an emphasis on high energy noise sources and the species tolerant enough of noise to be observed near them. Exclusion of the rarer datasets demonstrating responses to low levels of noise biases the average parameter values, and hence underestimates effects on sensitive species. In particular, exclusion of the Navy's own interpretation of harbor porpoise data resulted in an increase of B+K by 11 dB, and a reduction in estimated takes by a factor of about 5. Second, uncertainty is correlated with bias. That is, even if a representative set of noise exposure-response data are used to calculate parameter values, the statistical uncertainty resulting from small samples results in biased parameter estimates that lead to underestimation of effects. Thus when estimating takes, it will be important to correct for bias. When estimating population effects on poorly known species, it will be important to be precautionary.

An important error in the selection of parameter values was in interpretation of existing data. Extrapolating behavioral changes in beluga and killer whales and bottlenose dolphins trained to tolerate physical harm that is in their long-term best interest to the threshold for onset of any physical harm in wild individuals is problematic. A similar mistake was made with the right whale data. The level at which 100% of individuals responded was used as the value at which 50% of individuals responded (B+K).

Likewise, the level at which 100% of killer whales responded to mid-frequency sonar is less than the value derived for B+K in the HRC SDEIS (Dept. Navy 2008b).

The "broad overview" of studies reported responses to received levels of 120 dB re 1 μPa by 50% of individuals. That is, 120 dB re 1 μPa should be taken as a "default" value for B+K, not B. Studies which looked at the level at which statistically significant changes were observed, rather than the level at which 50% of individuals responded found lower levels for B. As a result, B is overestimated, and B+K (the level at which risk is 50%) is as well. The use of data from trained dolphins and white whales biased the average B+K value upward. The exclusion of the effects of AHD's and ADD's on harbor porpoises further biases these values, though the sensitivity analysis suggests that using average values to extrapolate takes is unlikely to be accurate due to the broad range of inter-specific variation.

It is likely that biological B values should be in the range from just detectable above ambient noise to120 dB re 1 μPa. The resulting mathematical B value could be tens of dB lower, not the 120 dB re 1 μPa proposed. For many species, risk may approach 100% in the range from 120-135 dB re 1 μPa, putting K in the 15-45 dB range. A values do not seem well supported by data, and in any case, are likely to be misleading in social species as the risk function is likely to be asymmetrical with a disproportionate number of individuals responding at low noise levels. Re-evaluating the datasets identified by the Navy and including harbor porpoises, an average B+K value of 125 dB was found, and the over-representation of species that fare well in captivity likely biases the average above what it would be for all species. Rather than one equation fitting all species well, parameters are likely to be species typical. As realistic parameter values are lower than those employed in the HRC SDEIS (Dept. Navy 2008b), AFAST DEIS (Dept. Navy 2008a) and related DEIS's, take numbers should be recalculated to reflect the larger numbers of individuals likely to be taken. The difference between the parameter values estimated here and those used in the SDEIS suggests takes were underestimated by two orders of magnitude.

The large number of takes predicted when more sensitive species are used as sources of the parameters indicates that many individuals are likely to be taken many times, and the potential for population scale effects to result from small behavioral changes becomes significant.

Assuming spherical spreading out to 2 km followed by cylindrical spreading, B=120, K=45 and A=10 (the Navy values), most takes occur where the received level is greater than 157 dB re 1 μPa and the distance is less than 13 km. With stringent criteria for what constitutes a take derived in the reanalysis (B=120, K=20, A=10), most takes would occur where the received level is below 145 db re 1 μPa and the distance is over 43 km. With the average values calculated here (B=80, K=45, and assuming A=10), most takes would occur where the received level is below 135 dB re 1 μPa and the distance is over 80 km. These values predict over 100 times more takes as the Navy values, as well as the need for very different approaches to mitigation.

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The Navy recognizes that the occurrence of conditional effects is important to assessing the impact of noise exposure. As such effects are the result of both received levels and environmental conditions, permit conditions will be important in determining these. The potential for conditional harm suggests using mitigation to limit the potential for actual harm. E.g., the risk of causing stranding can be minimized by restricting exercises to areas far from shore. Limiting the duration of exposure can limit the consequences of long-term displacement, risk of injury from prolonged flight, and limit cumulative effects. The risk of causing gas bubble lesions can be minimized by restricting use near canyons, for extended periods of time, and limiting the number of sources. The absolute effects can be minimized by conducting exercises in areas where population density is low, or at times of year when species of concern are absent.

Finally, it will be important to assess the cumulative effects of noise combined with other factors and population status (Wade and Angliss 1997) to assess the likely effects of sonar exercises on marine mammal populations.

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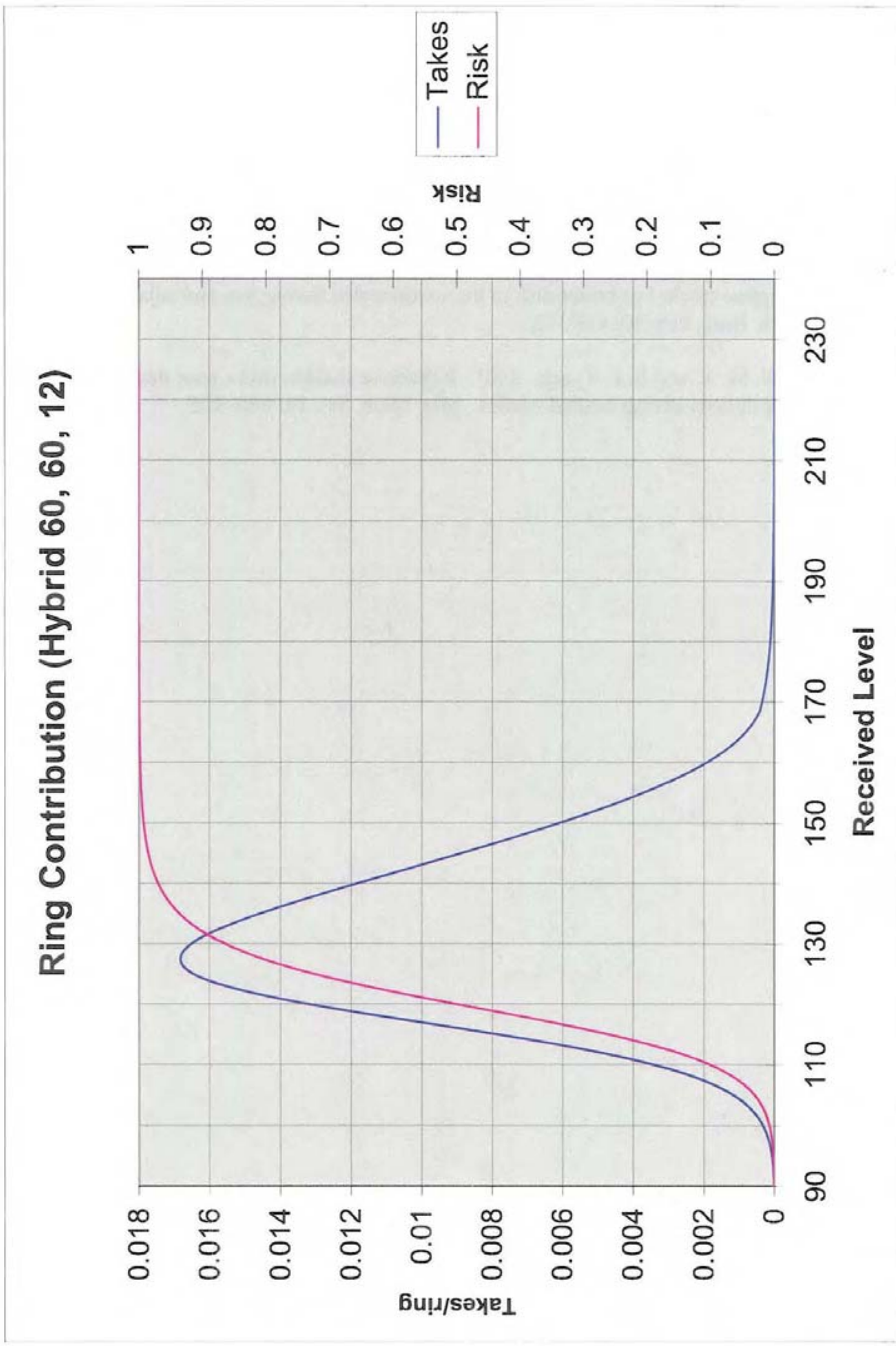
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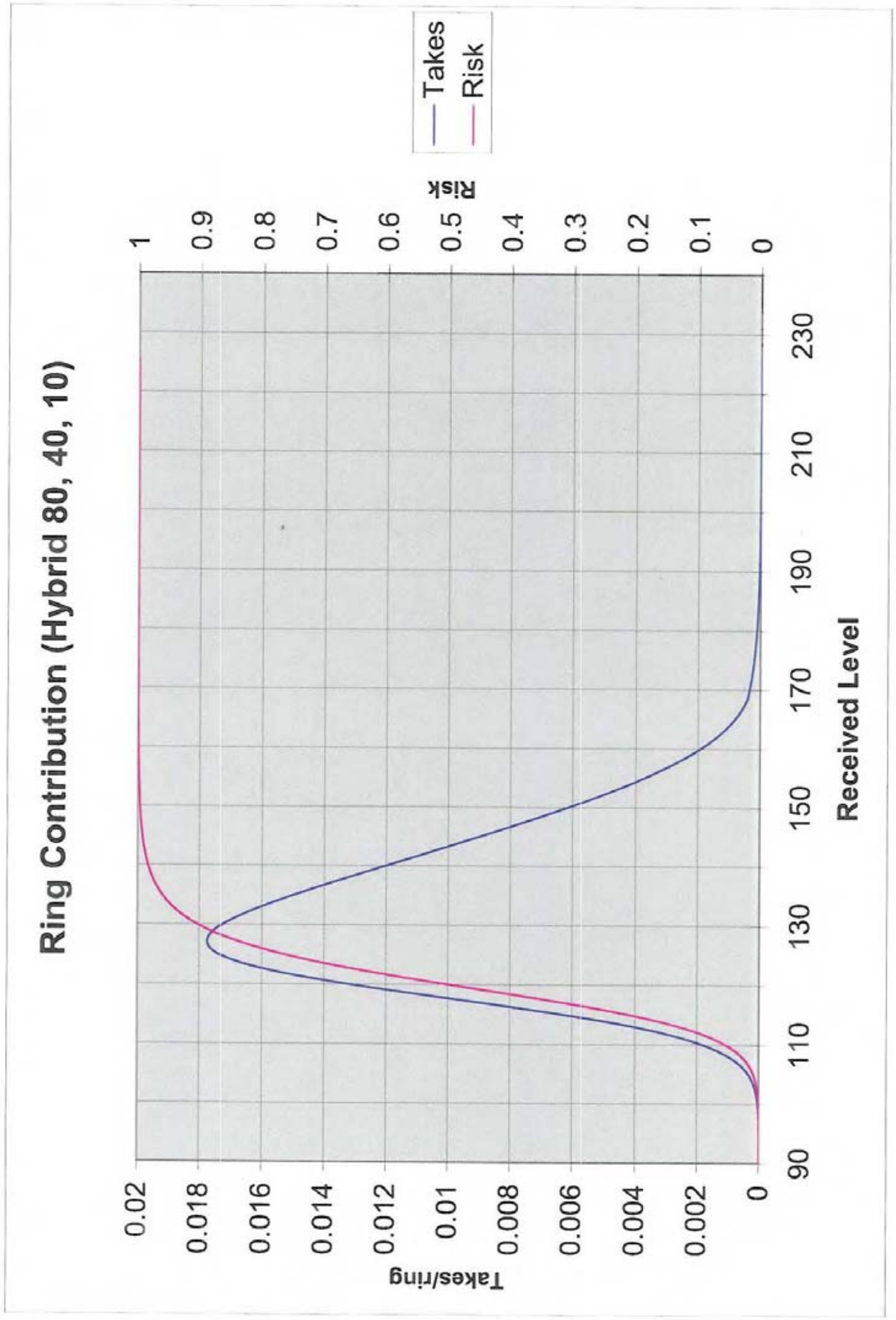
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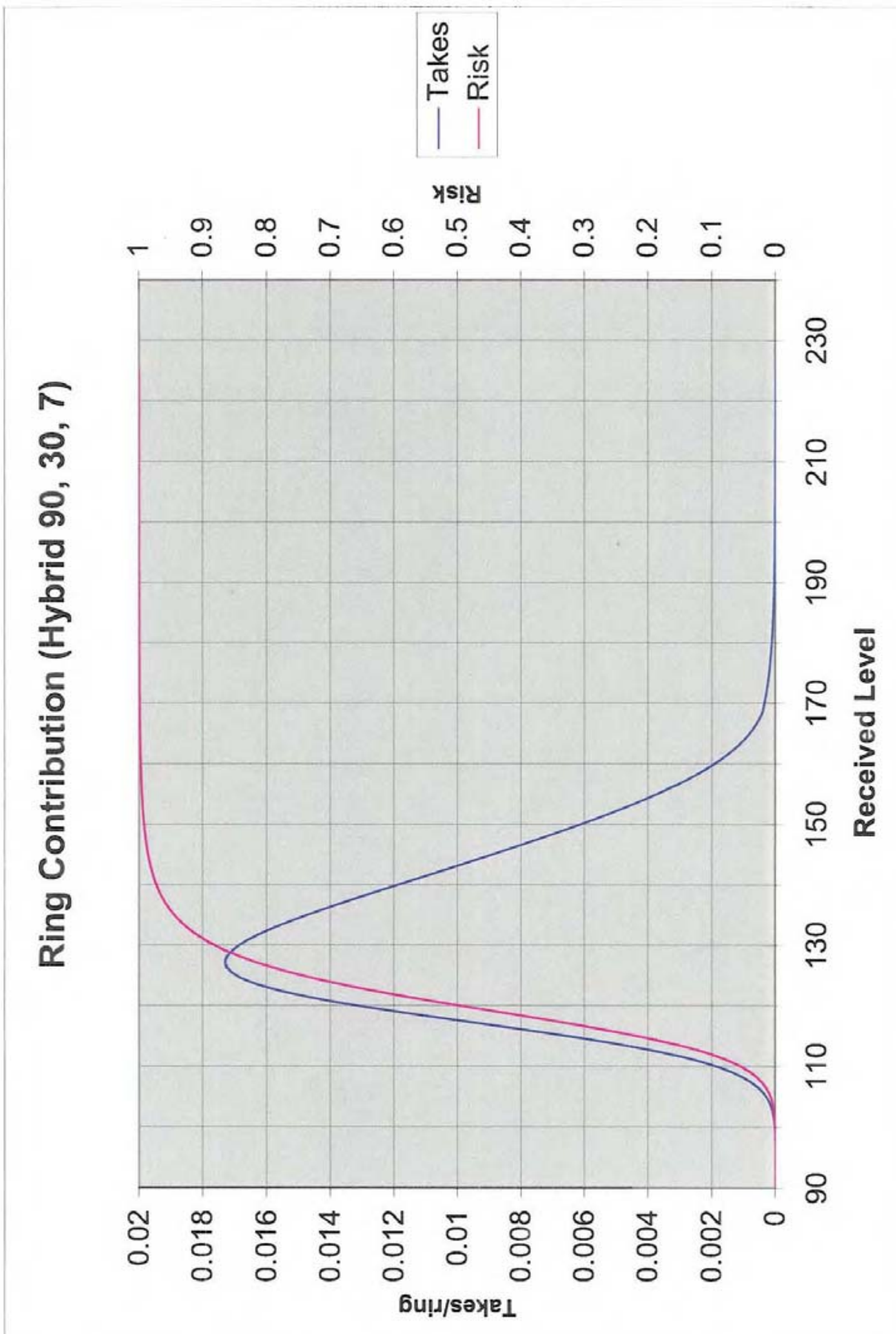
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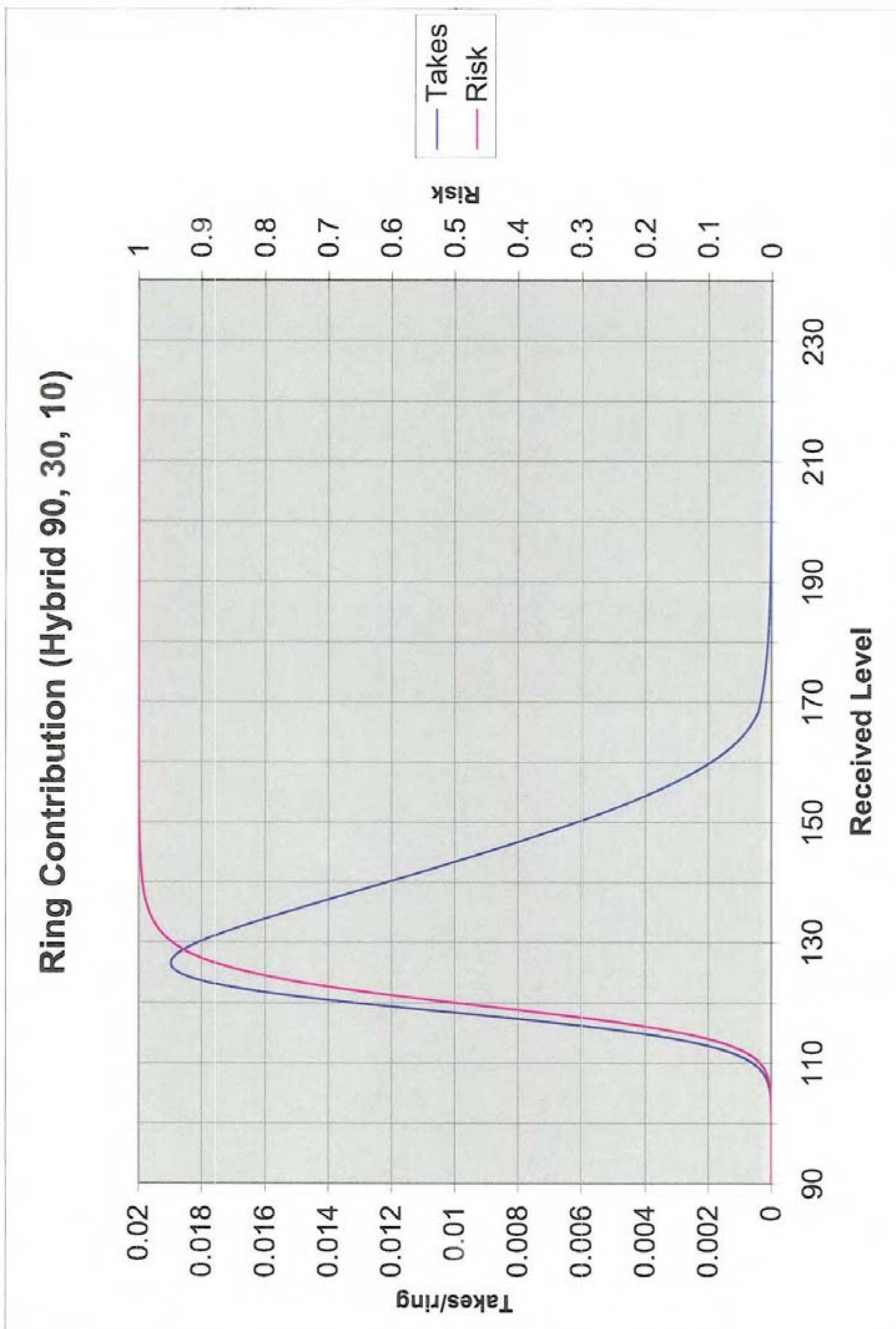

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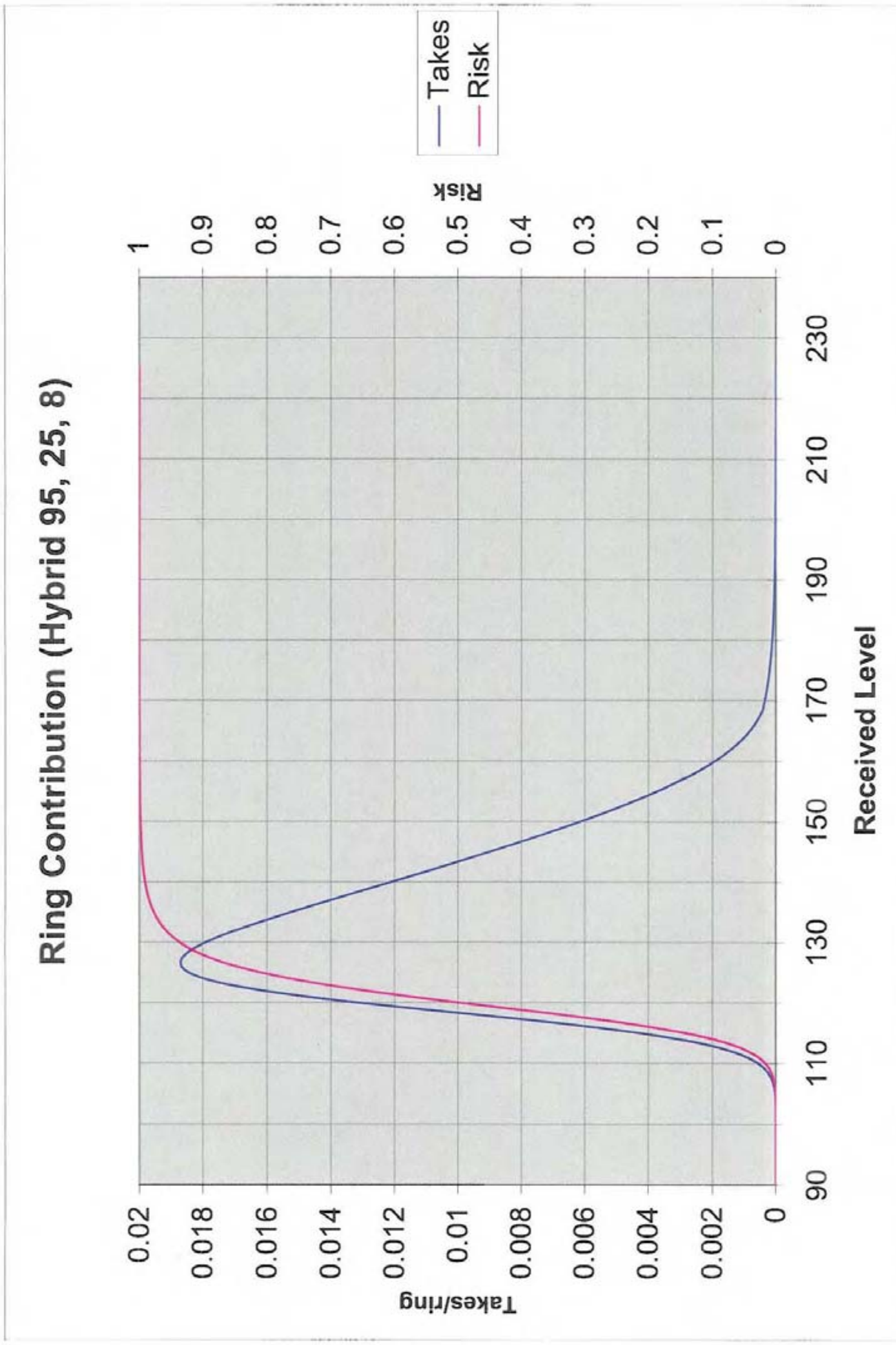
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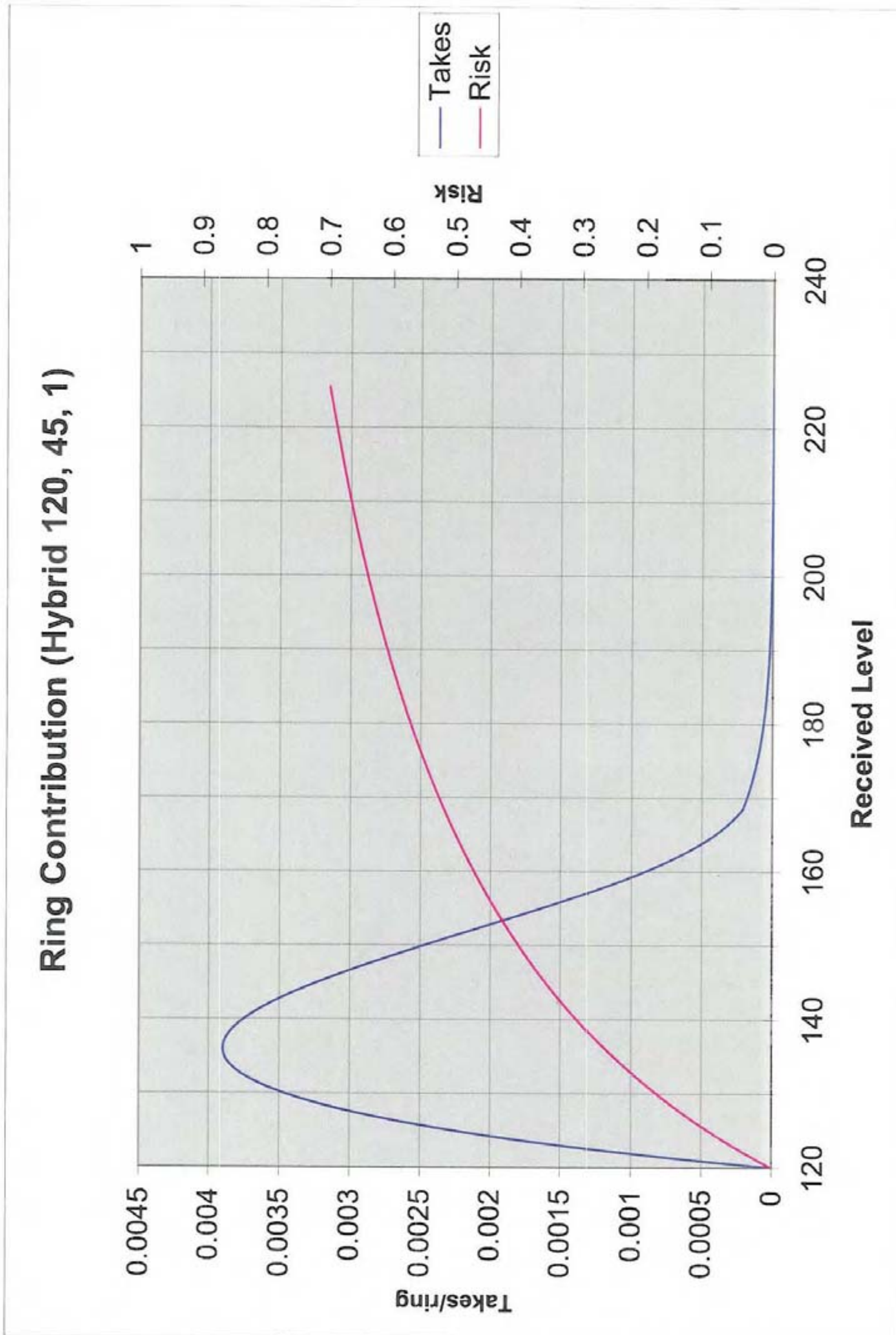
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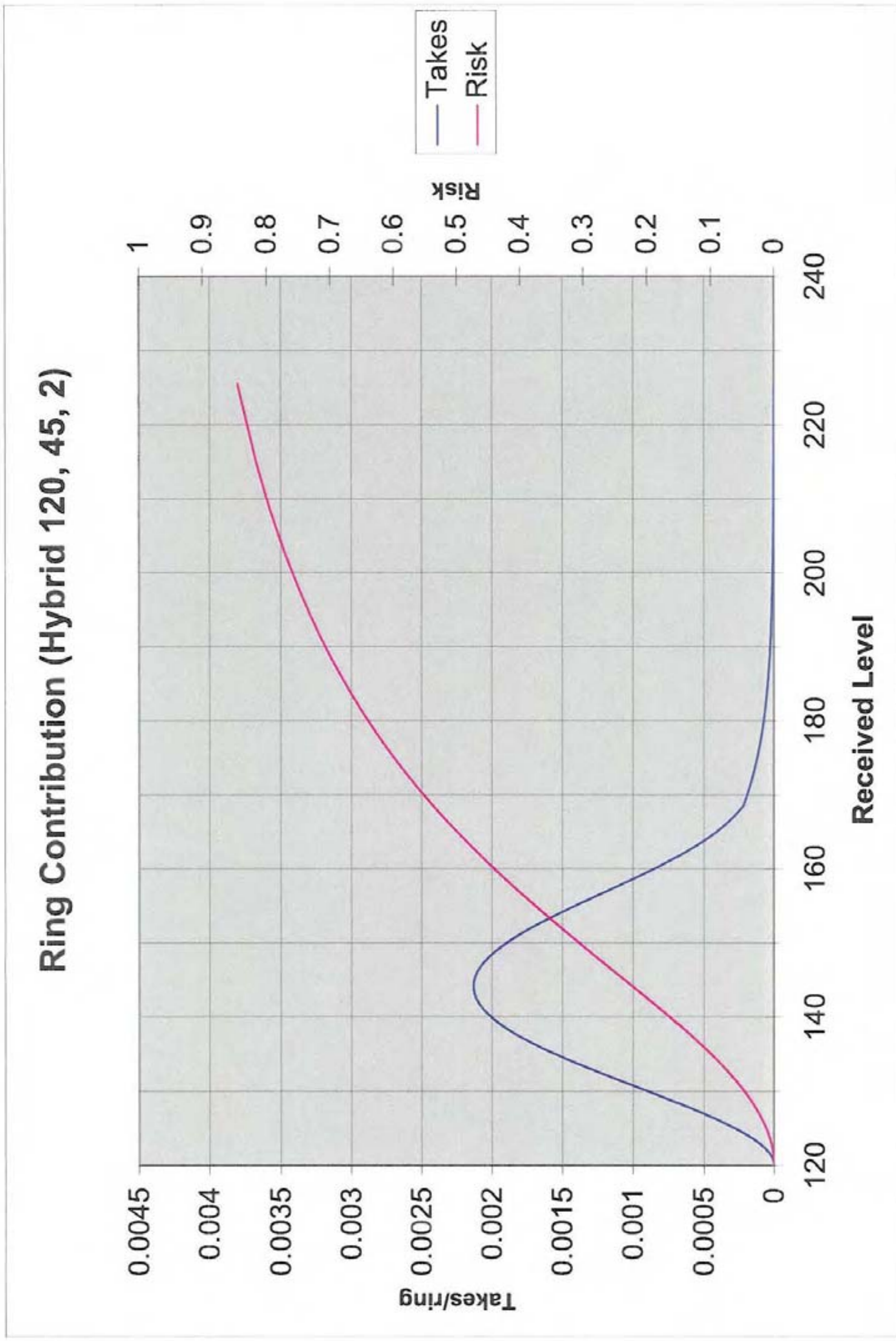
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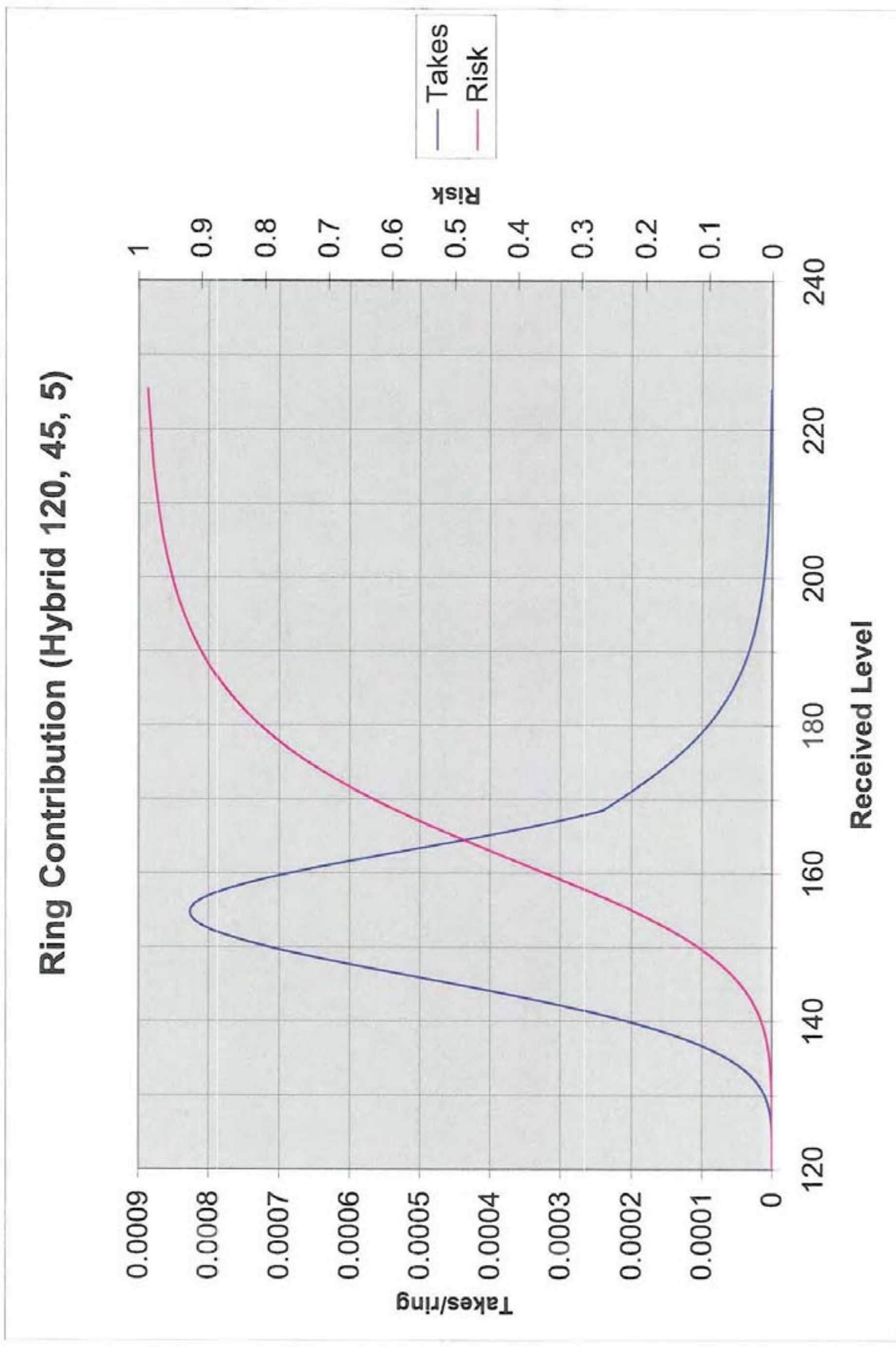
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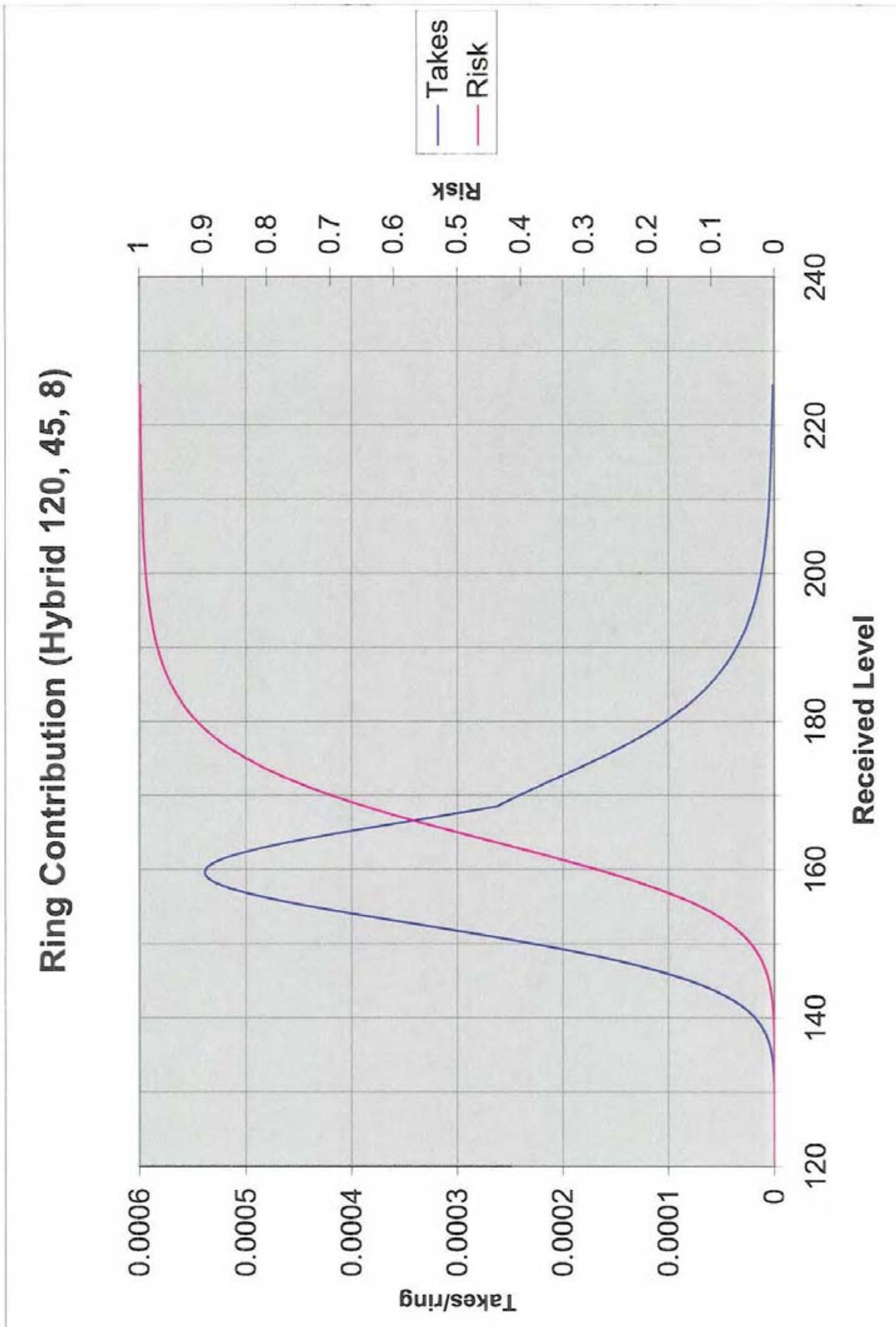
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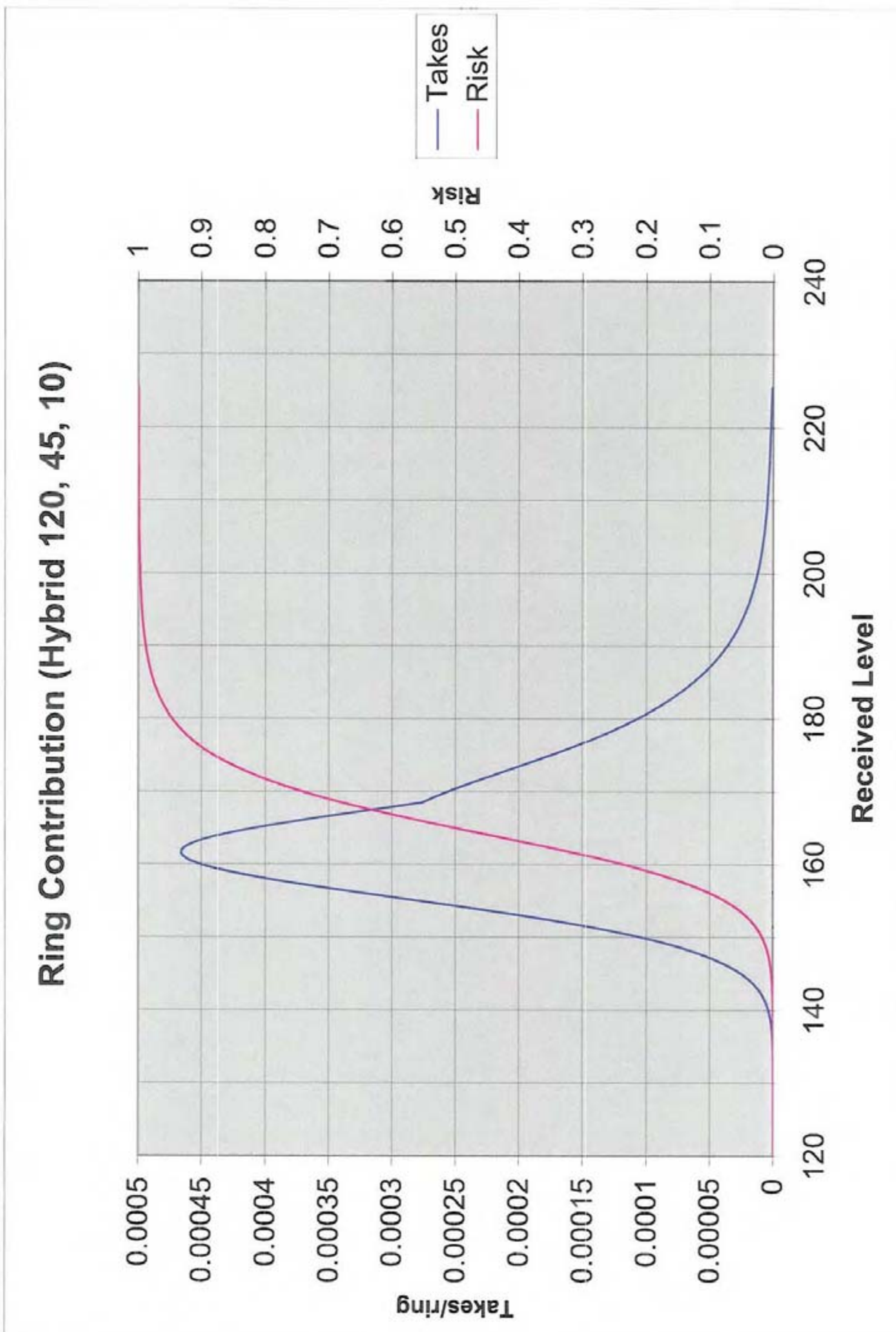
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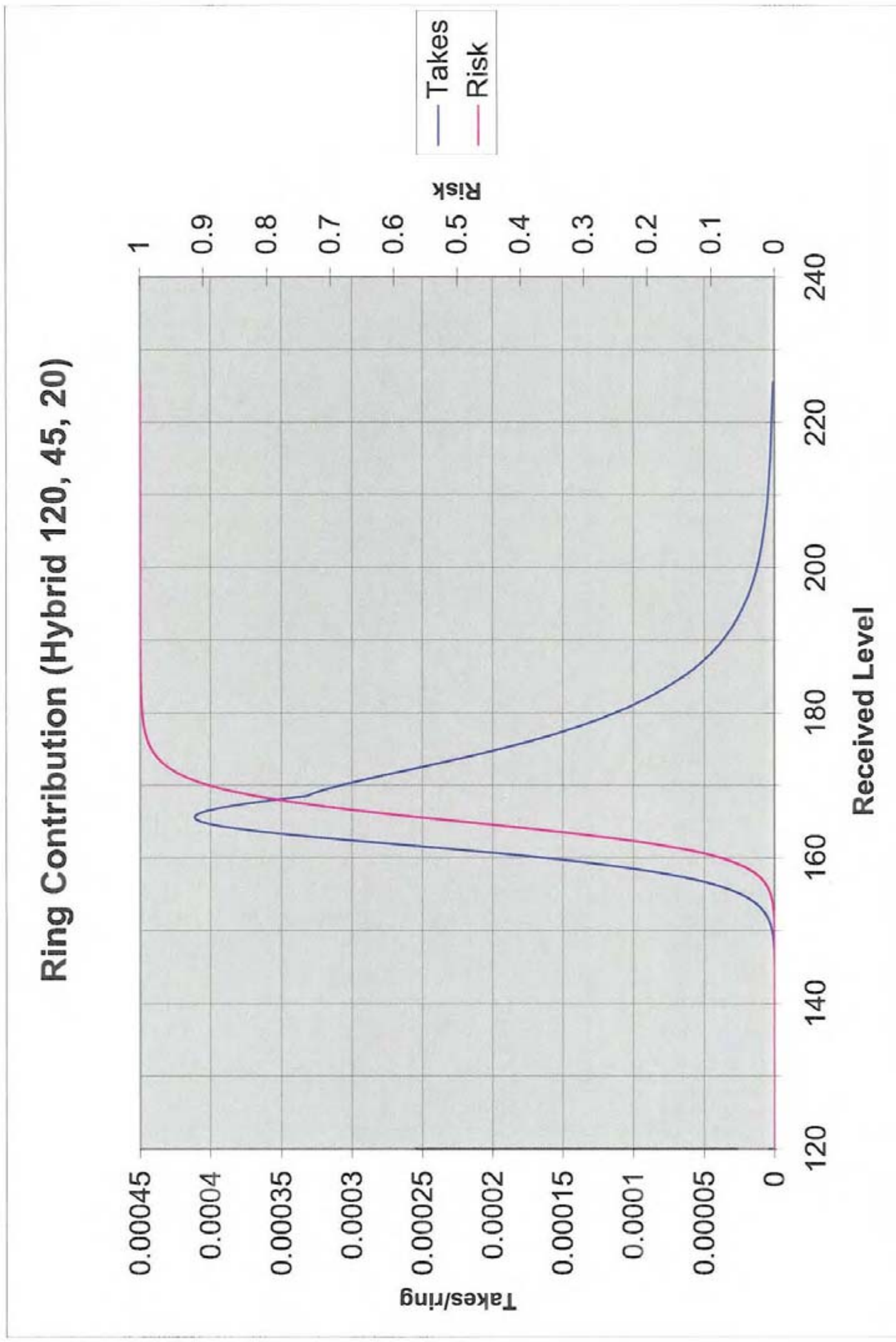
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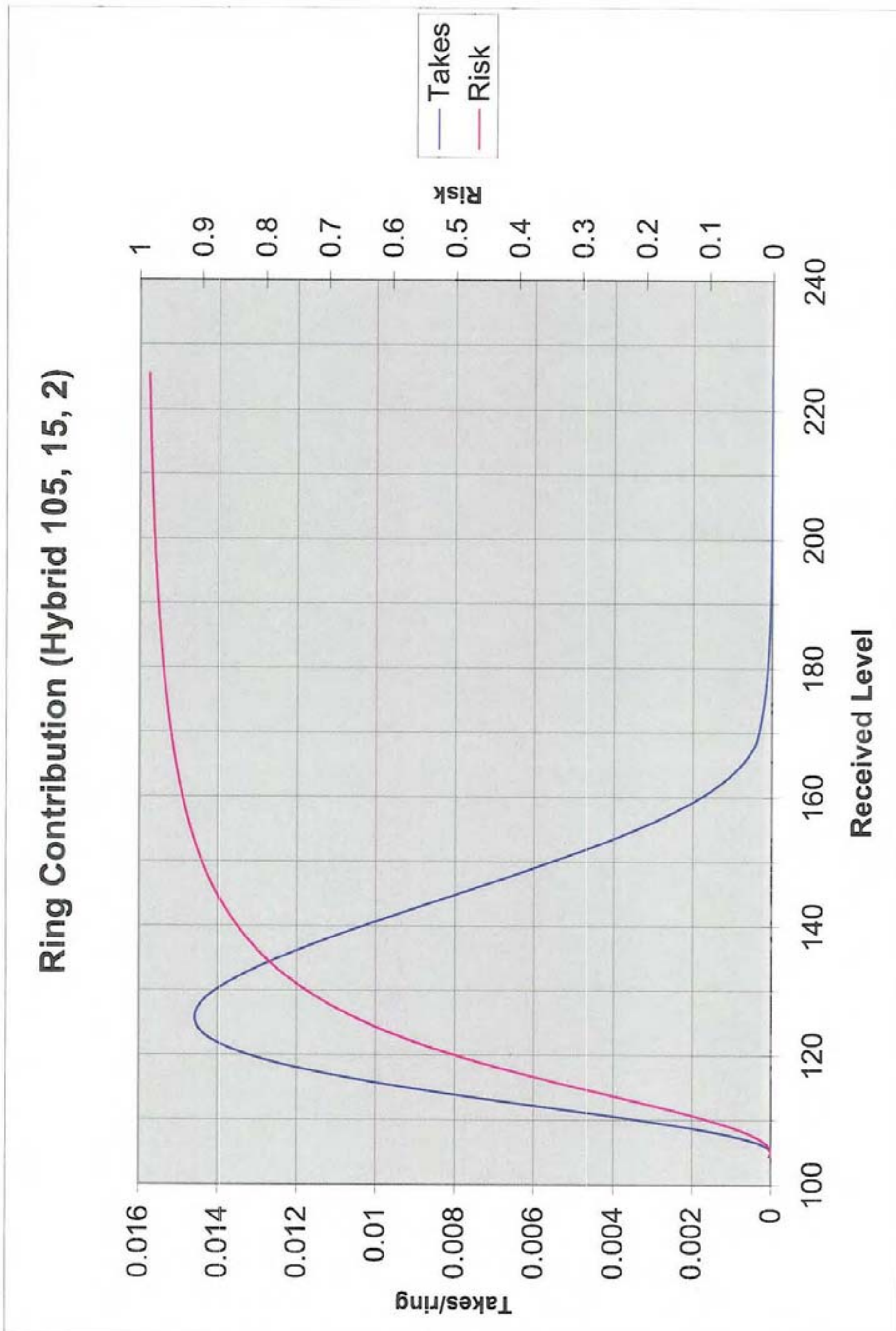
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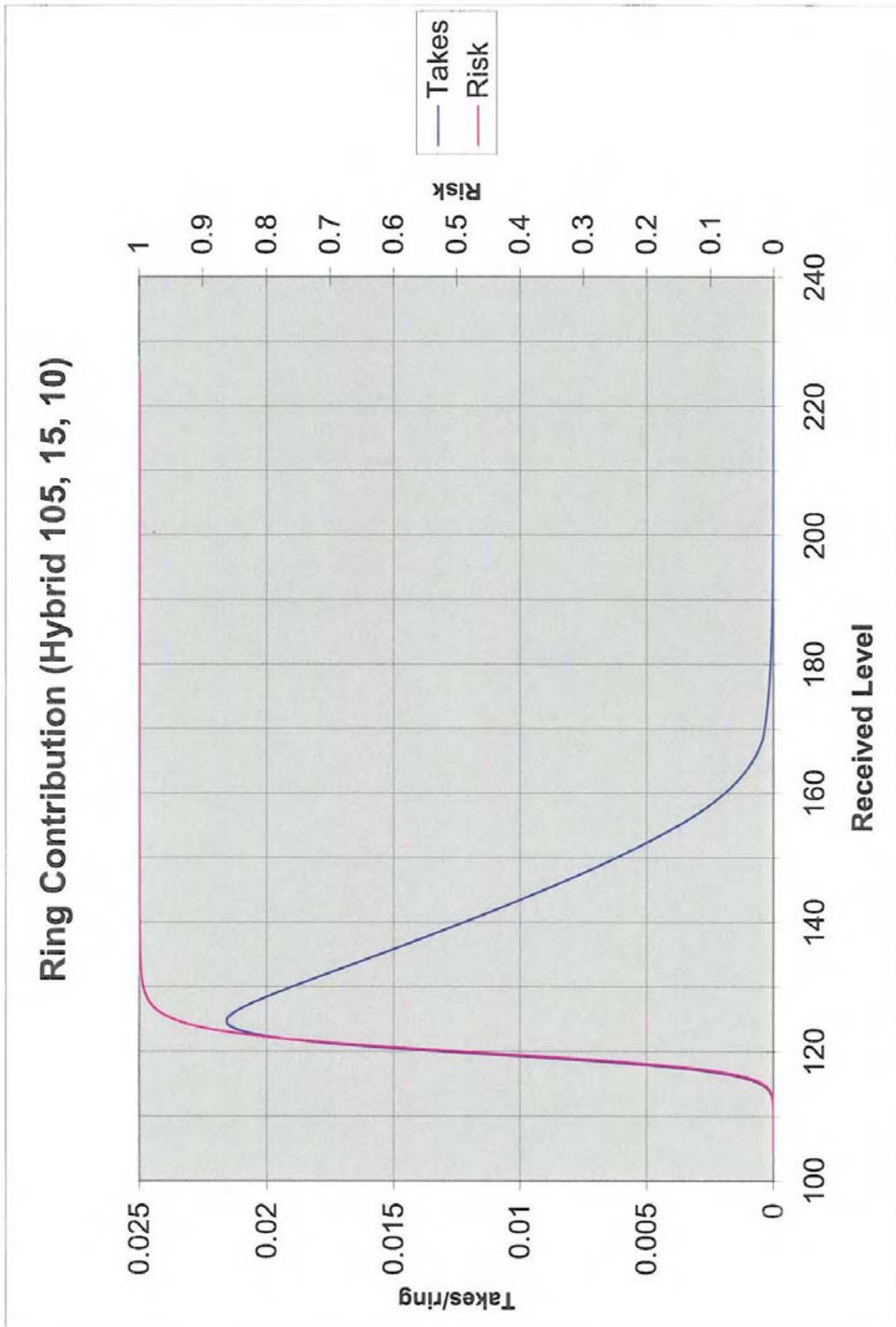
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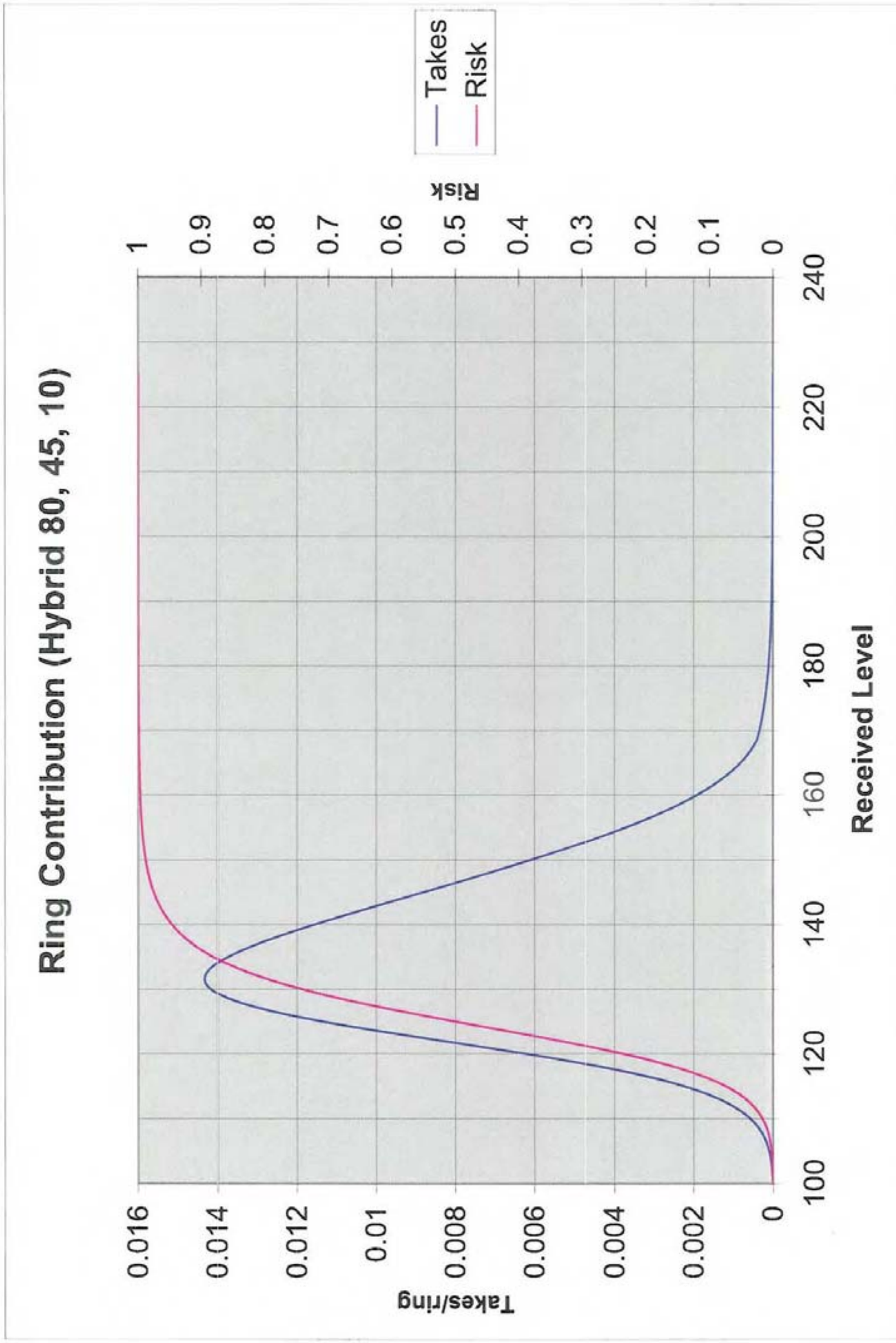
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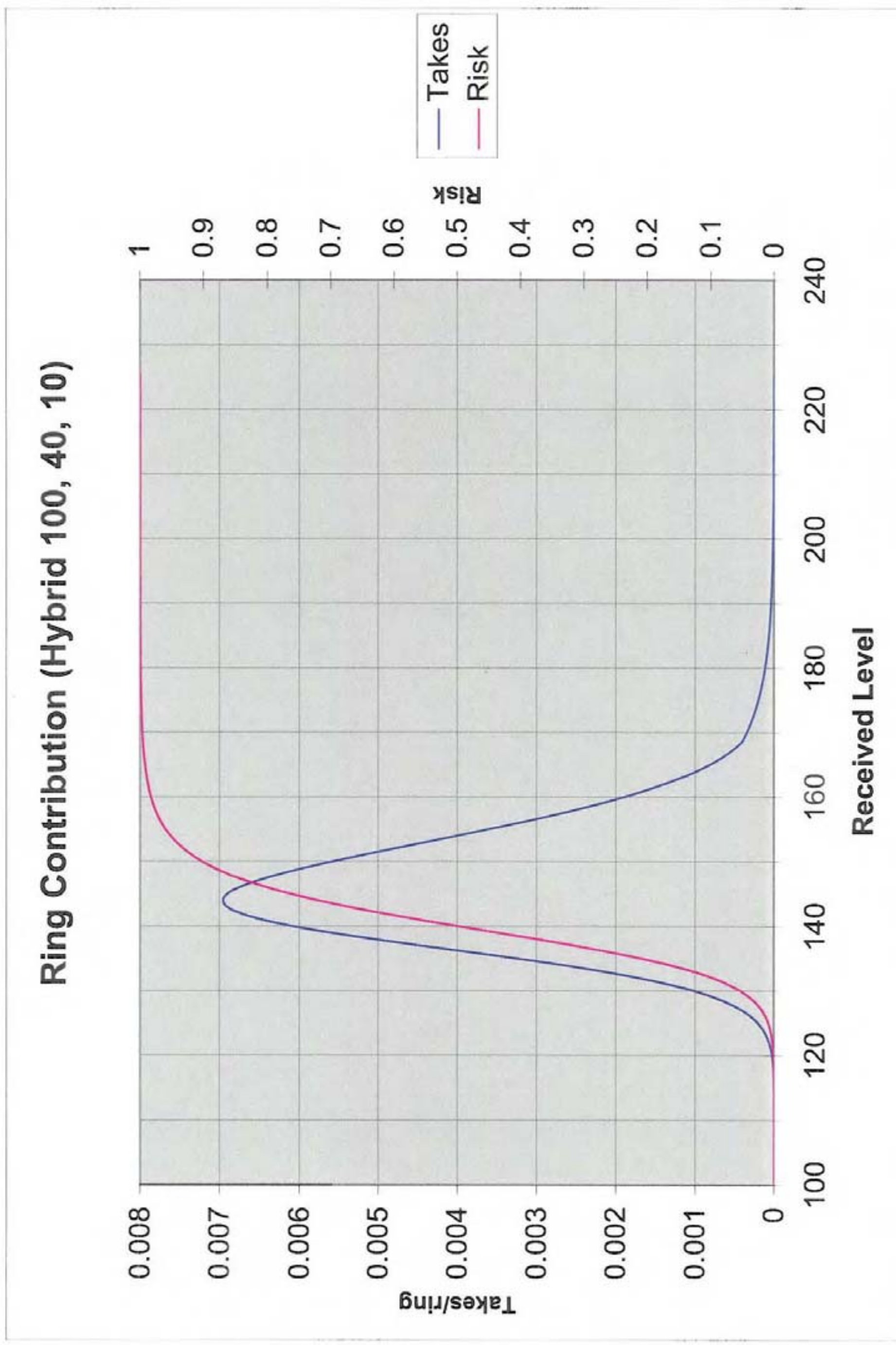
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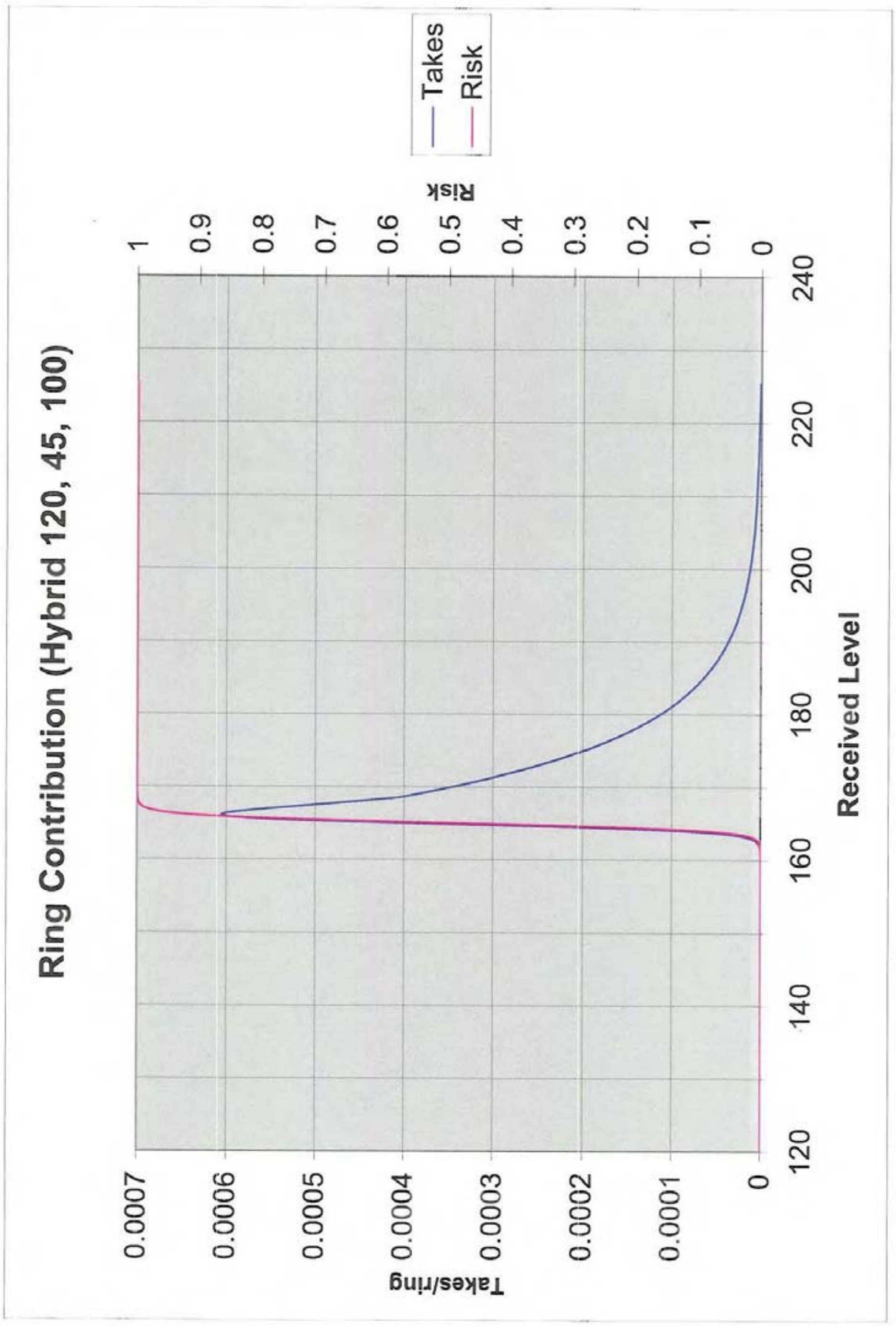
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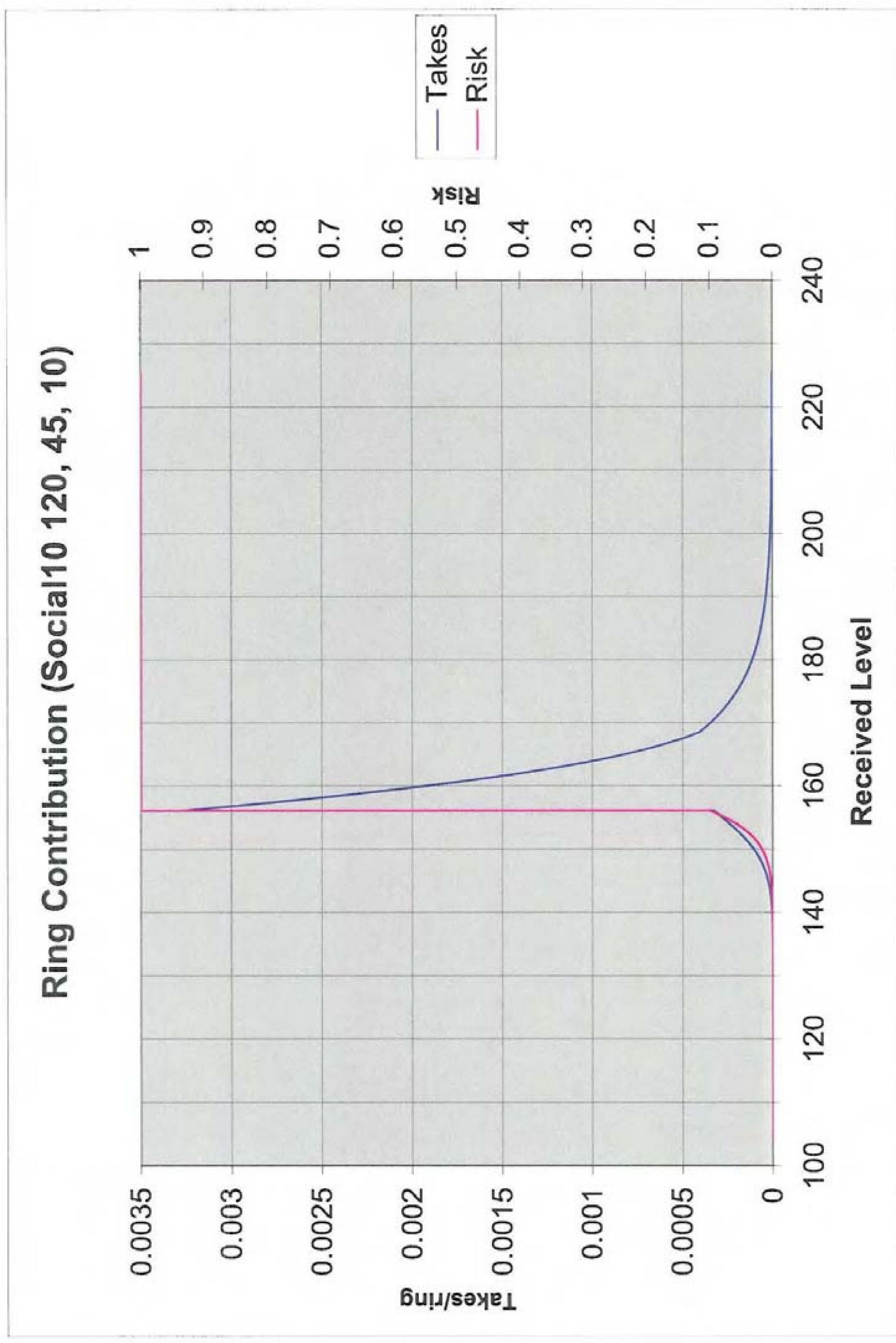
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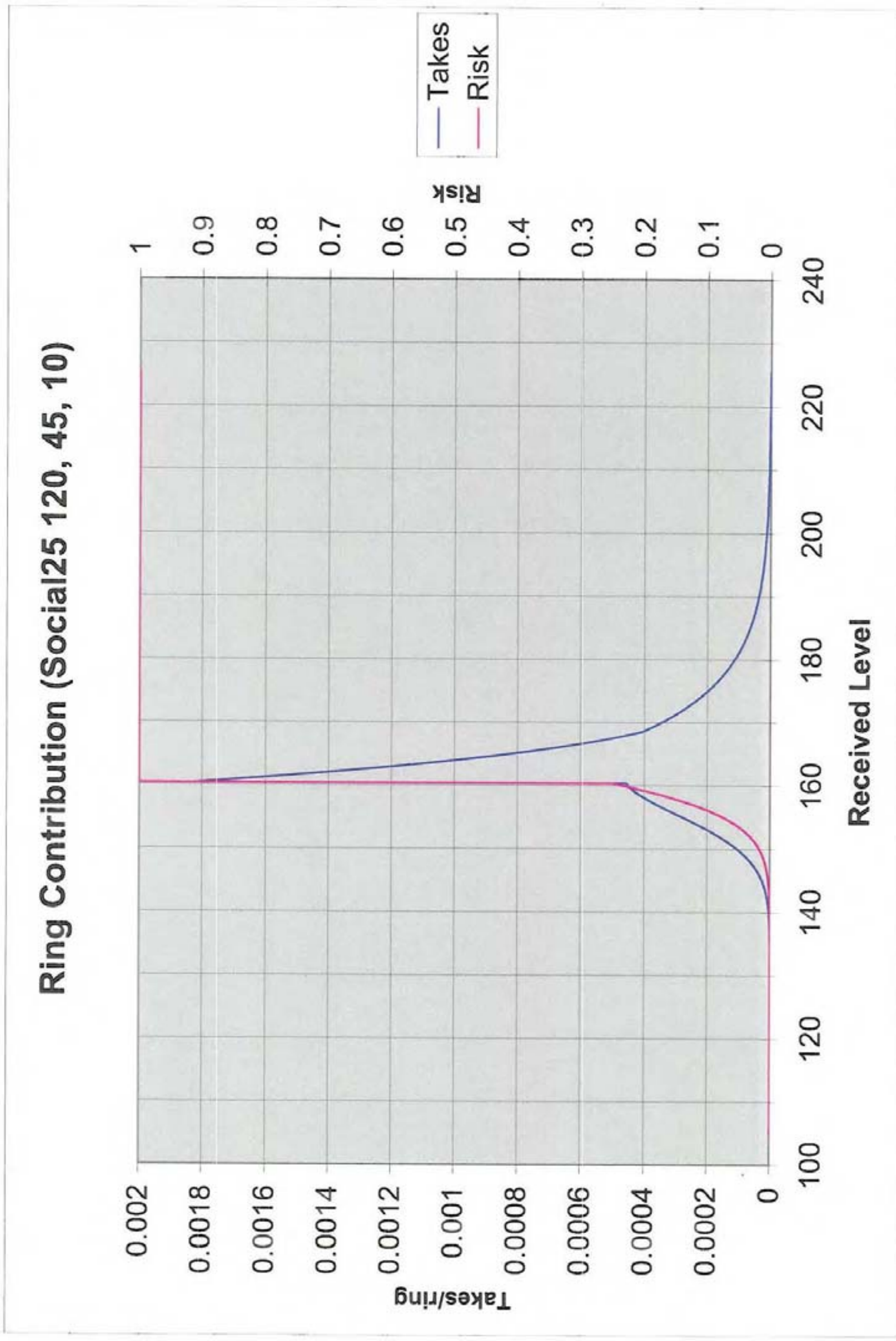
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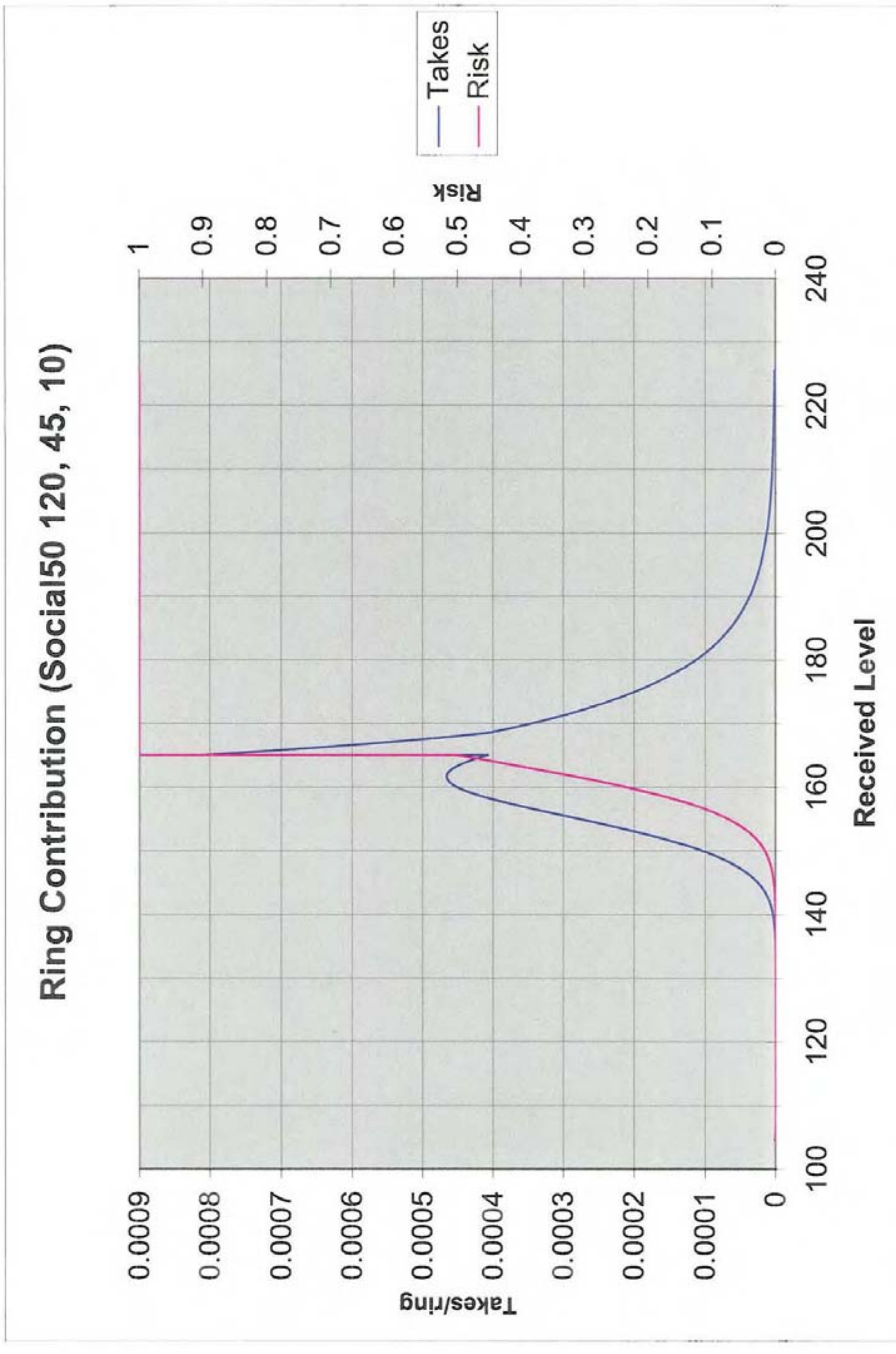
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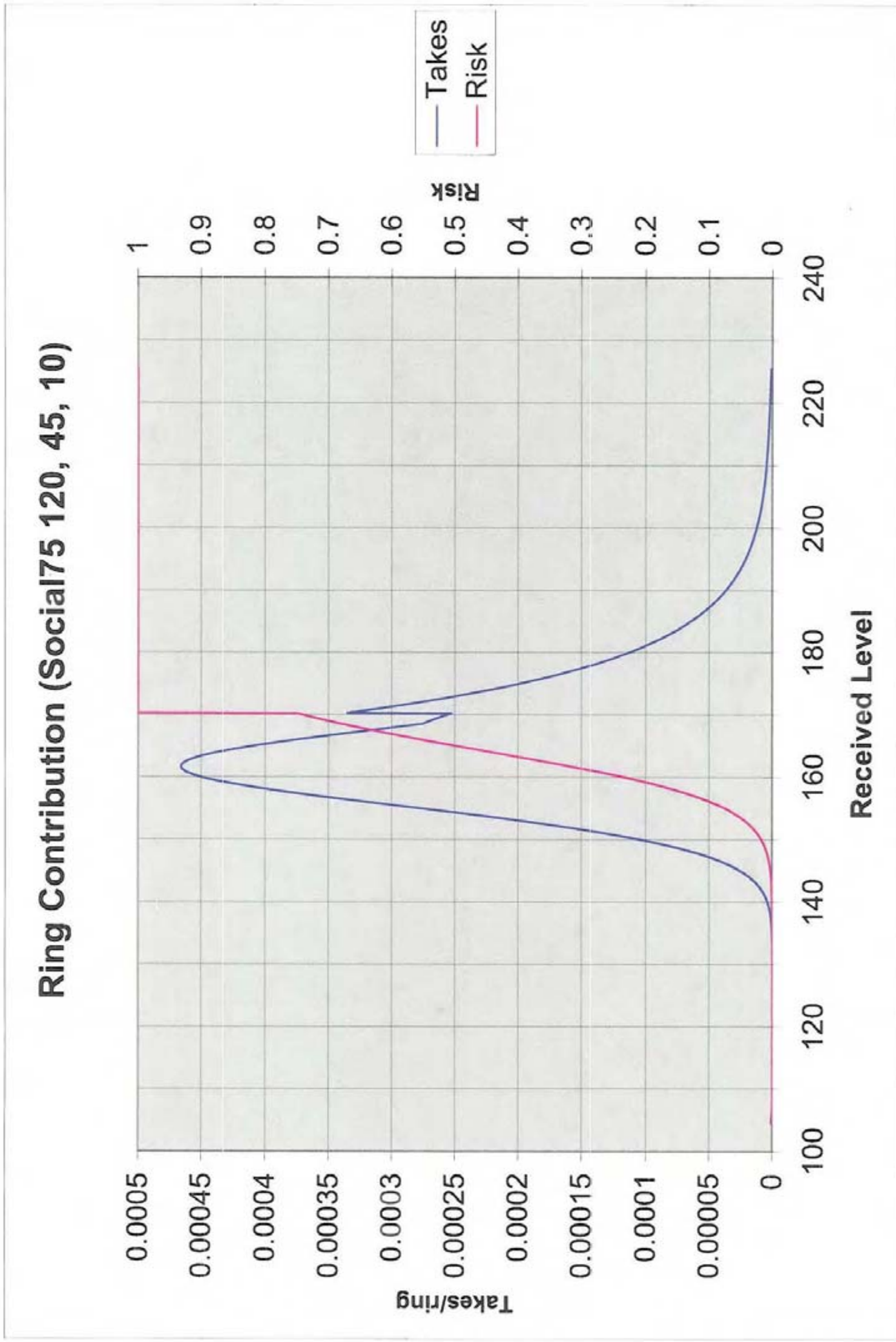
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I.1.29 OCEAN CONSERVATION RESEARCH - 1

OCEAN CONSERVATION RESEARCH

Science and technology serving the sea

Mrs. Amy Burt
Gulf of Alaska EIS/OIES Project Manager
Naval facilities Engineering Command Northwest
1101 Tautog Circle, Suite 203
Silverdale, WA
98315-1101

December 24, 2009

Ref: 5090 Ser N01CE1/1333

Re: Request for extension of public comment period.
Gulf of Alaska Navy Training Activities Draft EIS/OEIS

Dear Mrs. Burt,

We have just received this week (December 20, 2009) by US mail the Gulf of Alaska Navy Training Activities draft EIS/OEIS, with the enclosure letter dated December 4 2009. I can not attest to the reason for the late delivery as the envelope was not stamped with a postmark.

Nonetheless we believe that as was the case in the December 2005 issuance of the US Undersea Warfare Training Range (USWTR 70 Federal Register 62101-62103), the Gulf of Alaska Draft EIS/OEIS is far too lengthy and detailed, and far too important to have the public comment period constrained by a temporal conflict with the traditional American winter holidays.

Therefore we respectfully request that the public comment period for this document be extended an additional 10 business days from Jan. 25 to Feb. 8, 2010.

Extending the comment period would also be consistent with the extension given to the 2005 USWTR Draft EIS for much the same reason.

Additionally I am concerned that the public hearings are all limited to Alaska. While the proposed range is closest to that state, in is in both Federal and International waters and thus subject to the concerns of all US Citizens, not just Alaskans. We believe that asking concerned US citizens and marine stakeholders to travel to Alaska in the dead of winter poses an undue burden on those who do not live in Alaska, so we request that at least two public hearings be hosted in the lower 48 states, preferably in California and/or Washington DC. This would assure that a broad representation of citizens and

Box 559, Lagunitas, California 94938
V. 415.488.0553 F. 415.488.1725
www.OCR.org

stakeholders could become informed about the proposed training range, and provide comments for the record.

Thank you for your considering our request for an extension of the public comment period for the Gulf of Alaska Navy Training Activities Draft EIS/OEIS

Sincerely,

Michael Stocker
Director

Cc: Admiral Patrick M. Walsh
Commander
US Pacific Fleet
Department Of the Navy
250 Makalapa Drive
Pearl Harbor, Hawaii
96860-3131

2

I.1.30 OCEAN CONSERVATION RESEARCH - 2

OCEAN CONSERVATION RESEARCH

Science and technology serving the sea

Naval Facilities Engineering Command Northwest
Attn: Mrs. Amy Burt, Gulf of Alaska EIS/OEIS Project Manager
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

Re: 5090 Ser. N01CE1/1333 Comments on the Gulf of Alaska Navy Training Activities Environmental Impact Statement/Overseas Environmental Impact Statement

January 21, 2010

Cc: Dr. Jane Lubchenco, Director, NOAA
Nancy Sutley, Chair, Whitehouse Council on Environmental Quality
Hon. Barbara Boxer, US Senate, Chair of Environment and Public Works.

Dear Mrs. Burt,

We have taken the opportunity to review the Draft Environmental Impact Statement for the Gulf of Alaska Navy Training Activities (GOA-DEIS) Temporary Marine Activities Area (TMAA). While the document reflects much work and a comprehensive exploration into the possible impacts of the proposed additional uses of the GOA as required by the National Environmental Policy Act (NEPA), we believe that the GOA-DEIS leaves much to be desired if it is to be considered a guiding document for environmental stewardship.

This observation is made in particular light of the fact that despite our assumptions about the boundless ability of the ocean to absorb the assaults of human enterprise we are rapidly finding that the ocean is in very poor shape. This is a consequence of reckless resource extraction (which is not under the Navy's purview) and relentless dumping and pollution (which is). The fact is that in many of the more extreme cases, ocean environmental degradation has been a significant product of the militarization of ocean habitats.

We are seeing that the long term accumulation of toxics and "inert" trash is causing global scale problems with impacts on all marine biota. We are seeing the gradual and

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slow release of chemicals bio-accumulating and bio-concentrating throughout the entire food chain – including in humans, who consume the products of the ocean at the highest trophic levels.

Bio-accumulation and concentration of toxics had not been part of the models used when decisions were made to use the ocean as a chemical toilet. But now we know better. We also know that some chemicals once thought of as benign are having profound effects on biological function such as compromised reproductive health, mutation, carcinomas, and neurological damage in "parts per trillion" concentrations. Knowing this, it is unconscionable to continue to treat the ocean as a toxic waste dump.

While many of the toxic substances in the ocean are a product of civilian dumping and unintentional runoff from terrestrial as well as marine sources, a preponderance of terrestrial Superfund sites are due to reckless military hubris. There is no indication that the Navy has been any different in their stewardship of the sea. This is substantiated in our comments to the GOA-DEIS herein.

The GOA-DEIS largely concerns the addition of Anti-Submarine Warfare (ASW) activities currently not included in the existing training range and operations. As such the proposed operations will be introducing an acoustical systems component to the training range. This includes both the introduction of acoustical energy into the environment, as well as chemicals and other pollution from expendable materials, acoustical systems, and associated equipment. It also includes an extra component of underwater explosives – used for acoustical signals as well as for weapons ordnance.

I am limiting our comments to impacts on fish and marine mammals; and while the main focus of Ocean Conservation Research is the bio-acoustic impacts of human generated noise on the marine environment, I also include our concerns for chemical pollution in the training area. The models and assumptions used in the GOA-DEIS for chemical and toxics "mitigation" serve as a philosophical as well as a systematic model for noise pollution inasmuch as that while the jurisdiction and management of the training range fits within prescribed borders, acoustical energy and chemical pollutants, and their impacts on marine life and environment that would result from the proposed exercises are not so tidily constrained.

Symptomatic of this is that while the dumping of expended materials under "Alternative 1" and Alternative 2" is not increased within US territorial waters (which are subject to NEPA and other US environmental laws), there are substantial increases of expendables dumped in non-US Territorial waters (which are not subject to US environmental laws).

This situation clearly illustrates the effectiveness of NEPA in protecting US territorial waters, but is also shows the "avoidance relationship" that the US Navy has for NEPA and by extension other US environmental laws.

The overarching problem here is that while the jurisdictional boundaries of US environmental laws are clearly defined at 12 nm from the US Coast, energy and chemical pollutants and other destructive practices in the ocean are not subject to those boundaries. Animals impacted by reckless dumping practices, marine mammal acoustical "takes," damage to fish and fisheries food-stock (and habitat) are all trans-boundary problems in the ocean. And just because an animal or habitat is outside of US jurisdiction, it does not mean that the damage is any less grave than damage that occurs within US territorial waters.

The boundaries of our Federal laws are practically established as a consequence of the likelihood of enforcement, not as an expression of diminished impacts. If the US Navy is to uphold laws which express the priorities of the American People, the impact categories outlined in the various tables and "Environmental Consequences" statements in the GOA-DEIS[1] belie the Navy's stated concern to be "stewards of the sea."

It is within the context of the US Navy's responsible stewardship of the ocean – along with the understanding that the ocean is in terrible shape – that I submit the following comments and concerns for the proposed activities in the Gulf of Alaska Warfare Training Range.

Our overarching recommendation is the "No Action Alternative" and to not include ASW training exercises proposed in either Alternative 1 or Alternative 2 in the Gulf of Alaska Temporary Marine Activities Area (TMAA) for the following summary reasons:

- It is becoming increasingly and shockingly clear, the ocean is in precarious shape due to continuous and expanding insults of human enterprise and adventure. This must figure into all of our deliberations and practices that compromise ocean habitat.
- Of all ocean areas within US Territorial reach, the Gulf of Alaska is one of the least assaulted areas and should remain so.
- The US Navy has recently expanded Anti-submarine Warfare training areas in Atlantic (USWTR), the Northwest Warfare Training Range Complex, Hawaii Range

[1] The jurisdictional distinction is made throughout the GOA-DEIS as to whether the impact standards – and thus mitigation thresholds, adhere to NEPA (inside 12 nm) or Executive Order [EO] 12114 (outside of US Territorial waters).

Complex, and the Southern California Warfare Training Range Complex. Adding the Gulf of Alaska is not justified by any scarcity of other training areas.

- The chemical, toxic and "inert" pollution models used in the GOA-DEIS are over-simplistic and do not take into account current state of knowledge about accumulation and concentrations of chemical, toxic, and "inert" pollutant behavior throughout the entire ocean, and up and down the entire food chain – including humans.
- Insufficient data provided on the sonar characteristics and source levels so a complete assessment of the potential impacts presented in the DEIS are incomplete.
- The bio-acoustic impact models used in the GOA-DEIS are over-simplistic and do not represent wild animal impacts or behaviors and do not account for the agonistic qualities and characteristics of the various signals that would be introduced into the environment.
- Mid and high frequency sonar acoustic impact data on fish is lacking and does not justify the DEIS conclusion that impacts are "negligible or non-existent."
- The mortality "risk continuum" for fish due to explosives is inadequate and suspiciously biased to appear much more benign than it is.
- The conclusion in the DEIS section on fish admits that very little is known about the impacts of sonar on fish – which contradicts the summary table statement that "sonar used in Navy exercises would result in minimal harm to fish or EFH."
- The exposure risk models of marine mammals appear to contain many examples of "statistical manipulations of convenience" which erodes both the credibility of the models and the integrity of the entire GOA-DEIS.
- The model of bio-acoustic impact of explosives on marine mammals is over simplistic. It models the animals as "linear input devices" and does not account for synergistic effects of stress on the animal or the destruction of habitat and food sources.
- The issuance of the DEIS over the winter holidays – truncating the available comment period is cause for suspicions that the Navy is disingenuous about seeking public input on this cumbersome, comprehensive, but nonetheless inadequate document. This established a justifiable foundation of mistrust as we evaluated the document.

We have substantiated these assertions below. Given the limited time that was available for review we had to focus on the more obvious concerns. If we actually had the full 45 days required by NEPA not interrupted by holidays and obligatory year-end activities our comments would be much more comprehensive and informative. Nonetheless we were able to provide the forgoing, which more than adequately substantiates our recommendation that the "No Action Alterative" is the preferred alternative for the GOA-DEIS.

"Expended Materials"

While Ocean Conservation Research is focused on understanding and finding solutions to the impacts of human generated noise on marine life, we are compelled to comment on the chemical, toxics, and "inert" pollution from expended materials in the proposed DEIS. This is because, as indicated above, this dumping of chemicals in the ocean needs to be curtailed. The US Navy's continued disregard for the mounting biological evidence that chemicals are seriously impacting the global ocean is indicative of a larger hubris that plagues the entire GOA-DEIS.

This hubris is characteristically represented in the following comment from the Executive Summary section Table ES 3.1:

> "Outside of U.S. territory, air pollutant emissions would increase substantially, mainly from increased surface vessel and aircraft activities. • SINKEX would generate a substantial portion of the air pollutants that would be emitted under Alternative 2. • Although Alternative 2 would increase emissions of air pollutants over the No Action Alternative, emissions outside of U.S. territorial seas would not cause an air quality standard to be exceeded"

Believing that air pollution (in this case) or marine pollution respects US Territorial boundaries is particularly short sighted in light of what we know about air and ocean circulation patterns; especially in the GOA and arctic waters.

Also in Table ES-3: Summary of Effects: "Expended materials under Alternative 2 would not have a substantial effect on the marine environment." The phrase "substantial effect" needs to be more clearly defined, because the numbers and weights of materials expended annually (under preferred Alternative 2) provided in Table 3.2-18 and Table 3.2-19 indicate 10,000 lbs. of hazardous materials per year. Without even evaluating the toxicity of the specific materials, 10,000 lbs. per year is not insignificant.

Our current state of knowledge about the impacts of hazardous substances on marine life, and the effects of bio-concentration as hazardous materials move up the trophic levels do not constitute an inconsequential impact. Hazardous materials are not static; they are hazardous because they are dynamic. And just because a deposit of hazardous materials might be statistically hard to detect, we can assume that over time the accumulation of these materials in the environment will have negative impacts on marine life.

Additionally, framing the hazard in long time frames does not decrease the impacts. For example on page 3.2-12 we find "In instances where seawater corrodes the sonobuoy, that corrosion takes at least 40 years."

What will happen after 40 years? Will the ocean be somehow immune to the effects? And on page 3.2-23 "Most of these materials are relatively inert in the marine environment, and will degrade slowly." What does "relatively inert" mean?

Throughout the "Expended Materials" section we find the repeated use of the phrase "quickly dispersed by (or diluted by) ocean and tidal currents" troubling. It seems that the US Navy assumption is that once dispersed outside of the training range that the substances are no longer a problem. But we have found that chaff, plastics, and drifting chemical pollutants are a significant and growing global environmental problem because ocean currents end up pulling them into oceanic gyres where they end up in dangerous concentrations, polluting the food supply from the lowest trophic levels on up. While much of this has been accidental or incidental to global consumption, the US Navy deliberately adding to this mess – particularly with known military toxins is unconscionable.

Acoustic Impacts

While we know that the ocean is largely an acoustic environment, the understanding about role of acoustics across the vast array of marine animals is rudimentary at best. In some cases we have not been able to procure evidence that our noises have any impact at all, and in other cases we are baffled by the extreme impacts that human generated noise has wrought on marine life.

As we roll back the frontiers of our ignorance it will be wise to assume precaution. This would mandate that we gather as much evidence as possible and populate our models with the most accurate, concise, and up-to-date data as possible.

We are concerned about the impacts of the noise generated in the training range on marine animals both inside and outside of the training range. This includes impacts on migratory and resident marine mammals as well as migratory and resident fish - particularly fish with a high commercial value, including but not limited to salmon, halibut, herring, haddock, Pollack, and crab, the consequent impacts on the commercial fishery, and the consequent impacts on links in the regional food chain.

Noises of concern are the noises from explosive ordinance, mid-frequency sonar, sonar jamming signals, communication and surveillance sonar, and mechanical noises associated with warfare exercises such as engine noise, propeller cavitation, and through-hull transmitted mechanical noise.

One of our dominant systematic concerns expressed throughout this document is that a preponderance of audiometrics for fish and marine mammals are derived from laboratory test signals that have very little correlation to the exposure signals of concern – particularly the various acoustic communication and sonar signals.

This situation is exacerbated by the presentation of sonar systems in the DEIS Appendix H "Acoustic Systems Descriptions" section wherein the various acoustic systems were generally described and qualified in terms of their frequency bands (Low, Mid, and High frequency) but source levels were not provided, and in most cases there was no indication of signal qualities (e.g.: short "pings" or longer data-streams). Both exposure levels and signal qualities have bearing on the biological impacts so a complete assessment of the potential impacts presented in the DEIS are incomplete.

This is also the case with the Portable Undersea Training Range (PUTR) (section H.1.9) in terms of transponder frequencies, source levels, and signal characteristics.

Without knowing more about the signal characteristics of these devices it is impossible to derive and accurate impact model; to determine how different these signals are from the audiometric signals used to establish auditory thresholds in subject animals, or determine if there are acoustical characteristics of these signals that may be of greater concern than just their amplitude.

Seminal to this discussion is the assumption that all hearing animals have a need to discriminate pitch. While mammals, including marine mammals, have organs of pitch discrimination (the cochlea) it is not clear that any other animal family has a need to discriminate pitch. It is likely that other animals have acoustical perceptions tailored to their specific habitat priorities that do not include pitch discrimination.

Almost without exception, all audiograms taken of marine animals are a comparison of frequency and amplitude sensitivities. It is possible that in lieu of pitch and level perceptions, that many fish (or other marine animals) could be sensitive to other characteristics of acoustical energy; that in place of level or time-of arrival differences between sound receptors, these animals can distinguish phase differences between 'particle' and 'pressure gradient' acoustical energy. In this context, time-domain cues across these physical characteristics of acoustical energy are much more important than frequency or amplitude cues.

This could cut both ways in regards to the acceptable noise levels for fish in the subject environment: Up to the point where the acoustical mechanics of the noise in the environment and the acoustical compliance of the organism are in conflict with the noise levels, a particular fish may not even perceive the noise. This would explain why fish residing in extremely turbulent settings (like corvina or surf perch) can endure extreme, noise-saturated acoustical settings and still respond to subtle acoustical stimulus in their environment.[2] This could mean that very loud but distant noise sources might have much less impact on an animal than quieter but closer noises.

This is germane to the DEIS because the preponderance of audiograms and threshold shift procedures used to determine the acoustical sensitivities of fish in the cited studies[3] used either sinusoidal signals or band limited 'pink' noise[4]. While this statement doesn't answer many questions in regard to the impacts of the noise generated by the proposed TMAA project on various fish exposed to the noises of the program, it highlights the fact that the assumptions used to frame the impact models do not reflect the actual acoustical situation proposed in the program. This is particularly evident in the fact that some of the proposed acoustical signals will not be sinusoidal, rather some signals will include fast rise times and high "crest factors"[5] which are significantly different from sinusoidal signals.

This shortcoming can only be addressed by doing systematic testing on various fish using signals and levels that more closely match the signals proposed for the TMAA, especially the mid frequency communication sonars that overlap the known audiological response of the subject fish and contain either rich harmonic content, fast rise times, and crest factors at or above unity.

Using the actual sonar signals to determine acoustical thresholds would also clarify the impacts of the proposed signals on other marine biota, where again the preponderance of audiological or physiological impact data are taken from sinusoidal or 'pink noise' sources.

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[2] J. Engelmann, W. Hanke, J. Mogdans & H. Bleckmann "Neurobiology: Hydrodynamic stimuli and the fish lateral line" 2000 Nature 408, p.51-52

[3] The GOA-DEIS cites Scholik and Yan, 2002 and Wysocki and Ladich, 2005. These studies also evaluate three fresh water species: The goldfish (*Carassius auratus*) and the Rafael catfish *Platydoras costatus*) both live in still, turbid waters, (thus their particular acoustical adaptations), and the sunfish (*Lepomis gibbosus*), a clear water inhabitant. These animals are not good models for open ocean fish that live in a completely different acoustic habitat.

[4] Band limited "Pink Noise" is typically derived from Fourier Transfer derived Gaussian noise constructed from sine waves without any coherent time-domain component.

[5] Crest factor is the ration of peak to RMS value of a signal. Pure sinusoidal waves have a crest factor of .707; pure "square waves have a crest factor of 1; repetitive impulse sounds have a crest factor greater than 1.

Marine invertebrates have mechanoreceptors that are adapted to the sinusoidal motions of their environment. Sometimes these motions are relatively energetic (such as the acoustical energy generated by heavy currents and wave motions), so these animals may not be as affected by extreme sinusoidal energy. On the other hand, fast rise times or high crest factors used in some acoustical communication signals may exceed the acoustical compliance of the organism and damage it. These types of signals need to be explored with various marine invertebrates and plankton prior to excluding all of these animals from consideration of acoustic impacts in the GOA-DEIS.

Acoustic Impacts: Fish

In chapter 3.6 on fish, and most notably under section 3.6.2.2 Assessment Framework it is stated repeatedly that there are many data gaps in the literature on the impacts of noise on fish. The remark that "it is hard to extrapolate between species or conditions" is abundantly found throughout this section, substantiating the general position that there is a high level of uncertainty in the known impacts of noise on fish.

But the absence of data does not mean the absence of harm, and precautionary practices would dictate that some known statistical mean of harm would be used to set mitigation thresholds. What is done throughout this section ambiguates the probable impacts with biased metrics. For example the correlation of impulse impact mortality relative to body mass and charge size taken from Young's equations[6] were extrapolated into tables 3.6-4: "Range of Effects for at-Sea Explosions" and table 3.6-5: "Estimated Fish-Effects Ranges for Explosive Bombs" to indicate the distance at which 10% mortality would occur (also noted as "90% survival" in the DEIS.)[7]

This metric ambiguates the perspective that fish at or *outside* of the specified range have a 10% or greater survival rate. There is a mortality continuum from 10% - 100% mortality *inside* that range. So while for example only 10% of the fish greater than 30 lbs will be killed at 578 feet by a 500 lb. bomb, it is highly likely that the death rate will be significantly higher for smaller fish with the mortality continuum scaling down to only 10% at 1289 feet and beyond.

[6] Young, G.A.. 1991. Concise methods for predicting the effects of underwater explosions on marine life. Naval Surface Warfare Center, Dahlgren, Virginia.
[7] GOA-DEIS 3.6-31

The Young paper also only states short term or instant mortality. It does not evaluate intermediate and long term damage to the animals and their biological function that will kill them within days or weeks from the assault.[8]

The type of explosive is also not integrated into the metric. Rise times of explosives have a significant bearing on mortality.[9] Different explosives have varying impulse rise times[10] so without knowing what was used in the literature and what explosives are proposed in the GOA-DEIS this entire section along with the extrapolated metrics are meaningless.

The conclusion on the impacts of sonar on fish found in the DEIS on page 3.6-43 tidily sums it up: "the effects of sound on fish are largely unknown…There is a dearth of empirical information on the effects of exposure to sound, let alone sonar, for the vast majority of fish."

Given this admission (strengthened by the remaining text in the paragraph), the conclusion in table 3.6.10 "Because only a few species of fish may be able to hear the relatively higher frequencies of mid-frequency sonar, sonar used in Navy exercises would result in minimal harm to fish or EFH" contradicts the conclusion that 'we know nothing.' Either we know nothing, or we know that no harm will come from sonar exposure. Not both. Given that "we know nothing" supersedes the assumption that no harm will come from exposure, the former statement prevails.

We also do know that there are many fish that do hear well in the ranges covered by Mid-frequency and High frequency sonar[11] although currently there are no published exposure tests on these animals using MF and HF sonars. The auditory bandwidth sensitivity of these fish was probably a consequence of evolutionary pressure to hear the sounds of their main predators, the odontocetes – indicating that other odontocete prey may as well perceive and thus be impacted by Mid or High Frequency sonars.

An important element of certainty is missing from our understanding of fish responses to MF and HF sonar signals. The Popper 2008[12] report frequently cited in the DEIS refers to contract studies on the impacts of MF and HF sonars on fish, but the paper is only used to

[8] McCauley et al., High Intensity Anthropogenic Sound Damages Fish Ears, J. Acoust. Soc. Am. 113 (2003).
[9] Stocker, M "Examination and evaluation of the effects of fast rise-time signals on aquatic animals" J. Acoust. Soc. Am. 120, 3267 (2006)
[10] Fry, Donald H 1953 "Observations on the effect of black powder explosions on fish life." Calif. Fish and Game v.39:2
[11] Mann, D.A., D.M. Higgs, W.N. Tavolga, M.J. Souza, and A.N. Popper. 2001. "Ultrasound detection by clupeiform fishes." The Journal of the Acoustical Society of America 109: 3048-3054.
[12] Popper, A.N. 2008. Effects of Mid- and High-Frequency Sonars on Fish. Naval Undersea Warfare Center Division. Newport, Rhode Island. Contract N66604-07M-6056

cite known and published data about fish hearing. The impact data is not cited and the paper is a US Navy contract paper and has not been published in peer reviewed journals.

So what we are left with is data derived from audiograms taken of marine animals are a comparison of frequency and amplitude sensitivities using sinusoidal derived signals.[13] It is possible that in lieu of pitch and level perceptions, that many fish (or other marine animals) could be sensitive to other characteristics of acoustical energy; that in place of level or time-of arrival differences between sound receptors, these animals can distinguish phase differences between 'particle' and 'pressure gradient' acoustical energy. In this context, time-domain cues across these physical characteristics of acoustical energy are much more important than frequency or amplitude cues.

While this statement doesn't answer many questions in regard to the impacts of the noise generated by the proposed GOA training range operations on various fish exposed to the noises of the operations, it highlights the fact along with the "dearth of empirical information on the effects of exposure to sound, let alone sonar,"[14] that fish will be exposed to signals for which we have even less data and will include signals with fast rise times and high "crest factors"[15] which are significantly different from sinusoidal signals.

This shortcoming can only be addressed by doing systematic testing on various fish using signals and levels that more closely match the signals currently being used or developed for modern ASW operations, especially the mid frequency communication sonars that overlap the known audiological response of the subject fish and contain either rich harmonic content, fast rise times, and crest factors at or above unity.

Using the actual sonar signals to determine acoustical thresholds would also clarify the impacts of the proposed signals on other marine biota, where again the preponderance of audiological or physiological impact data are taken from sinusoidal or 'pink noise' sources. Marine invertebrates have mechanoreceptors that are adapted to the sinusoidal motions of their environment. Sometimes these motions are relatively energetic (such as the acoustical energy generated by heavy currents and wave motions), so these animals may not be as affected by extreme sinusoidal energy. On the other hand, fast rise times or high crest factors used in some acoustical communication signals may exceed the acoustical compliance of the organism and damage it. These types of signals need to be

[13] Most audiograms either use single frequency sinusoid signals or band limited "Pink Noise" which is typically derived from Fourier Transfer derived Gaussian noise constructed from sine waves without any coherent time-domain component. These signals are very unlike mid-frequency sonar signals.
[14] GOA-DEIS 3.6-43
[15] Crest factor is the ration of peak to RMS value of a signal. Pure sinusoidal waves have a crest factor of .707; pure "square waves have a crest factor of 1; repetitive impulse sounds have a crest factor greater than 1.

explored with various marine invertebrates and plankton prior to concluding that they are not impacted by loud, fast rise-time, high crest-factor sonar signals.

But in the absence of evidence clearly indicating harm, the GOA-DEIS takes the "let's see if anything floats up to the surface" approach – which has left our ocean in such bad shape already.

Acoustic Impacts: Marine Mammals

While the modeling of the impacts of acoustical exposure in section 3.8.7.2 "Acoustic Effects: Assessing Marine Mammal Responses to Sound" is extensive, detailed, and comprehensive, given the other quirky statistical models found throughout the entire GOS-DEIS (and the predictable history of biased mathematical and statistical models in prior Navy DEIS documents), frankly I worry when the Navy's statistical modelers are given so much text space to synthesize decades of scientific study into their own home-spun complex risk-continuum.

Symptoms of this are ambiguously presented in the opening gambit on Table 3.8-1[16] wherein the density of given species of concern are presented in a density metric of animals per km^2. While I understand the statistical value of having a distribution number that represents the probability of interactions within a prescribed data set, the fact of the matter is that there is no such thing as ".0019" of a Humpback whale, or even a ".1892 of a Dall's porpoise." And once the statistical arguments get to this point they are in their third derivation which indicates that they are being set up for a statistical model of convenience.

While we did review the models that use these metrics in Appendix D and at face value they appear to be based on reasonable assumptions, given some of the other biased and quirky models used in the Fish Impacts section we would need to run these models in a few scenarios to assure that they do yield cogent and credible results. For example the setting the cutoff extent of the integral to 120dB seems to be based on either excluding the harbor porpoise form the marine mammal response data set or modifying the harbor porpoise risk function to a "heaviside step function"[17] smells suspiciously like manipulations of statistical convenience.

Unfortunately given the truncated comment period on the GOA-DEIS due to the issuance of this over the traditional winter holidays we did not have as much time as would be required to review the entire architecture of the US Navy statistical arguments justifying their particular models. Suffice it to say that in addition to the forgoing comments, we suspect that there are clever manipulations afoot.

Of course none of these characterizations require a response under NEPA, but the following criticisms substantiate these claims.

[16] GOA-DEIS section 3.8-2 through 4.
[17] GOA-DEIS Appendix D-31, also Section 3.8-101

There are many questionable assumptions made in the GOA-DEIS regarding the actual levels of Temporary Threshold Shift (TTS) and Permanent Threshold Shift (PTS) in marine mammals. As inferred in the DEIS, PTS levels are on marine mammals are derived numerically and not actually known. This is because we have not intentionally subjected marine mammals to PTS levels (for compassionate reasons). I will review the PTS assumptions below, but the foundation of the PTS assumptions used in the DEIS are made from data derived from TTS studies. Furthermore, these studies have all been done on test-habituated animals, and in many cases these animals are quite old. Additionally, these studies include a level of assumptions that belie the actual data. For example a study featured in the GOA-DEIS by Finneran, Carder et al. (JASA 2005)[18] used mature (18-20 years) or old (38 – 40 years) animals that have been systematically exposed to noise studies for many years. The subjects have lived in a busy environment full of anthropogenic noise, so it is highly likely that they have been habituated to the test environment. It is clear that these animals do not represent different species of wild marine animals across a broader – and mostly younger – age range, in their own environment.

Model inaccuracies due to habituation in the instance of this study is compounded by the fact that the test animals may employ biological protections to prepare them for their tests – protections akin to the "wincing" that visual animals use to protect their eyes from damage. Terrestrial animals have a mechanism, like "wincing" in their middle ears that protect them from damaging sounds. This mechanism is a tightening of the tensor tympani muscles around the middle ear ossicles, protecting the hearing organ from physical damage.[19] While this mechanism is fast acting in response to "surprise" stimulus, once terrestrial animals are habituated to expect loud noise, the system is activated by the expectation. In humans the mechanism kicks in when noise levels reach 75dB SL (re: 20μPa) – about 10dB SL below where OSHA guidelines for TTS-level noise exposures occur in humans, and about 50dB SL below where PTS occurs.

The middle ear structure of marine mammals differs significantly from the middle ears of terrestrial animals. We are just learning about how environmental sounds are conveyed into the odontocete's inner ears. This mechanism seems to include the lipid channels in their lower jaws,[20] and the mobility of the bulla (the bone envelope that houses the

[18] James Finneran, Donald Carder, Carolyn Schlundt, Sam Ridgeway "Temporary threshold shift in bottlenose dolphins (*Tursiops Truncatus*) exposed to mid frequency tones." October 2005 J. Acoust. Soc. Am. 118(4) p.2696

[19] Pierre Buser and Michel Imbert "Audition" 1992. MIT Press. p. 110 - 112.

[20] Heather Koopman, Suzanne Budge, Darlene Ketten, Sara Iverson "The Influence of Phylogeny, Ontogeny and Topography on the Lipid Composition of the Mandibular Fats of Toothed Whales:

cochlea and semicircular canals). While this mechanism does include the same middle ear ossicles of terrestrial mammals, these bones in cetaceans can be rigidly attached to each other and connected differently (by way of ligaments) to the tympanic membrane.[21] While the ears of the odontocetes or mysticetes do not have the same tensor tympani found in terrestrial mammals, it is probable that these hearing specialist animals would have an analogous system to protect their inner ears from periodic or occasional sound levels that would otherwise damage their organs of hearing.[22] If this assumption is correct, then the "sound test" habituated dolphins would obviously yield much higher thresholds for TTS than their wild, un-habituated counterparts – given that they will always "prepare" for acoustical assaults when asked to perform in a given testing situation.

But even assuming that the legacy of TTS testing done on these test-habituated animals does accurately reflect the TTS levels for all wild, un-habituated animals, the data used to establish an "appropriate" TTS levels all show onset of TTS occurring between 185dB and 190dB (re: $1\mu Pa^2$-s).

In the DEIS these levels are presented on a chart that includes three different signal types;[23] impulsive signals representing distant explosions,[24] seismic airguns,[25] and tone bursts.[26]

This disparity in signal types is noted in the text, but with the exception of two cases of TTS as a consequence of seismic signals (one at 185dB re: $1\mu Pa^2$-s and the other at 190dB) the chart represents TTS as a consequence of pure tone bursts. (It was in this Schlunt et.al. study that the test-habituated beluga whale subject attacked the testing

Implications for Hearing" 2003 Paper delivered at the Environmental Consequences of Underwater Sound conference, May 2003.

[21] G.N. Solntseva, "The auditory organ of mammals"1995 p. 455 in "Sensory Systems of Aquatic Mammals' R.A. Kastelein, J.A. Thomas and P.E. Nachtigall eds. De Spil press.

[22] This system might involve thermo-regulating the viscosity, and thus the acoustical compliance of the lipids through regulating blood circulation around the organs -- thereby attenuating or accentuating acoustical transfer through the organ as needed.

[23] Not from Nachtigall et. Al. 2004 as stated in the DEIS. Additionally Chart 3.8.7 is mislabels "Existing TTS Data for Cetaceans when is should be labeled "Some TTS Data for Cetaceans." Many other peer reviewed TTS models exists that are not represented in the chart.

[24] Finneran, J.J., C.E. Schlundt, D.A. Carder, J.A. Clark, J.A. Young, J.B. Gaspin, and S.H. Ridgway. 2000. Auditory and behavioral responses of bottlenose dolphins (Tursiops truncatus) and a beluga whale (Delphinapterus leucas) to impulsive sounds resembling distant signatures of underwater explosions. Journal of the Acoustical Society of America. 108:417-431.

[25] Finneran, J.J., R. Dear, D.A. Carder, and S.H. Ridgway. 2002. Temporary shift in masked hearing thresholds in odontocetes after exposure to single underwater impulses from a seismic watergun. Journal of the Acoustical Society of America. 111:2929-2940.

[26] Schlundt, C.E., J.J. Finneran, D.A. Carder, and S.H. Ridgway. 2000. Temporary shift in masked hearing thresholds of bottlenose dolphins, Tursiops truncatus, and white whales, Delphinapterous leucas, after exposure to intense tones. Journal of the Acoustical Society of America. 107:3496-3508.

apparatus before the tests were complete). You might say that this illustrates that there is a physiological as well as a behavioral difference in impacts between the various signals rather than the conclusion that there is a clear threshold at 195dB as indicated in the DEIS.

Nonetheless the chart takes a "statistical mean" to justify raising the TTS level to 195dB.[27] This elevated level is justified in part by the statement: "Use of the minimum value would overestimate the amount of incidental harassment because many animals counted would not have experienced onset TTS."[28] This highlights one of my concerns; why do harassed animals need to experience onset of TTS? While it may be important to find the absolute value for onset of TTS in our model animal, the purpose here is to avoid harassing animals, not derive "statistical precision" on the exposure levels that will always produce TTS in test-habituated animals. For this reason the data should be used as found and as presented; that onset of TTS occurs in test-habituated animals at 185dB (re: $1\mu Pa^2$-s).

The statement in the DEIS that "The growth and recovery of TTS are analogous to those in land mammals. This means that, as in land mammals, cetacean [TTS] depend on the amplitude, duration, frequency content, and temporal pattern of the sound exposure"[29] is correct, but the DEIS-adapted assumptions used in the following bullet points in this section to build the argument omit the critical characteristics of "frequency content, and temporal pattern," ignoring the evidence that signal characteristics have a stronger bearing on TTS thresholds than amplitude.[30]

So the fundamental argument here is that as in the fish studies, none of the tests performed on marine mammals used to substantiate the Navy's impact and mitigation models used signals that simulated the actual sonar signals proposed in the GOA ASW activities.

Most papers cited for the DEIS used either sinusoidal tones or impulse noises. These signals do not elicit the same behavioral responses as more complex signals.[31] The test subjects of most papers cited for the DEIS were also older (over 30 years old), test-habituated animals that have been in captivity and used as test subjects for a large portion

[27] GOA-DEIS Section 3.8-87
[28] GOA-DEIS Section 3.8-92
[29] GOA-DEIS Section 3.8-87
[30] Roger P. Hamernik and Wei Qiu "Energy-independent factors influencing noise-induced hearing loss in the chinchilla model" J. Acoust. Soc. Am. 110 (6), December 2001
[31] R.A. Kastelien, D. Goodson, L. Lein, and D. de Haan. "The effects of acoustic alarms on Harbor Porpoise (*Phocena phocena*)" 1997 P.367-383 in A.J. Read, P.R. Wiepkema, and P.E. Nachigall eds. "The Biology of Harbor Porpoise" de Spil publishers, Woerned, The Netherlands.

of their lives.[32] The captive animals are accustomed to coming into a test area for their livelihood and while they provide TTS data for their specific physiology, they are poor stand-ins for a majority of marine mammals that will be impacted by the GOA proposal.

In terms of the range of impact relative to signal amplitude, Kastelein and Rippe studied younger animals (harbor porpoise *Phocena phocena*) [33] with more appropriate test signals yielded significantly different results than the assumptions made in the GOA-DEIS. These animals demonstrated an aversion to more complex signals in the frequency range of the proposed sonars and at 130dB re: 1μPa@1m. (Animals used in this study were recently taken into captivity and approximately 3 years old.)

While the signals used in this study were specifically designed to repel net-predatory marine mammals, the signals are closer in form to many communication sonars than to the sinusoidal waves or band limited pink noise used in the DEIS citations. Another study by Verboom and Kastelein indicates that more complex signals induce a discomfort threshold level for younger, less habituated marine mammals (*P. phocena* and harbor seal *Phoca vitulina*) at or below 133dB re:1μPa@1m.[34] This study extrapolates a TTS level for these animals at 150 dB(*w*) re:1μPa@1m for the harbor seal, and 137dB(*w*) re:1μPa@1m for the harbor porpoise. The paper also goes on to suggest that hearing injury – PTS, will occur in the Harbor seal and Harbor porpoise at 190dB and 180dB respectively – 50% to 500% less energy than the 195dB level that the GOA-DEIS presents as the thresholds for MMPA Level B harassment.

Like the estimated PTS levels used in the DEIS, the TTS figures from the Verboom and Kastelein (2005) study are extrapolations – extrapolating from behavioral responses to noise exposure of young, healthy marine mammals against known human auditory responses. The disparity between the TTS figures used by Verboom and Kastelein and the numbers used in the DEIS indicate a high degree of scientific uncertainty in the models and extrapolation methods used in both sets of assumptions. I am more inclined to accept the Verboom Kastelein numbers for three reasons: 1) they were not cited or crafted under the rubric of justifying a proposed program; 2) their studies were not funded by an agency whose desired actions would be limited by more precautionary

[32] e.g. J. J. Finneran, C. E. Schlundt, D. A. Carder, J. A. Clark, J. A. Young, J. B. Gaspin, S. H. Ridgway Auditory and behavioral responses of bottlenose dolphins (*Tursiops truncatus*) and a beluga whale (*Delphinapterus leucas*) to impulsive sounds resembling distant signatures of underwater explosions. J. Acoustical Soc. of America. V.108(1) July 2000.
[33] R.A, Kastelien, H.T. Rippe " The Effects of Acoustical Alarms on the Behavior of Harbor Porpoises (*Phocena phocena*) in a floating pen" Marine Mammal Science 16(1) p. 46 – 64. January 2000
[34] W.C. Verboom and R.A. Kastelein. "Some examples of marine mammal 'discomfort thresholds' in relation to man-made noise." June 22, 2005. Proceedings from the 2005 Undersea Defense Technology conference 2005, Sponsored by TNO, P.O. Box 96864, 2509 JG The Hague, The Netherlands.

results,[35] and 3) they are inherently more precautionary, in that they examine the thresholds of behavioral response, not the upper limits of physiological response.

Regarding the estimation of PTS onset relative to TTS levels used in the DEIS,[36] I find these data troubling as well. The linear regressions adapted from the W.D. Ward et al papers[37] cited in the DEIS were all taken from human subjects – highly visually adapted terrestrial mammals. Ward's research indicates a threshold of PTS by examining the maximum recoverable TTS in human and finds that humans can recover from a TTS of 50dB without permanently damaging their hearing. The Ward studies are "conservatively" tempered in the DEIS by incorporating a study of cats by Miller[38] that indicates that cat's threshold of PTS is at 40dB recoverable TTS.[39]

The cat is also a highly visually adapted terrestrial animal, though it is more dependent on aurality than humans.[40] One correlation can be deduced here is that animals that are more dependent of sound cues are less able to recover from extreme TTS. Thus if there is a 10 dB disparity in recovery levels between humans (50dB TTS) and cats (40dB TTS), it might easily follow that cetaceans who rely almost exclusively on acoustical cues would be even less likely to recover from extreme TTS and may indicate a PTS threshold at TTS level of 30dB. If we use this assumption, the onset of PTS in cetaceans may only be 15dB above the onset of TTS,[41] not the "conservative" 20dB modeled in the DEIS.

Given the forgoing, we might assume from the data presented in the DEIS that the onset of TTS occurs at 185dB re: $1\mu Pa^2$-s (as shown in the DEIS without incorporating the "statistical mean" tool), and that the onset of PTS could then be as low as 200dB re:$1\mu Pa^2$-s (taking the above assumption about recoverable TTS levels in highly

[35] Hal Whitehead and Linda Weilgart "Science and the management of underwater noise: Information gaps and polluter power." J. Acoust. Soc. Am., Vol. 110, No. 5, Pt. 2, November 2001 142nd Meeting: Acoustical Society of America.

[36] GOA-DEIS 3.8-88–92

[37] e.g.: Ward, W.D. "Recovery from high values of temporary threshold shift." J. Acoust. Soc/ Am., 1960. Vol. 32:497–500.

[38] Miller, J.D., C.S. Watson, and W.P. Covell. 1963. "Deafening effects of noise on the cat."Acta Oto-Laryngologica Supplement Vol. 176:1–91.

[39] The DEIS states further that "A variety of terrestrial mammal data sources point toward 40 dB as a reasonable estimate of the largest amount of TS that may be induced without PTS" though no citations are provided for this statement.

[40] Ralph E. Beitel "Acoustic pursuit of invisible moving targets by cats" JASA – 1996. Vol.105(6) p.3449 This paper indicates that cats will follow acoustic cues without needing to visually identify the cue, unlike humans, who will use an auditory cue to help localize a source of noise which they will then "look for."

[41] Using the same extrapolation and linear regression found in the DEIS and using 30dB TTS as the maximum recoverable TTS level: There is a 24 dB TS difference between onset-TTS (6 dB) and onset-PTS (30 dB).The additional exposure above onset-TTS that is required to reach PTS is therefore 24 dB divided by 1.6 dB/dB, or 15dB.

acoustically-adapted animals). While these revised numbers are "lower" than the proposed thresholds of TTS and PTS (suggested for all marine mammals), they are based on assumptions that are still of questionable validity, inasmuch as they are based on extrapolated models that meld terrestrial, highly visual animals with old, test-weary odontocetes. I feel that this methodology provides a poor stand-in for a diverse variety of wild marine mammals, in their own habitat, being subjected to extreme levels of noise that they are not biologically adapted to or trained to expect.

Regarding the DEIS section 3.8-92 "Criteria and Thresholds for Level B Harassment from Non-TTS:" The authors of this section state that there is no metric to determine the "annoyance" levels of non-verbal animals. I suggest that the subjective term "annoyance" be replaced with the more observable characteristic of "disturbance." Many papers on disturbance levels in marine mammals are available[42] and can be used in lieu of trying to find published papers on the subjective "annoyance levels."

The behavioral effects section 3.8-92 does mention that "…there are few observations and no controlled measurements of behavioral disruption of cetaceans caused by sound sources with frequencies, waveforms, durations, and repetition rates comparable to those employed by the tactical sonars to be used on the proposed TMAA." This statement is the first indication in the DEIS that the authors have identified that the paucity of data derived from exposing animals to actual sonar signals is a shortcoming of the analysis.

The "risk function adapted from Feller"[43] could prove to be a useful tool, but like any model, the output is only as good as the input. As such, any data using the trained and long-term habituated animals at the San Diego test facility must be categorically dismissed because the SCC animals have been treated as "biological input devices" and thus are a very poor analogy for wild animals. Surprisingly the conclusions in the DEIS reflect exactly the opposite conclusion, although some of the shortcomings are addressed (limited species range and the animals trained for TTS tests, not behavioral tests).

The data from the Haro Strait incident[44] should be tailored to reflect that the J-pod orcas were already being set upon by groups of whale-watching tour-boats (of which they must

[42] e.g.: John R. Buck, Peter L. Tyack "An avoidance behavior model for migrating whale populations" The Journal of the Acoustical Society of America. April 2003. Volume 113, Issue 4, p. 2326 wherein gray whale avoidance threshold of 135dB re: 1µPa was established. See also W.C. Verboom and R.A. Kastelein. "Some examples of marine mammal 'discomfort thresholds' in relation to man-made noise." June 22, 2005. Proceedings from the 2005 Undersea Defense Technology conference 2005, Sponsored by TNO, P.O. Box 96864, 2509 JG The Hague, The Netherlands.

[43] GOA-DEIS 3.8-94

[44] Fromm, D. 2004. "Acoustic Modeling Results of the Haro Strait For 5 May 2003." Naval Research Laboratory Report, Office of Naval Research, 30 January 2004.

be habituated) so there is a probability that their "disturbance" thresholds would have been elevated from their non-set-upon or wild habitat state. Thus the impact risk thresholds modeled with the risk function using the Haro Strait data should be weighted down by some amount. While this is reflected in the DEIS, any weighting factor would be arbitrary.

In the absence of empirical data some model must be used. The risk function is heading in the right direction, but with the limited input sources the weighting should favor a lower threshold than what unweighted inputs from Haro Strait and SCC inputs would yield. We believe that the Nowacek data[45] is the "cleanest" of all three, but as noted in the DEIS the alerting signals do not approximate MFA Sonar signals, although the relatively low behavioral threshold for mysticetes is supported by Di Iorio and Clark[46] in seismic sparker signals.

Meanwhile excluding the fairly comprehensive and robust harbor porpoise data from the input set, or modifying the same risk function curve used in the other three inputs is arbitrary. With the paucity of data – both in terms of studies as well as species, qualified data should not be excluded from the input data set, nor should any clean data be modified to accommodate for arbitrary considerations just because the data does not fit the desired outcome of the model.

The fact is that the years of Kastelein data on harbor porpoises more accurately represent the behavioral responses of near wild animals because 1) these animals are the most recently wild captive animals, 2) the testing done on these animals is done with signals more characteristically akin to MF and HF sonar, 3) the tests are focused on behavioral responses, not operant conditioning, and 4) the testing environments have been specifically designed or cited to eliminate high levels of background noise and specular reflections found in most training enclosures.

Additionally, tailoring the harbor porpoise data because they "inhabit shallow and coastal waters suggest[ing] a very low threshold level of response for both captive and wild animals"[47] flies in the face of glomming together mysticetes and odontocetes that do fit a convenient risk function. If the justification for melting together three disparate species under three disparate conditions is due to the paucity of behavioral data available, then

[45] Nowacek, D.P., M.P. Johnson, and P.L. Tyack. 2004. North Atlantic right whales (*Eubalaena glacialis*) ignore ships but respond to alerting stimuli. Proceedings of the Royal Society of London, Part B 271:227-231.
[46] Lucia Di Iorio and Christopher W. Clark "Exposure to seismic survey alters blue whale acoustic communication" Biol. Lett. 23 February 2010 vol. 6 no. 1 51-54
[47] GOA-DEIS 3.8-101

the Tyack et. al[48] controlled exposure work on beaked whales should not have been excluded from the data set. This is particularly the case since the exposure tests were funded by the US Office of Naval Research and included beaked whales – a species of particular concern. Perhaps the Tyack results were not included because they showed behavioral responses to signal Receive Levels as low as 117 dB (re: 1 μPa)?

In section 3.8-106, Table 3.8-7a "Approximate Distance to Effects for At-Sea Explosives in the Temporary Maritime Activities Area" the metric is not stated. Are these feet or meters? Without this data the table is meaningless.

Regarding the general topic of behavioral responses to explosions, it is extremely reductionist to assume that agonistic response linearly correlates to exposure level regardless of the signal source or characteristic. The DEIS assumes that the response value of an explosion is equivalent to the response value of other impulsive but natural sounds such as thunder or calving icebergs. I don't believe that it would be too anthropomorphic to assume the analogy to human response to explosions; and that our response to explosions in our own neighborhood, or even across town would definitely be different than our response to thunder.

The clear fact is that explosions from military ordnance have the acoustical signature of things being destroyed. Regardless of the collateral damage to animals and habitat, military explosions are a product of destruction. This plays into physiological impacts and behavioral responses, but also into psychological disruption, inducing stress and anxiety, compromising biological function. The DEIS fails to bring this into the discussion.

Additionally, despite the appearances presented in the inverted impact model used to examine the impacts of explosions on fish (evaluated in this document), explosions will cause fish mortality and habitat destruction which will in turn compromise food abundance for marine mammals. To what extent is not included in the DEIS analysis.

For the foregoing reasons we advise the "No Action Alternative" be used.

In the event that the US Navy sees to dismiss the foregoing arguments, or accommodates them to their best "practicable manner" and proceeds with Action Alternative 1 or Action Alternative 2, we advise the deployment of third-party (non military) aerial and marine observers to scan coastlines and littoral waters for marine mammal stranding incidents

[48] Tyack, P. et. al.. "Effects of sound on the behavior of toothed whales." J. Acoust. Soc. Am. Volume 123, Issue 5, pp. 2984-2984 (May 2008)

during the exercises. The GOA is sparsely populated with very long stretches of uninhabited coastline. Should some catastrophic impacts of the TMAA operations kill or maim marine mammals causing them to strand there is a high probability that the event would go unnoticed or unreported without an active, non-biased watch.

Sincerely,

Michael Stocker
Director

I.1.31 SUSAN PAYNE

Naval Facilities Engineering Command Northwest
Attn: Mrs. Amy Burt, Gulf of Alaska EIS/OEIS Project Manager
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

January 21, 2010

Dear Commander of the Navy and Ms. Burt,

Your Gulf of Alaska DEIS does not offer the NO Action option and does not provide any alternatives other than more of your action using LFA, which has been demonstrated to negatively impact marine life, outright death of marine mammals and the disruption of fish migration. As I have testified before, I am opposed to Navy activities that use active sonar and depleted uranium.

I propose that you change the dates of operations to more accurately reflect the conditions in which an attack on the US will likely occur, under the most severe conditions. This would be winter in the Gulf of Alaska. Your choice of summer in these proposed waters directly impacts migrating animals, many Endangered, and fishermen trying to make a living on fish such as salmon that only migrate shoreward at this time. Your assertion that you need support services leads me to conclude that this summertime mission is just a salmon and halibut charter opportunity for the Navy. You talk of realistic operations, then conduct your work in the winter.

Depleted Uranium and other toxics will enter the food chain and accumulate in the tissues of marine mammals and commercially important fish species. We have spent millions of dollars and years trying to sell the purity of our fisheries. You in your actions on some of the most productive fisheries habitat in the world will contribute to the demise of our fish quality and our markets. The cumulative effect of toxics on marine mammals will lead to deaths that cannot be quantified and attributed to your actions. How will you mitigate these impacts?

Finally, the Navy should conduct themselves under the same regulations that the general public must, the Endangered Species Act, the Marine Mammal Protection Act, and all other rules of the Land. Since your draft only allows for the continuance of these activities, then limit them to only the necessary, and locate and time them to impact the fewest.

Sincerely,
Susan Payne
Susan Payne
Kodiak, AK 99615

Ps.

Your online comment form did not allow the paste function. This is not friendly to the public wishing to comment online as it requires us to retype our entire letter.

I.1.32 ANDREA PETERSON

United States Navy
Public Hearing Comment Form
Gulf of Alaska Navy Training Activities
Draft Environmental Impact Statement/
Overseas Environmental Impact Statement

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2) Submitting your comments via the project Web site at **www.GulfofAlaskaNavyEIS.com**
3) Mailing this form to:
Naval Facilities Engineering Command Northwest
ATTN: Mrs. Amy Burt - Gulf of Alaska EIS/OEIS Project Manager
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

☐ *Please check the box if you would like to receive a CD copy of the Final EIS/OEIS. Provide your mailing address below.*

All comments must be received or postmarked no later than January 25, 2010, to be considered in the Final EIS/OEIS.

Name: Andrea C Peterson
Organization/Affiliation: self
Address:* 9338 Northland St.
City, State, Zip Code: Juneau, AK 99801
Comments: My concern is that you are planning this testing at the height of our Alaskan summer in the nutrient rich waters of the Gulf of Alaska. Marine Mammal numbers are at their highest then because they are drawn to these waters to feed. I also know you will not be able to guarantee there are no marine mammals in the area being tested.

Stellar sea lions and many of our whales are endangered. I'm not willing to sacrafice any of them to Naval/Airforce Testing.

Please find a spot without the rich environment, over →

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*Provide your mailing address to receive future notices about the Gulf of Alaska Navy Training Activities EIS/OEIS.

ocean life and procimity to shore. This seems to be one of the worst sights and seasons possible.

Whales are most active in Alaskan waters from mid April through October, and we always have some whales in our waters year round.

I'm not sure what the answer is, but testing under these conditions will be damaging to our environment and ocean creatures.

I.1.33 MIKE PETERSON

United States Navy

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   1101 Tautog Circle, Suite 203
   Silverdale, WA 98315-1101

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Name: Mike Peterson - Mike Peterson 1-20-2010

Organization/Affiliation: Self

Address:* P.O. Box 240913

City, State, Zip Code: Douglas, AK 99824

Comments: Like many in the State of Alaska, I am concerned about the effects of sonar to the sealife within the Gulf.

As a Vietnam Veteran I remain distrustful of military motives in peaceful waters.

I would advocate for a 60 day period of observation, after the exercises, to document any and all damage that may have resulted from any testing to the marine life of the Gulf - within the boundries as set forth by the U.S. Navy for the purpose of this training.

All documented material would be turned over to State DNR, Secretary of the Interior, Dept. of Alaska Fish + Game Governor's office, and local newspaper in Anchorage, Juneau, Kodiak, Seward + Dutch Harbor.

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*Provide your mailing address to receive future notices about the Gulf of Alaska Navy Training Activities EIS/OEIS.

I.1.34 CAROLYN RAMSEY

P.O. Box 190562
Anchorage, Alaska 99519
19 October 2010

Amy Burt, Environmental Planner
Naval Facilities Engineering Command Northwest
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

Dear Ms. Burt,

I am writing to you as a concerned citizen and resident of Anchorage, Alaska. This letter addresses a few of my concerns about the *Gulf of Alaska Navy Training Activities Draft EIS/OEIS.* I understand that the U.S. Navy has "identified the need to support and conduct current, emerging, and future training activities". I understand that the the men and women in our United States Military require such training so that they can be prepared for any and all situations that may arise. This training however needs to remain at the No Action Alternative. The other option would be for the U.S. Navy to find another location away from the vast marine and endangered species that inhabit our Alaskan waters.

As noted in the Draft EIS/OEIS Appendix F page F-18 "Animals in or near an intense noise source can die from profound injuries related to shock wave or blast effects." Alaska Department of Fish and Game has developed blasting standards that say "no person may discharge an explosive that produces or is likely to produce an instantaneous pressure change greater than 2.7 pounds per square inch in the swim bladder of a fish". Considering salmon, whales and other various marine species either are fish or rely on these fish. The risk to our Alaskan food chain is unacceptable under the Alternative 1 and Alternative 2 proposals. Alaska's economy is based in natural resources and the seafood industry is its third most important natural resource. The No Action Alternative is the only option.

As noted in the Draft EIS/OEIS Appendix F page F-18 "Acoustic exposures have been demonstrated to kill marine mammals and result in physical trauma, and injury (Ketten 2005)." Mass stranding of beaked whales and porpoise have been reported in association with the use of active sonar. The disorientation and unusual behavior patterns in whales, porpoise, and many other various marine mammals have been reported in association with the use of active sonar. With the vast marine and endangered species that inhabit the Gulf of Alaska the use of active sonar in any degree is unacceptable. The No Action Alternative is the only option.

The temperatures of the Gulf of Alaska range from approximately 40 - 50 degrees, due to these cold temperatures it will take the expended ordinances hazards material much longer to degrade and dissipate therefore placing the marine ecosystem in the Gulf of Alaska in even greater danger for an even longer period of time. Again this is another reason Alternative 1 and Alternative 2 are unacceptable. The No Action Alternative is the only option.

I suggest that the U.S. Navy continue its development of interactive computer simulation software and hardware that can be used to train its sonar technicians. This will assist in limiting the damage done to the earths marine life. Mankind has been doing irrefutable damage to our earth and the life that inhabits it for many years. The damage to the ecosystem is growing each and every day. While I understand the United States Navy needs to train its personal, the risk of further damage to Alaska's fragile marine environment must be kept at a minimum. This is why the No Action Alternative is the only acceptable option.

Respectfully

Carolyn Ramsey

I.1.35 CARL RANNEY

United States Navy
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ATTN: Mrs. Amy Burt - Gulf of Alaska EIS/OEIS Project Manager
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

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All comments must be received or postmarked no later than January 25, 2010, to be considered in the Final EIS/OEIS.

Name: Carl L. Ranney
Organization/Affiliation: self
Address:* P.O. Box 2105
City, State, Zip Code: Cordova, AK 99574
Comments: I think that the sheling in the gulf wount have any major afects on the wildlife. In fact I think that the fragments from the destroyed ship if it lands on flat sea bed will aculy previd fish habatat.

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I.1.36 KRIS RANNEY

United States Navy

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   ATTN: Mrs. Amy Burt - Gulf of Alaska EIS/OEIS Project Manager
   1101 Tautog Circle, Suite 203
   Silverdale, WA 98315-1101

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All comments must be received or postmarked no later than January 25, 2010, to be considered in the Final EIS/OEIS.

Name: Kris Ranney

Organization/Affiliation: Boy Scouts

Address:* P.O. Box 2105

City, State, Zip Code: Cordova, AK, 99574

Comments: I was wondering if the sinking of ships in the Gulf would afect the Helibut population there. As far as I know the area where you will sink ships is also home to this deep water fish speces, most leave for the warmer shalow-waters closer to shore in the summer but the larger fish do not come as close, some may stay over the shelf. It takes 25 years for one of these fish to grow over 100 pounds, if you hit and killed a 600 pound fish it would take hundreds of years to replace!

Visit www.GulfofAlaskaNavyEIS.com for project information.

*Provide your mailing address to receive future notices about the Gulf of Alaska Navy Training Activities EIS/OEIS.

I.1.37 LIBBY RIDDLES

Libby Riddles
Blazing Kennels
PO Box 15253
Fritz Creek, AK 99603
907-235-2997
lriddles@alaska.net

TO:Naval Facilities Engineering Command Northwest
ATTN: Mrs. Amy Burt -Gulf of Alaska EIS/OEIS project Manager
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

Dear Mrs Burt,

I urge you to reconsider doing especially sonar testing in the Gulf of Alaska between Prince William Sound and Kodiak and also in the Seward area.

Our ocean wildlife takes enough of a hit between the occaisional oil spills, the over-fishing, the acidification of the ocean, and other factors. Adding unreasonable risks to animals like sea lions, whales, seals, sea otters and other marine wildlife including the fish just doesn't make any sense. Sonar has been proven to be very stressful to mammals that use it for navigation especially, making them prone to beaching and other health issues we are just beginning to understand.We depend on these animals for subsistence, and also for the tourist trade, and they deserve to exist in their own right without unnessecary harassament.

Please reconsider doing your practise sessions in areas that are not so sensitive to ocean wildlife, and the people that depend on them. Explosives and sinking ships in this area seems like a really bad idea as well, for the same reasons.

Thank you for your consideration,

Libby Riddles
Iditarod Champion
Alaska Resident since 1973

I.1.38 RICHARD STEINER

United States Navy

Public Hearing Comment Form

Gulf of Alaska Navy Training Activities
Draft Environmental Impact Statement/
Overseas Environmental Impact Statement

Please record your comments on this form to let the U.S. Navy know what concerns and comments you have on the Gulf of Alaska Navy Training Activities Draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). You may submit your comments by:

1) Depositing this form at the Comment Table before you leave tonight.
2) Submitting your comments via the project Web site at **www.GulfofAlaskaNavyEIS.com**
3) Mailing this form to:
   Naval Facilities Engineering Command Northwest
   ATTN: Mrs. Amy Burt - Gulf of Alaska EIS/OEIS Project Manager
   1101 Tautog Circle, Suite 203
   Silverdale, WA 98315-1101

☐ *Please check the box if you would like to receive a CD copy of the Final EIS/OEIS. Provide your mailing address below.*

All comments must be received or postmarked no later than January 25, 2010, to be considered in the Final EIS/OEIS.

Name: Richard Steiner
Organization/Affiliation: Professor, University of Alaska Marine Advisory Program
Address:* 2221 E. Northern Lts. Blvd. #118
City, State, Zip Code: Anchorage, AK, 99508
Comments:

I strongly recommend that the exercises be re-located farther offshore, to minimize impact to the shelf ecosystem.
At a minimum, no potentially impactful activities should be conducted over or near the continental slope or shelf (shallower than 1000 Fm or 2000 m depth). As well, all activities should be conducted only from October - February to minimize impacts on seasonal migrant marine mammals + birds.
over please →

Visit www.GulfofAlaskaNavyEIS.com for project information.

*Provide your mailing address to receive future notices about the Gulf of Alaska Navy Training Activities EIS/OEIS.

I recommend that any such exercise be conducted outside of 200 n miles from shore, and only in winter, thereby minimizing impact on seasonal resources.

As well, independent marine mammal observers need to be included to clear the safety zone a large zone needs established (at least to verify no harmful exposure to noise) and no exercises should be conducted

I.1.39 STACY STUDEBAKER

Mrs. Amy Burt
Gulf of Alaska Gulf of Alaska EIS/OIES Project Manager
Naval Facility Engineering Command Northwest
1101 Tautog Circle
Silverdale, WA 98315-1101

Dear Mrs. Burt, 1/22/10

Navy Needs Better Data

The Navy visited Kodiak on Jan. 7 to brief the community on its proposed increase of training activities in the Gulf of Alaska (GOA) Temporary Maritime Activity Area (TMAA) which encompasses 42,146-square nautical miles just to the north of Kodiak Island. What least impressed me about the meeting was the Navy's arrogance and the lack of data in its presentation. I'm all for the readiness of our military, but not at the expense of vast amounts of marine life and the health of our immediate ocean environment upon which our community makes its living.

With our ocean's health and its ability to sustain life already compromised from so many other factors, the cumulative impacts, which you barely address, of these training activities in our area may cause irreparable harm to ocean life and losses to our local economy.

At the meeting the Navy discussed the 900-page Draft Environmental Impact Statement that it has been preparing for the last two years. It is now being circulated for public review. The EIS was boiled down to a few information bullets on posters stating nothing the Navy is planning to do in its exercises in the GOA would have any significant impacts on the environment! Any data upon which the Navy could make such unscientific claims were absent on the posters or in the presentation and woefully inadequate in the 900 page document.

The Navy's proposed training activities in the GOA would pose significant risk to whales, fish, and marine birds that depend on the area for breeding, feeding, navigating, and avoiding predators, in short, for their survival. Many exercises would employ mid-frequency active sonar, used to locate submarines, which has been implicated in mass injuries and mortalities of whales around the globe. The same technology is known to affect marine mammals in countless other ways, including inducing panic responses, displacing animals and disrupting crucial behavior such as foraging.

The Navy estimates its sonar training exercises in the GOA from its Preferred Alternative (Alternative 2) will result in more than 425,000 marine mammal "takes" (behavioral impacts, harassment, injury and death) every year. That's more than 2.125 million takes during the course of the Marine Mammal Protection Act permit it must seek from National Oceanic and Atmospheric Administration. Those numbers don't even account for the animals that die as a result of your experiments and quickly sink to the bottom. How can the Navy claim a FONSI on marine mammals when you are applying for such a permit?

In all, the Navy expects to "take" more than 20 different species of marine mammals, including seven endangered species, in the GOA. Beaked whales are barely mentioned because very little is known about them or their habitats. There may be many species of these small whales in the GOA. They dwell in deeper waters in trenches where they feed on squid and are very vulnerable to sonar because of the natural amplification and concentration of sound in marine canyons. Since they can stay underwater for up to 2 hours, it is impossible to mitigate harm to them with visual monitoring from the deck of a ship. They are among the most vulnerable and you have barely mentioned them.

The Navy's expanded training activities in the GOA also would affect fisheries and essential fish habitat, damage hard bottom habitat, and release into coastal waters a variety of hazardous materials such as spent rounds of ammunition and unexploded ordnance containing chromium, chromium compounds, depleted uranium and other hazardous materials. The report estimates an extraordinary amount of spent material will result from Preferred Alternative (Alternative 2) including a large increase in the weight of expended materials (352,000 pounds) and 10,300 pounds of hazardous material. That does not include entire ships the Navy plans to sink as part of its exercises. No data were presented on the impacts of sonar on fish and in particular, schools of salmon that swim directly through the test area.

Nearly all of the mitigation measures the Navy has proposed for the GOA concern the operation of a small "safety zone" around the sonar ship. Yet it is widely agreed in the scientific community that this measure is inadequate given the far-reaching effects of Navy sonar and the difficulty of spotting marine mammals from fast-moving vessels by a few people standing on the deck with binoculars. Most fishermen would agree that it is impossible, even under the best conditions in the open ocean, to spot anything on the surface of the ocean.

The Navy is not planning to establish any protection areas in the GOA, despite the broad recognition that geographic protection zones are the most effective available means to mitigate sonar's impacts on marine wildlife.

For example, no protection areas are proposed for harbor and Dall's porpoises, which are acutely sensitive to sound; for endangered gray whales, which migrate directly through the TMAA; for endangered humpback whales, sei and blue whales, which gather to feed in the TMAA; or for the critically endangered short-tailed albatross or North Pacific right whales, whose critical habitat is directly adjacent to the TMAA.

The Navy underestimates the number of marine mammals, fish and birds that will be harassed, injured and killed because it simply does not have the density estimates needed in order to accurately make this determination.

The National Environmental Policy Act (NEPA) specifically requires federal agencies to obtain the data necessary to their analysis. Here, the Navy failed to obtain data that is essential to its analysis. In addition, there are simply no reliable estimates for current or historical abundance numbers for many of the affected marine mammals in the GOA. How can you claim "Finding of No Significant Impact" when you don't even know what's there?

The Navy does not attempt to address the effects of sonar and contaminants on plankton, the very base of our marine food chain and only briefly addresses the cumulative impacts on the marine ecosystem.

The Navy's alternative analysis also is inadequate. The Navy only presents three options; No Action Alternative — maintaining the present levels of training without sonar, Alternative (1) — add more training with sonar, or Alternative (2) — add even more intensive training with a lot more sonar. It does not consider any other alternatives, some employed by the Navy itself in other training exercises and ranges.

Finally, and most critically, the Navy does not offer adequate measures to mitigate the harmful effects of sonar. Its proposed mitigation measures basically boil down to "safety zones" (1,000 yard power-down and 200 yard shut down) around the sonar maintained primarily by on-board visual monitors. These are the same measures that federal courts have found to be "woefully inadequate and ineffectual." For instance, studies show that visual monitoring only spots about 5 percent of marine mammals. Statistically, a 5 percent "success" rate clearly does not cut it.

In conclusion, there is no scientific basis for the claims you make that nothing you are proposing to do in your test area, and in our back yard, will have any significant impacts on marine life. You are coming to Alaska to test this deadly technology because you have been legally blocked from doing so in other states and your assumption is that you can get away with it here because of our small, scattered population that won't put up much of a fuss. Please don't do any more harm to our ocean and adopt the No Action Alternative.

Sincerely,
Stacy Studebaker

Stacy Studebaker is a biologist, a 30-year Kodiak resident and coordinator of The Kodiak Gray Whale Project.

I.1.40 SUZANNE TORIAN

United States Navy

Public Hearing Comment Form

Gulf of Alaska Navy Training Activities
Draft Environmental Impact Statement/
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   Naval Facilities Engineering Command Northwest
   ATTN: Mrs. Amy Burt - Gulf of Alaska EIS/OEIS Project Manager
   1101 Tautog Circle, Suite 203
   Silverdale, WA 98315-1101

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All comments must be received or postmarked no later than January 25, 2010, to be considered in the Final EIS/OEIS.

Name: Suzanne Torian

Organization/Affiliation:

Address:* P.O. Box 3162

City, State, Zip Code: Homer, Alaska 99603

Comments:

I am categorically opposed to the Gulf of Alaska Navy Training Activities as proposed. Please do not allow this Activity to proceed.

Visit www.GulfofAlaskaNavyEIS.com for project information.

*Provide your mailing address to receive future notices about the Gulf of Alaska Navy Training Activities EIS/OEIS.

I.1.41 TRUSTEES FOR ALASKA

TRUSTEES FOR ALASKA

A Nonprofit Public Interest Law Firm Providing Counsel to Protect and Sustain Alaska's Environment

1026 W. 4th Ave., Suite 201 Anchorage, AK 99501 (907) 276-4244 (907) 276-7110 Fax
Email: ecolaw@trustees.org Web address: www.trustees.org

January 25, 2010

Mrs. Amy Burt
Gulf of Alaska EIS/OES Project Manager
Naval Facilities Engineering Command Northwest
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

Re: Comments on Gulf of Alaska Navy Training Exercises Draft Environmental Impact Statement/Overseas Environmental Impact Statement.

On behalf of the Alaska Community Action on Toxics, Alaska Marine Conservation Council, Center for Biological Diversity, Cook Inletkeeper, Kodiak Audubon Society, Kodiak Gray Whale Project, North Gulf Oceanic Society, Prince William Soundkeeper, and Turning the Tides, Trustees for Alaska submits the following comments on the Navy's Draft Environmental Impact Statement/Overseas Environmental Impact Statement for proposed Gulf of Alaska Training Exercises.[1] The Navy proposes a series of training exercises in the Gulf of Alaska (GOA) and Alaska's inland training areas, collectively referred to as the Alaska Training Areas (ATA). Within the ATA, the Navy has delineated the GOA Temporary Maritime Activity Area (TMAA), a 42,146 square nautical miles (nm) zone south of Prince William Sound and east of Kodiak Island.

The purpose of the Proposed Action is to achieve and maintain fleet readiness using the ATA to support and conduct current, emerging, and future training activities. Gulf of Alaska Navy Training Exercises Draft Environmental Impact Statement/Overseas Environmental Impact Statement (DEIS/OEIS) at 1-2. The need for the Proposed Action is to enable the Navy to meet its statutory responsibility to organize, train, equip, and maintain combat-ready naval forces and to successfully fulfill its current and future global mission of winning wars, deterring aggression, and maintaining freedom of the seas. *Id.*

The DEIS/OEIS only considers three alternatives, including the no-action alternative. With regards to actions in the TMAA, the two action alternatives only differ in the number of exercises (with Alternative 2, the preferred alternative, including a

[1] Trustees for Alaska incorporates by reference comments submitted by other government agencies, individual scientists, environmental organizations and the public.

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second 21-day training exercise in the GOA) and the addition of a sinking exercise under Alternative 2.

The Navy estimates that its sonar training exercises in the GOA from its Preferred Alternative (Alternative 2) will result in more than 424,620 marine mammal "takes" (behavioral impacts, harassment, injury, death) every year. DEIS/OEIS at 3.8-147. Over the course of the five year Letter of Authorization (LOA) permit, to be issued under the Marine Mammal Protection Act (MMPA), total take would exceed 2.125 million. In all, the Navy expects to "take" more than 20 different species of marine mammals, including 7 endangered species, in the GOA.

1. The Navy's proposed exercises and the use of mid-frequency sonar pose unacceptable harm to marine mammals and the Navy has failed to fully assess available mitigative measures.

Trustees for Alaska fully supports the comprehensive comments submitted by the Natural Resources Defense Council regarding the impact of the proposed use of mid-frequency active (MFA) sonar on marine mammals in the GOA. Trustees for Alaska reiterates, briefly, the major concerns with mid-frequency sonar use in the GOA and the lacking DEIS/OEIS analysis of impacts from the training exercises in the GOA.

First, nearly all of the mitigation measures that the Navy has proposed for the GOA concern the operation of a small "safety zone" around the sonar ship. Yet it is widely agreed in the scientific community that this measure is inadequate given the far-reaching effects of Navy sonar and the difficulty of spotting marine mammals from fast-moving vessels.

Second, the Navy has not proposed to establish any protection areas in the GOA, despite the broad recognition that geographic protection zones are the most effective available means to mitigate sonar's impacts on marine wildlife. For example, no protection areas are proposed for harbor porpoises, which are acutely sensitive to sound; for endangered gray whales, which migrate directly through the TMAA; for endangered humpback whales and blue whales, which gather to feed in the TMAA; for the critically endangered North Pacific right whale, who's critical habitat is directly adjacent to the TMAA; or for any other species or habitat.

Third, the Navy's acoustics impact analysis ignores scientific studies contrary to its interests and uses methodologies not supported by the scientific community. Thus, the thresholds it sets for permanent injury, temporary injury (hearing loss) and behavioral change are invalid as a matter of science. For instance, in setting its thresholds at 195 dB for harassment and temporary injury and 215 dB for permanent injury and death, the Navy ignores a 2004 study by Nowachek et al which found that right whales respond to mid-frequency sound below 140 dB (the sound caused them to stop eating and ascend rapidly to just below the surface, making them extremely vulnerable to ship strikes).

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Finally – and most critically – the Navy does not set forth adequate measures to mitigate the harmful effects of sonar. Its proposed mitigation measures basically boil down to "safety zones" (1,000 yard power-down and 200 yard shut down) around the sonar maintained primarily by on-board visual monitors. *See* DEIS/OEIS at 5-12. These are the same measures that federal courts have found to be "woefully inadequate and ineffectual." *Natural Resources Defense Council v. Winter*, 527 F.Supp.2d 1216, 1221-1222 (C.D.Cal. 2008). Studies indicate that visual monitoring only spots about 5% of marine mammals. Statistically, a 5% "success" rate is absolutely insufficient to be considered an effective mitigative measure. The DEIS/OEIS is also inadequate because it fails to acknowledge that the Navy has employed other more successful mitigation measures during previous training. These measures (which include some of the same mitigation measures environmental conservation organizations have supported but the Navy now claims cannot be employed) include siting exercises beyond the continental shelf and Gulf Stream, relocating exercises out of important habitat and to avoid certain species, and using a technique called "simulated geography" to avoid canyons and near-shore areas on at least three of its major ranges. The Navy has also restricted sonar use at night when marine mammals are harder to detect, as well as minimized the use of sonar from multiple sources at the same time. Although Chapter 5 of the DEIS/OEIS describes "alternative mitigation measures considered but eliminated," it fails to explain why these measures are not employable when they have been adopted and successfully implemented in the past. *See* DEIS/OEIS at 5-28. The Navy's claim that it cannot implement more protective mitigation measures is therefore unsupported by the DEIS/OEIS.

2. <u>The DEIS/OEIS fails to take the requisite "hard look" at the impacts of the proposed action on endangered species and critical habitat.</u>

Several endangered and threatened species may occur within in the TMAA including: various listed salmonids (Chinook salmon, coho salmon, chum salmon, sockeye salmon, and steelhead), various sea turtles (leatherback, loggerhead, green, and olive ridley), blue whales, fin whales, humpback whales, sei whales, sperm whales, North Pacific right whales, stellar sea lions, and short-tailed albatross. The DEIS/OEIS fails to adequately assess the impacts of the proposed action on endangered species, nor how adverse impacts will be minimized and mitigated. The DEIS/OEIS fails to provide a proper analysis of the serious impacts its sonar training and expended materials will have on the critically endangered North Pacific right whales, whose critical habitat is only 12 nautical miles from the TMAA or the endangered gray whales, which migrate through the TMAA.

3. <u>The DEIS/OEIS fails to provide a satisfactory analysis of impacts, based on complete data.</u>

The DEIS/OEIS underestimates the number of marine mammals (and fish) that will be harassed, injured and killed because the Navy simply does not have the density estimates needed in order to accurately make this determination. The National

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Environmental Policy Act (NEPA) specifically requires federal agencies to obtain the data necessary to their analysis. The simple assertion that "no information exists" does not excuse the Navy from conducting the requisite analysis to fully understand the impacts of its proposed action and make a reasoned choice amongst its alternatives. *See* 40 C.F.R. § 1502.22(a) (unless the costs of obtaining the information are exorbitant, NEPA requires that it be obtained).

The Navy failed to obtain data essential to its analysis. The Navy itself admits that it has no density estimates for endangered blue whales, North Pacific right whales, sei whales, sea turtles, California sea lion, harbor porpoise, and harbor seal.3.7-2 and 3.8-109. In addition, there are simply no reliable estimates for current or historical abundance numbers for many of the affected marine mammals in the GOA. Despite the lack of survey/density data, the Navy simply estimates that only 1 blue whale, 1 North Pacific right whale and 4 sei whales may be harmed by its use of sonar because of the "rareness" of those whales. NEPA requires more. It requires these surveys to be completed and included in the impacts analysis.

4. <u>The DEIS/OEIS cumulative impacts analysis fails to provide quantified and detailed information about other activities that may cumulative impact the environment, including marine mammals and fish.</u>

The DEIS/OEIS cumulative impacts analysis is inadequate because it fails to provide the requisite quantified and detailed information about other activities and associated impacts. Table 4-1 simply lists projects that could have potential cumulative impacts with the proposed activity in the GOA without actually analyzing what those impacts will be. NEPA requires that agencies provide quantified and detailed information about past, present and reasonably foreseeable projects that support an analysis of the impacts associated with those other projects. Table 4-1 fails to provide the requisite detail or an analysis of how these other projects cumulative impact the environment.

5. <u>The DEIS/OEIS range of alternatives is inadequate</u>.

The Navy's range of alternatives is far too narrow in scope and has improperly failed to consider other reasonable alternatives. The Navy only considers three alternatives: the no-action alternative (maintain the status quo); increase training activities to include the use of active sonar, and; increase training activities to include the use of active sonar, conduct one additional summertime CSG exercise annually beyond that in Alternative 1, and sink up to two ships with a variety of ordnance. In other words, the DEIS/OEIS considers no action, increased training with sonar, and even more training with sonar and exercises that involve sinking vessels. The DEIS/OEIS fails to consider any other alternatives such as training measures that do not include MFA. Alternatives that include increased training with sonar and even more increased training with sonar do not amount to a "reasonable range of alternatives," as required by NEPA.

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The stated purpose of the Proposed Action is to achieve and maintain fleet readiness using the ATA to support and conduct current, emerging, and future training activities. DEIS/OEIS at 1-2. The need for the Proposed Action is to enable the Navy to meet its statutory responsibility to organize, train, equip, and maintain combat-ready naval forces and to successfully fulfill its current and future global mission of winning wars, deterring aggression, and maintaining freedom of the seas. *Id.* Nothing within the purpose and need statement asserts that all action alternatives must include mid-frequency sonar use. Training exercises without the use of mid-frequency sonar could take place and still meet the purpose and need and the set of criteria used to identify whether a possible alternative meets the purpose of and need for the Proposed Action. *See* DEIS/OEIS at 2-14 to 2-14; *see also* Letter from Nova Blazej, Manager, Environmental Review Office, EPA to Tom Clements, Public Affairs Officer, Pacific Missile Range Facility, Re: FEIS/OEIS for the Hawaiian Range Complex, June 10, 2008 (EPA recommended additional alternatives be evaluated and a more precautionary approach be taken regarding the use of mid-frequency active (MFA) sonar in training exercises due to the substantial uncertainty of these impacts on marine resources). As a result, the current two action alternatives do not represent an adequate range of reasonable alternatives.

6. The DEIS/OEIS fails to take the requisite "hard look" analysis at the impacts associated with expended materials.

The Navy estimates an extraordinary amount of spent material will result from its Preferred Alternative (Alternative 2) in the GOA. The weight of expended materials under Alternative 2 would increase to 352,000 lb (160,000 kg) per year (360-percent increase over the No Action Alternative), with the largest percentage increase from expended sonobuoys. DEIS/OEIS at 3.2-34. Navy training under Alternative 2 would deposit approximately 41 lb of expended material per nm2 (5.4 kg per km2) per year over 20 percent of the TMAA. *Id.* The Navy bases its analysis on an assumption that training under Alternative 2 would remain consistent for a 20 year period. *Id.* Under this assumption, the Navy would expend approximately 3,520 tons, for a total concentration of approximately 835 lb per nm2 (110 kg per km2). *Id.* Breaking down total tons of expended material per nm in the TMAA is inappropriate because these materials are not "diluted" or spread across the entire TMAA. The Navy must identify and assess the likely levels of contaminants associated with the expended materials where those materials are to be found.

According to the DEIS/OEIS, expended bombs would account for most of the weight of expended materials, but the Navy asserts that the majority of this weight would be relatively inert material used as filler for practice bombs, such as concrete or sand. *Id.* However the DEIS/OEIS fails to provide any detail with regards to what percentage is inert.

Under Alternative 2, approximately 10,300 lb (4,680 kg) per year of hazardous material would be expended (Table 3.2-19). *Id.* The DEIS/OEIS fails to provide a full list of the amount of each hazardous material. While the DEIS/OEIS identifies elements associated with "heavy metals," "propellants," "batteries," "explosives," and "pyrotechnics", it is unclear how much of each hazardous substance is released into the environment from the training activities. Specifically, the DEIS/OEIS identifies the following hazardous substances: lead, cadmium, mercury, chromium, zinc, copper, manganese, aromatic hydrocarbons(such as benzene, toluene, and xylene), polycyclic aromatic hydrocarbons (such as naphthalene, acenaphthene, and fluoranthene), aluminum and ammonia propellant grain, arcite propellant grain, potassium hydroxide, lithium chloride, ammonium perchlorate, plastic-bonded explosives (PBX), high-explosive (HE) components, PBX-106 explosive, PBX (AF)-108 explosive, plastic or other polymer binders, Royal Demolition Explosive (RDX, cyclotrimethylene trinitramine), High Melting Explosive (HMX, cyclotetramethylene tetranitramine), pentaerythritoltetranitrate (PETN), barium chromate, potassium perchlorate, phosphorus, titanium compounds, lead oxide, lead chromate, lead azide, fulminate of mercury, molybdenum, vanadium, columbium, sodium, and nickel. The DEIS/OEIS fails to demonstrate whether the release of these materials, in these concentrations complies with the Clean Water Act, the Ocean Dumping Act, and the London Convention.

Trustees for Alaska highlights the following materials and lacking analysis in the DEIS/OEIS as examples of the insufficient analysis of expended materials upon the marine environment.

RDX (cyclotrimethylene trinitramine), HMX (cyclotetramethylene tetranitramine) and PETN (Pentaerythritoltetranitrate) are used in bomb, missiles, blasting caps, detonation cords, etc. Most new military explosive are a mixture of RDX, HMX and plastic polymers. DEIS/OEIS at 3.3-14. However, explosives used in the training exercises (e.g. MK-82, MK-83, MK84) are older ordnances and their explosive component contain approximately 80% 2-4-6 trinitrotoluene (TNT) by mass. The toxicity of TNT in marine environments is well documented, and most studies suggest that TNT interferes with reproduction of primary producers. In high concentrations, such as those that could result from unexploded ordnances, TNT profoundly affects the reproduction capabilities of primary producers found in marine sediment. Darrar et el. "Chronic toxicity of 2,4,6-trinitrotoluene to a marine polychaete and an estuarine amphipod", Environmental Toxicology and Chemistry. August 1999. The DEIS/OEIS fails to adequately assess the potential impact of TNT and quantify possible concentrations of TNT that would be deposited in the ocean.

The DEIS/OEIS dismisses impacts associated with ammonium perchlorate on the grounds that the missiles would sink to the bottom of the ocean, where the deleterious effects would be minimized. Because of the large number of missiles being used in SINKEX (up to 28 missiles will be used), further analysis of ammonium perchlorate levels around a SINKEX area are warranted.

The DEIS/OEIS states that copper thiocynate, a component of the batteries found in sonobuoys, "would also release cyanide, a material often toxic to marine organisms, thiocynate is tightly bound, and will form a salt or bind to bottom sediments. Therefore, the risk from thiocynate is very low." DEIS/OEIS at 3.2-14. The DEIS/OEIS insufficiently addresses the environmental impact of copper thiocynate. The DEIS/OEIS contains only two sentences that address the toxicity of thiocynate. Furthermore, the DEIS/OEIS fails to cite any research that substantiates the claim that "the risk of thiocynate is very low." While the DEIS/OEIS acknowledges that cyanide would leech from batteries containing thiocynate, it fails to provide any information about expected concentrations. This is problematic, as cyanide is extremely harmful, even in low concentrations.

Flourocarbons are a component of sonobuoys. The DEIS/OEIS assert that there will be no adverse effects. DEIS/OEIS at 3.2-32. Fluorocarbons are persistent organic pollutants (POPs), and are resistant to degradation. Therefore, bioaccumulation may occur, and at high concentrations fluorocarbons can interfere with biological processes. Fluorocarbons come in all varieties, some more reactive and harmful than others. The EIS fails to quantify the specific type of fluorocarbons present in sonobouys. While a small amount of fluorocarbons would be released, the DEIS/OEIS must consider the impact of fluorocarbons as POPs, which means they will remain in the marine environment for a long time. The DEIS/OEIS fails to take this into account.

Copper is also a component of sonobuoys. Like fluorocarbons, copper can come in a variety of forms. Depending on the type of copper compound (copper sulfide, copper oxide, etc.) it is more or less reactive. The EIS fails to give descript examples of the type of copper that is used to house sonobuoys. Copper can be harmful to primary producers, and in high concentrations bioaccumulation will yield high amounts of copper in fish and other marine organisms. Absent this information, the DEIS/OEIS findings cannot be supported.

Tungsten is found in CIWS (Close-in Weapons Systems). The DEIS/OEIS notes that exposure to tungsten through either inhalation or ingestion poses a threat to humans and other biological organisms. DEIS/OEIS at 3.2-11. Tests performed by Mitchell et. al in 2001 determined that tungsten shot ingested by ducks had "[no] deleterious health effects." *Id.* Recent studies by Strigul et. al. in 2005 suggest that even in extremely low concentrations, tungsten can have a measurable impact on terrestrial ecosystems. *See* Strigul et. al, "Effects Of Tungsten On Environmental Systems", Chemosphere, Oct. 2005. Even *extremely low* concentrations, tungsten reduced total peak biomass by as much as 8%. Tungsten primarily impacts primary producers, meaning that tungsten could potentially be toxic to algae and other single-celled organisms. The research cited is irrelevant to impacts associated with the Navy's proposed training exercises because it addresses the effect of tungsten-iron and tungsten-polymer shot in ducks. However, the type of activity the Navy would be practicing would deposit shards of tungsten and tungsten powder directly into the water column, potentially harming primary producers, not larger animals. Research suggests that primary producers are profoundly impacted when tungsten is introduced into an environment, even at low concentrations. The threat to larger animals arises from bioaccumulation, not the type of direct impact assessed by Mitchell et al. This is of special concern for the SINKEX test, which would use large amounts of tungsten rounds in a very small area, potentially yielding a very high concentration of tungsten in the water column. The DEIS/OEIS analysis of tungsten fails

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to provide expected concentrations of tungsten in the waters surrounding training exercises such as the SINKEX. The DEIS/OEIS analysis is also wholly inadequate because it fails to address impacts to primary producers and the indirect impacts to the food chain.

Finally, with regard to specific assessment of hazardous materials, the SINKEX analysis is inadequate for several reasons. Alternative 2 would include two SINKEX training activities. DEIS/OEIS at 3.2-34. This training activity would result in 67,800 lbs of expended material annually. While Table 3.2-23 identifies the types of ordnance used, the DEIS/OEIS fails to quantify the amount of each hazardous waste deposited in the water column. The DEIS/OEIS acknowledges that an area of hazardous materials of relatively high concentration would be created in a SINKEX, however they fail to define what those concentrations are and fail to provide any supportive analysis for the conclusion that there will be "no measurable impact on the environment." Although the DEIS/OEIS acknowledges that the 67,800 lbs of expended material would likely be concentrated within an 8 nm^2 (DEIS/OEIS at 3.2-33) it provides no meaningful assessment of the actual impact to the marine environment in the vicinity of the SINKEX training exercise. As a result, all DEIS/OIES conclusions regarding the SINKEX activity are unsupportable.

The DEIS/OIES also generally diminishes the impacts associated with expended materials by stating that "[a]ssuming deposition of expended materials on 20 percent of the TMAA, the increase in density of deposited hazardous materials would be approximately 1.2 lb per nm2 (0.2 kg per km2) per year." DEIS/OEIS at 3.2-34. The DEIS/OEIS does not explain where the 20 percent assumption comes from. Furthermore, as noted above, averaging out lbs/nm fails to provide a proper assessment of the impact from expended materials.

Concerns over expended materials from Navy training exercises elsewhere in the United States have also drawn significant criticism from the EPA. For example, in comments submitted by EPA over the Final EIS/OEIS for the Navy's Proposed Training at the Jacksonville Range Complex in North Carolina, EPA noted that the deposition of expended materials and their accumulation over time was identified as the greatest impact of Navy training activities. April 20, 2009 Letter from Heinz Mueller, Chief NEPA Program Officer, EPA to Kelly Proctor, JAX EIS/OEIS PM; *see also* Oct. 27, 2008 Letter from Heinz Mueller, Chief NEPA Program Officer, EPA to Susan Admire, Naval Facilities Engineering Command, Atlantic Division Re: DEIS/OEIS for the Navy's Proposed Training at the Cherry Point Range Complex in North Carolina. The EPA raised concerns about the direct and cumulative long-term impacts to the aquatic environment associated with the accumulation of these expended materials. *Id.*

The DEIS/OEIS fails to fully identify, discuss and analyze the direct, indirect and cumulative short-term and long-term impacts associated with discarded debris, toxins and hazardous materials. Because the DEIS/OEIS fails to properly assess concentrations of expended materials, including hazardous materials, its subsequent analyses with respect to impacts on marine mammals, fish, marine organisms, etc. is invalid. Additionally, the

Mrs. Burt
January 25, 2010
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DEIS/OEIS analysis is lacking with regards to the impacts all expended material may have upon marine organisms and the aquatic food chain into the future.

If you have any questions about these comments, please do not hesitate to contact me at 276-4244 x 107. Thank you.

Sincerely,

Brian Litmans
Staff Attorney

I.1.42 UNITED STATES DEPARTMENT OF THE INTERIOR

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
1689 C Street, Room 119
Anchorage, Alaska 99501-5126

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PEP/ANC

January 25, 2010

Naval Facilities Engineering Command Northwest
ATTN: Mrs. Amy Burt
Gulf of Alaska EIS/OEIS Project Manager
1101 Tautog Circle, Suite 203
Silverdale WA 98315-1101

Dear Mrs. Burt:

The U.S. Department of the Interior has reviewed the December 2009 Draft Environmental Impact Statement for the Gulf of Alaska Navy Training Activities. We have no comments to offer at this time.

Thank you for the opportunity to comment. If you have questions, you may contact me at 907-271-5011.

Sincerely,

Pamela Bergmann

Pamela Bergmann
Regional Environmental Officer – Alaska

I.1.43 LYNN WILBUR

Written comment to the United States Navy's Draft Environmental Impact Statement
For the Gulf of Alaska's Northern Edge Temporary Military Activities Area
Author: Lynn Wilbur, Sitka, Alaska

To: Mrs. Amy Burt
Gulf of Alaska EIS/OES Project Manager
Naval Facilities Engineering Command Northwest
1101 Tautog Circle, Ste. 203
Silverdale, WA 98315-1101

24 January, 2010

The following bulleted notes are highlights of my opposition to the United States Navy's proposal to increase training activities, introduce new training platforms, and introduce the use of mid frequency active sonar as outlined in Alternative 2, the preferred alternative in the Draft Environmental Impact Statement for the Northern Edge Training Range in the Gulf of Alaska. While I am also opposed to Alternative 1, I focus on details described in Alternative 2 for the scope of this letter. I do not believe that the Navy has taken a "Hard Look" at the impacts from its proposed training platforms on the air, water, sediments, and marine life in the Gulf of Alaska in alternatives 1 and 2 as required by the National Environmental Policy Act.

- **Air quality**-Alternative 2 proposes a 123-fold increase in emissions, including greenhouse gas emissions, and it only qualifies emissions below 3000 feet. It is a well-known fact that air-borne pollutants circulate in the atmosphere and sequester in circumpolar regions. The Navy claims that no mitigation is required because "Frequent precipitation probably scavenges from the air any particulates or other pollutants that might be present" (DEIS 3.1-2)-for the Navy to assume that nature will *probably* clean the atmosphere of pollutants discharged during training exercises is neither acceptable mitigation nor responsible stewardship of the environment.

- **Expended materials**-Alternative 2 proposes to release hazardous propellants, chaff, tungsten (which is toxic to marine life), fluoride compounds, 150 x the "safe" levels of hydrogen cyanide and heavy metals from missiles, bombs, sonobuoys, unmanned aircraft, etc. into the marine environment. Propellants containing PAH, benzenes, metals, and synthetic materials including PVC plastics will be released into the water column and sediments. The proposal states that these materials will "lodge in oxygen poor sediments, corrode, or become encrusted". The Navy uses environmental impact statements from other Naval training ranges, and letters written from Navy personnel to the National Marine Fisheries Service (*e.g.* DoN 2008c) to make this assumption; the Navy also refers to its own studies in other geographical regions of the U.S. (*e.g.* Wilson *et al.* 2002). I do not see how the Navy can correlate oxygen poor environments in the Gulf of Mexico with the marine environment in the Gulf of Alaska, especially in the absence of any references to meaningful studies undertaken in the GOA. It is also disturbing that the Navy plans to increase its deployment of sonobuoys by 6000%; PVC and other plastic materials are part of the expendable materials list for sonobuoys.

  Plastic compounds and other "flotsam" from the sonobuoys will be left in the ocean as well as more than 5,000 pounds of materials expended yearly from bombing and other exercises. With plastics accumulating in the North Pacific Ocean at an increasing rate, and coupled with the harmful effects that are being seen in seabirds and in the food chain, why is the Navy proposing to add to this problem? Navy personnel on hand to answer questions at the public meeting in

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Written comment to the United States Navy's Draft Environmental Impact Statement
For the Gulf of Alaska's Northern Edge Temporary Military Activities Area
Author: Lynn Wilbur, Sitka, Alaska

Juneau were completely unaware that plastic pollution is a current and enormous threat to our oceans. Even if the amount of expended materials proposed in Alternative 2 is a fraction of the total amount of garbage in the oceans today, discarding more hazardous debris and plastics in our oceans and leaving them to accumulate on the bottom or become flotsam is not responsible stewardship.

- **Fish**-the Navy admits that the TMAA encompasses highly productive areas for demersal, pelagic, groundfish, and shellfish stocks. The DEIS references a dated publication (see p. 3.6-16) to make a case for dismissing the effects of sound and pressure on the lateral line of fish, yet a more recent review by the same author (Hastings *et al.* 2005 from p. 8-1) suggests that the effects of sound and pressure on the lateral line requires more research and cannot be dismissed. The proposal criticizes the "gray literature" (wording used in Hastings *et al.* 2005, page 4), yet relies on its own final environmental impact statements, letters, and reviews from Navy biologists to provide the basis for its stock assessments and lack of mitigation effort. Contained in Hastings *et al.* 2005 is a recommendation for guidelines and criteria for studying the effects of different sound sources on fish. There exist well-referenced, peer-reviewed studies using controls that clearly show the detrimental impact of high intensity sound on the sensory organs of various commercial fish species.

  Is the same mitigation that is used fort sea turtles and marine mammals, *i.e.* using on board spotters, adequate measures for protecting our fish in the Gulf of Alaska? Do we have to rely on fish declines in order to understand the effects of sonar and missile blasts of over 200 decibels on fish, as has happened in the Baltic Sea? Neither a lack of a clear understanding of impacts of sounds on fish before proceeding with the activities as put forth in Alternative 2, nor an adequate mitigation plan is good stewardship.

- **Marine mammals**-Beaked whales have become a case study for effects of sonar on marine mammals, which was catalyzed by the Bahamas incident in 2000. There are three species of beaked whales in the GOA mentioned in the DEIS, as well as the critically endangered north Pacific right whale and the blue whale. In the DEIS the Navy is using abundance estimates based on one 10-day survey, and generalizes results from a comprehensive and well-coordinated study of several years duration of cetacean abundance off the coasts of California, Oregon, and Washington (see Appendix E-2) in order to make abundance estimates in the GOA. It is also using depth distribution measurements against the advice of the very author that it cites (see DEIS E-12). The Navy will rely on the use of up to three onboard spotters before commencing shipboard active sonar as part of its mitigation plan; these spotters will be expected to identify and count whales by reading Navy handbooks, watching DVDs, and using a paper wheel yet the DEIS does not indicate that they will receive essential training from qualified, seasoned, and experienced marine mammal biologists. The proposal indicates that the Navy *may* use aerial spotters, *if they are participating in the activity, if it is safe for them to*

  do the survey, and if they have time. The Navy does not identify or exclude critical cetacean habitat within the TMAA and will potentially be practicing with active sonar less than 25 km

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from the north Pacific right whale critical habitat. If, in the event of an unusual marine mammal stranding and/or death (USE), there will be no immediate correlation made between the sonar activity and the USE, despite scientific evidence that high intensity active sonar is harmful to whales. This means that if the National Marine Fisheries Service investigators decide that the USE has been resolved, the active sonar exercises may resume. The NMFS cannot even commit to what degree that they will be able to investigate USEs (see DEIS 5-25) and the Navy has yet to develop monitoring, unusual stranding event, or operational/communication response plans (see DEIS 5-20:24). In the SOCAL training range, three blue whales were struck by ships in the spring of 2009, yet the Navy has yet to clarify or provide details of the event, what actions were taken, and what mitigation measures were in place at the time of the ship strikes. I find the lack of study, lack of mitigation, and lack of planning highly disturbing.

I also find it disturbing that the DEIS dismisses a recommended mitigation to avoid training in the TMAA during seasonally productive times of the year, because it must "operate at any time or place to meet their training needs pursuant to Title 10"-yet it claims that it can't train in the winter. What if the "enemy" attacks Alaska during the winter months? Why does the "any time/place" policy require that they have to train near rich and biologically productive areas, critical habitats, and marine sanctuaries, and during seasonal migrations? Other recommended mitigations the DEIS dismisses are as follows:

- **Third party observers (TPO)**-The DEIS cites security reasons and a lack of military reflexes of TPOs, and the capability of its own spotters as reasons not to allow third party observers or spotters on its vessels. However, the Navy has used NOAA observers for other training projects, and has manned its own sonar-equipped vessels (*i.e.* the *Impeccable*) with contract employees. If the Navy believes that it can provide its own spotters with the same training and skill that is required of seasoned cetacean abundance surveyors, why can't the Navy provide third party observers with response training? The DEIS goes on to contradict its claims that it can provide adequate training for its spotters by admitting that personnel are not likely to be able to differentiate cetaceans species (see DEIS 5-30)-if spotters are incapable of identifying cetaceans to species, how is the Navy supposed to implement any type of monitoring protocol, especially in the event of a marine mammal take?
- **Halting activities after an USE**-The DEIS makes the claim that training exercises in the TMAA cannot be held up by investigations of cetacean mortalities, as they take months or years. This is not so according to scientists and experts who have investigated stranding events following military sonar exercises. In fact, experts have testified that timely autopsies and tissue necropsies are critical in determining whether or not active sonar is linked to cetacean strandings and deaths. Nevertheless, timely investigations should not be a means for the Navy to deflect its responsibilities under NEPA.
- **Ramping up sonar**-"ramping up" the intensification of active sonar so that animals have a chance to flee a sonar training event is a NMFS recommended mitigation plan

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Written comment to the United States Navy's Draft Environmental Impact Statement
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Author: Lynn Wilbur, Sitka, Alaska

(see DEIS 5-38). The Navy should be following this recommendation irrespective of their "train as they fight" policy. It seems plausible that "ramping up" can be integrated into the Navy's sonar training exercises and still allow the Navy to retain its "train as they fight" policy. The Navy must assuredly have a history of adapting and integrating other policies in their training regimes.

- **Enlargement of powerdown/shutdown zones**-Cetacean survey experts say that it is difficult, if not impossible, to spot cetaceans or identify them to species at distances greater than 1000 yards or in anything higher than a calm sea state of Beaufort 0-1. In the absence of proper mitigation measures, such as identifying and avoiding critical habitat, avoiding seasonal migration routes, and employing more sophisticated methods of identifying marine mammals in the vicinity of an active sonar exercise, the Navy should respect the recommended 2000-yard buffer zone.

- **Implementing vessel speed reduction**-Ship strikes are an increasing cause of cetacean deaths. The Navy must evaluate and reduce the speed of its vessels, especially following active sonar exercises in order to ensure the safety and protection of marine mammals and to ensure its mission of good environmental stewardship.

- **Adopting mitigation measures of foreign Navies**-NATO members have taken the negative impact of active sonar on cetaceans very seriously, and NATO and the European Union have implemented treaties, exclusion zones, and restrictions on the use of sonar during military training exercises. Protecting marine life must be a priority for the US Navy if it wishes to be respected to by its allies and consider itself a world leader in good environmental stewardship.

Lynn Wilbur
Sitka, Alaska

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1 ## I.2 WRITTEN COMMENTS AND RESPONSE TABLE

ID	Organization	Public Comment (Written)	Navy Response
Alaska Dept of Environmental Conservation		Dear Mr. McNair: The Alaska Department of Environmental Conservation has reviewed the information in the subject letter and the referenced websites regarding United States Navy training intentions within the described temporary Maritime Exercise Area in the Gulf of Alaska. It has been determined that the temporary Maritime Training Area is not within Alaska State waters. Therefore, there is no regulatory jurisdiction within the proposed training area under the provisions of Title 18, Alaska Administrative Code, Chapter 75, Oil and Other Hazardous Substances Pollution Control. Thank you for inquiry with the Alaska Department of Environmental Conservation. If you have any questions regarding this correspondence please contact Martin Farris or John Kotula. Sincerely, Betty Schorr, Program Manager	This comment is duly noted.
Alaska Dept of Military and Veterans Affairs - 1		Dear Mrs. Burt: As the Commissioner of Alaska's Department of Military and Veterans Affairs, I can assure you that the Parnell Administration fully support "Alternative 2" proposed by the U.S. Navy in its Draft "Gulf of Alaska Navy Training Activities Environmental Impact Statement / Overseas Environmental Impact Statement" (EIS/OEIS). This Administration supports the "increase training activities to include the use of active sonar, accommodate force structure changes to conclude new platforms, weapons systems, and training enhancement instrumentation, and conduct one additional summertime CSG exercise annually."1 The Parnell Administration's support of alternative 2 is steadfast give that the U.S. Navy has an excellent track record in caring for Alaska's land, sea, and air. As you realize, the Gulf of Alaska is very important to the people of our state who rely on this area for their livelihood and subsistence needs. These areas are home to a vast array of marine mammals and the largest and most diverse fisheries in the United States. We understand that protecting the marine environment of the Gulf of Alaska is an important goal of the Navy. We appreciate the Navy following detailed programs to care for the environment and realize that the Navy continues to improve these programs as they learn more about the ocean and marine species.	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
Alaska Marine Conservation Council (AMCC) - 1		Re: *Draft Environmental Impact Statement/Overseas Environmental Impact Statement for the Gulf of Alaska Navy Training Activities* The Alaska Marine Conservation Council (AMCC) is a community-based organization dedicated to protecting the integrity of Alaska's marine ecosystems. Please accept these comments on behalf of our board and members who include commercial and sport fishermen, subsistence harvesters, and coastal residents throughout Alaska. These individuals and their families are culturally and economically dependent on a healthy marine and coastal environment. AMCC submits these comments in addition to verbal testimony provided at the hearing on the Draft EIS in Kodiak, Alaska on January 7, 2010.	Thank you for taking part in the public review process and attending our Kodiak public hearing.
AMCC - 2		After review of the Draft EIS, AMCC remains concerned about the proposed increase in Navy training activities in the Gulf of Alaska (GOA). Particularly of concern are the effects of underwater noise on living marine resources, especially noise resulting from the use of sonar in this productive and important marine environment.	The Navy shares your concern for marine resources and is presenting this FEIS/OEIS along with NMFS as a cooperating agency in the process. The Navy is a leader in funding research to better understand marine species so that training activities can be conducted with the least possible impacts. The biological sections of Chapter 3 of the EIS/OEIS (Sections 3.5-3.9) provide the details of the Navy's analysis and demonstrate that there is little relative risk to living marine resources from sonar use or other training exercises as proposed in the Final EIS/OEIS.
AMCC - 3		AMCC supports the no action alternative which would maintain current training activities and does not involve the use of sonar.	This comment is duly noted. As explained in Section 1.4 of the Draft and Final EIS/OEIS, the decision on which alternative the Navy will pursue will be made in light of the Purpose and Need by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
AMCC - 4		The alternatives listed in the analysis are inadequate to explore a range of options for increased training potential without the use of sonar, and thereby reduce options for consideration only to the no action alternative.	For EISs that propose a new tempo of current training, the No Action Alternative is seen as the current management level of asset usage or, in this case, status-quo as the current level of training area usage. The no-action alternative can be thought of in terms of continuing with the present course of action until that action is changed. (46 Fed Reg 18026, at 18027). Alternatives 1 and 2 discuss the increase from these levels and include the use of sonar. This is the approach properly taken in developing alternatives for this EIS (See #3 of CEQ's Forty Most Asked Questions). The Navy has explored a range of alternatives as discussed in the FEIS, Section 2.3.1, Alternatives Development. This

ID	Organization	Public Comment (Written)	Navy Response
			includes a discussion of the Navy's alternative selection criteria that was used to determine the potential range of alternatives based on the purpose and need of the Proposed Action. Based on the criteria presented in the FEIS, the Navy evaluated all alternatives that were considered but eliminated from further consideration and identified the No Action Alternative and two other action alternatives to be carried forward and analyzed in detail in the FEIS. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
AMCC - 5		Overall, the proposed action would result in dramatic changes in the acoustic marine environment inside and adjacent to the operating area that could have significant impacts on fish and marine mammals inhabiting these waters.	Chapter 3, Sections 3.6 (Fish) and 3.8 (Marine Mammals) of the EIS/OEIS provide the details of Navy's analysis and demonstrates there is little risk to living marine resources in the Gulf of Alaska from sonar use or other training exercises as proposed in the EIS/OEIS.
AMCC - 6		Designated critical habitat for the North Pacific right whale, the world's most endangered whale, is located directly adjacent to the training area, a mere 12 miles away. This is a major concern given that this population is literally teetering on the brink of extinction. Waters in the Gulf of Alaska provide vital feeding habitat particularly suited to the right whale's biological needs. Underwater noise related to the proposed Navy training activities could drive the right whales away from these feeding grounds, potentially resulting in major impacts to the North Pacific right whale population and species.	As presented in Section 3.8 and shown on Figure 3.8-1, the North Pacific right whale Critical Habitat is approximately 16 nautical miles from the nearest border of the TMAA. Most of the activities proposed will take place far from the TMAA borders because requirements of training realism place ASW activities towards the center of the TMAA for a 360 degree training experience. Therefore, activities with potential impact to North Pacific right whale Critical Habitat would be much further than shown on Figure 3.8-1.
AMCC - 7		In response to measures to mitigate impacts on marine mammals with use of on board visual monitors in the form of personnel with binoculars as the primary means to reduce impact, we believe these measures to be inadequate. The proposed measures rely on observations to enact the 1,000 yard power down and the 200 yard shut down. Fishermen can share endless stories about looking for gear in this area. Boats can spend hours and even days searching for a flag and buoy they know is there, with the benefit of locating coordinates, before spotting the gear. Studies show that visual monitoring only spots about 5% of marine mammals.	Chapter 5 presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events at sea in the TMAA. As detailed in that section, the mitigation measures involve much more than a sonar "safety zone", a (1,000 yard power down and 200 yard shutdown) and make use of all available observers such as those in aircraft in addition to observers on vessels, and use all available sensors such as passive acoustic hydrophones. Please note that such measures have been approved by NMFS in other EISs. The mitigation measures presented were developed in coordination with NMFS biologists and scientists to determine which mitigation measures would be both effective and still allow the

ID	Organization	Public Comment (Written)	Navy Response
			Navy to meet its operational needs for realistic training. Please note that the comment referencing studies indicating "a 5% success rate" was with regard to survey protocols, were not done using Naval personnel or vessels (which have a higher height of eye for observation), and did not take into account the circumstances present during a training event such as having multiple vessels over a very wide area, communicated sharing of observations, and operating in a coordinated manner in combination with aircraft that are also observing the water space. The Navy does not expect 100% of the animals present in the vicinity of training events will be detected and the acoustic impact modeling quantification is not reduced as a result of mitigation effectiveness, however, mitigation measures based on detection of marine mammals by exercise participants anywhere in the exercise area will result in the mitigation of some potential impacts. Monitoring reports from exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. (Please see the recent results supporting this as presented in training ranges monitoring reports "Marine Mammal Monitoring for the U.S. Navy's Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)" available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). An integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the EIS/OEIS. Section 5.2.1.6 from pages 5-28 through 5-41 provides detailed explanations for why some previously used or suggested measures have been eliminated from further consideration. In the first training events authorized under the Marine Mammal Protection Act, some measures were attempted in previous training events at other locations in the past (since 2006) but were subsequently shown to be clearly ineffective or having resulted in an impact to training realism. The suite of mitigation measures proposed by Navy, developed in coordination with NMFS, and presented in Chapter 5 provides the best balance between the need to be precautionary in the protection of marine mammals and the needs to realistically train at sea.
AMCC - 8		In addition, it is quite possible the Navy underestimates the number of marine mammals and fish that may be harassed,	Section 3.8.2 in the EIS/OEIS discusses the density estimates: In April 2009, the Navy funded and NMFS conducted the Gulf

ID	Organization	Public Comment (Written)	Navy Response
		injured or killed due to lack of density estimates needed to accurately make this determination. For many reasons, there a simply no reliable estimates for current or historical abundance numbers for many of the affected marine mammals in this region.	of Alaska Line-Transect Survey (GOALS) to address the data needs for density analysis. Line-transect survey visual data to support distance sampling statistics and acoustic data were collected over a 10-day period both within and outside the TMAA. Please see Section 3.8.2.1 for full discussion on the survey. CEQ regulation at 40 CFR §1502.24 requires the Navy to ensure the "professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements" and to "identify any methodologies used and make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement." Navy has met this requirement. The EIS represents the best available science and most applicable science on species and distribution. The Navy has taken a hard look through its analysis and has considered competing and contradictory scientific research. Under 40 CFR §1502.22, NEPA allows for recognizing incomplete and unavailable information. Information on species density found in Tables 3.8-1 and 3.8-2 of the EIS was compiled from NMFS Stock Assessments as well as the 2009 GOALs survey and two other vessel surveys in the GOA. Therefore, density data has been generated based on available data in coordination with technical staff from NMFS. The Navy's marine mammal density estimates take into account all of the factors cited in this comment that lead to biological abundance. These density estimates then informed the acoustic modeling analysis, the results of which can be found in Section 3.8.7.9 of the EIS/OEIS. The results in this section consider all of the marine mammal species present in the Gulf of Alaska and indicate that although as many as 425,000 animals could be exposed to sound from Navy sonar and explosives, only **one** is estimated to receive sound at levels that could cause some degree of permanent hearing loss. The remainder are non-injurious Level B exposures. No marine mammal deaths are expected as a result of the proposed training activities.
AMCC - 9		Another factor that has not been considered in the EIS is the habituation of sperm whales with commercial fishing vessels. In recent years, interactions between commercial fishing vessels prosecuting the halibut and sablefish fisheries have had increased interactions with sperm whales as the whale approach the boats looking for an easy meal. A	A discussion of cumulative effects of Navy training with commercial fishing in the Gulf of Alaska is presented in Chapter 4. With regard to sperm whales interacting with fishing vessels, anecdotal information available and discussions with folks involved in fishing in Alaska conveyed to Navy personnel that it is the sound of hydraulics reeling in a fishing line that

ID	Organization	Public Comment (Written)	Navy Response
		whale may seek out the sound of a boat to explore the vessel's activity, thereby further decreasing the effectiveness of proposed mitigation measures and increasing the whale's exposure to noise resulting from training activities.	attracts sperm whales to the fishing boats. Navy vessels use a system to deploy and retrieve a towed hydrophone array but do so while underway and this system is designed to be very quiet since it is used to detect submarines passively. In essence, there is no equipment on a Navy vessel that is analogous to the equipment on fishing vessels that is believed to attract sperm whales.
AMCC - 10		The Draft EIS is majorly lacking in a robust analysis of fish habitat and fishing grounds that occur in the geographic area considered for training activities, which precludes any effective analysis of the potential impacts to fish and commercial fishing activities from the proposed activities. For example, the Draft EIS does not include an adequate discussion of salmon migratory routes in the Gulf of Alaska and therefore lacks a robust analysis of impacts to migrating salmon species in the region.	As presented in Section 3.6, there will be no impacts to fish populations and no significant impacts to fish in migratory routes, such as noted on page 3.6-14 for example. In addition and as presented in Section 4.1.3.1, the impacts and influence of commercial fishing activities far overshadows any potential impacts that may result from Navy training activities. This assessment is based on the best available data, science, and research being conducted by the Navy, regulatory agencies, and other sources, and includes bathymetric data and habitat prepared by NOAA. The conclusions of the assessment are based on regulatory criteria for impact determination. Given the localized and infrequent nature of the activities, the Navy has determined that the proposed training would not have an impact on fish populations. While individual fish may be harmed if they co-occur with some activities, this would not have any impact on the overall population. Therefore the minimal effect determination does not imply that individual fish would not be affected, but based on the regulatory criteria, that impacts from the proposed activities would not constitute a population- level effect (i.e., adverse impact).
AMCC - 11		The Draft EIS is lacking a thorough analysis of the potential impacts to halibut and the halibut fishery. The document includes no discussion or maps showing the major halibut regulatory area that directly overlaps the training area nor does it discuss halibut habitat in the area- this information must be added to the Draft EIS.	The TMAA overlaps with International Pacific Halibut Commission statistical areas 240, 250, 260, 270, and a small portion of 230. A Map showing this overlap, as well as an analysis to halibut and the fishery, has been added to the FEIS/OEIS in Section 3.6.1.1 (Figure 3.6-1).
AMCC - 12		The proposed training activities area overlaps Gulf of Alaska Slope Habitat Conservation Areas that are not mentioned in the Draft EIS (see: http://www.fakr.noaa.gov/habitat/efh/goascha.pdf). The Draft EIS should include maps showing the overlap of designated EFH and other important fish habitat in the Gulf of Alaska such as the Slope Habitat Conservation Areas.	These conservation areas are discussed in Section 3.5 and depicted on a map in Figure 3.5-7 specifically for the purpose of illustrating those conservation areas that are present in the TMAA.

ID	Organization	Public Comment (Written)	Navy Response
AMCC - 13		Additionally, while the Draft EIS admits that "...the effects of sound on fish are largely unknown" (3.6-4.3), it concludes that the proposed activities including sonar will not adversely affect fish. AMCC advises the Navy to utilize a precautionary approach to potential impacts in data poor environments, especially when dealing with highly valuable commercial fish stocks or endangered marine mammals populations.	An assessment of impacts associated with sound (from impulsive and non-impulsive sources), as well as, explosions is presented in the Draft EIS/OEIS for the various sources expected in the GOA TMAA as a result of training activities. See Section 3.6.1.4 for discussion on hearing ranges in fish and also Sections 3.6.2.3 through 3.6.2.5 for discussion of effects of proposed actions on fishes (explosive sounds, sonar usage, etc.) This information is based on the best available science and research being conducted by the Navy, which includes some of the foremost researchers and experts on hearing in fishes. The range of acoustic effects analyzed includes no effects, small behavioral effects, significant behavioral effects, temporary loss of hearing, and physical damage. Potential effects of explosive charge detonations on fish and EFH include disruption of habitat; exposure to chemical by-products; disturbance, injury, or death from the shock (pressure) wave; acoustic impacts; and indirect effects including those on prey species and other components of the food web. The conclusions of the assessment are based on regulatory criteria for impact determination. Given the localized and infrequent nature of the activities, the Navy has determined that the proposed training would not have an impact on fish populations. While individual fish may be harmed if they co-occur with some activities, this would not have any impact on the overall population. Therefore the minimal effect determination does not imply that individual fish would not be affected, but based on the regulatory criteria, that impacts from the proposed activities would not constitute a population-level effect (i.e., adverse impact).
AMCC - 14		The Draft EIS also lacks a thorough assessment of the overlap with fishing areas, and the conclusion that there will be no socioeconomic impacts from the proposed action (including fishing) is impossible to predict without comprehensive answers to the above mentioned comments.	Because the Navy has no exclusive “right of way” when conducting training activities on the ocean, Navy ships and aircraft intentionally seek areas clear of all other vessel traffic, thereby reducing the likelihood of negatively affecting vessels engaged in fishing or other use of this ocean area.
AMCC - 15		In addition to concerns regarding effects on marine mammals and fish as a result of the use of sonar and an increase in underwater noise from training activities, AMCC is also concerned about expended, hazardous wastes expected to result from the proposed training activities. The Navy concludes in the Draft EIS, without sufficient data, that,	The Final EIS/OEIS thoroughly analyzes the impacts of expended materials used during Navy training activities. As shown in Table 3.2-18 and 3.2-19, an estimated 352,000 lb (176 tons) of material would be expended during the training activities proposed under Alternative 2, with less than 3 percent of that material (about 5 tons) considered to be

ID	Organization	Public Comment (Written)	Navy Response
		"In general, ordnance constituents appear to pose little risk to the marine environment (3.2-5). Again, there is no specific analysis of the benthic communities where these expended materials settle, and they may include EFH as well as Habitat Areas of Particular Concern (HAPCs), or important habitat for bottom-dwelling halibut.	hazardous. Section 3.2 of the EIS/OEIS describes the impacts from the perspective of potentially hazardous materials such as explosives constituents. Section 3.3 describes the impacts of expended materials in terms of water and sediment quality. In addition, the existing discussion on the breakdown of hazardous materials in Environmental Consequences of Section 3.2.2, Expended Materials has been reviewed and, as appropriate, expanded. The analysis in the EIS/OEIS concludes that Expended and hazardous materials under the Proposed Action would not have a substantial effect on the marine environment. Effects on marine benthic communities are analyzed in Sections 3.5.2.3, 3.5.2.4, and 3.5.2.5. The Navy completed an Essential Fish Habitat Assessment, which included analyzing effects to EFH for scallops, groundfish, salmon, and Habitat Areas of Particular Concern. A summary of that analysis has been incorporated into the FEIS/OEIS in Section 3.6.1.2. Additionally, a halibut analysis and figure (Figure 3.6-1) has been added to Section 3.6.1.1.
AMCC - 16		AMCC is dismayed that the Navy only provided the bare minimum 45-day review for the Draft EIS and did so over the holidays, leaving insufficient time for the public to review and comment on the proposed action. This lack of consideration for the public's ability to comment is unacceptable given the scope of the proposed activities. AMCC requested an extension of the Draft EIS comment period and we do so again here in our written comments.	The Navy has complied with all NEPA notification requirements under 40 C.F.R. § 1506. NEPA regulations require that agencies not allow less than 45 days for comments on a DEIS. The public review period for the Gulf of Alaska (GOA) Draft EIS/OEIS began with publication of a Notice of Availability on December 11, 2009. This notice specifically listed library repositories where the hard copy document could be viewed, and stated specifically that the document could be viewed online at the project website. In addition, specific mention of the locations where a copy of the GOA Draft EIS/OEIS could be viewed or downloaded were made in the following: - Postcards sent to potentially affected Tribes and Nations, State and Federal regulatory and government agencies, non-governmental organizations, fishing groups, and individuals - Newspaper advertisements in newspapers in Alaska - Press releases to numerous print, TV, and online media - Meeting flyers sent to community locations in Alaska. - Stakeholder letters sent to previously identified stakeholders including Tribes and Nations, Federal and State elected officials, State and Federal regulatory and government agencies, and individuals. Please note that public comments are very important to the

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			NEPA process. The Draft EIS/OEIS was released to the public for a 45-day comment period. During this 45-day period, the Navy made extensive efforts to conduct outreach based on what was learned during the scoping period and public feedback. There were ample opportunities, as well as a wide variety of options, to comment on the Gulf of Alaska Draft EIS/OEIS. The public provided comments via mail, online comments via the Gulf of Alaska EIS/OEIS website; or attendance at one of five public hearings in the state of Alaska in January 2010. At the public meetings, the public had an opportunity to publicly or privately comment in front of a court reporter or fill out a comment form, and turn it in. The Navy considered your request for an extension of the 45-day comment period. After further evaluation of the request, and the outreach efforts conducted by the Navy for the Draft EIS/OEIS, the Navy felt it was not necessary to extend the public comment period for review of the Draft EIS/OEIS.
AMCC - 17		Furthermore, new research points to the disturbing trend of ocean acidification occurring in our marine waters, with high latitude seas particularly at risk. Reduced pH levels already measured in the Gulf of Alaska pose a new and potentially significant source of stress on the food web (J. Mathis. 8/11/09. Ocean Acidification in Alaska: New findings show increased ocean acidification in Alaska waters. University of Alaska Fairbanks, School of Fisheries and Ocean Sciences. Press release. http://www.sfos.uaf.edu/oal). Alarmingly, studies have also demonstrated that noise travels farther underwater as pH reduces, creating concern for acoustic changes in the marine environment to have an even greater impact on marine species that previously thought. (Hester, et al. 2008. Unanticipated consequences of ocean acidification: A noisier ocean at lower pH. Geophysical Research Letters. Vol. 35. http://iod.ucsd.edu/courses/sio278/documents/hester et al 08 ocean noisier pH irl.pdf).	Ocean acidification is addressed under Cumulative Impacts in Section 4.2.1.2 of the FEIS/OEIS. Additionally, the proposed Navy actions for the Gulf of Alaska should have no net effect on the emission of greenhouse gases given the Navy is required to maintain trained forces and must undertake the necessary training activities at some location, if not in the proposed TMAA. The proposed action will, therefore, have no significant additive or cumulative impact on greenhouse gas emissions, global warming, or the chemistry of the ocean as a result of any of the proposed action alternatives.
AMCC - 18		The Navy must consider this research and the impacts of ocean acidification on the marine environment in the EIS, especially within the cumulative impacts section.	Ocean acidification is addressed under Cumulative Impacts in Section 4.2.1.2. of the FEIS/OEIS.

ID	Organization	Public Comment (Written)	Navy Response
AMCC - 19		In closing, we again urge the selection of the No Action Alternative. The proposed increase in Naval training activities in the Gulf of Alaska lies squarely within some of the most productive marine waters in the United States and the world.	Please see response to AMCC – 3.
AMCC - 20		The Gulf is home to a myriad of marine mammals, fish and other marine species that contribute to a rich and productive tapestry of life here.	The Navy is aware of the rich and diverse biological presence in the Gulf of Alaska and as such, has conducted a thorough analysis of potential effects in Chapter 3 of the EIS/OEIS. Chapter 4 includes cumulative analysis of all past, present, and reasonably foreseeable future projects in or possibly affected the GOA and the Navy activities addressed in the EIS/OEIS.
AMCC - 21		Important fish habitat and fishing grounds overlap and lies adjacent to the area proposed for training, and coastal communities rimming the Gulf of Alaska continue to rely on the health of these fisheries for their economic and cultural well-being.	As detailed in Sections 3.6 and 3.12, the proposed training activities should not have an impact on populations of fish or the health of the fisheries and socioeconomics in Alaska.
AMCC - 22		Given the high stakes to the living marine resources and surrounding communities, we strongly reiterate that this is an inappropriate location for increasing Naval training exercises and introducing the use of sonar. Sincerely, Theresa Peterson, Kodiak Outreach Coordinator, Alaska Marine Conservation Council Kelly Hartell, Executive Director, Alaska Marine Conservation Council	This comment is duly noted.
Andrew Bakke		I am completely against this unnecessary program!!!	This comment is duly noted.
Basel Action Network (BAN) - 1		Ms. Amy Burt, I write on behalf of the Basel Action Network (BAC) to submit comment on the Navy's Draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) for proposed Gulf of Alaska (GOA) training exercises. BAN requests consideration of the comments because they present new information that was not previously available during the comment period. While the comment period for the draft EIS has closed, the comments provided in the attachment contain new information showing that the proposed GOA training exercises will affect the quality of the environment in a significant manner not addressed under the draft EIS. Therefore, BAN requests consideration of this new information in the final EIS or through a supplemental EIS. See 40 C.F.R. §1502.9(c)(1)(ii); Marsh v. Oregon Natural	This comment is duly noted. We have not been able to locate the report discussed in BAN – 2 nor is FWC aware of such a report. Therefore, the findings discussed in the EIS/OEIS are the most relevant. If you can provide us with a copy of the mentioned report we will further evaluate its findings.

ID	Organization	Public Comment (Written)	Navy Response
		Resources Council, 490 U.S. 360, 374 (1989). Please find comment attached. Your acknowledgment of receipt of this e-mail and its attached comment are much appreciated. Sincerely, Colby Self Basel Action Network	
Basel Action Network (BAN) - 2		RE: Comment on Gulf of Alaska Navy Training Exercises Draft Environmental Impact Statement/Overseas Environmental Impact Statement **Request for Comment Consideration** The Basel Action Network (BAN) submits these comments on the Navy's Draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) for proposed Gulf of Alaska (GOA) training exercises. BAN requests consideration of the comments because they present new information that was not previously available during the comment period. The Florida Fish and Wildlife Conservation Commission released a report in May 2010, summarizing a five-year post-sinking monitoring study on PCB leaching from the sunken Ex-USS Oriskany. The study reveals PCB concentrations in fish caught at the Oriskany site at more than twice the EPA screening limits and above the Florida Department of Health's fish advisory limits. PCB sampling results are discussed below and are relevant to the environmental impacts of the Navy's SINKEX activity in the Gulf of Alaska. While the comment period for the draft EIS has closed, the comments provided below contain new information showing that the proposed GOA training exercises will affect the quality of the environment in a significant manner not addressed under the draft EIS. Therefore, BAN requests consideration of this new information in the final EIS or through a supplemental EIS. See 40 C.F.R. §1502.9(c)(1)(ii); Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 374 (1989).	Please see BAN – 1 regarding the FWC report findings.
Basel Action Network (BAN) - 3		**I. Comment: Impacts from SINKEX vessels.** The Draft EIS/OEIS acknowledges that Sinking Exercises (SINKEX) will occur in the Gulf of Alaska (GOA) Temporary Maritime Activities Area (TMAA); however, the long-term environmental impacts associated with SINKEX are not	Please see BAN – 1 regarding the FWC report findings.

ID	Organization	Public Comment (Written)	Navy Response
		discussed in the Draft EIS/OEIS. The Navy has in the past acknowledged the presence of hazardous materials remaining within the composition of scuttled naval vessels, including, but not limited to: polychlorinated biphenyls (PCBs), asbestos, iron, lead paint, antifouling paint containing tributyltin (TBT), and polybrominated diphenyl esters (PBDEs). Yet these materials and their effects on the environment, marine life and human health are not discussed in the Draft EIS/OEIS. We ask for additional assessment of the risks associated with the ocean disposal of these toxic materials in the GOA pursuant to the SINKEX program. The assessment should state the specific amounts of each material (mentioned above) expected to be left onboard scuttled vessels, as well as their expected impacts on the environment, marine life, and human health.	
Basel Action Network (BAN) - 4		**II. Comment: SINKEX impact assessment is based on inconclusive research.** While removal of liquid PCBs is required before a vessel is scuttled via SINKEX, the complete removal of all or most solid material containing PCBs is not. The SINKEX general permit issued under 40 CFR 229 states *"The Navy may leave in place wire cables, felt gaskets and other felt materials that are bonded in bolted flanges or mounted under heavy equipment, paints, adhesives, rubber mounts and gaskets and other objects in which the Navy has found PCBs…"* In effect, SINKEX vessels contain large quantities of PCBs which remain in the vessel during and following sinking and are thus exposed to the marine environment. Current SINKEX remediation practices were developed 11 years ago (1998-1999) and were based on the Sunken Vessel Study that assessed the impacts of a single SINKEX vessel, the Ex-USS Agerholm, 17 years after the vessel's 1982 sinking. At the time of the assessment, solid PCBs were not believed to leach into the marine environment and little was known about PCB transport in an aqueous setting. In fact, the EPA allowed SINKEX to operate solely under the General Permit (issued under the Marine Protection, Research and Sanctuaries Act) and exempt from the Toxic Substances Control Act, because there was a *"lack of evidence of unreasonable risk to human health or the environment..."* considering the type of PCB material involved (solid PCBs).1 They stated *"Solid PCBs are not*	Please see BAN – 1 regarding the FWC report findings.

<table>
<tr><th>ID</th><th>Organization</th><th>Public Comment (Written)</th><th>Navy Response</th></tr>
<tr><td></td><td></td><td>believed to be readily leachable to the marine environment.”
2 These conclusions are not supported by current scientific research. While further research is both necessary and appropriate to assess the environmental impacts of SINKEX vessels, particularly the impacts of PCBs on the environment, marine life and human health, continued reliance on out-dated research is not appropriate.</td><td></td></tr>
<tr><td>Basel Action Network (BAN) - 5</td><td></td><td>III. Comment: New study shows detrimental impacts from sunken naval vessel.
In the 11 years since this Sunken Vessel Study (Ex-USS Agerholm), new research confirms that solid PCBs leach into the marine environment, are taken up by marine organisms, and are transferred up the food chain.
The Ex-USS Oriskany was sunk as an artificial reef 23 nautical miles off the coast of Florida in 2006 and was prepared for sinking in much the same way as SINKEX vessels. All liquid PCBs were removed from the vessel prior to sinking; therefore all documented PCB leaching is from solid PCBs. 33% of all fish sampled post-sinking in the vicinity of the Oriskany had PCB concentrations above 20 parts per billion (ppb), the EPA screening level. 21% of all fish sampled post-sinking had PCB concentrations above 50 ppb, the Florida Department of Health fish advisory threshold. Total PCB concentrations in fish samples increased 1,446% on average from pre-sinking to post-sinking.
<table>
<tr><th></th><th>Pre-Sinking Oriskany Site</th><th>Post-Sinking Oriskany Site</th></tr>
<tr><td>Red Snapper Samples</td><td>17</td><td>157</td></tr>
<tr><td>Red Snapper Mean PCB Concentration</td><td>2.36 ppb</td><td>54 ppb</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Total Samples</td><td>62</td><td>180</td></tr>
<tr><td>Total Mean PCB Concentration</td><td>3.8 ppb</td><td>58.75 ppb</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Total Fish Above 20 ppb (EPA Screening Level)</td><td>2
(gag & king mackerel)</td><td>60</td></tr>
<tr><td>Total Fish Above 50 ppb (Florida DoH Fish Advisory Threshold)</td><td>1
(king mackerel)</td><td>38</td></tr>
</table>
</td><td>Please see BAN – 1 regarding the FWC report findings.</td></tr>
</table>

<table>
<tr><th>ID</th><th>Organization</th><th>Public Comment (Written)</th><th>Navy Response</th></tr>
<tr><td></td><td></td><td>Note: gag and king mackerel fish were not sampled post-sinking.
Source: Table developed by Author based on data provided by the Florida Fish and Wildlife Conservation Commission Post-Sinking Monitoring Study
1 Official letter from Carol Browner, EPA Administrator, to Richard Danzig, Secretary of the Navy, September 13, 1999.
2 IBID</td><td></td></tr>
<tr><td>Basel Action Network (BAN) - 6</td><td></td><td>There were also two sampling events in 2008 on a control reef; these results were also recently released in May 2010. The control reef is a concrete bridge rubble reef that is 8 miles from the Oriskany site. The control reef samples were taken on the same days as the Oriskany samples in 2008. PCB concentrations in fish caught at the Oriskany site in 2008 were more than 932%, on average, higher than PCB concentrations in fish caught at the control reef.
<table>
<tr><th></th><th>2008 Control Reef</th><th>2008 Oriskany Reef</th></tr>
<tr><td>Red Snapper Samples</td><td>45</td><td>60</td></tr>
<tr><td>Red Snapper Mean PCB Concentration</td><td>7.6 ppb</td><td>55.22 ppb</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Total Samples</td><td>61</td><td>61</td></tr>
<tr><td>Total Mean PCB Concentration</td><td>7.89 ppb</td><td>81.44 ppb</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Total Fish Above 20 ppb (EPA Screening Level)</td><td>5</td><td>16</td></tr>
<tr><td>Total Fish Above 50 ppb (Florida DoH Fish Advisory Threshold)</td><td>0</td><td>12</td></tr>
</table>
Source: Table developed by Author based on data provided by the Florida Fish and Wildlife Conservation Commission Post-Sinking Monitoring Study
The Oriskany sampling does not merely show fish contamination in the state of Florida; rather, it shows that more than 100 naval vessels intentionally sunk in the last 10 years alone (through SINKEX and artificial reefing) have placed the marine environment and human health at unreasonable risk of toxic exposure. These risks must be</td><td>Please see BAN – 1 regarding the FWC report findings.</td></tr>
</table>

ID	Organization	Public Comment (Written)	Navy Response
		assessed in the GOA EIS.	
Basel Action Network (BAN) - 7		**IV. Comment: PCB transport via physical and biological means.** The Navy has long argued that PCB releases in the deep ocean from SINKEX vessels (6,000 feet or greater) do not pose adverse risks to marine life at that depth. Further, the Navy has suggested that the deep benthic environment has minimal chance of physical or biological transport to the shallow marine ecosystem. However, the Draft EIS/OEIS does not have any discussion or analysis of PCB releases in the deep ocean and possible transport mechanisms. There are at least three scientifically acknowledged modes of material transport from the deep ocean to shallow waters: 1. Upwelling; 2. Meridional Circulation Overturning; and 3. Biographic Transport.	Please see BAN – 1 regarding the FWC report findings.
Basel Action Network (BAN) - 8		First, the physical marine transport process called *upwelling* routinely moves materials from deep water to surface water.3 Upwelling can occur in coastal regions as well as the open ocean,4 and can be wind or tide-induced. Both types of upwelling do not typically occur in isolation, but rather coexist.5 Upwelling is a vital ecological process that delivers nutrients from the benthic zone (sea floor); however, this same process is also capable of delivering PCBs from sunken Navy vessels to shallow waters.	Please see BAN – 1 regarding the FWC report findings.
Basel Action Network (BAN) - 9		Second, deep ocean currents and water circulation produces dynamic uplift capable of delivering sediments, with which PCBs adhere, to surface waters. Traditionally, this is known as Meridional Circulation Overturning (ocean conveyer belt), in which currents driven by wind, thermohaline circulation, and atmospheric conditions transport deep water to shallow water.6 *3 Tomczak, M.,1998. Shelf and Coastal Oceanography. http://www.es.flinders.edu.au/~mattom/ShelfCoast/notes/chapter06.html* *4 http://oceanmotion.org/html/background/upwelling-and-downwelling.htm* *5 Tomczak, M.,1998. Shelf and Coastal Oceanography. http://www.es.flinders.edu.au/~mattom/ShelfCoast/notes/chapter06.html* *6 http://earthobservatory.nasa.gov/Newsroom/view.php?id=24124*	Please see BAN – 1 regarding the FWC report findings.
Basel Action		Finally, marine life that has taken up PCBs in deep water at	Please see BAN – 1 regarding the FWC report findings.

ID	Organization	Public Comment (Written)	Navy Response
Network (BAN) - 10		the disposal site can transport PCB material via migration and predatory consumption to the shallow marine ecosystem, which can continue up the food chain to humans. Sunken vessels typically rest in the bathylpelagic zone (1,000-4,000 meters), just below the mesopelagic zone (200-1,000 meters), which exists below the epipelagic zone (200 – surface). Biographically speaking, organisms from each zone have contact with organisms from the zone above and below, allowing for food transfer and PCB uptake through the water column. "*Undoubtedly, there is considerable trophic interaction among these larger epipelagic fishes* [albacore, blue shark, swordfish, etc.] *and their meso- and bathypelagic counterparts during diel vertical migration."7*	
Basel Action Network (BAN) - 11		Additionally, the Deep Scattering Layer (DSL) is an assemblage of vertically migrating marine organisms that travel from the deep ocean to the shallows at night to feed, thus trophic interaction occurs.8 DSLs have been recorded at all depths to 3,000 meters.9	Please see BAN – 1 regarding the FWC report findings.
Basel Action Network (BAN) - 12		The physicochemical properties of PCBs, including low solubility in water, very high bioconcentration factor, and very low degradation rates, determine their behavior in the environment.10 And because PCBs are very hydrophobic (readily come out of solution), persistent, and highly lipophilic (partition into lipids and organic carbon) they readily adsorb onto particles and build up in the food chain (bio- and geoaccumulation).11	Please see BAN – 1 regarding the FWC report findings.
Basel Action Network (BAN) - 13		PCBs and other hazardous materials left on SINKEX vessels are in no way confined to the dumping site. PCBs can be transported great distances from the initial sink site via physical and biological means. The GOA EIS must include impact analysis of possible PCB transport mechanisms.	Please see BAN – 1 regarding the FWC report findings.
Basel Action Network (BAN) - 14		In closing, we thank you for the opportunity to submit comments on the draft EIS/OEIS and are hopeful that our concerns will be addressed in the final EIS. Should you have any questions please do not hesitate to contact me directly. Sincerely, Colby Self Basel Action Network 7 *Monterey Bay National Marine Sanctuary Site Characterization – Biological Communities and Assemblages – Pelagic*	Please see BAN – 1 regarding the FWC report findings.

ID	Organization	Public Comment (Written)	Navy Response
		Zone.http://montereybay.noaa.gov/sitechar/pelagic5.html *8 IBID* *9 Opdal, A.F., Godo, O.R., Bergstad, O.A., Fiksen, O, 2007. Distribution, identity, and possible processes sustaining meso- and bathypelagic scattering layers on the northern Mid-Atlantic Ridge* *10 Mackay, D., W.Y. Shiu, and K.C. Ma, 1992. Illustrated handbook of physical-chemical properties and environmental fate for organic chemicals, Vol. I, Monoaromatic Hydrocarbons, Chlorobenzens, and PCBs. Lewis Publishers, Boca Raton, FL, 697pp.* *11 Froescheis, Oliver, Ralf Looser, Gregor M. Cailliet, Walter M. Jarman and Karlheinz Ballschmiter, 2000. The deep-sea as a final global sink of semivolatile persistent organic pollutants? Part I: PCBs in surface and deep-sea dwelling fish of the North and South Atlantic and the Monterey Bay Canyon (California), Chemosphere, Volume 40, Issue 6, March 2000, Pages 651-660.*	
Amanda Bentley		I wish to express my concern regarding the Navy's use of mid-frequency active sonar in the Gulf ofAlaska in the summer of 2011. I understand that it is the intention of the Navy to undergo extensive training exercises at that time. I also understand and respect the need to maintain a level of military readiness against any and all potential threats against the United States. However, my goal for writing this letter is to open your eyes to serious and fatal damage that the Navy may inflict upon innocent and endangered marine life. All marine life thrives on the peacefully balanced acoustic environment underwater. Disruptions to this habitat can risk animal life. It is no secret that mid-frequency sonar in aquatic environments even 300 miles from the source retains an intensity of 140 decibels, equating to a hundred times more intense than the level known to alter the behavior of large whales. The use of mid-frequency active sonar is so detrimental that it causes whales and marine mammals to dramatically change their behavior and flee their aquatic habitat forcing them to surface too quickly. Surfacing too quickly causes "the bends" resulting in cranial hemorrhaging. On multiple occasions, whales and sea turtles. too many to count, have been the sacrifice of the Navy's training exercising. Originating from a very patriotic background, I understand and fully support military readiness. However, this sort of environmental harm seems out of control. Countless whales, porpoises and other mammals strand during naval exercises: in October of 1989, 20 whales of three species stranded during naval exercises	The Navy shares your concern for marine resources. The Navy is a leader in funding research to better understand marine species so that training activities can be conducted with the least possible impacts. The biological sections of Chapter 3 of the EIS/OEIS (Sections 3.5-3.9) provide the details of the Navy's analysis and demonstrates that there is little relative risk to living marine resources from sonar use or other training exercises as proposed in the Final EIS/OEIS. For acoustic exposures to result in injury to marine mammals, the sound source has to be very loud and the animal very close (within a few meters) for there to be a direct effect. Mass strandings of whales have occurred as described in Appendix F, however, this occurrence is relatively rare and the reasons it has occasionally happening are therefore not well understood. The Navy has been using mid-frequency and high-frequency active sonar for decades in the Fleet concentration areas of the East Coast, Southern California, and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations as documented in monitoring reports at these training ranges (see "Marine Mammal Monitoring for the U.S. Navy's Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)" available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). The Navy's analysis and history demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. For a discussion on marine mammals and the bends from sonar, please see Section 3.8.7.3 of the FEIS/OEIS and Appendix F, Cetacean

ID	Organization	Public Comment (Written)	Navy Response
		near the Canary Islands.; in January of 2006, at least 34 whales beached themselves to avoid the sonar along the coast of the Outer Banks of North Carolina as training was carried out by a naval fleet. In an article published in the Juneau Empire, in January of 2010. it states that the Navy plans to carry out one of three proposed procedures: 1. No action as the Navy would have already reached its status quo of annual training; 2. Called Alternative I, where the Navy increases training to a 21-day period and includes the use of mid-frequency active sonar; lastly 3. Called Alternative 2 which includes Alternative 1 plus a sinking exercise during the three week training period. I urge you to commit to your first option and halt any and all training in the GulfofAlaska; the Navy has already it meet its annual required training between April and October, according to Eric Morrison in "Concerns grow over Navy Sonar training in the Gulf of Alaska" in January, 2010. Even though Shelia Murray, the regional environmental public affairs officer for the Navy, states in the same article. "The Navy does a lot of things to avoid any type of interaction with any type of marine mammal" there still seems to be numerous fatal strandings ofaquatic life. Can the death of innocent marine life be on the Navy's conscience? Can it be on yours? As a citizen of the earth, we all have a responsibility to preserve the life it holds. Exterminating a species, or even endangering its well-being is a serious offense as this action could be irreversible. Every organism, animal and habitat is essential to the balance of the environment I ask that this be taken into consideration during training exercises. I hope you will find it logical and moral to limit the training exercises using such dangerous technology as mid-frequency active sonar.	Stranding Report. With regard to selection an alternative, the decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
Greg Brown - 1		**Marine Mammals** The Situation: The Navy has been authorized to take two million mammals per year for the next five years during its training exercises in Hawaii, the west coast, the Gulf of Mexico, and the entire Eastern seaboard; in fact, the Navy wants to deploy sonar in 80% of the world's oceans. Obviously, this issue greatly affects all of Alaska. The immediate Alaskan concern, however, involves proposed Navy training activities in the Gulf of Alaska (GOA). All public comments must be received or	The Navy is not proposing sonar deployment in 80% of the world's oceans. The Navy already uses sonar all over the world's oceans in operational activities. The proposed action in the EIS/OEIS is for training use of sonar not operational or testing use. This EIS/OEIS uses a method for calculating exposures to underwater sound that was developed jointly by the Navy and the National Marine Fisheries Service. This method for evaluating "takes" of marine mammals is a term used to indicate the level of harassment, either A or B, under the

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		postmarked no later than January 25, 2010, so time is of the essence. You may comment online at www. GulfofAlaskaNavyEIS.com. Please see below for points on which to comment. **Marine Mammals** 1. According to the Marine Mammal Commission, "The Gulf of Alaska supports a diversity of marine mammals, a number of which are listed as endangered or threatened under the Endangered Species Act or designated as depleted under the Marine Mammal Protection Act. They include pinnipeds (Stellar sea lions, northern fur seals, and sea otters) and cetaceans (AT1 killer whales, eastern North Pacific right whales, Cook Inlet beluga whales), humpback whales, fin whales, sperm whales, and sei whales .... Several of them are in especially critical conditions.	Marine Mammal Protection Act; the term does not reflect a marine mammal death. Of the approximately 425,000 exposures under the Preferred Alternative, which are estimated without consideration of the Navy's protective measures, only **one** is expected to be a Level A harassment. The remainder are non-injurious Level B exposures. No marine mammal deaths are expected as a result of the proposed training activities. The Navy fully analyzed potential impacts to marine life in Section 3.8 (Marine Mammals) of the EIS/OEIS and is in full compliance with the Marine Mammal Protection Act, the Endangered Species Act, and the National Environmental Policy Act. The analysis concludes that there is no significant impact to population levels of marine mammals. For more information about the Navy's compliance with these and other regulatory requirements, see Section 6 of the EIS/OEIS.
Greg Brown - 2		2. The Ocean Mammal Institute, a federal agency created to help protect marine mammals, stated serious concerns about the effects of the Navy's use of LFAS, explaining that the possible effects on marine mammals could include the following: - death from trauma - hearing loss - disruption of feeding, nursing, sensing and communication (Abandoned calves have been reported in affected areas.) - stress (making animals more vulnerable to disease and predation) - changes in distribution and abundance of important marine mammal prey species - subsequent decreases in marine mammal survival and productivity.	LFA sonar is not part of the Proposed Action; however its effects are described in Section 3.6.2.4 of the EIS/OEIS.
Greg Brown - 3		All of these effects have been witnessed in the past. See the Ocean Mammal Institute's publication "US Navy's Misinformation To Congress About LFAS." Additionally, MSNBC reported that "A National Oceanic and Atmospheric Administration study said the Navy's use of sonar contributed to the beaching of 16 whales and two dolphins in the Bahamas in 2000. Eight of those whales died, showing hemorrhaging around their brains and ear bones, possibly because they were exposed to loud noise. 3. Many scientists believe that animals seen stranded on the beach as a result of Navy sonar testing represent only a	The use of low frequency active sonar (LFAS) is not part of the proposed action for GOA. A discussion of all stranding events potentially associated with the use of sonar, including the Bahamas event of March 2000, are detailed in Section F.1.6.1 of Appendix F of the EIS/OEIS. The best available science is considered in preparation of this EIS/OEIS. As a general matter, the Navy shows consideration of the best available science when we ensure the scientific integrity of the discussions and analyses in the GOA TMAA. Specifically, this EIS/OEIS identifies methods used, references reliable scientific sources, discusses responsible opposing

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		small portion of the technology's toll because severely injured animals rarely come to shore. In fact, scientists believe that mid-frequency sonar blasts may drive certain whales to change their dive patterns in ways their bodies cannot handle, causing debilitating and even fatal injuries; these symptoms are akin to a severe case of 'the bends." (NRDC) In fact, the true effects of Navy sonar testing on marine wildlife remains unknown. 4. The June, 2010 [*sic*] issue of Scientific American reported that the U.S. Navy's sonar generates "slow-rolling sound waves topping out at around 235 decibels, equivalent to the intensity of a Saturn rocket; the world's loudest rock bands top out at only 130. The Navy confirms that these sound waves can travel for hundreds of miles under water, and can retain an intensity of 140 decibels (100 times more intense than the level known to alter the behavior of large whales) as far as 300 miles from their source."	views, and discloses incomplete or unavailable information, scientific uncertainty, and risk (See 40 CFR,1502.9 (b),1502.22,1502.24). Please note that the U.S. Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations. The Navy's analysis indicates and this history indicates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Since sound in the air and sound underwater are measured on two separate scales (Sound Pressure Level is expressed in dB re 1 μPa for underwater sound and dB re 20 μPa for airborne sound), it is incorrect to compare the dB sound level of sonar in water to the dB sound level of jet engines or other loud noises through the air. To clarify a misunderstanding brought up in the comment, proposed sonar use in the TMAA would not result in sound levels of 140 dB as far as 300 miles from the source.
Greg Brown - 4		5. The Navy does not consider the potential cumulative impacts from multiple sound exposures. For example whales in the GOA migrate to Hawaii. The Navy seeks to cover 80% of the world's oceans with its sonar testing, including the west coast of the U.S. as well as Hawaii. Over time, multiple exposures could lead to impaired hearing abilities, as studies on the effects of sound on terrestrial mammals has shown. Too, feeding behavior and other vital behavior could be altered repeatedly, the cumulative effects of which could prove fatal.	Regarding the comment about the Navy seeking to cover 80% of the world's oceans with sonar testing, please see response to Greg Brown – 1 above. Please refer to the EIS/OEIS Chapter 4 regarding cumulative impacts analysis and specifically to Section 4.2.8.3 on Anthropogenic Sound regarding the multiple sound sources present in the Gulf of Alaska. The analysis of sonar use in the EIS/OEIS does take into account the accumulated energy from multiple sound exposures (those exposures in addition to the Risk Function behavioral exposures) and indicates the potential for permanent threshold shift (resulting in an impaired hearing ability) in one (1) individual before any mitigation measures are considered; it is unlikely this one exposure will occur given the mitigation measures.
Greg Brown - 5		6. The Navy does not consider the marine animals that may be affected by sonar at a significant distance from the source.	Under the current regulatory (MMPA) use of the Risk Function, the extent of sound propagating from a source to the point at which it reached 120 dB can be 10s of miles from that source (depending on the environmental conditions); see Section 3.8.7.3. As such, the Navy's analysis does consider the potential that marine mammals may be affected by hearing sonar at significant and various distances from the source.

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Greg Brown - 6		7. The Navy does not take into account the added noise pollution caused by the increase in vessel traffic during training.	Noise associated with vessel movements, along with other potential effects of vessel movements, is described on an individual resource basis in Sections 3.6, 3.7, 3.8, and 3.9 and under Cumulative Impacts in Section 4.2.8.3 of the FEIS/OEIS.
Greg Brown - 7		8. The Navy does not consider the possibility of strikes by sub-surface submarines during transit and/or operations. The Navy lacks any evidence that passive listening is a reliable means of detecting nearby marine life.	The potential for vessel strikes by submarines was not previously addressed but has now been added to Section 3.8.7.6. Use of passive acoustic detection is not 100% effective but is offered as a means for possible detection of marine mammals so that appropriate action can be taken.
Greg Brown - 8		9. Although the risk of surface vessel strikes is heightened by its operations, the Navy does not note the many limitations on the ability to see and avoid collisions with marine mammals, instead repeatedly touting lookouts as an effective means to avoid collisions with whales. The limited effectiveness of using lookouts is widely documented, yet the Navy fails to take into account the difficulty to see animals as well as the fact that many marine mammals remain under water for considerable periods of time. Beaked whales, for example, can spend up to an hour under the surface, with only short and intermittent surface intervals.	Navy lookouts undergo extensive training to include on-the job instruction under supervision of an experienced lookout followed by completion of Personnel Qualification Standard Program. NMFS-approved Marine Species Awareness Training is required before every sonar exercise. While the Navy is very confident in its well-trained lookouts, it does not expect that 100% of the animals present in the vicinity of training events will be detected. However, the acoustic impact modeling estimates provided in the EIS/OEIS are not reduced as a result of mitigation effectiveness, even though many marine mammals will be detected and sonar exposures will be avoided. As such, the Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals. Based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy feels its protective measures are adequate. Please refer to chapter 5 of the EIS/OEIS which presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events.
Greg Brown - 9		10. The Navy fails to consider the adverse impact of the massive amounts of debris that will be disposed of in the oceans during its training periods. Entanglements are serious concerns for marine mammals, often resulting in death.	Please see response to AMCC – 15. Additionally, as discussed in Section 3.8,, Marine Mammals, potential entanglement of species with expended materials is not a substantial threat within the GOA.
Greg Brown - 10		11. Clearly it is likely that certain impacts on marine mammals from the Navy operations may fall within the category of Level A Harassment.	Please see response to Greg Brown – 1. In addition, please note that without consideration of mitigation measures, there are also five Level A exposures from training events using explosives, however, these are exposures are unlikely to occur given the set-up time for those events, mitigative protective

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			measures, and the species involved (Dall's porpoise, Pacific white-sided dolphin, and northern fur seal). No marine mammal deaths are expected as a result of the proposed training activities. Neither NMFS nor the Navy anticipates that marine mammal stranding events or mortality will result from the use of MFA or HFA sonar during Navy exercises within the TMAA. Given, however, the potential for naturally occurring marine mammal stranding events in GOA (e.g., natural mortality), it is possible that a stranding could co-occur with a Navy exercise even though the stranding is actually unrelated to and not caused by Navy activities. Accordingly, the Navy will include requests for take, by mortality, for three beaked whale species three known species of beaked whales present in the TMAA (Baird's, Cuvier's, and Stejneger's beaked whale).
Greg Brown - 11		**Fish and Other Marine Wildlife** 12. The Navy does not provide analysis of the cumulative effects of sonar testing on commercial fishing, yet the National Marine Fisheries Service believes that sonar testing could directly and indirectly impact federally managed fishery species in North Carolina. (North Carolinians for Responsible Use of Sonar)	Discussion of Cumulative Effects is presented in Chapter 4, including a discussion of the impacts to commercial fishing. Also, as discussed in Chapter 3 (Section 3.6.1.4), fish in general are not likely to hear the mid- and high-frequency sonar proposed for use in the TMAA.
Greg Brown - 12		13. Not everything is known about the effects of sonar on fish, but studies show that intense sound can damage fish's ears, reduce the viability of eggs and harm larvae, and retard growth. Intense sound can also cause fish to change their behavior, disrupt their navigation, communication, foraging, and schooling - and dramatically reduce catch rates. (NC Coastal Federation)	The studies showing damage to fish ears were not based on sounds similar to those produced by the Navy's proposed use of sonar. The Navy is very aware of concerns from fishing fleets and fisheries in the Gulf of Alaska. In areas where sonar use has been ongoing for decades, there is no indication, based upon catch data, that any fish stocks have been affected. Additionally, in an study of herring (one of the few fish that can hear mid-frequency sonar) Doksæter et al. determined that "Military sonars of such frequencies and source levels may thus be operated in areas of overwintering herring without substantially affecting herring behavior or herring fishery" (2009:554).
Greg Brown - 13		14. According to the Times-Standard, "the Navy says that shock waves from inert bombs, intact missiles and targets hitting the water's surface would injure fish in some areas," and that "underwater explosions.. .could hurt invertebrates. ..."	As stated above, the Navy is very aware of concerns from fishing fleets and fisheries in the Gulf of Alaska. The impacts described are small in area and, if they occur, will only impact small insignificant numbers of fish. As described in the Section 3.6 of the EIS/OEIS, analysis of impacts to fish, including those with swim bladders, explosive ordnance use may result in injury or mortality to individual fish but would not result in impacts to fish populations.. Effects of at-sea explosions on invertebrates are addressed including those possible impacts

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			in Section 3.5, Marine Plants and Invertebrates. As summarized in Section 3.5, surface or near-surface explosions have the potential to kill or harm individual animals and plants in the immediate vicinity resulting in localized impacts. Given the TMAA size and using conservative estimates, 0.02 explosions would occur per nm2 (0.006 per km2) per year resulting in minimal effects. Benthic communities would not be affected by explosions due to water depth.
Greg Brown - 14		15. Walt Duffy with the U.S. Geological Survey's Cooperative Research Unit at Humboldt State University points out that there is limited information on the effects of sound on fish. He said that "how the activities the Navy proposes might affect surfacing and migrating salmon are also open to question." (Times-Standard)	See Section 3.6.1.4 for discussion on hearing ranges in fish and also Sections 3.6.2.3 through 3.6.2.5 for discussion of effects of proposed actions on fishes (explosive sounds, sonar usage, etc.) This information is based on the best available science and research being conducted by the Navy, and while hearing information on Pacific salmon is limited, the section does discuss hearing in Atlantic salmon, which are similar anatomically to Pacific salmon and indicates that they cannot hear mid- and high frequency sonar, and would be expected to have similar responses to sound. The range of acoustic effects analyzed includes no effects, small behavioral effects, significant behavioral effects, temporary loss of hearing, and physical damage. Potential effects of explosive charge detonations on fish and EFH include disruption of habitat; exposure to chemical by-products; disturbance, injury, or death from the shock (pressure) wave; acoustic impacts; and indirect effects including those on prey species and other components of the food web. The conclusions of the assessment are based on regulatory criteria for impact determination. Given the localized and infrequent nature of the activities, the Navy has determined that the proposed training would not have an impact on fish populations. While individual fish may be harmed if they co-occur with some activities, this would not have any impact on the overall population. Therefore the minimal effect determination does not imply that individual fish would not be affected, but based on the regulatory criteria, that impacts from the proposed activities would not constitute a population-level effect (i.e., adverse impact).
Greg Brown - 15		16. Arthur N. Popper, biology professor at the university of Maryland and expert in fish hearing, states, 'The effects of sound on fish could potentially include increased stress, damage to organs, the circulatory and nervous systems. Long-term effects may alter feeding and reproductive	Note that the analysis by Dr. Popper is for sounds that fish can hear and all indications are that most fish cannot hear the Navy's mid- and high-frequency sonars proposed for use in the TMAA. As described in the EIS/OEIS, of which Dr. Popper is one of the authors, analysis of impacts to fish, including those

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		patterns in a way that could affect the fish population as a whole."	with swim bladders, are found in Section 3.6 of the EIS/OEIS. While there may be a few species that can hear within this range, it is anticipated that the effects could range from no effect to physical damage and that it would be dependent on intensity and proximity (basically the list of potential effects that was provided in Section 3.6.2.2.3). Given the temporal and spatial nature of the activities, it is anticipated that any effect would be localized and not affect fish populations as a whole.
Greg Brown - 16		17. The reproductive functions of shrimp and crabs may also be affected by intense underwater noise. (NC Coastal Federation)	Effects of underwater noise on invertebrates are described in Marine Plants and Invertebrates; Sections 3.5.2.3, 3.5.2.4, and 3.5.2.5. Surface or near-surface explosions have the potential to kill or harm individual animals and plants in the immediate vicinity resulting in localized impacts. Given the TMAA size and using conservative estimates, 0.02 explosions would occur per nm2 (0.006 per km2) per year resulting in minimal effects. Benthic communities would not be affected by explosions due to water depth.
Greg Brown - 17		18. The Navy has not considered the possible effects on seabirds.	Section 3.9 of the EIS/OEIS provides a thorough analysis of potential impacts to birds. This analysis concluded that the Navy's activities would have no significant impacts to birds. Additionally, the Navy entered into informal ESA Section 7 consultation with the U.S. Fish and Wildlife Service. The USFWS has concurred with the Navy's determination of "may affect, not likely to adversely affect" short-tailed Albatross, the only threatened and endangered seabird potentially present within the TMAA on 24 March, 2010. Please see Appendix C, Regulatory Communications.
Greg Brown - 18		**Humans and Marine Wildlife** 19. The Navy has not addressed the issue of sea pollution. Humans cannot survive without a healthy ocean, and already the North Pacific is known for the North Pacific Gyre, a plastic "graveyard" at least twice the size of Texas; some believe it to be as large as the entire continental United States.	Please see response to AMCC – 15. Additionally, shipboard waste-handling procedures governing the discharge of nonhazardous waste streams have been established for commercial and Navy vessels. These categories of wastes include solids (garbage) and liquids such as "black water" (sewage), "gray water" (water from deck drains, showers, dishwashers, laundries, etc.), and oily wastes (oil-water mixtures). The Navy will comply with waste discharge restrictions, as described in Section 3.3.1.2, and would not discharge plastic at any location. It is all recycled and disposed of in port.
Greg Brown - 19		20. The Navy has not addressed the issue of air pollution.	Air Quality, including estimates of the quantities of regulated air pollutants to be emitted by the Preferred Alternative, is addressed on pages 3.1-1 through 3.1-14 of the EIS/OEIS.

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Greg Brown - 20		**Closing** - In October 2004 the European Parliament called for a ban in European waters of military sonar equipment and asked its twenty-five member states to stop deploying high-intensity active naval sonar, (Marine Connection) - In November 2004, delegates at the meeting of the parties to ACCOBAMS (the United Nations Environment Program's Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area) adopted a resolution recognizing that ocean noise generated by humans is a dangerous pollutant to marine life. (Marine Connection) - In November 2004, the World Conservation Union called for action to reduce the impact of high-intensify active sonar and other sources of damaging underwater sound. (Marine Connection) (-) The North Carolina Watermen United has presented a statement opposing Naval sonar training off the coast of North Carolina.	This comment is duly noted.
Greg Brown - 21		*Alaskans depend on the sea for food, for income, and for pleasure. Clearly the Navy needs to train, but choosing training areas in some of the most prolific marine wildlife regions in the United States, if not the world, particularly at a time when migrating marine life is present, is, at best, irresponsible. We therefore support the "No Action Alternative," which provides for the continuation of training activities within the Alaska area at the current levels. Additional sources: Southern Environmental Law Center, Atlanta, Georgia Turning the Tides, Sika, Alaska, Chapter, Lynn Wilbur	The Navy is aware that this is one of the richest marine areas in the world and has conducted a thorough analysis of potential effects in Chapter 3 of the EIS/OEIS. Specifically, socioeconomic impacts in regard to the fishing industry, tourism, and recreation have been analyzed in the EIS/OEIS in Section 3.12 - Socioeconomics. Regarding alternatives selection, please see response to AMCC – 3.
Tina Brown - 1		**Marine Mammals** The Situation: The Navy has been authorized to take two million mammals per year for the next five years during its training exercises in Hawaii, the west coast, the Gulf of Mexico, and the entire Eastern seaboard; in fact, the Navy wants to deploy sonar in 80% of the world's oceans. Obviously, this issue greatly affects all of Alaska. The immediate Alaskan concern, however, involves proposed Navy training activities in the Gulf of Alaska (GOA). All public comments must be received or postmarked no later than January 25, 2010, so time is of the essence. You may comment online at www.	Please see response to Greg Brown – 1.

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		GulfofAlaskaNavyEIS.com. Please see below for points on which to comment. **Marine Mammals** 1. According to the Marine Mammal Commission, "The Gulf of Alaska supports a diversity of marine mammals, a number of which are listed as endangered or threatened under the Endangered Species Act or designated as depleted under the Marine Mammal Protection Act. They include pinnipeds (Stellar sea lions, northern fur seals, and sea otters) and cetaceans (AT1 killer whales, eastern North Pacific right whales, Cook Inlet beluga whales), humpback whales, fin whales, sperm whales, and sei whales .... Several of them are in especially critical conditions. .. .	
Tina Brown - 2		2. The Ocean Mammal Institute, a federal agency created to help protect marine mammals, stated serious concerns abut the effects of the Navy's use of LFAS, explaining that the possible effects on marine mammals could include the following: - death from trauma - hearing loss - disruption of feeding, nursing, sensing and communication (Abandoned calves have been reported in affected areas.) - stress (making animals more vulnerable to disease and predation) - changes in distribution and abundance of important marine mammal prey species - subsequent decreases in marine mammal survival and productivity. All of these effects have been witnessed in the past. See the Ocean Mammal Institute's publication "US Navy's Misinformation To Congress About LFAS." Additionally, MSNBC reported that "A National Oceanic and Atmospheric Administration study said the Navy's use of sonar contributed to the beaching of 16 whales and two dolphins in the Bahamas in 2000. Eight of those whales died, showing hemorrhaging around their brains and ear bones, possibly because they were exposed to loud noise."	Please see response to Greg Brown – 2.
Tina Brown - 3		3. Many scientists believe that animals seen stranded on the beach as a result of Navy sonar testing represent only a small portion of the technology's toll because severely injured animals rarely come to shore. In fact, scientists believe that mid-frequency sonar blasts may drive certain	Please see response to Greg Brown – 3.

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		whales to change their dive patterns in ways their bodies cannot handle, causing debilitating and even fatal injuries; these symptoms are akin to a several case of 'The bends." (NRDC) In fact, the true effects of Navy sonar testing on marine wildlife remains unknown. 4. The June, 2010, issue of Scientific American reported that the U.S. Navy's sonar generates "slaw-rolling sound waves topping out at around 235 decibels, equivalent to the intensity of a Saturn rocket; the world's loudest rock bands top out at only 130. The Navy confirms that these sound waves can travel for hundreds of miles under water, and can retain an intensity of 140 decibels (100 times more intense than the level known to alter the behavior of large whales) as far as 300 miles from their source."	
Tina Brown - 4		5. The Navy does not consider the potential cumulative impacts from multiple sound exposures. For example whales in the GOA migrate to Hawaii. The Navy seeks to cover 80% of the world's oceans with its sonar testing, including the west coast of the U.S. as well as Hawaii. Over time, multiple exposures could lead to impaired hearing abilities, as studies on the effects of sound on terrestrial mammals has shown. Too, feeding behavior and other vital behavior could be altered repeatedly, the cumulative effects of which could prove fatal.	Please see response to Greg Brown – 4.
Tina Brown - 5		6. The Navy does not consider the marine animals that may be affected by sonar at a significant distance from the source.	Please see response to Greg Brown – 5.
Tina Brown - 6		7. The Navy does not take into account the added noise pollution caused by the increase in vessel traffic during training.	Please see response to Greg Brown – 6.
Tina Brown - 7		8. The Navy does not consider the possibility of strikes by sub-surface submarines during transit and/or operations. The Navy lacks any evidence that passive listening is a reliable means of detecting nearby marine life.	Please see response to Greg Brown – 7.
Tina Brown - 8		9. Although the risk of surface vessel strikes is heightened by its operations, the Navy does not note the many limitations on the ability to see and avoid collisions with marine mammals, instead repeatedly touting lookouts as an effective means to avoid collisions with whales. The limited effectiveness of using lookouts is widely documented, yet the Navy fails to take into account the difficulty to see animals as well as the fact that many marine mammals	Please see response to Greg Brown – 8.

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Tina Brown - 9		10. The Navy fails to consider the adverse impact of the massive amounts of debris that will be disposed of in the oceans during its training periods. Entanglements are serious concerns for marine mammals, often resulting in death.	Please see response to Greg Brown – 9.
Tina Brown - 10		11. Clearly it is likely that certain impacts on marine mammals from the Navy operations may fall within the category of Level A Harassment.	Please see response to Greg Brown – 10.
Tina Brown - 11		**Fish and Other Marine Wildlife** 12. The Navy has not evaluated the consequences of its sonar on marine fish.	All indications are that most fish cannot hear the Navy's mid and high frequency sonar proposed for use in the TMAA. Effects of sonar on marine fish are described in Section 3.6, Fish. For additional information, please see response to Greg Brown – 12 and 15.
Tina Brown - 12		12. The Navy does not provide analysis of the cumulative effects of sonar testing on commercial fishing, yet the National Marine Fisheries Service believes that sonar testing could directly and indirectly impact federally managed fishery species in North Carolina. (North Carolinians for Responsible Use of Sonar)	Please see response to Greg Brown – 11.
Tina Brown - 13		13. Not everything is known about the effects of sonar on fish, but studies show that intense sound can damage fish's ears, reduce the viability of eggs and ham larvae, and retard growth. Intense sound can also cause fish to change their behavior, disrupt their navigation, communication, foraging, and schooling - and dramatically reduce catch rates. (NC Coastal Federation)	Please see response to Greg Brown – 12.
Tina Brown - 14		14. According to the Times-Standard, "the Navy says that shock waves from inert bombs, intact missiles and targets hitting the water's surface would injure fish in some areas," and that "underwater explosions.. .could hurt invertebrates. ..."	Please see response to Greg Brown – 13.
Tina Brown - 15		15. Walt Duffy with the U.S. Geological Survey's Cooperative Research Unit at Humboldt State University points out that there is limited information on the effects of sound on fish. He said that "how the activities the Navy proposes might affect surfacing and migrating salmon are also open to question." (Times-Standard)	Please see response to Greg Brown – 14.

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Tina Brown - 16		16. Arthur N. Popper, biology professor at the university of Maryland and expert in fish hearing, states, "The effects of sound on fish could potentially include increased stress, damage to organs, the circulatory and nervous systems. Long-term effects may alter feeding and reproductive patterns in a way that could affect the fish population as a whole."	Please see response to Greg Brown – 15.
Tina Brown - 17		17. The reproductive functions of shrimp and crabs may also be affected by intense underwater noise. (NC Coastal Federation)	Please see response to Greg Brown – 16.
Tina Brown - 18		18. The Navy has not considered the possible effects on seabirds.	Please see response to Greg Brown – 17.
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Tina Brown - 20		20. The Navy has not addressed the issue of air pollution.	Please see response to Greg Brown – 19.
Tina Brown - 21		**Closing** - In October 2004 the European Parliament called for a ban in European waters of military sonar equipment and asked its twenty-five member states to stop deploying high-intensity active naval sonar, (Marine Connection) - In November 2004, delegates at the meeting of the parties to ACCOBAMS (the United Nations Environment Program's Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area) adopted a resolution recognizing that ocean noise generated by humans is a dangerous pollutant to marine life. (Marine Connection) - The North Carolina Watermen United hes presented a statement opposing Naval sonar training off the coast of North Carolina.	This comment is duly noted.
Tina Brown - 22		*Alaskans depend on the sea for food, for income, and for pleasure. Clearly the Navy needs to train, but choosing training areas in some of the most prolific marine wildlife regions in the United States, if not the world, particularly at a time when migrating marine life is present, is, at best, irresponsible. We therefore support the "No Action	Please see response to Greg Brown – 21.

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		Alternative," which provides for the continuation of training activities within the Alaska area at the current levels. Additional sources: Southern Environmental Law Center, Atlanta, Georgia Turning the Tides, Sika, Alaska, Chapter, Lynn Wilbur	
Civil Air Patrol (CAP) 2LT Daniel Holt		How can CAP be involved, help with your training activities?	The proposed action does not necessitate the use of the CAP but thank you for your offer.
Cordova District Fishermen United (CDFU) - 1		Dear Mrs. Burt, I am writing in response to the Draft Environmental Impact Statement relating to the Gulf of Alaska Navy Training activities. Cordova District Fishermen United (CDFU) would like to clearly state for the record that we support the U.S. Navy in their efforts to defend our great country, however we are strongly opposed to an increase in U.S Navy training exercises in the Gulf of Alaska (GOA), and in particular the use of mid-frequency sonar. We support the No Action Alternative and support a review of existing practices. CDFU is a nonprofit political advocacy organization that directly represents the commercial fishing interests of over 1,000 fishermen in Prince William Sound, and indirectly supports the economic livelihood of the community of Cordova. For over 75 years, CDFU has strived to protect the health and sustainability of species that inhabit our waters and errs on the side of caution when assessing potential risks to these species.	This comment is duly noted. Please see response to AMCC – 3.
CDFU - 2		As you should be aware through your extensive EIS process, Alaska has one of the richest ocean environments in the world, and the sustainability of our fisheries resources is of highest priority to our State - both from an economic and cultural perspective.	The Navy is aware that this is one of the richest marine areas in the world and has conducted a thorough analysis of potential effects in Chapter 3 of the EIS/OEIS. Specifically, socioeconomic impacts in regard to the fishing industry, tourism, and recreation have been analyzed in the EIS/OEIS in Section 3.12 - Socioeconomics.
CDFU - 3		Thank you for the opportunity to comment on the Draft EIS. CDFU looks forward to reviewing the Final EIS and requests inclusion on the Navy postal mailing list to receive a full, printed copy when it is published. Additionally, CDFU would like to request that the comment period for the Final EIS be increased to provide sufficient time for Alaska communities to respond - longer than the timeframe given during the comment period for the draft EIS, and at least 90 days. Sincerely, Rochelle van den Broek - Executive Director	Your request has been acknowledged and you will be included on the mailing list for a full printed copy of the FEIS/OEIS. The Navy will comply with NEPA requirements for release of the FEIS.

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CDFU - 4		**CDFU COMMENTS** **Section: 4.1.3.1 Fishing & Section 2.6 FISH** During the explanation of commercial fishing activities there is a vague mention that a number of fisheries are at very depressed levels or are closed (referencing Richardson and Erickson 2005). The remainder of this section goes on to describe those fisheries that are currently in operation. As acknowledged in the Draft EIS, Pacific Herring (Clupea Palladio) are present in the GOA. Despite the fact that this commercial fishery is currently not in operation, Pacific Herring are an ecologically and commercially significant species in the Gulf of Alaska and Prince William Sound ecosystem. Few species are of greater combined ecological and economic importance in Prince William Sound (and in many other coastal ecosystems) than is the Pacific herring[1]. .... 1 Brown ED and MG Carls. 1998. Pacific Herring Clupea Pallasi. Restoration Notebook, Sept. 1998. Exxon Valdez Oil Spill Trustee Council.	This comment is duly noted and the Navy concurs that Pacific Herring are an ecologically and commercially significant species in the Gulf of Alaska. The EIS/OEIS fully analyzed potential impacts to fish. As was described in Sections 3.6.1.4, fish have very limited hearing in the frequency range of Navy sonar, and the body of research indicates they are not negatively impacted by Navy sonar. Specifically, a study of herring (one of the few fish that can hear mid-frequency sonar) Doksæter et al. determined that “Military sonars of such frequencies and source levels may thus be operated in areas of overwintering herring without substantially affecting herring behavior or herring fishery” (2009:554). As such, the impact conclusion in the EIS/OEIS, that there is no significant impact to population levels for fish, including Pacific Herring, from Navy activities, is fully supported by scientific research.
CDFU - 5		Pacific Herring are central to the marine food web; providing food to marine mammals, birds, invertebrates and other fish. The Exxon Valdez Oil Spill Trustee Council (EVOSTC), a council charged with overseeing the restoration of the injured ecosystem through the use of the $900 million civil settlement and which consists of three state and three federal trustees (or their designees), has classified Pacific Herring as damaged and "Not Recovering"[2]. Pacific herring have not met their recovery objective. No strongly successful year class has been recruited into the population and health indices suggest that herring in the Sound are not fit. Pacific herring are the subject of ongoing Trustee Council-funded research. Through this research, and the work of the Alaska Department of Fish and Game, Prince William Sound communities are hopeful for the return of a viable herring fishery in the future and are actively working towards this goal. The collapse of the Pacific Herring fishery following the Exxon Valdez oil spill indicates that this species is not particularly resilient to changes in their immediate marine environment. CDFU is concerned that the effects of mid-frequency sonar use in the GOA will stress an already	Please see response to CDFU – 4 above.

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		weakened population and do not feel that this species was adequately addressed in the Draft EIS. .... [2] Exxon Valdez Oil Spill Trustee Council. Nov, 2006. Exxon Valdez Oil Spill Restoration Plan. Update on Injured Resources and Services 2006.	
CDFU - 6		**Acoustic Effects of Underwater Sounds to Fish** Despite their lack of resilience to changes in their environment, Pacific Herring (Clupeidae) have the highest hearing range indicated of all marine species identified in the GOA, at 5 kHz. Some studies, however, demonstrate that the hearing range of the Pacific Herring is in fact much greater. Wilson and Dill (2002) reported that Pacific herring (Clupea pallasii) responded to sounds up to 140 kHz. As hearing "specialists", Pacific Herring have the ability to hear over a much wider frequency range than most other fish.	Please see response to CDFU – 4 above.
CDFU - 7		Of grave concern to CDFU is the lack of available research that demonstrates the short and long term impacts to fish and marine mammals. It is apparent that there is very limited research available that focuses on the impacts of mid-frequency sonar use to fish, Pacific Herring in particular and the limited research that is available suggests that there is not only variation in effects of intense sound sources on different species of fish, but that there may also be differences based on genetics or development. Indeed, one can go even further and suggest that there may ultimately be differences in effects of sound on fish (or lack of effects) that are related to fish age as well as development and genetics, as was demonstrated by Popper et al. (2005). Many references included in this section cite data based on freshwater fish, species not included in the GOA, and entirely different environmental conditions. These references do not fully describe the impacts to GOA specific species as there simply is not research available in this area.	Please see response to Greg Brown – 3. Additionally, Earlier studies involving high intensity sound sources are distinguishable from the current conditions within the TMAA. As discussed within pages 3.6-39 to 3.6-43 and the analysis within Popper (2008); because only a few species of fish may be able to hear the relatively higher frequencies of mid-frequency sonar, sonar used in Navy exercises would result in minimal harm to fish or EFH.
CDFU - 8		Since the collapse of the herring fishery in 1996, millions of dollars have been expended to help scientists understand more about the inability of Pacific Herring to fully recover from the impacts of the Exxon Valdez oil spill. The ultimate goal of this research is to work towards the restoration of the Pacific Herring fishery returning it to its former abundance. The lack of adequate research on mid-frequency sonar on Pacific Herring, and other fish species in the Gulf of Alaska	This comment is duly noted. There are many areas of science where additional research is needed. With respect to existing studies completed to date on sonar effects on herring, the Navy and NMFS have reviewed existing literature and studies on this subject.

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		is alarming. It is incomprehensible that a Department of U.S. Government (EPA or the DOD) would support any alternative other than the No Action alternative based on this lack of information and available research.	
CDFU - 9		**4.2.8.2 Ship Strikes** This section states that releasing individual expended materials would not have any significant effects on the environment, but does not indicate whether the cumulative effect of adding specific contaminants into the marine environment was fully analyzed. Elevated concentrations of certain chemicals can cause adverse effects on aquatic biota including reduced survival, impaired reproduction, and reduced growth. Release of toxic substances in the water may be quickly diluted; however, some toxic substances have the potential to bioaccumulate in the food chain. Information included in the Draft EIS is not sufficient to detail the myriad of toxic chemicals that will be released into GOA waters, and the tendency of each specific chemical to bioaccumulate. A table describing each chemical's tendency to bioaccumulate (or not) would more accurately demonstrate the long-term environmental impacts of the proposed training activities. Currently, this area is severely lacking despite the extreme quantities of foreign chemicals that are proposed to be expended in the GOA. It is likely that this too is an area where research is lacking.	This comment is duly noted as is your concern regarding bioaccumulation. Specifically, the potential effect to species and habitats in the GOA and additional research. The Navy did not include a table describing each chemicals tendency to bioaccumulate because bioaccumulation effects must be handled according to impact to individual species. Section 3.2 of the FEIS/OEIS identifies the expended materials that are part of the proposed action and the effects known to date of these chemicals. The bioaccumulation process is discussed in this EIS/OEIS in Section 3.8 and Section 4.2.8.2. A detailed species by species analysis of bioaccumulation potential for all possible contaminants is not possible with the best available scientific data at this time. Impacts from bioaccumulation present a large and complex set of variables, including marine mammal and fish occurrence in the TMAA, population size, toxicity to each individual species, and habitat types and characteristics of the TMAA. An analysis of this magnitude would overwhelm the reader with details and scientific data, without adding substantial value to the overall analysis conclusions. Due to the short-term duration and impacts of Navy training activities in the GOA, bioaccumulation impacts are not significant.

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CDFU - 10		**Table 3.2-2: Failure and Low-Order Detonation Rates of Militant Ordnance** The failure rate of guns, grenades, rockets, etc. ranges from 1.78% to 8.23%. Representation as a percentage does not clearly articulate the amount of ordnance that is left in an unexploded state. As indicated in the Draft EIS, the training activities will take place in an area frequented by commercial fishermen. An increase in training activities will increase the percentage of unexploded ordnance left on the ocean floor. While the training area is large, there is no way to predict where a commercial fisherman will place their net. The fishing process can include dragging nets across the ocean floor. Unstable, unexploded ordnance poses the potential for significant risk to commercial fishermen. It is incomprehensible that the Draft EIS does not include any information on this inherent risk to public safety.	The DEIS addresses the use of live ordnance and the potential for ordnance items to not function as designed (i.e., dud) in Section 3.2 of the EIS/OEIS. In general though, undetonated ordnance could pose a risk to fishermen, particularly those fishing by bottom trawling. If a trawl were to contact undetonated ordnance, it could trigger a detonation. Most likely, the ordnance would not detonate for the same reason it failed to detonate upon impact with a training target or the water surface. Based on the number of live explosive ordnance used under Alternative 2 and the estimated failure rate, there would be approximately 0.007 undetonated explosive items per square nautical or one undetonated explosive item per 140 square nautical miles. While fisherman could contact undetonated ordnance, it would be unlikely given the large area of the TMAA. Text describing potential effects on public safety from undetonated ordnance has been added to Sections 3.14.2.3, 3.14.2.4, and 3.14.2.5 of the Final EIS/OEIS.
CDFU - 11		**3.7.8 At-Sea Explosions** Mitigation measures used to protect marine mammals may be inadequate. The Navy uses visual inspection and passive sonar to detect marine mammals prior to and during training activities. Passive sonar does not indicate the location of marine mammals, only that they are in the vicinity. The Navy will not cease training activities simply because they detect a marine mammal on the passive sonar; they will primarily rely on visual inspections to detect marine mammals and will only cease activities if the marine mammal comes within 200 yards. Marine mammals will only be detected when they come to the water's surface, thus they may have already entered the critical threshold area before they are spotted. Migration patterns should be studied and training exercises should occur outside of their migration routes.	The Navy does not claim or expect 100% of the animals present in the vicinity of training events will be detected, however, mitigation measures based on detection of marine mammals by exercise participants anywhere in the exercise area will result in the mitigation of some potential impacts. Monitoring reports from exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. As detailed in the introduction to Chapter 5, the Navy and NMFS as a cooperating agency have reviewed other potential mitigations measures as described.
CDFU - 12		Ordnance cannot be released and explosives cannot be detonated until the target area is determined to be clear. Training activities are halted immediately if cetaceans, pinnipeds, or sea turtles are observed in the target area. The Gulf of Alaska is prone to extreme weather and severe storms occurring regularly during the intended training exercise timeframe. The Draft EIS is lacking information relating to adverse weather conditions and how this would significantly impede Navy's ability to visually detect marine mammals and large schools of fish. This topic is briefly	The Navy believes it mitigation measures (Chapter 5) are effective and the monitoring reports substantiate this belief. (Please see “Marine Mammal Monitoring for the U.S. Navy’s Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)” available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]).

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		mentioned in Operating Procedures & Collision Avoidance however mitigation in this scenario is not well defined.	
CDFU - 13		**Other** Information on the migration patterns of fish is not sufficient. More information is needed in this area to fully describe the potential impact an increase in training activities might have to salmon returning to Prince William Sound and the Copper River.	The ocean migrations of salmonids was defined by Pearcy (1992) as 1) the coastal phase of juveniles, 2) the oceanic feeding phase, 3) the return of maturing fish from oceanic to coastal waters, and 4) coastal migrations of adults that terminate in freshwater. The distance traveled and the time spent in each of these phases vary greatly within and among species. Pacific salmon smolts from the Pacific Northwest and California generally move up and around the West Coast of North America following the continental shelf. Juvenile salmon, including those originating from Alaska (such as the Copper River), were found to remain over the continental shelf until the start of the Aleutians before moving offshore into the Gulf of Alaska. As such, many salmon species from Alaska, California, Washington, and Oregon would be expected to be present in the Gulf of Alaska for at least part of their oceanic feeding phase. For more information on fish migration patterns, please see Section 3.6.1.2 of the EIS/OEIS.
Douglas Dobyns - 1		In conducting exercises under either alternative 1 or 2, it would be good to have monitoring of the distributions and population densities of marine mammals - in study times of before, during and afterwards of equal durations - to assess whether the mammals have been herded into particular areas.	As described in Section 5.2.1.3, the Navy is planning to implement a comprehensive monitoring plan to determine if there are any observable effects from training activities. The Navy takes environmental stewardship very seriously and has been and will continue to be a leading sponsor of marine mammal research. The Navy provides a significant amount of funding and support to marine research. In the past five years the agency funded over $100 million ($26 million in FY08 alone) to universities, research institutions, federal laboratories, private companies, and independent researchers around the world to study marine mammals. For additional information on Navy research efforts, refer to Chapter 5, pages 5-19 and 5-20 of the Draft EIS/OEIS.
Douglas Dobyns - 2		The concern for this comment is that feeding of these marine mammals might be concentrated in areas where their ecosystem impacts are unusually concentrated.	Due to the temporary nature of the training, the constant movement of the participants, and the established mitigation measures that are in place, training will not have a concentrated effect on any areas such as where marine mammals may be feeding. In addition, concentrations of marine mammals engaged in feeding are much more likely to be detected and thus avoided by Navy training event participants.
Douglas Dobyns - 3		The longer-term impacts to commercial fishing should be known, if there are any.	The Navy is very aware of concerns from fishing fleets and fisheries in the Gulf of Alaska. As described in the Final

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			EIS/OEIS, analysis of impacts to fish, including those with swim bladders, are found in Section 3.6 of the DEIS. Based on the analysis in Section 3.6 and discussion of Socioeconomic impacts within Sections 3.12.2.3 through 3.12.2.5, Navy training activities will not impact commercial fisheries in the Gulf of Alaska. Cumulative impacts are addressed in Chapter 4 of the Final EIS/OEIS.
Douglas Dobyns - 4		Also, inter-species of marine mammal behavior should be assessed to find if exercises have caused changes.	The Navy is very concerned about the environment and is a leading sponsor of marine mammal research. The Navy provides a significant amount of funding and support to marine research. Please see response to Douglas Dobyns – 1 above regarding Navy funding and research.
EPA Region 10 - 1		Dear Ms. Burt: EPA has reviewed the above-referenced document (CEQ No. 20090424) in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. Section 309 specifically directs EPA to review and comment in writing on the environmental impacts associated with all major federal actions. Under our policies and procedures, we assign a rating to the Draft EIS/OEIS (herein EIS) based on the environmental impacts of the proposed action and the document's adequacy in meeting NEPA requirements. The EIS evaluates the potential impacts associated with current and proposed Navy training activities within the Temporary Maritime Activities Area (TMAA) located in the Gulf of Alaska (GOA). The TMAA covers an area of 42,146 square nautical miles (nm2) of surface and subsurface ocean training area and overlying airspace. The No Action Alternative evaluates the current level of Navy training in the TMAA, which entails an annual exercise of one joint force exercise occurring over a period of no more than 14 days during the summer months. Alternative 1 includes the activities under the No Action Alternative, as well its anti-submarine warfare training, use of active sonar, and incorporation of additional training activities to incorporate force structure changes. The period for training would also increase up to 21 days. Alternative 2, the Navy's Preferred Alternative, would essentially double the activity under Alternative 1 as well as incorporate a SINKEX exercise, up to 2 times per year. Overall we find the document to be well-organized, and the	Thank you for your input and recommendations for improving the Navy's EIS/OEIS.

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		tables and maps that are included are very helpful to the reader. We recognize the short-term nature of these activities, and applaud the Navy for developing an EIS in an attempt to fully evaluate the impacts of these activities. We also appreciate that the Navy considered to the extent possible other influences and stressors on resources in the TMAA, such as climate. change, and went to great lengths to include a quantitative comparison of alternatives that clearly identifies the differences in impacts amongst those alternatives.	
EPA Region 10 - 2		We do have concerns, however, regarding the limited range of alternatives considered, the analysis and disclosure of impacts, lack of analysis of wastewater discharges, impacts from munitions, impacts to marine mammals from mid-range active sonar, and the limited discussion regarding mitigation activities (such as turtle-free zones).	This comment is duly noted.
EPA Region 10 - 3		We also offer some suggestions we believe would improve the analysis, such as: -incorporating more detailed information on EPA's general permit and the related Letter Agreement for SINKEX, G307	This comment is duly noted. Text from the August 1999 SINKEX Letter of Agreement and MPRSA general permit regarding requirements for removal of PCBs and the estimated amount of PCBs remaining on vessels (approximately 100 lb per vessel, based on SINKEX Letter of Agreement) has been incorporated into Section 3.2.2.2 of the Final EIS/OEIS and analysis of Alternative 2 (Section 3.2.2.6).
EPA Region 10 - 4		and current information for the PM 2.5 designation for the Fairbanks area, for your inclusion in the Final EIS (Enclosure 1).	In October 2009, the Fairbanks North Star Borough was designated as nonattainment for $PM_{2.5}$, based on the increased stringency of the $PM_{2.5}$ 24-hr standard from 65 $\mu g/m^3$ to 35 $\mu g/m^3$. The discussion of the regulatory status of the Fairbanks North Star Borough air basin has been updated in Section 3.1.1.1 of the Final EIS/OEIS.
EPA Region 10 - 5		We have assigned a rating of "EC-2" (Environmental Concerns-Insufficient Information) to the Gulf of Alaska Navy Training Activities Draft EIS. A copy of EPA's rating system criteria used in conducting our environmental review is enclosed (Enclosure 2). Our rating and a copy of our comments will be published in the *Federal Register*. Thank you for the opportunity to review and provide written comments on the Gulf of Alaska Navy Training Activities Draft EISI/OEIS. If you have any questions regarding this letter, please do not hesitate to contact Jennifer Curtis of my staff at (907) 271-6324 or curtis.jennifer @epa.gov. Sincerely, Christine B. Reichgott, Manager, Environmental Review and Sediment Management Unit	This comment is duly noted.

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EPA Region 10 - 6		**ENCLOSURE 1** **EPA REGION 10 DETAILED COMMENTS ON THE GULF OF ALASKA NAVY TRAINING EXERCISES DRAFT EIS/OEIS** **Limited Range of Alternatives** The EIS evaluates a limited range of alternatives. We believe the alternatives analysis would be much improved by including alternatives that represent a more diverse level and mix of training instead of evaluating alternatives that simply build upon one another. The inclusion of an alternative with additional appropriate mitigation (40 CPR 1502.14(f)) would also expand the range of alternatives.	For EISs that study management levels of Federal assets, the no-action alternative is seen as the current management level of asset usage-in this case, status-quo as the current level of range usage. The no-action alternative can be thought of in terms of continuing with the present course of action until that action is changed. (46 Fed Reg 18026, at 18027). Alternatives 1 and 2 discuss the increase from these levels. The Navy has discussed all alternatives that were considered but eliminated in Section 2.3.2. Mitigation measures are examined in Chapter 5.
EPA Region 10 - 7		The use of geographic and/or temporal exclusions, even within the current timeframe and TMAA, can potentially be effective in reducing impacts to marine resources. We note that the DEIS considers this suggestion in the section discussing alternatives considered but dismissed (Section 2.3.2), but does not consider restrictions within the TMAA or identified timeframe.	As discussed in Section 3.8, the boundaries of the TMAA were adjusted to avoid the designated Critical Habitat for Steller sea lions. Mitigation measures presented in Chapter 5 are implemented as appropriate wherever marine mammals are detected and have been proven to be effecting in reducing impacts. As stated in the EIS/OEIS, and in public articulations of the professional military judgment of senior Navy leaders, alternatives that would impose geographic and/or temporal limitations on training within the GOA TMAA would not support the purpose and need. Additionally, limitations are inconsistent with the requirements for training in the TMAA and would remove the realism needed for accomplishing this critical training.
EPA Region 10 - 8		EPA supports the selection of alternatives that minimize the impacts to the environment while meeting the project's purpose and need. For this project, we identify Alternative 1 as the action alternative with the least impacts.	This comment is duly noted.
EPA Region 10 - 9		***Recommendation*** *EPA recommends that an alternative with additional mitigation measures be developed in the Final EIS, possibly incorporating geographic and/or temporal exclusions. We recommend the identification of geographic areas where training restrictions would be especially beneficial to environmental resources, such as the Seamounts and other areas with substantial upwelling, and additional discussion of how excluding such an area would affect training goals and the underlying purpose and need. We also recommend that the Navy reconsider its selection of Alternative 2 as its Preferred Alternative as it is the alternative with the greatest impacts to resources and the environment.*	As detailed beginning in Section 5.2.1.6, additional mitigation measures have been considered and in cooperation with NMFS as a cooperating agency. The most effective mitigation measure that still allows Navy to conduct vital training have been proposed. Please see Chapter 5 regarding discussion of each of the additional mitigation measures suggested in your comment. The Preferred Alternative is the alternative that meets all the selection criteria. For these reasons, the Navy believes that issues that would be addressed in adding an alternative along these lines have already been evaluated in different parts of the FEIS/OEIS, specifically in Chapters 2 and 5.

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EPA Region 10 - 10		**Analysis and Disclosure of Impacts** We are concerned that the some of the potential impacts from project activities are not properly disclosed in the EIS. Conclusions of "no substantial effect" are not always adequately demonstrated and, on some occasions, the lack of knowledge regarding resource impacts seems to be presented as justification for a conclusion of no substantial impact. This approach is frequently in the impacts analysis, and may result in some impacts being underestimated. A possible reason for these deficiencies could be the lack of data or understanding of resources and systems in the GOA.	The Navy considered the best available science in evaluating reasonably foreseeable significant adverse effects on the human environment in this EIS/OEIS. The Navy has taken a hard look through its analysis and has considered competing and contradictory scientific research in supporting its conclusions. Conclusions are justified and do not underestimate impacts. Given particular protective measures, best management practices, standard operating procedures and mitigation measures for Navy's activities, impacts are further reduced when applied. Specifically, this EIS/OEIS identifies methods used, references reliable scientific sources, discusses responsible opposing views, and discloses incomplete or unavailable information, scientific uncertainty, and risk (See 40 CFR,1502.9 (b),1502.22,1502.24).
EPA Region 10 - 11		In addition, the EIS tends to assume an even distribution of resources and impacts, which does not accurately reflect the natural distribution of aquatic resources, or the likely nature of distribution and disbursement of impacts. As a result of the approach taken, the EIS seems to have averaged the impacts over the TMAA and concluded that localized impacts would be minimal and temporary, and thus not substantial. This may not be accurate, even in the open ocean.	The estimated density of expended training materials deposited in the TMAA is based on the Navy's experience that its use of other training areas is not uniform (Section 3.2.2.3). The 20 percent use of the TMAA - a conservative "worst-case" assumption - is derived from interviews with Navy personnel. Assumptions are necessary to support quantitative estimates where specific data are not available; the Navy considers this assumption to be reasonable.
EPA Region 10 - 12		The following are specific examples of the above concerns: Water quality impacts. The EIS acknowledges unavoidable effects on ocean and surface water quality, including the introduction of hazardous materials from munitions, yet concludes that no long-term impacts to water resources would occur, and short-term impacts are not addressed.	The potential for releases of hazardous substances from expended training materials is addressed in Expended Materials (Section 3.2.2.1) of the Final EIS/OEIS. The EIS/OEIS acknowledges unavoidable short-term effects on ocean water quality (surface waters were not addressed, as no surface waters will be impacted), but concludes that long-term impacts on water resources would not be substantial. This conclusion is based on a qualitative, item-by-item evaluation of the potential for short-term and long-term releases of toxic or hazardous substances into the environment. Text on the estimated amount of PCBs from SINKEX vessels (about 100 lb per vessel [1999 SINKEX Letter of Agreement]) has been added to Section 3.2.2.6 of the Final EIS/OEIS. Text on the expected leaching rate of copper thiocyanate (0.015 µg/L) from sonobuoys has been added to Section 3.2.1.1.
EPA Region 10 - 13		<u>Sonar impacts on fish.</u> The EIS acknowledges that the "effects of sound on fish are largely unknown" and that there is a "dearth of empirical information on the effects of exposure to sound, let alone sonar, for the vast majority of	The citations abstracted from Section 3.6 must be viewed in context but edits will be made to this important material. The comment is in reference to text on page 3.6-42 which reads, "These experiments did not cause any significant direct

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		fish." However, the EIS documents a study that showed a statistically significant post-exposure mortality of 20 to 30% from simulated Naval sonar signals, and another that found the use of continuous-wave transmissions within the frequency band corresponding to swim bladder resonance will escalate this impact by an order of magnitude, resulting in affects to 0.6 percent of the total stock of juvenile fish. There is no discussion, however, that continuous-wave transmissions at such frequency will not be employed, nor is there discussion of the avoidance measures in response to identification of populations of fish at more vulnerable life stages. The EIS concludes, however, that "limited information currently available suggests that populations of fish are unlikely to be affected by the projected rates and areas of use of military sonar." ***Recommendation*** *We recommend the conclusions drawn in the impact analysis be reevaluated and where impacts are unknown or potentially more substantial, the EIS be revised to reflect this. We also recommend that the assumption of even distribution/disbursement or resources and impacts be reconsidered and revised, if possible, to more accurately reflect the actual spatial and temporal distribution of both.*	mortality among the exposed fish larvae or juveniles, except in two (of a total of 42) experiments on juvenile herring where significant mortality (20 to 30 percent) was observed". Edits will make clear that the sounds used in the experiment were not like U.S. Navy mid-frequency sonar. In the Programmatic Biological Opinion on Keyport and Northwest Training Range Complex dated November 12, 2010, NMFS wrote: Jørgensen et al. (2005) exposed fish larvae and juveniles representing three different species to sounds that were designed to simulate mid-frequency sonar transmissions (1 to 6.5 kHz) to study the effects of the exposure on the survival, development, and behavior of the larvae and juveniles (the study used larvae and juveniles of Atlantic herring, Atlantic cod, saithe (Pollachius virens), and spotted wolfish (Anarhichas minor)). The data from the experiment does not support a causal relationship from sonar exposure and mortality of fish in the study as many fish in the control group died without ever being exposed to sound. As such, a causal relationship was not established.
EPA Region 10 - 14		**Wastewater Discharges** The EIS states that discharges from military vessels are not considered point source discharges under the Clean Water Act but that there are Uniform National Discharge Standards for 25 discharges for military vessels up to 12 nm. Since the EIS only considers activities beyond 12 nm, it is unclear why this information was included, particularly since there is no discussion of what the anticipated wastewater discharges (type and volume) will actually occur. There is also no discussion of the impacts that will result from the wastewater discharges. ***Recommendation*** *EPA recommends that the Final EIS clearly identify any applicable restrictions to wastewater discharges (if any) for the proposed action, the projected types and volumes of discharges, and the anticipated impacts to marine resources from those discharges. We also recommend that the Navy consider additional appropriate mitigation measures to minimize the discharges and subsequent impacts o/those*	The information on the Clean Water Act in Section 3.3.2.2 is not applicable to training in the Gulf of Alaska because training activities occur further than 12 nautical miles from shore. All Navy waste discharges beyond 12 nautical miles would be conducted in accordance with standard operating procedures and best management practices as outlined in OPNAVINST 5090.1C, and as described in Section 3.3.1.2 of the EIS/OEIS. The discussion of wastewater discharges has been removed from Section 3.3.2.2 of the Final EIS/OEIS.

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		discharges.	
EPA Region 10 - 15		**Impacts from Munitions** The EIS identifies the potential for contamination from munitions components including various heavy metals releases from sonobuoys, leaching of hazardous bomb materials, release of cyanide from torpedoes, various explosives compounds such as aluminum perchlorate, picric acid, etc., and organic chemicals from underwater detonations. The EIS concludes that there would be no long-term or substantial degradation of water resources and no short-term impacts because contaminants would be diluted in the ocean and metal materials would corrode, thus preventing the deterioration of certain objects. We understand the assumption regarding ocean dilution~ however, we believe the assumption should be substantiated with monitoring data, particularly since such activates have been occurring for nearly a decade, and are expected to continue (and possibly increase in frequency and duration) into the foreseeable future. Because of the cumulative impacts to ocean water quality, good stewardship can no longer assume that the size of the ocean will dilute and disperse all pollutants to safe levels, especially considering that metals such as copper and lead bioaccumulate in marine organisms. ***Recommendation*** *We recommend the development and implementation of a monitoring program for the GOA to validate the Navy's conclusions that impacts would not result in long-term degradation of water resources. The Navy should conduct the necessary monitoring to substantiate the assumptions being made regarding the lack of impacts from munitions releases into the ocean environment.*	Please see response to AMCC – 15. Additionally, please note that engineering calculations supported by conservative assumptions demonstrate that the quantities of munitions expended by the Proposed Action would not result in a significant impact on the ocean environment of the Gulf of Alaska. In the absence of a potentially significant impact, monitoring of water or sediment quality would be impracticable due to the vast region covered by the proposed TMAA and the significant depths at which some of the monitoring would need to occur. Regarding bioaccumulation, please see response to CDFU – 9.
EPA Region 10 - 16		**Impacts to Marine Mammals from Mid-frequency Active (MFA) Sonar** We have concerns regarding impacts to marine mammals from MFA sonar in an area that historically has not had MFA sonar activity, or such activity is not disclosed in the EIS. The EIS estimates that the Preferred Alternative will result in a total of 425,551 Level B harassments from active sonar and other non-sonar acoustic sources, and possibly one Level A harassment, affecting all species of marine mammals, including all seven listed species. We are also	The analytical methodology used in the impact assessment for marine mammals was developed in close association with NMFS. The methodology represents the best available and most applicable science with regard to analysis of effects to marine mammals from MFA/HFA sound sources. While recognizing there is incomplete and unavailable information with regard to behavioral impacts on marine mammals, the methodology does look to effects as low as 120 dB SPL specifically to encompass uncertainty and the potential for behavioral reactions in marine mammal species that may be

ID	Organization	Public Comment (Written)	Navy Response
		concerned that the impact assessment methodology (derivation of marine mammal density) assumes a uniform distribution of animals although the EIS clearly states that this is "rarely likely true". The EIS recognizes that there are many unknowns in assessing the effects and significance of marine mammal responses to sound exposures but makes no judgment based on the estimated number of harassments as to whether these impacts are anticipated to significantly affect the species. The Council on Environmental Quality (CEQ) Regulations list criteria for assessing significance: the degree to which the effects on the quality of the human environment are likely to be highly controversial, the degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks, and the degree to which the action may adversely affect endangered or threatened species (40 CFR 1508.27(4),(5) and (9) respectively). When considered in this light, impacts of MFA sonar on marine mammals may be considered significant under NEPA. We understand the Navy is working with the National Marine Fisheries Service to obtain a Letter of Authorization under the Marine Mammal Protection Act. ***Recommendation*** *We recommend the Navy consider the scientific controversy, uncertain/unknown risks, and presence of threatened and endangered species in assessing significance of impacts from MFA sonar on marine resources. EPA recommends the Navy operate sonar at the lowest practicable level to achieve mandated training levels. We recommend the approach taken for the Hawaii Range Complex be utilized, where an additional alternative was created for the Final EIS that held sonar use at minimal (existing) levels while increasing training activity.*	affected by sounds perceived at levels just above ambient in some areas during some parts of the year in the GOA. The methodology does assume that marine mammals are evenly distributed over the entire area of potential effects. This is a conservative approach since the methodology would over estimate effects given that marine mammals appearing in pods or groups are easier to detect and therefore be avoided by the use of the Navy's standard operating procedures serving as protective measures. The information from the methodology about harassments and takes has been provided to the NMFS for their use in determining the significance of those effects to the various marine mammal populations. After determining the significance, NMFS will issue a Letter of Authorization under the Marine Mammal Protection Act. That LOA will outline what conditions and mitigation measures the Navy will be required to enact, above Navy's existing protective measures. The Hawaii Range Complex (HRC) Final EIS/OEIS did add an alternative in the Final EIS/OEIS that increased training activities but kept the amount of sonar usage to existing levels. Those levels were determined to allow the Navy to meet its future ASW and non-ASW training and RDT&E mission objectives while maintaining historic levels of ASW training to avoid increases in potential effects to marine mammals in the HRC. However, in the GOA TMAA, sonar usage for training has not been done before. Therefore, the Navy could not develop an alternative with existing levels as was done in the HRC EIS. The levels of sonar usage proposed in the GOA EIS/OEIS do represent those minimum levels that are required to allow Navy to meet its ASW training obligations.

ID	Organization	Public Comment (Written)	Navy Response
EPA Region 10 - 17		**Mitigation Discussion and Effectiveness** Although the EIS dedicates a full chapter to mitigation, and incorporates mitigation discussion in the impact analysis, there are several instances where the mitigation measure is not clearly identified or defined, and the relevance of the measure to actual impacts is not explained. There are also references to best management practices, Navy policies and standard operating procedures, but specific actions are not always identified, and when they are, no discussion of the anticipated effectiveness of mitigation occurs. It is important that mitigation measures be discussed, especially if they are the basis for concluding that impacts will not be substantial or will not occur at all. Results of monitoring of training impacts would also be helpful to include in mitigation discussions. ***Recommendation*** *EPA recommends further refinement of mitigation measures to include clear identification of the measure (i.e. turtle-free zone), a discussion of the anticipated effectiveness and likelihood of implementation. Monitoring efforts should be included.*	The mitigation measures proposed were developed in cooperation with NMFS. Discussion of the Integrated Comprehensive Monitoring Plan and the GOA specific plan are described beginning at Section 5.2.1.3. Additionally, the Navy believes it mitigation measures are effective and the monitoring reports substantiate this belief. (Please see "Marine Mammal Monitoring for the U.S. Navy's Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)" available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]).
EPA Region 10 - 18		**General Comments** **Discussion regarding SINKEX** The EIS states that the sinking exercise (SINKEX) activities will be "conducted under the auspices of a permit from the USEPA". We recognize that this is a reference to the general permit issued by EPA under the Marine Protection, Research, and Sanctuaries Act (MPRSA) for the SINKEX. However the EIS presents very little information about the requirements and conditions of this permit, or the related August 1999 Letter Agreement between the Navy and EPA. In addition, the EIS refers to the potential for floating non-hazardous expended material to be lost (to become persistent seabed litter) or washed ashore as flotsam. It should be noted that the SINKEX general permit states that "Before sinking, appropriate measures shall be taken by qualified personnel at a Navy or other certified facility to remove to the maximum extent practicable all materials which may degrade the marine environment, including without limitation removing from the hulls other pollutants and all readily detachable material capable of creating debris or contributing to chemical pollution." If the sinking	Please see response to EPA Region 10 – 3.

ID	Organization	Public Comment (Written)	Navy Response
		exercise could create floating non-hazardous expended material that will create persistent marine debris or has the potential to wash ashore, the Navy must attempt to remove such material from the marine environment. While disposal of materials during SINKEX is a permitted activity, the EIS should disclose the amount of polychlorinated biphenyls (PCBs) that would be disposed into the ocean under each of the project alternatives. ***Recommendation*** *We recommend that the Final EIS include additional discussion to inform the reader of the conditions with the permit and agreement, including but not limited to: the removal of all PCB transformers and large capacitors; the removal of all small capacitors to the greatest extent practical; removal of readily detachable solid PCB items; the cleaning of petroleum from tanks; piping and reservoirs, as well as the removal of trash, floatable materials, and mercury or fluorocarbon containing materials. The Final EIS should clearly note that the requirements of both the 1999 EPA/Navy agreement and the SINKEX General Permit under 40 CFR 229.2 are to be met in order to comply with the MPRSA SINKEX General Permit. For material that is expected to become flotsam or beach debris, we recommend the consideration of additional mitigation, such as supporting marine debris cleanup efforts in areas potentially affected by such debris.*	
EPA Region 10 - 19		**PM2.5 Designation for Fairbanks** EPA recently finalized its rule to designate portions of the Fairbanks North Star Borough as non-attainment for PM2.5. The EIS currently contains information that is now out-of-date. ***Recommendation*** *We recommend that the Final EIS be updated to reflect the current designation as discussed in the final rule. Please see Final Rule at: http://frwebgate6.access.gpo.gov/cgibinIPDFgate.cgi?WAISdocID=104316123081+4+2+0&W AISaction=retrieve)*	Please see response to EPA Region 10 – 4.
EPA Region 10 - 20		**Evaluation of World War II Dumps in the GOA** During scoping, commenters identified concerns regarding past dumpsites from the World War II era, and requested that the Navy reidentify those and consider them in the analysis.	Past military practices and historical contamination sites are beyond the scope of the EIS/OEIS; they are not associated with the Proposed Action. With regard to the cumulative impacts addressed in Section 4 of the EIS/OEIS, no reliable information on the location, extent,

ID	Organization	Public Comment (Written)	Navy Response
		There does not appear to be any discussion regarding these sites in the document outside of the scoping summary. ***Recommendation*** *While specific information relating to the existence, location and possible constituents of past marine dump sites may not be readily available, we recommend that any reliable information (e.g. information from the marine charts referenced by the commenter) currently available be reviewed and any conclusions, even general, regarding these sites be included in the cumulative impacts assessment in the Final EIS, if possible.*	or contents of World War II military dump sites in the GOA have been identified.
EPA Region 10 - 21		**Programmatic Nature of EIS** Although the document is not currently identified as a Programmatic EIS, it does appear that the EIS is programmatic in nature as it identifies, for an unknown period of time, activities that could occur within a specified range in magnitude, scale, and timeframe. As such, it may beneficial for the Navy to identify the document as programmatic and also set an estimated timeframe for which these activities are anticipated to occur (i.e. 5 or 10 years) before reevaluation, regardless of changes to the activities. We believe that reevaluation at regular intervals is important given the complexity of the marine dynamics as well as the substantial changes being observed in the GOA. ***Recommendation*** *We recommend that the Navy consider identifying the document as a Programmatic EIS and determine a timeframe for reevaluation.*	Navy training is a continuous and ongoing action that varies and shifts with time to meet training needs. The Navy has taken a comprehensive approach in developing environmental compliance documents for our ranges and operating areas, including GOA. The GOA EIS/OEIS is evaluating Navy activities in the GOA TMAA for which the Navy will be conducting mitigation and monitoring on an annual basis, under the terms and conditions of both the ESA Incidental Take Statement and the MMPA Letter of Authorization. Navy training activities in the GOA TMAA will be continuously evaluated on a five-year basis to support the timeframe of the ESA and MMPA authorizations. After this time, the Navy will undertake additional NEPA analysis and related/necessary regulatory actions to continue Navy training in the TMAA. This EIS/OEIS is serving as both the Navy's NEPA compliance document for training activities in the GOA and also the NMFS decision to issue a Letter of Authorization permit.
EPA Region 10 - 22		**Consideration of MPRSA** The MPRSA is not currently listed in several lists or discussions of environmental laws applicable to this project, even though it is quite relevant to the SINKEX activities. ***Recommendation*** *We recommend including the MPRSA in lists and discussions of environmental laws throughout the document where appropriate.*	The Marine Protection, Research, and Sanctuaries Act of 1972 is addressed in Section 3.2.2.2, Expended Materials, and Section 3.3.2.2, Water Resources. The identified sections also include descriptions of the SINKEX general permit under MPRSA. While not explicitly identified in other sections of the EIS/OEIS, MPRSA is indirectly referenced when resources sections refer to hazardous material or water quality analysis provided in Section 3.2 or 3.3, respectively.
EPA Region 10 - 23		**ENCLOSURE 2** **U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements Definitions and Follow·Up Action*** **Environmental Impact of the Action**	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
		LO - Lack of Objections The U.S. Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal. **EC - Environmental Concerns** EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts. **EO - Environmental Objections** EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts. **EU - Environmentally Unsatisfactory** EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ). • From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.	
EPA Region 10 - 24		**Adequacy of the Impact Statement** **Category 1 – Adequate** EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information. **Category 2 - Insufficient Information**	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
		The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS. **Category 3 – Inadequate** EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.	
Eye of the Whale Olga von Ziegesar - 1		My name is Olga von Ziegesar. I am the director of Eye of the Whale, a nonprofit research group here in Alaska. Our mission is to study and protect the humpback whale, and to educate people of the status and health of the species. We have been documenting the population of the humpback whales of Prince William Sound and the North Gulf coast of Alaska for thirty years. In 1966 the humpback whale was put on the Endangered species list and was protected by the Marine Mammal Protection Act. In the thirty years of my study I have seen the population of the north Pacific humpback whale go from 3000 to 20,000 whales. About five thousand of these migrate up into the North Gulf of Alaska to feed. This area includes the Cook Inlet, Kodiak, the Barren Islands, Kenai Fiords, Prince William Sound, and the waters in-between.	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
Eye of the Whale Olga von Ziegesar - 2		It is known that military sonar testing is very damaging to the soft tissue in marine mammals' skulls and organs. These affects can cause brain hemorrhages, mass stranding, and even death. Mid frequency sonar has been proved to be very disruptive to whale diving and feeding behavior. They will avoid the intense sounds by surfacing too quickly and causing conditions similar to the "bends".	For acoustic exposures to result in injury to marine mammals, the sound source has to be very loud and the animal very close (within a few meters) for there to be a direct effect. Mass strandings of whales have occurred as described in Appendix F, however, this occurrence is relatively rare and the reasons it has occasionally happening are therefore not well understood. The Navy has been using mid-frequency and high-frequency active sonar for decades in the Fleet concentration areas of the East Coast, Southern California, and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations as documented in monitoring reports at these training ranges (see “Marine Mammal Monitoring for the U.S. Navy’s Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)” available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). The Navy’s analysis and history demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS.
Eye of the Whale Olga von Ziegesar - 3		You may think that these Military tests would be harmless if they are done in the winter, and not during summer months when the whales are most abundant. We are now finding that many whales stay in Northern waters during the winter to continue their feeding. Hydrophone arrays hung from buoys in the Gulf of Alaska have recorded whale songs and calls during all months of the year.	Please see Section 3.8 of the EIS/OEIS regarding presentation of this same information.
Eye of the Whale Olga von Ziegesar - 4		You will say that your plan is to have observers aboard to watch for whales, and when they are present the testing will be ceased. Marine mammals can hear for many miles under water. From the deck of a ship a whale blow can only be seen if it is within a couple of miles. For these reasons, it will be impossible to avoid affecting the whales, and other marine mammals during any time of the year in the Gulf of Alaska.	Please see response to Greg Brown – 8.
Eye of the Whale Olga von Ziegesar - 5		Finally the humpback whale population is recovering to healthy numbers and now the Navy proposes to endanger them with intensive sonar and explosives. It seems to me that we must change something if protecting our country means sacrificing the whales.	The Navy has been conducting these same training events including the use of sonar for decades in the Hawaiian Islands including within the Humpback Whale National Marine Sanctuary with no apparent affects on the recovery of humpback whales. As presented in Section 3.8, Navy does not anticipate any population level affect on humpback whale in the Gulf of Alaska from Navy training activities.

ID	Organization	Public Comment (Written)	Navy Response
Eye of the Whale Shelley Gill - 1		My name is Shelley Gill and I work for Eye of the Whale, a nonprofit research group here in Alaska. Our mission is to study and protect the humpback whale, and to educate people on the status and health of the species. We have been documenting the population of humpbacks along the north Gulf of Alaska coast for thirty years. In 1966 the humpback was placed on the endangered species list and was protected by the Marine Mammal Protection act. It has taken thirty years but the humpback has finally begun to make a comeback and we now estimate a population of about 20,000 whales. About 5000 of those migrate up into the North Gulf of Alaska to feed. They congregate, with their calves, along the shelf where the Navy proposes to do this testing. The area includes the Cook Inlet, Kodiak, the Barren Islands, Kenai Fiords, Prince William Sound and the waters in between. In the last five years, in this same area, scientists have made the first sightings of Blue Whales, a species not seen in Alaska since the 1940's. They appear to be re-establishing migration patterns disrupted by 1920's whaling that nearly led to the extinction of the species. Because of a change in herring stocks and feeding patterns we have documented a large exodus of humpback whale from interior water to the outside Gulf coast. Prince William Sound an the adjacent areas are beginning-just beginning-to recover from the devastating Exxon Valdez Oil Spill 20 years ago. We watched as Stellar sea lion populations plummeted and they are now on the endangered species list.	This comment is duly noted. Please note that the proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. Additionally, please note that Humpback, blue whales and stellar sea lions have been carefully considered in Section 3.8 of the FEIS/OEIS and were included in the acoustic modeling analysis. The Exxon Valdez oil spill was addressed within the affected environmental baseline descriptions of the GOA area.
Eye of the Whale Shelley Gill - 2		It is important to note that any form of sonar can adversely affect not only whales but all marine mammals; sea otters, seals and sea lions. It is well documented that sonar testing is extremely damaging to the soft tissue in marine mammals' skulls and organs. It causes brain hemorrhages, mass strandings, even death. Mid frequency sonar is very disruptive to whale diving and feeding behavior as well. Whales will avoid the intense sounds by surfacing too quickly. This causes a condition similar to the bends.	Please see Section 3.8 regarding the analysis of affects to marine mammals from the proposed use of mid and high frequency sonar during Navy training activities. With regard to the injuries and strandings, please see the full analysis of marine mammal strandings in Appendix F of the EIS/OEIS – Cetacean Stranding Report.
Eye of the Whale Shelley Gill - 3		Further, through explosive testing a number of toxins will be released into the water. The impacts are unknown. Your proposed "training exercise" has the potential to set back PWS recovery, disrupt commercial and sport fishing along the offshore shelf and poses a real threat to whale populations.	Please note that as depicted in Figure 1-1, Prince William Sound (PWS) is over 50 miles from the nearest corner of the TMAA where the proposed training activities will occur. Socioeconomic impacts in regard to the fishing industry, tourism, and recreation have been analyzed in the EIS/OEIS in Section 3.12 - Socioeconomics. To help manage competing

ID	Organization	Public Comment (Written)	Navy Response
			demands and maintain public access in the GOA, the Navy conducts its offshore activities in a manner that minimizes impacts to commercial fishing.
Eye of the Whale Shelley Gill - 4		After reviewing the plan of action for activity when whales are present, the Navy should be aware that is totally irresponsible and demonstrates their ignorance regarding cetacean behavior and physiology. You state you will have spotters who will alert the bridge when there are whales present and when they are present the testing will be ceased. Marine mammals can hear for many miles under water. Blue whales echolocate across 1000 miles of sea. However, from the deck of a ship, a whale blow can only be spotted if it is within a couple of miles. For these reasons, it will be impossible to avoid adversely affecting the whales and other marine mammals during any time of the year in the Gulf of Alaska.	Navy lookouts undergo extensive training to include on-the job instruction under supervision of an experienced lookout followed by completion of Personnel Qualification Standard Program. In addition, NMFS-approved Marine Species Awareness Training is required before every sonar exercise. While the Navy is very confident in its well-trained lookouts, it does not expect that 100% of the animals present in the vicinity of training events will be detected. As such, the Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals. Monitoring reports from exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. (Please see the recent results supporting this as presented in training ranges monitoring reports "Marine Mammal Monitoring for the U.S. Navy's Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)" available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). An integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the EIS/OEIS. Based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations. The suite of mitigation measures proposed by Navy, developed in coordination with NMFS, and presented in Chapter 5 provides the best balance between the need to be precautionary in the protection of marine mammals and the needs to realistically train at sea.. Please refer to Chapter 5 of the EIS/OEIS which presents the U.S. Navy's protective measures in addition to visual detection from ships (such as passive detection of vocalizations, observations from available aircraft), outlining steps that would be implemented to protect marine mammals and Federally listed species during training events.

ID	Organization	Public Comment (Written)	Navy Response
Eye of the Whale Shelley Gill - 5		Last year Prince William Sound fishermen experienced one of the worst fishing years in history. In these uncertain economic times it was a severe blow to our economy. Scientists are struggling to figure out what is going on in PWS and adjacent waters. Water temperature increases due to global warming are a real factor. Ocean acidity, lack of food stocks; all these elements play a role. At this point having the Navy off the coast setting off explosions and testing mid range sonar for a training exercise on the fishing grounds is a pressure the area cannot handle. Sincerely, Shelley Gill Eye of the Whale	As depicted in Figure 1-1, Prince William Sound (PWS) is over 50 miles from the nearest corner of the TMAA where the proposed training activities will occur. As detailed in Section 3.6, the use of explosives may result in injury or mortality to individual fish but would not result in impacts to fish populations. Because only a few species of fish may be able to hear the mid and high frequency sonar, the training events employing their use would result in minimal harm to fish and only minimal and temporary impacts to Essential Fish Habitat.
Nina Faust & Edgar Bailey - 1		Comments RE: Gulf of Alaska Navy Training Activities EIS/OEIS Dear Sirs, We are appalled at the proposal to expand Navy Training Activities in the Gulf of Alaska. The fact that the Navy even does any training exercises in the spring and summer in this richly biodiverse area when many whale species are migrating north and other species are spawning or giving birth, is biologically insensitive and ecologically adverse. We are strongly opposed to any proposals to expand these operations in the Gulf of Alaska.	This comment is duly noted.
Nina Faust & Edgar Bailey - 2		Alaska has a long history of toxic military waste that has recently come to light. Some of this waste will affect Alaskan waters for a long time to come. The Navy's proposal to increase ocean pollution here with the enormous addition of expended hazardous material is unconscionable, especially considering the dependency of Alaskans on salmon, crab, pollock, cod and other important seafood harvested by our fishing fleets.	Please see response to AMCC – 15. Additionally, please note that initial releases and peak concentrations of hazardous materials from expended materials would not result in water or sediment toxicity. Hazardous materials would be quickly dispersed by ocean currents to non-toxic concentrations, and would not be expected to adversely affect marine organisms.
Nina Faust & Edgar Bailey - 3		Adding the proposed toxins from exploded ordinances threatens Alaska's clean water and fishery resources. Considering the mess left by the bombing range at the mouth of Eagle River, we know all too well how toxic exploded ordinances are.	The effects of ordnance use during seasonal training exercises over water in the GOA are not comparable to those of long-term use of a land range. Only a small portion of the expended training materials, by weight, would be explosives, and all but trace quantities of explosives byproducts would be consumed during their use (detonation); high-order detonations are approximately 99.997% efficient in converting explosives to non-hazardous inorganic compounds (see Page 3.2-2 of the EIS/OEIS). These trace quantities of byproducts would be quickly dispersed. Byproducts of live ordnance are addressed in Section 3.2 of the EIS/OEIS.

ID	Organization	Public Comment (Written)	Navy Response
Nina Faust & Edgar Bailey - 4		The sonar testing is of grave concern to the marine mammals in Gulf of Alaska waters. It is well known and well documented that sonar can disrupt marine mammals and even kill them. The Navy knows the research.	Please see Appendix F regarding the potential stranding of marine mammals associated with sonar use and Section 3.8 regarding the potential effects on marine mammals. As the analysis presented in Section 3.8 indicates, the use of sonar is not predicted to result in any injury or death to any marine mammals based on the best available science. Also see Chapter 5 for a presentation of the mitigation measures developed in coordination with National Marine Fisheries Service to reduce risk to marine mammals from sonar use.
Nina Faust & Edgar Bailey - 5		We oppose the active sonar training proposals due to the very sensitive populations of marine mammals. populations of sea otters and sea lions have fallen dramatically in the past decade, threatening their viability. Adding the stress of sonar testing to populations that are already in trouble should not be allowed.	Your comment is noted, however, as detailed in Section 3.8 on environmental consequences, the analysis indicates there should be no impacts to populations of marine mammals including sea otters and sea lions.
Nina Faust & Edgar Bailey - 6		We do not support the proposed alternatives in the EIS/OEIS. At the very least, the exercises should stay status quo. At the best, we would like to see a cease and desist of all of these exercised in these very important marine mammal and fishery areas.	This comment is duly noted.
Nina Faust & Edgar Bailey - 7		The cumulative effects of the added stresses the Navy is proposing may be the too much for already stressed marine mammal populations. In Alaska, our wild resources are important for our security and that should be respected. Sincerely, Nina Faust - Edgar Bailey.	The cumulative impacts analysis addresses the environmental impacts that result from the incremental impact of Navy activities when added to the past, present, or reasonably foreseeable future actions that affect the same resources. Table 4-1, in the Final EIS/OEIS, succinctly depicts the categories of past, present, and reasonably foreseeable future actions that have an effect on cetacean populations. The FEIS/OEIS analyzes and compares the effects of Navy actions on specific resources in detail, and places those in the context of other sources of impacts. With regard to marine mammals, the cumulative impacts analysis accurately concludes that Navy activities, while they may affect marine mammal species, will not present significant impacts.
Carolyn Heitman - 1		Enclosed are additional comments on the GOA Draft EIS/OEIS to be included with my oral comments on January 7, 2010. I found the DEIS to be completely inadequate and lacking in the Navy's analysis of mid-frequency active sonar impacts to humans, fish and marine life (endangered North Pacific right whales e.g.) in, or near the GOA TMAA- including inland/overland areas which could potentially be affected by the Navy, Air Force and Army joint training exercises.	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
Carolyn Heitman - 2		The Navy seems to be focusing mainly on mid-frequency active sonar use in the DEIS, but there are other sonar frequencies that could be just as hazardous to marine life (and humans), such as low-frequency (LF) and extremely - low frequency (ELF) transmissions, which the Navy uses on a regular basis in various areas. If the Navy is also proposing the use of LF and ELF in the GOA TMAA or over land area, that information needs to be included in the FEIS along with the hazardous transmission effects on marine life-mammals and humans.	The Navy is not proposing to use low-frequency or extremely low-frequency transmissions during its training activities in the TMAA.
Carolyn Heitman - 3		Also, it states in the DEIS that the Navy does not know the hazards to birds from mid-frequency active sonar at long ranges.	Section 3.9 of the EIS/OEIS provides a thorough analysis of potential impacts to seabirds. Best available science was considered in the analysis of potential impacts to seabirds. The analysis concluded that the Navy's activities would have no significant impacts to seabirds.
Carolyn Heitman - 4		What about the risks to humans from long range MFA sonar? Taking into consideration all of the scientific research and studies that have been done by Navy scientists and others, I suspect the hazards are known but the Navy did not want to list them in the DEIS. The hazards to humans, birds, mammals and sea life needs to be included in the DEIS/OEIS.	Sonar effects on humans are described in Section 3.14.2.4 in the Public Safety section of the EIS/OEIS, while sonar effects for the listed biological resources listed in the comment are addressed in the individual resource sections of the EIS/OEIS. Potential impacts of sonar on humans were discussed in Section 3.14.2.4 and determined to only be possible when humans are underwater and close to the sonar source. Due to the infrequency of diving activities in the TMAA and the location of training activities (over 12 nautical miles from the closest land mass), impacts on humans are not likely.
Carolyn Heitman - 5		The GOA DEIS is mainly focused on the use of mid-frequency active sonar and some evaluations and information was omitted in the draft which should have been included for public comment. Section 3.14-Public Safety and Section 3.14-7-Aircraft Overflights in the GOA DEIS very briefly mentions potential risks to the public from ship or aircraft electromagnetic transmissions.	Radar used during training activities would follow Standard Operating Procedures (SOPs) to ensure both public and Navy personnel safety. Radar and other electromagnetic sources on Navy vessels have their highest intensities at the source; the strengths of these electromagnetic fields decrease at a geometric rate with increasing distance from the source. These sources also are elevated substantially above the surface of the ocean. Thus, non-Navy vessels operating at a safe navigational distance from Navy vessels would not be at risk from electromagnetic sources.
Carolyn Heitman - 6		However, in a October 22, 2008 Elmendorf Air Force Alaska briefing by Major Rob Peck, Airspace & Range Operations Team Chief, 611 AGC Combat Operations Division, he stated that the GOA EIS is mainly a subsurface evaluation and that although the Navy was looking at airspace, there would be no airspace proposal or rulemaking associated	Navy training in the TMAA would use existing designated airspace and general use airspace that has already received environmental analyses in Air Force and Army NEPA documents. Additionally, according to the FAA, no permanent airspace needs to be established as part of the Proposed Action. A more detailed discussion on the effects of the

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		with the EIS. Why was an airspace evaluation not done for warfare training exercises?	Proposed Action on air traffic is described in Section 3.11; Transportation.
Carolyn Heitman - 7		I am requesting that a Supplemental GOA DEIS be done as soon as possible, so that the public has time to comment on it, even if it means a delay in releasing the FEIS. Since the Navy, Air Force and Army are cooperating and doing combat training exercises together in the GOA and elsewhere in Alaska, the Supplemental GOA DEIS should include all air training exercise locations, military training routes (MTR), including the two new ones which are being proposed to be added this year, all radars/sensors which will participating in future combat exercises in or near the GOA or over-land areas, including their transmission, frequency and power levels. Some examples: (a) Sea-based X-band radar (b) Cordova HAARP substation (c) Juneau ANtrPY-2 (Transportable Xband Radar) (d) Shemya radar (e) HAARP in Gakona (f) Kodiak Dual-use High-power Microwave (g) King Salmon Microwave (h)Airborne Laser Plane. Some of these sensors/radars have transmission power levels which pose a health risk to humans and animals alike.	The focus of this EIS/OEIS is Navy training in the TMAA – to the extent that the Navy uses Army and Air Force ranges, those ranges and Navy activities that occur on them are incorporated by reference. Please see Section 1.6.
Carolyn Heitman - 8		The Sea-based X-Band will be coming under the jurisdiction of the Navy later this year (MDA spokesman Richard Lehner) and if the Navy is proposing to bring the radar to Alaska for home-porting or participate in future GOA training exercises, this information also needs to be included in a GOA Supplemental DEIS as the radar's transmission power levels are extremely hazardous to humans, birds and wildlife.	The Sea-based X-Band radar and its operation is not part of this Proposed Action and therefore is not addressed in the EIS/OEIS. Additionally, the X-Band radar has already been evaluated separately for homeporting by the Missile Defense Agency.
Carolyn Heitman - 9		The Navy assumes there will be no significant impacts to any marine life in the GOA TMAA but has no documentation in the DEIS to back up its conclusion.	Please see Sections 3.2, 3.5 through 3.9, Chapter 4 (Cumulative Impacts), and Chapter 5 (Mitigation Measures) of the FEIS/OEIS, which shows that the Navy has done a comprehensive analysis of the effects of the proposed activities.
Carolyn Heitman - 10		Very relevant 2009 Navy and Air Force documentation which should have been referenced and included in the GOA DEIS for public comments but is lacking, is the May 2009 'Northern Edge Joint Training Exercise 2009' Final EA/OEA (Elmendorf Air Force document) and the Naval Postgraduate School funded 'Cruise Report for the April 2009 Gulf of Alaska Line-Transect Survey (GOALS) in the Navy Training Exercise Area' (June 2009), in which scientists (including some Navy), on the NOAA ship Oscar	NE09 EA/OEA was prepared by the Navy, COMPACFLT was the action proponent. This document, looking programmatically at this training, includes all aspects of the NE09 EA and is broader. The Navy funded the GOALS survey to address the data needs for additional information on marine mammals." This document is referenced as Rone et al. 2009 in FEIS/OEIS.

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		Dyson documented marine mammal species and biological resources that would be potentially affected by Navy GOA training exercises.	
Carolyn Heitman - 11		Information contained in the Elmendorf Air Force document, determined that there are 37 Endangered Species Act (ESA)-listed species that potentially occur within or near the GOA Exercise Area, including 28 fish species and 7 marine mammals.	The EIS/OEIS contains accurate information regarding the presence of marine mammals and other endangered species within the TMAA as developed through consultation with NMFS as a cooperating agency on this document.
Carolyn Heitman - 12		Section 3.4.1.2.3-Conclusions on Effects of Sound on Fish in the Elmendorf AF document stated: "The data obtained to date on effects of sound on fish are very limited both in terms of number of well-controlled studies and in number of species tested. Moreover, there are significant limits in the range of data available for any particular type of sound source. Finally, most of the data currently available has little to do with actual behavior of fish in response to sound in their normal environment. There is also almost nothing known about stress effects of any kind(s) of sound on fish." The document also states that aside from a few field studies, there are no data on the most critical questions regarding behavior effects of fish and that the more critical issue is the effect of human generated sound on the behavior of wild animals.	These statements in the comment are correct and the best available science has been considered in preparation of this EIS. Most sounds generated as a result of Navy activities, however, will have no effect (such as mid- and high- frequency sonar which most fish cannot hear) or limited temporary effect (such as ship radiated noise from a passing vessel). Please see response to Greg Brown – 3.
Carolyn Heitman - 13		The Navy concedes in the GOA DEIS/OEIS that the effects on fish could include direct physical injury including potential death from mid-frequency active sonar,	The FEIS/OEIS does not conclude or state that the proposed sonar use could result in death or injury to fish species in the GOA. All indications are that most fish cannot hear the Navy's mid- and high-frequency sonar proposed for use in the TMAA. Effects of sonar on marine fish are described in Section 3.6, Fish.
Carolyn Heitman - 14		and since the GOA is a major commercial fishing area, the Navy, Air Force and Army should refrain from using mid-frequency active sonar or any other sonar (LFA, ELF) which has potential to kill fish, marine life or animals, and it should go without saying--the potential risks to humans.	The Navy is not proposing to use low-frequency or extremely low-frequency sonar during its training activities in the TMAA. As part of the general discussion of sonar in the EIS/OEIS, effects of LFA sonar were included in Section 3.6.2.4 of the EIS/OEIS.
Carolyn Heitman - 15		Low Frequency Active (LFA) sonar has also been known to kill fish.	As stated above, LFA sonar is not part of the Proposed Action.
Carolyn Heitman - 16		What exactly are the Navy's Shutdown Procedures for Schools of Fish in the GOA? That is, if Schools of Fish can be detected at all.	There are no mitigation measures involving shutdown procedures for schools of fish. As discussed in Section 3.6.2, it is not likely that Navy activities will impact any large numbers of fish in the GOA.

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Carolyn Heitman - 17		Another concern of the Navy's use of MFA sonar (or LFA sonar) is the fact that more than 95% of the seabirds breeding in the Continental United States nest in colonies in the Gulf of Alaska and Bering and Chukchi Seas (1992 US Fish and Wildlife Service). Approximately 60 million birds of 40 species breed in the Gulf of Alaska. Plus another 50 million visit the area during the summer. According to the U.S. Geological Survey Department, some seabird populations damaged by the EXXON Valdez oil spill have not recovered. In fact, as a whole, the Gulf of Alaska has not recovered from the oil spill. It is unacceptable and unnecessary for the Navy to put further contaminations in the GOA waters and stressors on marine life and birds.	The proposed action within the TMAA will not impact nesting or breeding areas on land. The TMAA is many miles distant from and does not include Prince William Sound where the Exxon spill occurred. Effects of Navy training activities in the TMAA on birds are described in Section 3.9. Cumulative Effects on birds are described in Section 4.2.9. In addition, Chapter 22 of OPNAVINST 5090.1C provides specific guidance on how Navy vessels underway must handle oil and oily wastes (Section 22-5 of OPNAV INST 5090.1C), hazardous materials (Section 22-6), solid wastes (Section 22-7) and medical wastes (Section 22-8). Additionally, Section 22-9 of OPNAVINST 5090.1C provides very specific guidance on the requirements for preparing for and dealing with any oil or hazardous substance spills.
Carolyn Heitman - 18		The Navy's GOA TMMA boundary line extends beyond the Aleutian Trench. The DEIS did not address what activities would take place in the trench or sonar impacts to sea life living in the trench, so this information needs to be included in the PEIS.	Activities proposed within the TMAA have the potential to occur over the Aleutian Trench. Sound energy from sonar may be present within the trench on occasion. However, the probability of effect is uniform across the entire TMAA. The potential effects to resources are analyzed as a whole and effects to the trench are reflected in potential effects to the entire TMAA.
Carolyn Heitman - 19		From the information given in the DEIS, there are no environmental benefits from GOA warfare testing. Rather the opposite is true-- the Navy's presence and activities pose potential environmental risks, especially to the endangered and threatened species found in or along the Gulf of Alaska coastline.	As detailed in Chapter 2, none of the proposed Navy training activities involve "testing." As analyzed in detail in Chapter 3 of the EIS/OEIS, Navy activities would not result in significant impacts to threatened or endangered marine species or seabirds located in the shallow and inner waters of the Gulf of Alaska as defined under NEPA.
Carolyn Heitman - 20		These species have no tolerance for additional risks factors. The Navy has not proven that it can ensure the protection of marine mammals, marine life and birds in the GOA.	The analysis in the EIS/OEIS documents the potential impacts and the likely results of those impacts on ESA listed species within the TMAA. The National Marine Fisheries Service will provide a Biological Opinion regarding their assessment of any risk to endangered or threatened species under their purview. Chapter 5.0 of the EIS/OEIS, Mitigation Measures, presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events. The Navy's protective measures are effective at mitigating, not eliminating, all risk to marine mammals. Based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant

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			biological impact to marine mammals and other species at those locations, it is not likely that any additional risk posed by the proposed activities will have any significant impact on species in the TMAA.
Carolyn Heitman - 21		Nor can it guarantee the safety to humans from mid-frequency transmissions.	The Navy Standard Operating Procedures for human safety during sonar use are described in Section 3.14.1.2 in the Public Safety section of the EIS/OEIS. Navy training exercises in the GOA would take place over 12 nautical miles offshore, where no recreational activities, including diving, would be expected to take place. Sonar would only affect humans in the water, and would not affect humans on vessels even when within the portion of the vessel under the surface of the ocean.. Navy mitigation measures would ensure that non-participants would be a sufficient distance from the sound source before using active sonar. Sonar systems used in Navy training activities in the GOA are described in Section 2.5.2.1.
Carolyn Heitman - 22		According to a 2008 National Oceanic and Atmospheric Association (NOAA) report, increasing evidence suggests that exposure to intense underwater sound in some settings may cause certain marine mammals to strand and ultimately die. Some of these strandings are associated with mid-frequency active (MFA) military sonar."	Appendix F provides a thorough discussion of the information linking strandings to the use of mid-frequency sonar. As the citation indicates, there have been strandings associated in time and location with the use of mid-frequency sonar but these events are rare in comparison to the number of times sonar has been used over the last 40 years. The Navy will continue to be a leader in funding marine mammal research to better understand marine species and to be able to operate with the least possible impacts.
Carolyn Heitman - 23		According to recently released NATO documents, low frequency active (LFA) sonar has been used as high as 240 decibels, which is considered to be millions of times higher than the level that causes damage to humans and animals. The Navy has tested its LFA sonar on divers in the 120 to 160 decibel range, which resulted in hospitalization of the subjects. The Navy has experimented with its sonar on humpback and blue whales around Hawaii and the above levels are enough to cause permanent damage and death even for short periods of exposure.	The Navy is not proposing to use low-frequency sonar during its training activities in the TMAA. As part of the general discussion of sonar in the EIS/OEIS, effects of LFA sonar were included in Section 3.6.2.4 of the EIS/OEIS. Navy experiments in Hawaii that you mention in your comment are referenced in the SURTASS LFA EIS document which can be found at http://www.surtass-lfa-eis.com/. The conclusions in the document indicated that "The potential effects from SURTASS LFA sonar operations on any stock of marine mammals from injury (non-auditory or permanent loss of hearing) are considered negligible, and the potential effects on the stock of any marine mammal from temporary loss of hearing or behavioral change (significant change in a biologically important behavior) are considered minimal. Any auditory masking in marine mammals due to SURTASS LFA sonar signal transmissions is not expected to be severe and would be temporary."

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Carolyn Heitman - 24		In Navy training exercises off the Bahamas, low frequency sonar levels of up to 235 decibels was used. Decibels in the 120 to 150 range caused the whales to abandon the area. In June 2004, six beaked whales stranded in Alaska after active sonar testing during the Navy's Northern Edge exercises in the GOA. Information is limited on this event and did not come from NOAA or the Navy but from legal discovery. Whether or not it had anything to with the Navy's 2009 summer Northern Edge Exercises in the GOA, a 2-year old humpback whale carcass was found washed ashore on a Kodiak Island beach on August 19. It was presumed to have been dead for approximately 4 weeks, but it's possible it could have been longer. Coincidentally, Northern Edge Exercise in the GOA took place from June 15-27.	The Bahamas event is discussed in detail in Section F.1.6.1 of Appendix F of the EIS/OEIS. Please note, there was no low frequency sonar used by Navy in the Bahamas prior to the March 200 event we believe you are referring to. Analysis of the distribution of beaked whales in the Bahamas following that event has been inconclusive, however, Navy has undertaken Behavioral Response Studies involving beaked whales to better understand sonar impacts on these marine mammals. With regard to the strandings of beaked whales between 27 June and 19 July 2004, please see the discussion in section 3.8.4.1 on Impacts of Human Activity and Appendix F. There have been no ASW exercises involving use of mid-frequency sonar in previous Northern Edge Exercises (incl. 2004/09). The strandings in GOA in 2004 were not associated with the use of Navy mid-frequency sonar since no sonar training events occurred, the animals were spread over 1,600 miles of coastline, and were found 27 June and 19 July. While there have been strandings associated in time and location with the use of mid-frequency sonar outside of GOA, these events are rare in comparison to the number of times sonar has been used over the last 40 years.
Carolyn Heitman - 25		The ‘Red Flag Alaska' exercise jamming frequencies) was going on from July 27-August 7. If there were any over flight exercises near the GOA, certain air activity using various transmission frequencies may also have interfered with the whale, as some transmissions can reach long distances.	Because most radio and other electronic devices that may be "jammed" are in the portion of the frequency spectrum very far above the hearing of whales and the radio waves do not propagate from the air into the water, whales will not be able to hear any of those transmissions.
Carolyn Heitman - 26		Section 3.6.1.3-Subsistence in the previously noted Elmendorf AF 'Northern Edge Training Exercise' document, it states that a number of communities that could potentially be affected by air activities are either partly or entirely dependent on subsistence activities and that because of the dependence of many Alaskans on subsistence activities, low-level military overflights and their potential impact on wildlife are a particular concern. Since there was no detailed information given in the GOA DEIS/OEIS, exactly what communities (coastal or inland) has the potential to be affected by air or ship warfare activities? List them in the FEIS.	The referenced document was making note of a recognized concern involving low-level overflight by aircraft, not indicating low-level flight would occur. No low-level overflights of land or coastal areas are associated with the Proposed Action. All the proposed overflights would take place above 15,000 feet and only occur during joint training exercises. Furthermore, the proposed action uses existing airspace over land areas and the use of that airspace was analyzed in other NEPA documents incorporated by reference and listed in Section 1.6 in the FEIS/OEIS. Additionally, regarding subsistence activities, the Navy has made extensive efforts to coordinate and consult with Native Alaskan tribes (please see Appendix C).
Carolyn Heitman - 27		As of January 5, 2009 (Federal Register), the National Marine Fisheries Service is adjusting the total allowable	As detailed in Section 3.8.3.7, the TMAA is outside the established Critical Habitat boundary for the Steller sea lion,

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		catch (TAC) amounts for the Gulf of Alaska Pollock and Pacific Cod fisheries. (Fisheries of the Exclusive Economic Zone of Alaska; Inseason Adjustment to the 2009 Gulf of Alaska Pollock and Pacific cod Total Allowable Catch Amounts.) The reason for this adjustment is because the endangered Steller sea lions occur in the same location as the Pollock and cod fisheries and cod and Pollock are the primary prey species source for the Steller sea lions in the GOA. The seasonal apportionment of Pollock and Pacific cod harvest is necessary to ensure the ground fish fisheries are not likely to cause jeopardy of extinction or adverse modification of critical habitat for Steller sea lions. This decision by NMFS will no doubt affect commercial fishermen in the GOA but is necessary to help with the Steller sea lions survival.	which was established to incorporate the forage range of the Steller sea lion plus a buffer. As presented in Section 3.6, some Navy activities may impact individual fish in the TMAA but will not affect fish populations in the TMAA.
Carolyn Heitman - 28		Additionally, Steller sea lions lives are being jeopardized by Killer whales in the Eastern GOA (Alaska Sea Life Conservation Science Center). If restrictions are being placed on Alaska fishermen, it is only fair that restrictions also be placed on the Navy, Air Force and Army by not allowing any warfare training exercises in the Gulf of Alaska.	Restrictions are placed on Navy training activities in the form of mitigation and protective measures for training activities as detailed in Chapter 5 of the EIS/OEIS.
Carolyn Heitman - 29		The Navy has other long-time training areas such as Point Mugu off the California coast and does not need to continually impact other environmentally sensitive areas for training exercises; nor should the Navy be doing military exercises that are likely to cause jeopardy of extinction or adverse modification of critical habitat for Steller sea lions or any other endangered species.	As discussed in Chapter 2, Section 2.3.2.1 of the FEIS, the GOA TMAA provides a strategically important and unique venue for conducting required Navy training activities and meeting the mission of Alaskan Command. As analyzed in detail in Chapter 3 of the EIS/OEIS, Navy activities would not result in significant impacts to threatened or endangered marine species or seabirds located in Gulf of Alaska. The Navy has completed the appropriate level of consultation with NMFS and USFWS for their proposed activities in GOA.
Carolyn Heitman - 30		The Navy has already received a Permit of Authorization from National Marine Fisheries Service (NMFS) to incidentally take 2 million marine mammals per year for the next 5 years during its training exercises in Hawaii, the West Coast, Gulf of Mexico and the entire East Coast. Currently the Navy is proposing to do training exercises off of Guam. According to Sheila Murray, Navy Public Relations Officer, the Navy already is conducting warfare testing programs in various U.S. locations and within the last two years has issued almost identical environmental impact statements for Warfare Training Range Complexes in the Mariana Islands,	The Navy's proposed action is for training activities and not warfare testing within the GOA. The Navy has been conducting training events in the Gulf of Alaska for over two decades and the GOA is a location meeting the requirements necessary for realistic training. Specifically, the GOA is an ideal location for joint exercises with Army and AF assets. In 2004, Navy received the funding to begin a series of Environmental Impact Statements (EISs) to address ongoing training at established training Range Complexes in cooperation with National Marine Fisheries Service as a cooperating agency. Because Navy training requirements are

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		the Hawaiian Islands, Jacksonville Florida, Cherry Point, North Carolina, Southern California, and now the Navy is proclaiming that the Gulf of Alaska is the best location for realistic training exercises.	similar across the various Range Complexes, training events appear to be similar. However, each training event is analyzed for impacts separately for each Range Complex.
Carolyn Heitman - 31		The Navy has a detrimental affect on marine life wherever it goes, and then does not want to accept responsibility for its actions.	The fact that the Navy is a seagoing force, and that two-thirds of the world's surface is covered by water, means that many of the environmental initiatives focus on ocean stewardship and seek opportunities to control the Navy's "ecological footprint" in relation to marine life, coastal impacts, and water quality. The Navy has installed technology aboard our ships to keep plastics out of the ocean and safely manage biodegradable waste. The Navy is a world leader in marine mammal research, and is funding approximately $26 million annually in marine mammal-related research projects from fiscal years 2007-2009. The Navy serves as the executive agent for the Department of Defense Coral Reef Task Force. Major ocean stewardship efforts can be seen in the Navy's comprehensive approach to managing effects on marine life for all training ranges and operating areas. That environmental planning documentation is being coordinated with the National Marine Fisheries Service. In addition, the U.S. Navy has programs in place to manage threatened and endangered species on and around our installations; safely clean up past hazardous waste sites for future reuse; explore and develop new, greener technologies for equipment design and maintenance; and recycle metal, wood, and glass. Navy installations and ship's crews frequently partner with local communities on volunteer shoreline and neighborhood cleanup projects.
Carolyn Heitman - 32		The Navy should be doing its part to protect and support federally threatened and endangered species in the Gulf of Alaska, Bering Sea, the Aleutian Chain and other geographic locations, rather than applying for federal exemptions to the Marine Mammal Protection Act and Bird Migratory Act, which it is consistently doing.	The Navy is not applying for exemptions but rather is fully complying with all applicable laws and is obtaining all associated permits. The EIS/OEIS under consideration is the established means by which analysis and authorization of proposed activities can be reviewed so that the Navy can ensure protection of threatened and endangered species in the Gulf of Alaska (please note that the Aleutian Chain and Bering Sea are outside the scope of Navy's proposed activities). Through this EIS/OEIS and a Biological Assessment and Application for Letter of Authorization the Navy began the regulatory process to comply with these laws. The Navy is not seeking to use exemptions from any of these laws. The Navy is also carrying out its responsibility for stewardship of marine resources in part by funding marine mammal research at a

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			rate of $26 million annually, more than most other federal agency.
Carolyn Heitman - 33		Also, the Navy should adhere to and be in compliance with the Alaska Coastal Zone Management Plan when Navy ships and submarines are in Alaska waters.	The Navy has written a De Minimis determination and submitted it to the State of Alaska DNR, as required under the law for any portions of the PA that could affect the AK coastal zone, on 29 July, 2010 pursuant to CZMA requirements. Concurrence was received on 14 October, 2010.
Carolyn Heitman - 34		Information contained in the previously mentioned Navy's GOALS document for the GOA survey, stated that although marine mammals are present year-round in the GOA, the greatest number of animals occurs during the spring and summer.	The Navy concurs with this comment.
Carolyn Heitman - 35		The humpback, fin and possibly the right whales, feed in the outer continental shelf and slope waters during the summer into fall, while blue, sei and sperm whale species are thought to be more pelagic (Berzin and Rovnin 1966, Rice 1974). In 1980 a survey conducted and described by Rice and Wolman 1982, it was determined that the populations of all great whales in the GOA had been severely depleted. Since that time some of these species have shown signs of recovery; however, only the eastern North Pacific gray whale has experienced a complete population recovery (Rough et al. 2005).	The Navy concurs with this comment.
Carolyn Heitman - 36		The Navy's GOALS project identified fin, humpback, gray, minke, and killer whales. Dall's and harbor porpoise, Pacific white-sided dolphins and Steller sea lions, harbor seals and sea otters in the GOA There were also 36 sightings (46 individuals) of unidentified large whales, dolphins, and pennipeds.	The Navy concurs with this comment.
Carolyn Heitman - 37		It needs to be noted that scientist observers on the Oscar Dyson NOAA ship had to use the towed acoustic array to collect vocalizations from all acoustically active cetaceans at times when no visual survey was possible due to high seas and winds or darkness. Under these types of weather conditions it would also be impossible for ship observers to keep visual track of whales and marine life in the GOA during Navy, Air Force, Army training exercises, which could then lead to the Navy having to use potentially harmful life threatening Low-frequency active (LFA) sonar in an attempt to locate marine life.	The Navy will use passive listening devices where applicable to help detect vocalizing marine mammals as part of its standard mitigation measures so that operators of vessels and other participants can take appropriate actions in the known presence of detected marine mammals. Analysis of LFA for use worldwide has been done separately by the Navy, but at this time the Navy is not planning to use LFA in the TMAA and it is not part of this proposed action.

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Carolyn Heitman - 38		In the GOA DEIS/OEIS, the Navy believes that the impacts of active sonar on marine mammals, turtles and birds can be decreased by using on-ship 'spotters' with high powered binoculars, aircraft spotters, and sonar technicians, but the Navy doesn't give any detailed information on the difficulty of spotting whales at any great distance. Many whales spend more time diving than they do at the surface. Biologists have said that the Navy's abilities to spot these whales any further than 1 kilometer in more than slight winds is 'zero'.	The Navy's protective measures are effective at minimizing, not eliminating, risk to marine mammals. For more information, please see response to AMCC – 7.
Carolyn Heitman - 39		GOA DEIS- Table 3.14-1-Training Activities Affecting Public Safety This section lists (1) Chaff (2) Anti-Air Warfare (AAW) Surface to Air Missile Exercise (3) EC Exercises (4) Counter Targeting Exercises There should have been more detailed information listed on the hazards of these activities to the public and the information needs to be included in the FEIS.	The comment does not specify the nature of the perceived lack of information on the hazards of specific training activities. Training activities in the TMAA are described in Section 2.4.1, with ordnance for each training activity listed in Table 2-5. Section 3.14, Public Safety, does not address potential hazards of training activities on an individual basis, but by elements of training activities under each of the alternatives. Table 3.14-1 lists ordnance use during the identified exercises. Ordnance use and safety measures are identified throughout Section 3.14.1.2. As discussed in Section 3.14, public safety is always a primary concern of the Navy's when conducting activities. As such, the Navy has extensive safety precautions built into its standard operating procedures and will always suspend any training activity when non-participating units are identified within the training area.
Carolyn Heitman - 40		Chaff has caused problems in the past from Navy activities. As an example, in 1985 the Federal Aviation Administration (FAA) tracked and timed a chaff-cloud path that correlated with a Navy exercise which caused a large power outage in San Diego. The Navy paid the electric company $49,000 in damages caused by the Navy's dropping of chaff: which is made up of hair-fine particles of aluminum and fiberglass.	Chaff is addressed on page 3.2-9 in the Expended Materials section of the DEIS. Chaff used during training activities in the Gulf of Alaska would occur miles offshore (the EIS/OEIS does not address the use of chaff at inland USAF or US Army facilities). Based on typical wind currents, chaff would be dispersed over large areas, and would not result in concentrations expected to affect biological resources, electrical facilities, or public safety.
Carolyn Heitman - 41		In a September 22, 1998 United States General Accounting Office National Security and International Affairs Division-Department of Defense report on Chaff, the report identified some unintended side effects of chaff. Chaff (a) can affect safety by interfering with air traffic control radar (b) can affect weather radar observations and the operations of friendly radar systems (c) has been reported to cause power outages and damage electrical equipment (d) has the	Chaff use is discussed in section 3.2 Expended Materials. The use of chaff during training exercises could disrupt radar and communications because of its design. However, the Chaff used during training activities in the Gulf of Alaska would occur miles offshore (the EIS/OEIS does not address the use of chaff at inland USAF or US Army facilities). Based on typical wind currents, chaff would be dispersed over large areas, and would not result in concentrations expected to affect biological

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		potential chance of collecting in reservoirs and causing chemical changes that may affect water and species that use it. Using chaff in the GOA or inland areas could have a potential life-threatening effect on marine life/ wildlife and possibly pose a health hazard risk to humans who might possibly come into contact with chaff in any situation (inhaling the aluminum/fiberglass particles or drinking them in their water supply e.g.).	resources, electrical facilities, or public safety and human health. Text regarding potential effects of chaff on public safety has been added to Section 3.14.2.
Carolyn Heitman - 42		Chaff cannot be dispensed if prevailing winds will carry the chaff into FAA air traffic control areas or into designated high and low altitude air routes (Standard Electronic Attack Clearance Request For Ranges'- Nov. 2002 White Sands Missile Range Army Manual). In spite of the Navy having knowledge of chaff hazards, the Navy and Air Force continues using it in warfare training exercises and are its leading users.	As noted above, chaff is addressed on page 3.2-9 in the Expended Materials section of the EIS/OEIS. Chaff has not been dispensed when prevailing winds would potentially carry the chaff into FAA air traffic control areas or into designated high and low altitude air routes. Prior to any activities involving chaff, coordination with and approval from the FAA is required under these conditions.
Carolyn Heitman - 43		Aside from the previously mentioned hazards from chaff use, another major concern is any potential risks to the electrical equipment of small or commercial aircraft in Alaska's heavily-used airspace, possibly causing the engines to fail. Rather than jeopardize the safety of humans and marine/wildlife, the use of chaff should be permanently discontinued by the Navy, Air Force and Army.	The Navy employs chaff in accordance with and approval from the FAA. To date, no small or commercial aircraft accident has been attributed to engine failures due to Chaff ingestion. Additionally, as analyzed in the EIS and based on typical wind currents, chaff would be dispersed over large areas, and would not result in concentrations expected to affect biological resources or public safety.
Carolyn Heitman - 44		The GOA DEIS did not state if Depleted Uranium or White or Red Phosphorus use is being proposed for use in the GOA or inland areas. Include this information in the FEIS.	All inland areas have been discussed within other NEPA documents that have been incorporated by reference and listed in Section 1.5.1. However, Depleted Uranium (DU) is not part of the proposed action for this EIS/OEIS. In February 2009, Commander Pacific Fleet directed that all Pacific Fleet ships offload all depleted uranium rounds at the earliest opportunity. This change is reflected in the EIS/OEIS in Section 3.2.1.1. White phosphorous was mentioned in Section 3.2.1.1 as a possible constituent of general pyrotechnic materials. White phosphorous, however, is not a constituent in training materials proposed for use in the Gulf of Alaska TMAA. White phosphorous has been removed from the Final EIS/OEIS. Red phosphorous is mentioned one time in the Draft EIS/OEIS as a compound contained in the MK-58 marine marker. Please see Section 3.2.1.1.

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Carolyn Heitman - 45		The deposition of washout of White Phosphorus, especially in water bodies may create exposure risks to resident fish, invertebrates and waterfowl, even if the resultant White Phosphorus concentrations are in the low ppb range (Berkowitz et.al1981». White Phosphorus is highly toxic to both experimental animals and man and is highly toxic to aquatic animals ('Mammalian Toxicology and Toxicity to Aquatic Organism of White phosphorus and Phossy Water' by Authors Dickinson Burrows; Jack C. Dacre: AWARE INC. Nashville TN).	Please see response to AMCC – 15 regarding a discussion of expended materials. Additionally, please note that white phosphorous is not used in the Gulf of Alaska. White phosphorous was mentioned in Section 3.2.1.1 as a possible constituent of general pyrotechnic materials. White phosphorous, however, is not a constituent in training materials proposed for use in the Gulf of Alaska TMAA. As such, white phosphorous has been removed from the Final EIS/OEIS.
Carolyn Heitman - 46		A map in the GOA DEIS (page 2-4) shows Kodiak Island within a large 'restricted area' (outlined in red). Since the DEIS refers to 'activity outside the training area', but does not give further details, is Kodiak Island being proposed as a future Military Training Route (MTR) or 'restricted area' as part of future GOA warfare training exercises?	The red box in question was intended to be a map insert, which is a standard way of identify a specific geographic region that is being discussed. The "map inset" has been re-colored to avoid any confusion.
Carolyn Heitman - 47		Considering the fact that the Kodiak Launch Complex has access to the 'Gulf of Alaska Maritime Exercise Area' and the Air Force and Army have used the launch complex for their missile tests in past years, then it is reasonable to assume that the Navy would want to include Kodiak Island in future GOA training exercises, if a missile(s) were to be launched from the launch complex, tracked and intercepted/destroyed by whatever means during a training exercise. If Kodiak is going to be a part of future GOA warfare training exercises, the information needs to be included in the FEIS and shown on the included Alaska Military Airspace map(s).	The scope of the Proposed Action is described in Chapter 2 of the DEIS. The Kodiak Island facility is not an element of the Proposed Action.
Carolyn Heitman - 48		Section 3.14-Public Safety states the public could be at risk from ship and aircraft activities and from the emissions of acoustic and electromagnetic energy (e.g. sonar and radar), but no specifics are given as to what radar or sonar systems. This needs to be discussed in further detail in the FEIS. Which radars/sensors will be transmitting into air space as part of warfare training exercises? The DEIS mentioned lasers, radio frequency and particle beam weapons, but no detailed information. Also mentioned but not discussed was 'new weapon systems'. In the FEIS list the weapon systems, their locations, maximum power levels, and transmission hazards to the public.	The analysis in the EIS/OEIS indicates that neither radar nor lasers would pose a risk to the public. Section 3.14.1.2 (Current Requirements and Practices) states that, "SOPs in place to protect Navy personnel and the public [from radar] include setting the heights and angles of EMR transmission to avoid direct exposure, posting warning signs, establishing safe operating levels, and activating warning lights when radar systems are operational. The EIS/OEIS also states in Section 3.14.1.2 that only eye-safe lasers are used during Navy training exercises in the GOA. Navy training exercises in the GOA would take place over 12 nautical miles offshore, where no recreational activities, including diving, would be expected to take place. Sonar would only affect humans in the water, and would not affect humans

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			on vessels even when within the portion of the vessel under the surface of the ocean. Navy mitigation measures would ensure that non-participants would be a sufficient distance from the sound source before using active sonar. Sonar systems used in Navy training activities in the GOA are described in Section 2.5.2.1. New weapon systems include Advanced Extended Echo Ranging Sonobuoy (AEER)/Multi-static Active Coherent (MAC) sonobuoy, and new training instrumentation includes a Portable Undersea Tracking Range. The current and proposed list of weapons systems and pertinent information is contained in Chapter 2 of the EIS/OEIS. Particle-beam weapons are not contemplated for use in GOA training activities.
Carolyn Heitman - 49		Through the University of Alaska-Fairbanks, the Navy funds the Kodiak High Power Microwave Array (located in Chiniak). The microwave fits into the category of what the Navy calls an 'Electromagnetic Warfare Weapon' System (the transmission power levels having the ability to interrupt the electronics on a plane or missile, causing them to "stop dead in their tracks", according to Department of Defense documents). The microwave antenna field has been upgraded since the radar was first installed and the sensors operate individually in various directions and frequencies and is a substation of the Navy's HAARP facility in Gakona. If the Navy is proposing to use the Kodiak microwave in future warfare training exercises, then it needs to be included in the FEIS along with potential transmitting hazards to the public, since many small commercial aircraft use the airspace around Kodiak Island and also the airspace between Kodiak and other Alaska communities.	The scope of the Proposed Action is described in Section 2 of the EIS/OEIS. The Kodiak Island High Power Microwave Array is not an element of the Proposed Action.
Carolyn Heitman - 50		The Navy stated in the GOA DEIS that the Gulf of Alaska was the best place for the Navy, Air Force and Army to do their combined Electronic Combat training exercises. That is a fallacy because the Nellis Range Complex-Nellis Air Force Range in Nevada supports Department of Defense and Department of Energy 'Advanced Electronic Combat' training and testing. Therefore, no Electronic Combat Exercises need to be tested in the Gulf of Alaska or inland areas.	The Navy does not state that the GOA is the best place for the Navy, Air Force, and Army to do their combined Electronic Combat training exercises. However, the uniqueness of the GOA is the ability to bring the services together to train in a joint scenario. Electronic Combat is just one of many exercises that, accomplished in a joint environment, provide added benefit and training to the participants. The Navy does however recognize the unique capabilities of the Nellis complex for aircraft oriented electronic combat, but it has no capabilities to support vessel and electronic combat training.

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Carolyn Heitman - 51		Finally, the 'No Action Alternative' is not a true alternative because if the public chooses that first alternative, the Navy will continue doing Gulf of Alaska activities at the current levels. In the Elmendorf 'Final EA/OEA-Northern Edge Joint Training Exercise' (proposed Action and Alternatives), five alternatives were evaluated and under the 'No Action Alternative', joint training exercises in the Gulf of Alaska would not be conducted. The GOA DEIS should also have included a 'true' No Action Alternative which would have discontinued Gulf of Alaska training exercises, as the 'No Action Alternative' also poses environmental hazards and risks. Rather than having to choose an Alternative that is really NOT an option, I am requesting that the Navy discontinue its environmentally damaging presence in the Gulf of Alaska. Carolyn Heitman	The Forty Most Asked Questions Concerning the Council on Environmental Quality's National Environmental Policy Act Regulations, Number 3, addresses the question of No-Action alternatives. For EISs that study management levels of Federal assets, the no-action alternative is seen as the current management level of asset usage-in this case, status-quo as the current level of range usage. The no-action alternative can be thought of in terms of continuing with the present course of action until that action is changed. (46 Fed Reg 18026, at 18027). In comparison to Northern Edge, this NEPA document analyzes a new scope of potential impacts and separate activities which requires a separate set of alternatives from the current (baseline) training levels. Regarding your Alternative suggestions; NEPA documents provide both the public and the decision maker with analyses of the potential environmental effects of proposed actions and alternatives. However, the federal decision maker, in this case, the Assistant Secretary of the Navy, will make the final decision.
Roberta Highland	Kachemak Bay organization	Please include a question and answer 1/2 to 1 hour - before the public meetings/comment time - so our questions can be answered as a group and everyone can hear the answer and learn. In the future	From past experience, the Navy has concluded that the public hearing format used during the public hearings is the most conducive to effective dialogue and fosters a peaceful and non-confrontational setting for all involved. Additionally, all five public hearings held in Alaska met NEPA requirements. Adequate time was given during each meeting to ask questions of a number of subject matter experts. All public comments received on the DEIS will be analyzed and addressed in the Final EIS/OEIS.
Roberta Highland & Robert Archibold - 1		We are very concerned at the proposed of expanding Navy training activities (NTA's) in the Gulf of AK. We oppose any expansion of these activities. However, we actually oppose any NTA's in this richly biodiverse area. The NTA's will pollute and cause disturbance to many species of mammals and fish.	The U.S. Navy has been conducting these same activities in the Gulf of Alaska for many years and has an excellent record as a steward of the oceans. Although the Navy's activities will cause a temporary disturbance to some marine mammals, they would not result in a population-level or significant impact to fish resources or fisheries because of the temporary nature of the Navy activities and given the movement of the participants and the length of the proposed training. For additional information, please see responses to Greg Brown – 11 through 15.
Roberta Highland & Robert Archibold - 2		We cannot think of any Alaskan H_2O's that are already so polluted; except for Cook Inlet which has already been sacrificed to irresponsible development and a critical habitat is presently being considered; that NTA's would not	By law, the Navy is required to follow federal laws and regulations regarding water quality, hazardous materials and hazardous wastes, protection of fisheries, and protection of special status species. Please see response to AMCC – 15.

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		adversely affect.	Additionally, please note that initial releases and peak concentrations of hazardous materials from expended materials would not result in water or sediment toxicity. Hazardous materials would be quickly dispersed by ocean currents to non-toxic concentrations, and would not be expected to adversely affect marine organisms. The analysis in the EIS/OEIS indicates that Navy training activities in the TMAA would not result in violations of any State or federal water quality regulation.
Roberta Highland & Robert Archibold - 3		We did not know of NTA's already occurring in this area and were shocked to discover they had been going on for 10 yrs - especially in May and June, which is the worst time frame for any such activities. However, as you heard at the public hearing, there is no "good" time for the whales.	The U.S. Navy has been training in the Gulf of Alaska for many years and will continue to act as a good steward of the environment as we have in the past. Similar to all other areas that the Navy trains, there is no indication that training activities have a negative impact on the health of the marine environment. In addition and as presented in Chapter 5, the Navy will implement mitigation measures to minimize potential impacts. As such, the Navy is confident, and the analysis indicates, that its training activities will not detrimentally impact the marine environment of the Gulf of Alaska.
Roberta Highland & Robert Archibold - 4		Active sonar testing has been well documented to be extremely adverse to mammals, esp. whales and may possibly affect the incredible system fish use to return to "whence they came."	The U.S. Navy has been using mid-frequency and high-frequency active sonar for decades in the Fleet concentration areas of the East Coast, Southern California, and Hawaii for decades with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals or fish at those locations as documented in monitoring reports at these training ranges (see "Marine Mammal Monitoring for the U.S. Navy's Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)" available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). . It is very unlikely that sonar is "extremely adverse" to marine mammals and all indications are that fish cannot hear mid-frequency sonar. Please see Section 3.6 on a discussion of fish in the TMAA and Appendix F for a discussion of marine mammal strandings associated with sonar use.
Roberta Highland & Robert Archibold - 5		Humans have to do a better job of respecting our precious oceans and we have grave concerns about ocean acidification. Please see the file "sea Change".	The overall issue of ocean acidification is addressed under Cumulative Impacts in Section 4.2.1.2.
Roberta Highland & Robert		We understand the need for the NTA's, though it is a sad state of affairs - but reality is harsh. The Navy is in a tough position when looking for H2O's to practice NTA's. The use	The Navy is aware of the diverse biological presence in the area and has conducted a thorough analysis of potential effects as presented in Chapter 3 of the EIS/OEIS. Chapter 4

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Archibold - 6		of any under H2O explosives over the continental shelf could have dire consequences for any migrating mammals and fish, thus we reiterate - we are opposed to any increase in NTA's and any activities of this nature in this rich body of H20. P.S. Consider using the 4E's for decision making: Economy, Environment, Energy, Ethics. Sincerely, Roberta Highland and Robert Archibold.	includes cumulative analysis of all past, present, and reasonably foreseeable future projects by the Navy and non-Navy activities. Based on having conducted most of the proposed training activities over the last 10 years in Gulf of Alaska and with the mitigation measure presented in Chapter 5 of the Final EIS, the Navy believes this history and the analysis presented in the Draft EIS accurately present the likely risks and protections to marine mammals and fish.
Bobbie Ivanoff		It is clear that the location of current proposed Temporary Maritime Activities Area is directly in the path of migrating whales. Also, sonar is well known to negatively affect whales, dolphins. Why does alternate plans include moving - redirecting the activity area away from and especially the path of migrating whales?	Based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, including migrating gray whales in California waters and humpback whales in Hawaiian waters, moving training events to other areas is not justified as presented in detail in Section 5.2.1.6.
Katchemak Bay Conservation Society (KRCS) - 1		**The Kachemak Bay Conservation Society (KRCS) requests that the public comment period be extended for the Proposed Gulf of Alaska Navy Training Project.** The community closest to the proposed training site was left out of the public hearings, although this community would be the most likely affected.	Though it is not clear which community the commenter feels is the closest to the proposed training site, please note that Public hearing locations were determined based on the location of potential or perceived impacts to the human environment. Because of the large geographic area of the GOA ATA's, the Navy chose public hearing locations that would enable it to contact as many people as reasonably possible. Five locations for public hearings were chosen in Alaska: Anchorage, Cordova, Homer, Juneau, and Kodiak.
KRCS - 2		Also, notification in the newspapers was insufficient in the small communities most affected, including Homer, Kodiak, and Cordova.	Public notification in the Peninsula Clarion, the Kodiak Daily Mirror, and the Cordova Times were a series of three display advertisements placed in each newspaper. The first series of newspaper advertisements occurred after the NOA/NOPH was published in the Federal Register and ran for three consecutive days in the respective papers. The second series of newspaper advertisements was published a week and a half prior to the public hearings dates. The third series of newspaper advertisements was published three days prior to the public hearing dates, including the day of the public hearings. The dates for the Peninsula Clarion were: 14 December 2009, 15 December 2009, 16 December 2009, 28 December 2009, 30 December 2009, 6 January 2010, 7 January 2010, and 8 January 2010. The dates for Kodiak Daily Mirror were: 14 December 2009,

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			15 December 2009, 16 December 2009, 28 December 2009, 5 January 2010, 6 January 2010, and 7 January 2010. The dates for Cordova Times were: 14 December 2009, 15 December 2009, 16 December 2009, 28 December 2009, 30 December 2009, 6 January 2010, 7 January 2010, and 8 January 2010.
KRCS - 3		KBCS reluctantly supports the **No Action Alternative**. After careful review of the DEIS, KBCS concludes that the Navy has not provided sufficient evidence or support for their claims of minimal or no impacts in a multitude of aspects. KBCS also concludes that the Navy DEIS fails to consider or completely ignores impacts that would cause incredible harm to the health and well-being of Alaska's people, wildlife, and environment.	This comment is duly noted.
KRCS - 4		The proposed testing area is adjacent to the eastern Kenai Peninsula and just south of the Prince William Sound. These areas are renowned tourist and fishing destinations because they are some of the world's biologically richest. The shallow shelf that skirts the edges of the GOA is highly productive, creating an abundance of prey foods for marine life large and small. Choosing to conduct testing in this area threatens the short and long-term health of the wildlife, people, and ocean in this region.	This comment is duly noted. Please note that the proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. Please see Chapter 3 of the EIS/OEIS for the description and analysis and potential effects. Specifically, those effects to the economy are found in Section 3.12; to marine life in Sections 3.5 through 3.9.
KRCS - 5		**Socioeconomic Impacts:** 1) In the discussion of impacts to both Socioeconomics and Fish, the Navy does not provide research into effects of its proposed activities on the types of fish that are harvested commercially (sport or commercial fishing) in this region. The DEIS makes broad discussions of generalist and specialist types of hearing among fish, and makes the claim that "most" fish are generalists. The DEIS does not state whether halibut, herring, rockfish, or salmon are generalists or specialists. Thus, they cannot make the claim of "no significant impacts."	The Draft and Final EIS/OEIS provides a table (Table 3.6-3) of hearing sensitivities for many families of marine fish including those species you are concerned about. For example, salmon are known to be generalists and were listed in the table under the family Salmonidae. Herring are listed under the family Clupeidae (they are hearing specialists). Halibut were not specifically identified in the table by common name (this edit has been made for the FEIS/OEIS), but they were in the table in the Draft EIS/OEIS as they are part of the family Pleuronectidae (flatfish) and are hearing generalists. Finally, rockfish were also in the table under the family Scorpaenidae (hearing generalists).
KRCS - 6		The DEIS does state that fish are known worldwide to avoid areas where sonar testing is being conducted. Thus, from the DEIS's own statements in this document one could reasonably conclude that the fish in the testing area would in fact avoid the area. As a result, there would be impacts on the fish. Given the likelihood of impacts on the fish, above, then one	It is incorrect to state that "fish are known worldwide to avoid areas where sonar testing is being conducted" and there is no statement in the DEIS to indicate that may be the case. As detailed in Section 3.6 of the DEIS, there should be no impact to fisheries in the Gulf of Alaska from sonar use or any of the other proposed or ongoing training activities. There is no "sonar testing" proposed but training using sonar is proposed

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		could reasonably conclude that the commercial fishers fishing in the proposed test area may be affected. Given that commercial fishing for some species is set to occur only at prescribed times according to federal and state laws (called "openers"), then the impacts from the testing could cause great harm to fishers who were unable to find fish or fish during times with Navy testing overlapped an opener. In addition, sonar testing, according to the DEIS, can cause harm to fish, thus, any harm to the fish that reduced the numbers of these fish due to disorientation, physical harm, or other aspects, could cause a reduction in the harvest of fish for that season. This would be a socioeconomic harm.	and it is not anticipated there will be any impact on any fishery resulting in any socioeconomic harm.
KRCS - 7		2) The DEIS also does not take into consideration the socioeconomic impacts for the tourist industry for the entire area, Seward to Homer, that are likely with the proposed alternatives. The DEIS states that for Alternative 2 the NMFS "takes" would likely be 425,551 marine mammals, much of those dolphin. In Alternative 1, this number is 215,519. The number of takes predicted by the DEIS is likely to cause a drop in the number of marine mammals in the area. Given that one of the primary economic businesses in the area, Seward, is whale watching, it is likely that any reduction in these animals will cause harm to the businesses that depend on the marine life in the area. Notably, the proposed testing area is immediately adjacent to the Kenai Fjords National Park, a Park that draws nearly 300,000 people every year.	Socioeconomic impacts in regard to the fishing industry, tourism, and recreation have been analyzed in the EIS/OEIS in Section 3.12 - Socioeconomics. To help manage competing demands and maintain public access in the GOA, the Navy conducts its offshore activities in a manner that minimizes impacts to recreation and commercial activities. Furthermore, no new closure or restricted areas are proposed. Please note that there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of the marine environment. With regard to takes, please see response to Greg Brown – 1.
KRCS - 8		**Marine Mammal Impacts:** 3) There is much discrepancy between how the Navy DEIS evaluates noise impacts and how other reputable marine mammal scientists evaluate these impacts. There are numerous instances of impacts on whales and dolphins by sonar testing. [See next cell for entire list:]	The science of sound in the water and its effects on marine life is evolving. The Navy conducted a thorough analysis of sonar and at sea explosions in the Draft EIS/OEIS, using the most current and best available science, and with cooperation from the National Marine Fisheries Service, which is responsible for the protection of marine species. While additional research or further scientific advances may provide a more definitive analysis, a NEPA document is necessarily based on information available at the time the document is prepared, and the current state of the science. As such, the Navy believes it has fully analyzed the potential impacts to marine life.

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KRCS - 9		Here is a list compiled by other environmental organizations: • January 2006 At least four beaked whales strand in the Gulf of Almeria, Spain, while sonar exercises take place offshore. • January 2005 At least 34 whales of three species strand along the Outer Banks of North Carolina as Navy sonar training goes on offshore. • July 2004 Four beaked whales strand during naval exercises near the Canary Islands. • July 2004 Approximately 200 melon-headed whales crowd into the shallow waters of Hanalei Bay in Hawaii as a large Navy sonar exercise takes place nearby. Rescuers succeed in directing all but one of the whales back out to sea. • June 2004 As many as six beaked whales strand during a Navy sonar training exercise off Alaska. • May 2003 As many as 11 harbor porpoises beach along the shores of the Haro Strait, Washington State, as the USS Shoup tests its mid-frequency sonar system. • September 2002 At least 14 beaked whales from three different species strand in the Canary Islands during an antisubmarine warfare exercise in the area. Four additional beaked whales strand over the next several days. • May 2000 Three beaked whales strand on the beaches of Madeira during NATO naval exercises near shore. • October 1999 Four beaked whales strand in the U.S. Virgin Islands during Navy maneuvers offshore. • October 1997 At least nine Cuvier's beaked whales strand in the Ionian Sea, with military activity reported in the area. • May 1996 Twelve Cuvier's beaked whales strand on the west coast of Greece as NATO ships sweep the area with low- and mid-frequency active sonar. • October 1989 At least 20 whales of three species strand during naval exercises near the Canary Islands. • December 1991 Two Cuvier's beaked whales strand during naval exercises near the Canary Islands. These issues should be addressed honestly and with a goal of conducting legitimate, unbiased research. Creating science that simply downplays the real effects of potentially lethal activities is morally imprudent and does not give the U.S. citizen the right to an educated choice.	A complete review of documents associated with marine mammal stranding events is presented in Appendix F and reference to species in the Gulf of Alaska is presented in Section 3.8. Regarding science, please see response to Greg Brown – 3.
KRCS - 10		4) The DEIS does not address potential impacts to marine mammals that feed primarily on the seafloor. Gray whales	Chapter 3 of the EIS/OEIS provides an analysis of the proposed action with regard to marine mammals within the

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		could easily scoop up spent debris and pollution from the proposed testing activities.	TMAA including those that feed from the seafloor. Specifically with regard to potential impacts to marine mammals such as gray whales feeding from the seafloor, see for example Pages 3.8-130 and 3.8-133.
KRCS - 11		**Toxicity** 5) There will be an inordinate amount of toxins dumped into a region known worldwide as being particularly clean. This could have impacts on the health of all life in the ocean and economic impacts for commercial and sports fishers.	Please see response to AMCC – 15. Additionally, please note that potential economic impacts to fishing are discussed in Section 3.12.2.5. In this section, the analysis concluded that impacts would not be significant due to advanced public notification and primarily short-term duration of military activities. Additionally, no new closure or restricted areas are proposed.
KRCS - 12		**Cumulative Effects** 6) The DEIS does not take into consideration elements of climate change that directly effect the proposed tests. In particular, the new scientific evidence that is showing that ph changes (acidification) of the oceans increases the transfer of sound through the ocean.	Climate change and ocean acidification are addressed under Cumulative Impacts in Sections 4.2.1.1 and 4.2.2.1 of the EIS/OEIS.
KRCS - 13		7) There is a profound lack of attention to the cumulative effects of all the toxins that the testing will discharge into the water.	Effects of past, present and planned Navy activities and projects in the GOA have been discussed in Chapter 4, Cumulative Impacts. Toxins, with the exception of heavy metals, from other projects or activities would not be the same as those released during Navy training activities. The large size of the GOA, however, would make it unlikely that the cumulative effects of Navy and other expended materials would result in toxic concentrations.
KRCS - 14		8) The DEIS fails to take into consideration the impacts of the Exxon Valdez Oil Spill, particularly in regards to salmon returns and otters.	The TMAA is many miles distant from and does not include Prince William Sound where the Exxon spill occurred.
KRCS - 15		**Mitigation** 9) The proposed mitigation measures would fail to protect any marine life. It is wholly unreasonable to expect anyone aboard a ship to spot a whale that is more than a few yards away from the ship. The Gulf of Alaska is known to have frequent high seas, winds, and rain that would make it nearly impossible for scouts to observe Whales. It is ludicrous that this mitigation measure is even proposed. The Navy was sued by NRDC over these measures, with the court finding stating that the measures were "woefully inadequate and ineffectual." According to research, only 5% of marine mammals are able to be spotted this way.	Chapter 5 presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events at sea in the TMAA. As detailed in that section of the EIS/OEIS, the mitigation measures involve much more visual detection from ships and make use of all available observers such as those in aircraft in addition to observers on vessels, and use all available sensors such as passive acoustic hydrophones. The Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals. Based on the documentation from previous Navy exercises involving sonar, Navy lookouts have been able to detect marine mammals at distances greater than 1 kilometer and in winds that are almost

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			universally greater than "slight" (see “Marine Mammal Monitoring for the U.S. Navy’s Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)” available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). The Navy does not expect 100% of the animals present in the vicinity of training events will be detected, however, mitigation measures will result in the mitigation of some potential impacts. The mitigation measures presented in the EIS/OEIS were developed in coordination with NMFS biologists and scientists to determine which mitigation measures would be both effective and still allows for the Navy to meet the operational needs for realistic training. Please note that the comment referencing studies indicating "a 5% success rate" was with regard to survey protocols, were not done using Naval personnel or vessels (which have a higher height of eye), and did not take into account the circumstances present during a training event such as having multiple vessels over a very wide area, communicated sharing of observations, and operating in a coordinated manner in combination with aircraft that are also observing the water space.
KRCS - 16		10) The DEIS eliminates important mitigation measures they were required to use elsewhere. A region as biologically rich and as economically dependent on marine life as the proposed testing region warrants much more diligent attempts at reasonable and functional mitigation measures.	Please see the response to KRCS - 15.

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KRCS - 17		11) Comparing impacts from the southern ocean region near San Diego, as was done by a representative at a public comment period, with the GOA is not logical. These are two very different ocean ecosystems. And, there is no viable commercial fishery in the region the Navy "usually" tests in, unlike the GOA. Please reconsider your plans. Thank you for taking our comments. Elise Wolf, KBCS	Granted the two ecosystems are very different, however, the context for the comparison made by a Navy representative at the hearing may have been appropriate. The area around the Southern California Range Complex has an extremely productive commercial and recreational fishing industry. In addition, the Navy has been conducting these same training activities for decades on training ranges in locations such as the East Coast, Hawaii, and Southern California where populations of whales appear to thrive, with no indications of injuries to marine mammals. There have been no indications for broad-scale impacts that are either injurious or of significant biological impact to marine mammals and the Navy's analysis for the Gulf of Alaska demonstrates there is little relative risk to marine mammal or fish populations from Navy training exercises as proposed in the EIS/OEIS.
Ryan Kingsbery - 1		Dear Amy Burt, I am writing to voice my concern with two specific aspects of the recently released Gulf of Alaska Navy Training Activities Draft EIS/OEIS (December 2009). My personal background is weighted in northern fur seal (*Callorhinus ursinus*) population biology and marine debris entanglement, particularly in the Bering Sea/Pribilof Island region. I am currently pursuing an M.S. in Environmental Science at Alaska Pacific University in Anchorage, Alaska. My first concern takes issue with the listing of the northern fur seal population trend as "increasing" as is stated on page 328 in Table 3.8-1 and indicated at the bottom of page 386 under section 3.8.5.4 Northern Fur Seal: Population Size and Trends. According to the Alaska Fisheries Science Center: National Marine Mammal Laboratory (NMML) 2008 Quarterly Report, up production in the Pribilof Islands has declined at an annual rate of .2% since 1998.[1] Towel et al. (2006) also notes that between 1998 and 2004 pup production on the Pribilofs has declined by 6% each year.[2] I therefore contend that the listing on the northern fur seal population trend as increasing as is stated in the EIS/OEIS, is not accurate and runs counter to current population studies. ____________ [1]- Alaska Fisheries Science Center: National Marine mammal Laboratory Quarterly Research Report (2008), PDF downloadable at http://www.afsc.noaa.gov/Quarterly/ond2008/tocNMML.htm,P.13 [website last accessed 1/18/10]	Thank you for the comment. The U.S. Navy has edited Section 3.8.5.4 on the fur seal to correspond to the specifics of the population trend as provided.

ID	Organization	Public Comment (Written)	Navy Response
		[2]- Towell RG, Ream RR, York AE (2006) Decline in fur seal (Callorhinus ursinus) pup production on the Pribilof Islands. mar Mamm SCI 22:486-491	
Ryan Kingsbery - 2		Secondly, I agree with public concerns outlined in Table 1.1. Public Scoping Comment Summary on page 69, more specifically the effects of harmful levels of noise on whales particularly both species of beaked whales (*Berardius bairdii, Ziphius cavirostris*) and endangered species such as the North pacific Right Whale (*Eubalaena robustus*).	The Navy shares your concern for marine life. The Navy has conducted mid-frequency and high-frequency active sonar activities for decades with no indications of injuries to resident beaked whales at training ranges in Hawaii and Southern California or to right whales on the East Coast. There are no indications for broad-scale impacts that are either injurious or of significant biological impact to marine mammals and the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS.
Ryan Kingsbery - 3		I disagree with the statement found on page 362 under section 3.8.4.1: Impacts of Human Activity, that says there is new evidence that beaked whales are not sensitive to Navy sonar. There is sufficient evidence in the form of well-documented cases that link certain sonar frequency levels with beaked whale strandings.[3] [3]-National Research Council (2003) Ocean Noise and marine mammals. The national Academies Press, Washington, D.C., accessed by way of University of Rhode Island, office of Marine Programs, http://www.dosits.org/animals/effects/e1a-d.htm. [website last accessed 1/18/10]	Please see Appendix F for a discussion regarding strandings of beaked whales in association with sonar use. While there have been a number of beaked whale strandings as detailed in the Appendix F and as noted in the reference cited from 2003, evidence from subsequent and recent research projects have indicated the presence of beaked whales in areas where training and sonar use has occurred for decades without resulting in the stranding of beaked whales. The reason for including the quote is that new evidence from controlled exposure experiments is documenting that beaked whales exposure to mid frequency sonar is not, in all cases and maybe most cases, going to result in strandings or injury to those animals.
Ryan Kingsbery - 4		Also, on page 349 under section 3.8.3.4: Acoustics there is mention of adverse behavioral changes observed when Right Whales are submitted to noise levels between 133 and 148 dB, but beyond this there is no other research indicated. This species in particular is the most vulnerable whale present in the TMAA due to current population numbers and therefore I think it demand special attention.	The study referenced in the EIS/OEIS (by Nowacek et al. 2004) on right whales in the Atlantic exposed those whales to a sound designed to be an "alert stimuli" to scare them away from ships as a collision avoidance measure. This "alert stimuli" was nothing like Navy sonar or any other Navy sound source. The "alert stimuli" signal was an 18 min exposure consisting of three 2-minute signals played sequentially three times over. The three signals had a 60 percent duty cycle and consisted of: (1) alternating 1-sec pure tones at 500 Hz and 850 Hz; (2) a 2-sec logarithmic down-sweep from 4,500 Hz to 500 Hz; and (3) a pair of low (1,500 Hz)-high (2,000 Hz) sine wave tones amplitude modulated at 120 Hz and each 1-sec long. The purposes of the alert signal were (a) to provoke an action from the whales via the auditory system with disharmonic signals that cover the whales estimated hearing range; (b) to maximize the signal to noise ratio (obtain the largest difference between background noise) and c) to

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			provide localization cues for the whale. Five out of six whales reacted to the signal designed to elicit such behavior.
Ryan Kingsbery - 5		In summary, I think there needs to be more convincing research and additional mitigation that takes into account the sensitivity of the aforementioned species. Thank you for allowing me to comment on this EIS/OEIS. I look forward to your response. Sincerely, Ryan Kingsbery.	Thank you for your participation in this public comment process.
Kitsap Trees and Shoreline Association – Donald Larson		Address update: Kitsap Diving Association 3815 Tracyton Beach Rd Bremerton WA 98310-2050	Thank you - your address has been updated.
Whitney Lowe		The navy has a history of poor environmental stewardship including dumping high volumes of garbage into the ocean as well as toxic materials from explosive ordinance. Consequently it is difficult to believe what they might say about being responsible with environmental impacts of their actions. In these times of international terrorism it is easy to throw out the fear card and say all these training exercises are necessary to keep our country safe. Trumping up people's fears has routinely led to trading off the health and safety of human and other animal habitats because supposedly it was going to make us safer. At some point it would be great to think that we might learn that the answer to making us safer doesn't result from bigger and more powerfully destructive weapons, nor from destroying our surroundings in the pursuit of those weapons. At the present moment, we have a situation of drastic concern with our worldwide fisheries and marine environment. A November 2006 article in the journal *Science* suggested there will be virtually nothing left to fish from the seas by the middle of the century if current trends of catastrophic fish population declines continue. The primary culprits involve overfishing, pollution, and other environmental factors In the face of these issues it is totally irresponsible to increase military training which involves toxic dumping and tactics known to kill and injure marine life. We should be going to great lengths to do anything we can to not only mitigate our current practices that are causing that precipitous decline, but to reverse this trend. To engage	Please note that the fact that the Navy is a seagoing force, and that two-thirds of the world's surface is covered by water, means that many of its environmental initiatives focus on ocean stewardship and seek opportunities to control its "ecological footprint" in relation to marine life, coastal impacts, and water quality. The Navy has installed technology aboard its ships to keep plastics out of the ocean and safely manage its biodegradable waste stream. The Navy is a world leader in marine mammal research, and has funded approximately $26 million annually in marine mammal-related research projects from fiscal years 2007-2009. The Navy serves as the executive agent for the Department of Defense Coral Reef Task Force. Major ocean stewardship efforts can be seen in the Navy's comprehensive approach to managing effects on marine life for all of its training ranges and operating. Please see Section 3.2 of the Final EIS/OEIS and the response to AMCC – 15 for a discussion of Expended Materials. Please also note that the Navy does not dump any toxic pollutants into any water anywhere nor has the Navy proposed doing so in this EIS/OEIS. Also, refer to Sections 3.5 to 3.8 regarding potential impacts to various species of marine life. Except for the possible although unlikely impact to a small number of individual fish (see Section 3.6.4), there are no known proposed activities that are likely to kill or injure marine life.

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		further military exercises in this region that is extremely rich in sensitive marine life is a blunder of serious proportions and represents incredibly poor judgment. Our children and descendants, in whose hands we leave this critically injured world, will be asking... What were they thinking?... We can't afford to participate in this process as it represents the epitome of irresponsibility and drastically poor Judgment.	
Marine Mammal Commission (MMC) - 1		Dear Ms. Burt: The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the Draft Environmental Impact Statement/Overseas Environmental Impact Statement (DEIS) referenced in the Navy's 15 December 2009 *Federal Register* notice (74 Fed. Reg. 65761) regarding proposed activities in the Gulf of Alaska. On 22 April 2008 the Commission commented on the Navy's Notice of Intent to prepare an environmental impact statement for those activities. The recommendations and rationale that follow either reinforce or expand upon those earlier comments.	This comment is duly noted.
MMC - 2		**RECOMMENDATIONS** The Marine Mammal Commission recommends that the Navy- • revise its DEIS to ensure that (1) all activities included under the no-action alternative have been evaluated,	For EISs that propose a new tempo of current training, the no-action alternative is seen as the current management level of asset usage-in this case, status-quo as the current level of training area usage. The no-action alternative can be thought of in terms of continuing with the present course of action until that action is changed. (46 Fed Reg 18026, at 18027). Alternatives 1 and 2 discuss the increase from these levels. This is the approach properly taken in developing alternatives for this DEIS. (See #3 of CEQ's Forty Most Asked Questions). The Navy has discussed all alternatives that were considered but eliminated in Section 2.3.2 and the consideration of the no-action alternative, alternative 1, and alternative 2 within Chapters 3 and 4 ensures the Navy's compliance under NEPA. As explained in Section 2.3.2 of the EIS/OEIS, a reduction in levels of training within the GOA ATAs would not support the Navy's Purpose and Need and was therefore eliminated from further consideration. As stated above, the decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.

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MMC - 3		(2) the alternatives evaluated and presented to decision-makers and the public include a reduction in activity level,	Please see response to MMC – 2.
MMC - 4		and (3) the scope of decision-making is not constrained unnecessarily;	The decision maker (signing the Record of Decision) for this EIS is not constrained in anyway and is free to choose any alternative or to create a hybrid alternative as required. The scope of this EIS/OEIS is based on the purpose and need as necessary to fulfill the military readiness objectives as described in Chapter 2.
MMC - 5		• resolve inconsistencies, omissions, and errors in the DEIS and either reissue it or use some other mechanism to allow decision-makers and the public to review and respond to the revised information;	Please see the following responses to your comments.
MMC - 6		• withdraw the current section of the DEIS dealing with Cook Inlet beluga whales, conduct the essential analysis of effects on this endangered stock, and reissue at least that section of the amended DEIS;	The Navy will not add analysis of the area because the Cook Inlet is located far from the proposed action and not within the area for consideration of impacts. By the definition of what constitutes a Cook Inlet beluga whale, none of these endangered species should occur anywhere near the TMAA or within the Gulf of Alaska. As depicted on Figure 1-1, the nearest shoreline at Kenai Peninsula is located approximately 24 nm (44 km) north of the TMAA's northern boundary and the nearest boundary for the Cook Inlet beluga whale habitat is beyond that distance. The approximate middle of the TMAA is located 140 nm (259 km) offshore, far from the Cook Inlet.
MMC - 7		• provide explicit and detailed descriptions of the measures that will be used to avoid risks to certain species or stocks of special concern (i.e., eastern population of North Pacific right whales, western population of Steller sea lions, AT1 pod of killer whales in and around Prince William Sound [although occasionally ranging more widely], sperm whales, humpback whales, fin whales, and sei whales);	Chapter 5 presents details of the U.S. Navy's protective measures, outlining steps that would be implemented to protect all marine mammals and Federally listed species during training events. These protective measures would afford the maximum protection to all marine animals, regardless of the species.
MMC - 8		• expand the description of marine mammal habitat use in the Gulf of Alaska by reviewing the considerable body of information on species-specific distribution and movement patterns obtained from whaling records, scientific research, and other sources over the past century;	The Navy has worked closely with marine mammal experts and NMFS on the analysis for density estimates and species distribution across the GOA range of influence. The scientific research implemented in determining the potential impacts from the proposed actions is a complete analysis of the status of marine mammal species and populations in the Gulf.
MMC - 9		• evaluate the anticipated effectiveness of monitoring and mitigation measures; and	As presented in Section 5.2.1.3, Navy is committed to implementing a monitoring program of research and one of the areas of investigation will be to evaluate, with NMFS in a cooperating role, the effectiveness of the monitoring and mitigation measures. Please see response to AMCC – 7 above regarding monitoring reports.

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MMC - 10		• require vessel commanders to retain vessel logs and reports for a minimum of three years.	The bullet in the DEIS on page 5-10 suggesting logs would be kept for 30 days was both in error and unnecessary and has been deleted. There are numerous Navy requirements applying to the retention of various logs and other general Department of Navy record management procedures.
MMC - 11		**RATIONALE** The Commission offers the following rationale for its recommendations. **No-Action Alternative** The Marine Mammal Commission continues to believe that an action agency should use the "No-Action" alternative to represent continued activity at the same level only if those activities already have been evaluated in a previous environmental analysis. Further, a previous analysis may not be adequate for that purpose if the activities that were initially evaluated have since changed. To fulfill their purpose of fully informing decision-makers, environmental impact statements must include or at least reference evaluations of all the activities in the proposed alternatives, whether those activities are ongoing or new. A hypothetical example may help explain the shortcomings of the Navy's current approach. If the Navy initiated activities in the Gulf of Alaska 10 years ago by conducting two exercises of one type each year, it should have completed an environmental analysis of the effects of those two exercises. If, over the past 10 years, the Navy increased its activities so that it now conducts five exercises of that type and three exercises of yet another type, then an environmental analysis based on historical data would be inadequate to describe the effects of all the Navy's current activities because the historical record does not in fact reflect the current level of activity. This undermines the intent of the National Environmental Policy Act.	In accordance with CEQ guidance, the no action alternative can be “no change’ from current management direction or level of management intensity.’ Given this guidance, the Navy considered all activities it has currently conducted within the GOA ATAs as its current managed level or no action. Previously, those activities have been evaluated in individually focused NEPA or E.O. 12114 documents such as the EA and/or OEAs for the Northern Edge exercise in previous years.
MMC - 12		The Marine Mammal Commission also continues to believe that it is inappropriate for the Navy to exclude alternatives that result in a reduction in its activities in the Gulf. By doing so, the Navy essentially limits the scope of decision-making because decision-makers are not presented with information about the consequences of possible reductions in training activities. Such an approach constrains rather than empowers decision-makers to make fully informed decisions and thereby undermines the intent of the National	Please see response to AMCC - 4. Further information can be found in response to MMC – 2. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.

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		Environmental Policy Act. For those reasons, the Marine Mammal Commission recommends that the Navy revise its DEIS to ensure that (1) all activities included under the no-action alternative have been evaluated, (2) the alternatives evaluated and presented to decision-makers and the public include a reduction in activity level, and (3) the scope of decision-making is not constrained unnecessarily.	
MMC - 13		**Inconsistent Descriptions of the Alternatives and Other Errors** Certain inconsistencies, omissions, and errors in this DEIS are likely to misguide decision makers and the public and therefore warrant attention. The following are four examples of such shortcomings. • The description of the three alternatives on page E-l does not match the more detailed descriptions on page ES-9 and in the body of the DEIS. In particular, the Portable Undersea Training Range is included only in Alternative 2 on page E-1 but is included in Alternative 1 in all subsequent discussions.	This comment is duly noted. The text has been reviewed for consistency and revised.
MMC - 14		• The DEIS does not provide an adequate description of SSQ-125 (Multi-Static Active Coherent or MAC), the replacement for the SSQ-110 non-explosive sound source. Although the specific source characteristics may be classified, sufficient unclassified information must be provided to permit verification in at least a general sense of the anticipated risk posed by what is obviously going to be a very loud and widely used source in Navy training.	As indicated in the EIS/OEIS in Section 3.8.7.8, the output and operational parameters for the SSQ-125 sonobuoy (source levels, frequency, wave forms, etc.) are classified, however, additional information has been added to the former text appearing on page 3.8-135 of the EIS/OEIS to provide a general sense of the anticipated risk from use of this source.
MMC - 15		• The DEIS does not describe the specifications for the Killer Tomato target simulator. Although it appears by inference to be some kind of smoke or optical beacon, the DEIS does not describe the device or its function or identify it with an official designation (e.g., Mk~85, TALD or LUU~2B/B) so that the reader is able to seek additional information from other resources.	Basically, a Killer Tomato is a large inflated vinyl shape used for target practice. At the end of the training activity, recovery of the Killer Tomato is attempted, but is not always successful. Additional descriptive information on the Killer Tomato target has been provided in Section 3.2.1.1 of the Final EIS/OEIS.
MMC - 16		• In the next to last paragraph of page 3.8-111, the DEIS includes what we believe is a typographical error in which the word *constructed* appears in place of the apparently intended word *constricted*.	This typographic error has been corrected in the FEIS/OEIS.
MMC - 17		• In the same paragraph, the DEIS cites speculation in Tyack (2009) that beaked whales may avoid all sounds equally. Indeed, this is just speculation on Tyack's part, and he identifies it as such. The commission believes it is	Dr. Tyack has taken part in the Behavioral Response Studies specifically designed to determine the response of beaked whales to Navy sonar and therefore his speculation as an expert who has just completed this research provides valuable

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		inappropriate and unreasonable to infer that sonars pose no greater risk than other sound sources when, in fact, there's little evidence available on this subject indicates otherwise.	insight on the subject. Based on this comment, the text has been revised as follows for the first mention of this citation on page 3-38 of the DEIS: In contrast and based on observations of tagged beaked whales exposed to sonar in recent behavioral response studies, Dr. Tyack of Woods Hole Oceanographic Institute has speculated that beaked whales may be "particularly sensitive to anthropogenic sounds, but there is no evidence that they have a special sensitivity to sonar compared with other signals" (Tyack 2009). Given the natural variation of marine mammal location over time within the GOA TMAA, operational variability of Navy mid-frequency and high-frequency active sonar operations, and the fact that the Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS.
MMC - 18		To ensure that decision-makers and the public are accurately informed about the activities proposed in this DEIS, the Marine Mammal Commission recommends that the Navy resolve inconsistencies, omissions, and errors in the DEIS and either reissue it or use some other mechanism to allow decision-makers and the public to review and respond to the revised information.	The Navy believes that this Final EIS/OEIS provides accurate and thorough information to the Navy's decision-maker, that Assistant Secretary of the Navy for Energy, Installations and the Environment. The Navy has responded to comments and addressed issues raised as required per CEQ regulation. Under 40 CFR §1502.9, supplemental EIS documentation should be prepared in one of two instances: 1) when there are substantial changes in the proposed action that are relevant to environmental concern or 2) there is new information relevant to environmental concerns bearing on the proposed action or its impacts. The Navy has not substantially changed its proposed action since public release of the Draft EIS/OEIS and while it has thoroughly addressed comments and concerns raised, there has not been a significant new circumstance or new information relevant to the environmental concerns that would require preparation of a supplemental EIS/OEIS at this time.
MMC - 19		**Cook Inlet Beluga Whales** The Navy excludes consideration of Cook Inlet beluga whales from analysis in the DEIS. It justifies this exclusion by citing a 1995 Air Force environmental impact statement as the appropriate document for analysis of this stock. However, the Air Force environmental impact statement does not contain an analysis of effects of aircraft noise on	The Navy will not add analysis of the area because the Cook Inlet is located far from the proposed action and not within the area for consideration of impacts. By the definition of what constitutes a Cook Inlet beluga whale, none of these endangered species should occur anywhere near the TMAA or within the Gulf of Alaska. As depicted on Figure 1-1, the nearest shoreline at Kenai Peninsula is located approximately

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		beluga whales in Cook Inlet and, even if it did, that analysis would be out of date. Since preparation of the 1995 statement, the Navy appears to have changed the number of aircraft and associated traffic patterns as part of an increase in joint activities with other armed forces, as noted in the current DEIS. Furthermore, since preparation of the 1995 statement, the Cook Inlet beluga whale stock has declined markedly to approxin1ately 300 to 400 individuals, has been designated as depleted under the Marine Mammal Protection Act, and has been listed as endangered under the Endangered Species Act. Thus, neither the 1995 statement nor the DEIS under consideration provides adequate analysis of the potential effects of the proposed activities on this endangered beluga whale stock. The Marine Mammal Commission considers this a serious oversight and recommends that the Navy withdraw the current section of the DEIS dealing with Cook Inlet beluga whales, conduct the essential analysis of effects on this endangered stock, and reissue at least that section of the amended DEIS.	24 nm (44 km) north of the TMAA's northern boundary and the nearest boundary for the Cook Inlet beluga whale habitat is beyond that distance. The approximate middle of the TMAA is located 140 nm (259 km) offshore, far from the Cook Inlet. Additionally, when Navy aircraft do operate from inland military bases, their activities and operations are conducted in accordance with established operating procedures as outlined by those installations, and not by the Navy. Furthermore, Navy activities operating from those bases and installations are covered under separate, approved environmental documents developed by those particular bases and installations.
MMC - 20		**Other Species or Stocks of Special Concern** As it did in its 22 April 2008 letter, the Marine Mammal Commission also recommends that the Navy provide explicit and detailed descriptions of the measures that will be used to avoid risks to certain species or stocks of special concern. These include the eastern population of North Pacific right whales, which has been reduced to fewer than 100 individuals and is vulnerable to disturbance and vessel strikes (based on data from the closely related North Atlantic right whale).	Please see response to MMC – 7.
MMC - 21		Cook Inlet beluga whales were mentioned previously in this letter. Although outside the Navy's designated operating area, they are exposed to increased activity at Elmendorf Air Force Base and possibly other joint service exercises in Cook Inlet and coastal areas within the stock's range.	Please see response to MMC – 19.
MMC - 22		Steller sea lions, AT1 killer whales in and around Prince William Sound (although occasionally ranging more widely), sperm whales, humpback whales, fin whales, and sei whales also were mentioned in our 22 April 2008 letter.	This comment is duly noted.

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MMC - 23		The Commission concurs that sea otters are unlikely to enter the Navy training range area due to the distance from shore.	This comment is duly noted.
MMC - 24		**Habitat Analyses** With regard to marine mammals, the habitat analyses in the DEIS focus almost entirely on areas designated as critical habitat for those species that are listed as endangered or threatened under the Endangered Species Act. Such areas clearly are important and warrant extra protection, but they also are insufficient in two important respects. First, critical habitat for listed species often is poorly understood, so key habitat areas for those species may not be included. For example, critical habitat for the North Pacific right whale includes two areas, one in the southeastern Bering Sea and one off Kodiak Island in the Gulf of Alaska. The right whales that use these two areas are not thought to represent separate populations; rather, they likely move back and forth between the Gulf (and other areas of the North Pacific) and Bering Sea through certain important passes in the Aleutian Islands (e.g., Unimak, Akutan, Umnak, and Sequam Passes). These areas also may be vital to protect as they must funnel or concentrate the whales during their seasonal movements. Second, a number of species in the Gulf area are not listed under the Endangered Species Act but still use and depend on specific habitat. In fact, the records of marine mammal habitat use in the Gulf of Alaska are extensive, dating back to the 1800s. For example, northern fur seals appear to use and depend on offshore areas south of the Yakutat area. C. H. Townsend described the use of this "Fairweather Sealing Ground" and other important seal habitat in the late 1800s based on records of pelagic seal harvests. Both pinnipeds and cetaceans use the Gulf extensively. More recently, much of this information is being collected and archived and is available for management purposes. Products from the OBIS SEAMAP are available from a Web-based data archive, which also comes with a toolkit for analysis. In fact, the Navy notes on page 1-6 that the Gulf of Alaska is a complex system of shelf edges, canyons, seamounts, and freshwater intrusions, all features that are of great relevance and attractive to marine mammals and other critical ecosystem components. Although this statement generally is correct, a thorough review of existing data on marine	The Navy is aware of the information with regard to right whales and notes that the TMAA does not overlap with the Bering Sea nor the Aleutian Islands (including the passes or corridors between the Bering Sea and the GOA). With respect to other marine mammal movements (ESA and non-ESA species) within the GOA and/or within the TMAA, the Navy has made use of the best available science, which includes a review of records including historic distribution. This material is presented in Chapter 3 of the FEIS/OEIS. Chapter 4 includes a cumulative analysis of all past, present, and reasonably foreseeable future Navy and non-Navy activities. In addition, the MMPA LOA application includes an analysis on habitat effects (water quality, sound, and vessel movements) from Navy activities for ESA and non-ESA marine mammals. This information is also summarized in Chapter 3 of the FEIS/OEIS. Finally, the Navy has reviewed the OBIS SEAMAP website. While the website is a useful tool for providing incidental sighting information (which over time will provide distribution data), it does not provide any additional information with regard to active habitat use of the TMAA, densities, or frequency of use of certain areas.

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		mammal distribution and movements in the North Pacific would give the Navy much more insight into habitat use and the kinds of measures that might be needed to protect that habitat.	
MMC - 25		With that in mind, the Marine Mammal Commission recommends that the Navy expand the description of marine mammal habitat use in the Gulf of Alaska by reviewing the considerable body of information on species-specific distribution and movement patterns obtained from whaling records, scientific research, and other sources over the past century. The Commission recognizes that this represents a considerable amount of work, but we note that the thorough literature research already completed for the "Affected Species" portions of the DEIS will probably also provide most of the information needed to define and plot the typical habitats used by each species and then factor that information into an analysis of places of special concern.	The Navy does not believe that historical whaling or seal hunting records have any relevance to determining an assessment of effects from training given the overwhelming impacts to populations of marine mammals as a result of commercial whaling and as a result of industrialized fishing in the Gulf of Alaska impacting available prey species. Emergent science regarding habitat mapping, such as the focused ground-breaking efforts being undertaken by the NMFS SWFSC make it apparent that accurate predictive mapping for the Gulf of Alaska is many years away from having adequate data to allow identification of specific locations as habitat for the individual species currently using GOA or the TMAA as part of their range.
MMC - 26		**Effectiveness of Proposed Mitigation Measures** The Marine Mammal Commission repeats its now frequent recommendation that the Navy evaluate the effectiveness of its monitoring and mitigation measures. Performance tests for monitoring and mitigation measures are both technically feasible and economically reasonable. Such tests could either strengthen the Navy's position that its existing measures are adequate or, more likely, point toward steps needed to improve them. Both outcomes would provide useful information for managers responsible for ensuring the protection of marine mammals and their habitat. The Navy subjects all tactical systems to performance evaluation and doing so with its environmental systems also is necessary for the Navy to meet its commitment to good environmental stewardship.	As presented in Section 5.2.1.3, the Navy is committed to implementing a monitoring program of research and one of the areas of investigation will be to evaluate, with NMFS in a cooperating role, the effectiveness of the monitoring and mitigation measures. Additionally, please see response to AMCC – 7 regarding monitoring reports.
MMC - 27		**Retention of Vessel Logs and Records** The DEIS proposes (page 5-10) that logs and records relevant to marine mammal sightings and mitigation efforts, and other critical environmental data will be destroyed after 30 days. The Marine Mammal Commission believes that destruction of such records is entirely contrary to efforts by the Navy, the regulatory agencies (primarily the National Marine Fisheries Service), the Marine Mammal Commission, and all parties interested in better characterization of interactions between Navy operations and marine	The bullet in the Draft EIS/OEIS on page 5-10 suggesting logs would be kept for 30 days was both in error and unnecessary and has been deleted. There are numerous Navy requirements applying to the retention of various logs and other general Department of Navy record management procedures.

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		mammals. Navy activities pose a variety of risks to marine mammals including, but not limited to, those emanating from the introduction of noise (e.g., sonar), blasting (e.g., ship-shock trials, weapons testing and training), and ship strikes (e.g., especially those that involve endangered large whales). Records of Navy interactions with marine mammals are critical to characterizing those risks, evaluating the efficacy of monitoring methods, evaluating the utility of mitigation measures, and identifying alternatives for avoiding unnecessary risks. To understand the effects of Navy operations, investigators must be able to reconstruct the circumstances surrounding events such as those that occurred in Haro Strait in 2003, Haro Strait in 2004, and Hanalei Bay in 2004. Destruction of vital Navy records precludes such reconstruction and undermines efforts to identify solutions that allow the Navy to conduct its exercises while ensuring that marine mammals are protected. For that reason, and because investigation of marine mammal interactions can take several years, the Marine Mammal Commission recommends that the Navy require its vessel commanders to retain vessel logs and reports for a minimum of three years. We hope that you find these recommendations and rationale helpful. Please contact us if you have any questions or wish to discuss them. Sincerely, Timothy J. Ragen, Ph.D., Executive Director	
Katherine McLaughlin - 1		Notice of Public Hearings for the Draft Environmental Impact Statement/Overseas Environmental Impact Statement for the Gulf of Alaska Navy Training Activities Thank you for the opportunity to comment on this draft EIS by the Department of Defense. As an environmental educator, a humpback whale researcher who works with NOAA on abundance and behavior patterns of these unique cetaceans, and a board member for Prince William Sound Keeper, a citizen water quality advocacy organization for Prince William Sound, the proposed actions by the department of defense are a great concern for me over the potential and real harm that will take place upon marine mammals, and for the amount of environmental damage that may be caused to the marine environment in general with the amount and type of ordinance and activity listed in the request.	This comment is duly noted.

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Katherine McLaughlin - 2		I believe the EIS submitted by the Navy is seriously flawed. It is my belief that the U.S. Navy can conduct its exercises while safeguarding the unique and precious ecosystem of the North Gulf of Alaska without jeopardizing the safety and security of our Country. For clarity and conciseness, the concerns outlined below were prepared by the NRDC, but speak for me as to my own personal concerns as well. Please include these comments in the administrative record. Sincerely. Mrs. Katherine McLaughlin, Environmental Consultant, McLaughlin Environmental Services	This comment is duly noted.
Katherine McLaughlin - 3		*The Navy estimates an extraordinary amount of spent material will result from its Preferred Alternative (Alternative 2) in the GOA, including (I) a large increase in the weight of expended materials (352,000 lbs) and (2) 10,300 pounds of expended hazardous material. The Navy uses a quirky calculation to estimate that hazardous materials would account for approximale1y 1.2 Ib per square nautical mile (assuming the materials are spread over 20% of the TMAA, and that ocean currents will rapidly disperse the expended materials, neither of which is a valid assumption).	Please see response to AMCC – 15. Please see Highland & Archibold – 2.
Katherine McLaughlin - 4		*The Navy estimates that its sonar training exercises in the GOA from its Preferred Alternative (Alternative 2) will result in more than 425,000 marine mammal "takes" (behavioral impacts, harassment, injury, death) every year that's over 2.125 million takes during the course of the Marine Mammal Protection Act permit it must seek from NOAA. *In all, the Navy expects to "take" more than 20 different species of marine mammals, including 7 endangered species, in the GOA.	This EIS/OEIS uses a method for calculating exposures to underwater sound that was developed jointly by the Navy and the National Marine Fisheries Service. This method for evaluating "takes" of marine mammals is a term used to indicate the level of harassment, either A or B, under the Marine Mammal Protection Act.
Katherine McLaughlin - 5		*Nearly all of the mitigation measures that the Navy has proposed for the GOA concern the operation of a small "safety zone" around the sonar ship. Yet it is widely agreed in the scientific community that this measure is inadequate given the far-reaching effects of Navy sonar and the difficulty of spotting marine mammals from fast moving vessels.	Chapter 5 in the Final EIS/OEIS presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events at sea in the TMAA. As detailed in that section of the EIS/OEIS, the mitigation measures involve much more than a sonar "safety zone", make use of all available observers such as those in aircraft in addition to observers on vessels, and use all available sensors such as passive acoustic hydrophones. The mitigation measures presented in the EIS/OEIS were developed in coordination with NMFS biologists and scientists to determine which mitigation measures would be both effective and still allows for

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			the Navy to meet the operational needs for realistic training. The Navy's mitigation measures are designed to minimize impacts. It is recognized that not all marine mammals will be present at the surface and/or detected visually and not all marine mammals will be vocalizing and thus detectable by passive acoustics. The mitigation measures are effective at limiting some marine mammals exposures to high levels of sound, just as they were designed to do.
Katherine McLaughlin - 6		*The Navy has not proposed to establish any protection areas in the GOA, despite the broad recognition that geographic protection zones are the most effective available means to mitigate sonar's impacts on marine wildlife. *For example, no protection areas are proposed for harbor porpoises, which are acutely sensitive to sound; for endangered gray whales, which migrate directly through the for endangered humpback whales and blue whales, which gather to feed in the TMAA~ for the critically endangered North Pacific right whale, who's critical habitat is directly adjacent to the TMAA; or for any other species or habitat.	The boundaries of the TMAA were adjusted to avoid the designated Critical Habitat for Steller sea lions. As presented in Section 3.8 and depicted on Figure 3.8-1, the North Pacific right whale Critical Habitat is approximately 16 nautical miles from the nearest corner of the TMAA and not directly adjacent to it as stated in the comment. In addition, gray whales and harbor porpoise will generally be found near the coastal areas whereas the closest point of the TMAA is over 12 nautical miles from the nearest coast line. While blue whales could be present in the TMAA, the best available science indicates their presence will be rare in the area and it is therefore unlikely that Navy training activities would occur when they are present. As provided in Section 5, mitigation measures will be implemented as appropriate whenever marine mammals are detected and regardless of their location. In this manner, Navy mitigation measures will afford the maximum protection to all marine animals, regardless of the species or area. In addition, the concept of geographical limitations is inconsistent with the requirements for training in the TMAA. It would be impractical to train while attempting to avoid geographic protection areas, and would certainly remove the realism needed for accomplishing this critical training.
Katherine McLaughlin - 7		With regard to our specific concerns/question, we obviously have huge concerns with the impacts of the Navy's proposed increase in training, including: *The Navy does not properly analyze environmental impacts. For instance, it completely disregards the serious impacts its sonar training will have on the critically endangered North Pacific right whales, whose critical habitat is only 12 nautical miles from the TMAA or the endangered gray whales, which migrate through the TMAA.	As presented in Section 3.8 and depicted on Figure 3.8-1, the North Pacific right whale Critical Habitat is approximately 16 nautical miles from the nearest corner of the TMAA. In addition, gray whales have largely recovered, are no longer considered endangered, and will generally be found near the coastal areas whereas the closest point of the TMAA is over 12 nautical miles from the nearest coast line.
Katherine McLaughlin - 8		*The Navy underestimates the number of marine mammals (and fish) that will be harassed, injured and killed because it simply does not have the density estimates needed in order	Please see response to AMCC - 8.

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		to accurately make this determination. The National Environmental Policy Act (NEPA) specifically requires federal agencies to obtain the data necessary to their analysis. The simple assertion that "no information exists" will not suffice; unless the costs of obtaining the information are exorbitant, NEPA requires that it be obtained. See 40 C.FR § 1502.22(a). Here, the Navy failed to obtain data that is essential to its analysis. The Navy itself admits that it has no density estimates for endangered blue whales, North Pacific right whales, and sei whales. In addition, there are simply no reliable estimates for current or historical abundance numbers for many of the affected marine mammals in the GOA Despite the lack of survey/density data, the Navy simply estimates that only 1 blue whale, 1 North Pacific right whale and 4 sei whales may be harmed by its use of sonar because of the "rareness" of those whales. NEPA requires more. It requires these surveys to be completed and included in the impacts analysis.	
Katherine McLaughlin - 9		*In addition, the Navy's acoustics impact analysis ignores scientific studies contrary to its interests and uses methodologies not supported by the scientific community. Thus. the thresholds it sets for permanent injury, temporary injury (hearing loss) and behavioral change (which we would argue are too high and thus completely underestimate the actual number of wildlife that will be impacted) are invalid as a matter of science. For instance, in setting its thresholds at 195 dB for harassment and temporary injury and 215 dB for permanent injury and death, the Navy ignores a 2004 study by Novacek et al which found that right whales respond to mid-frequency sound below 140 dB (the sound caused them to stop eating and ascend rapidly to just below the surface, making them extremely vulnerable to ship strikes).	The study referenced (by Nowacek et al. 2004) on right whales in the Atlantic exposed those whales to an sound designed to be an "alert stimuli" and was nothing like Navy sonar or any other Navy sound source. The "alert stimuli" signal was an 18 min exposure consisting of three 2-minute signals played sequentially three times over. The three signals had a 60 percent duty cycle and consisted of: (1) alternating 1-sec pure tones at 500 Hz and 850 Hz; (2) a 2-sec logarithmic down-sweep from 4,500 Hz to 500 Hz; and (3) a pair of low (1,500 Hz)-high (2,000 Hz) sine wave tones amplitude modulated at 120 Hz and each 1-sec long. The purposes of the alert signal were (a) to provoke an action from the whales via the auditory system with disharmonic signals that cover the whales estimated hearing range; (b) to maximize the signal to noise ratio (obtain the largest difference between background noise) and c) to provide localization cues for the whale. Five out of six whales reacted to the signal designed to elicit such behavior.
Katherine McLaughlin - 10		*The Navy's cumulative impacts analysis is inadequate. Chapter 4 of the DEIS simply lists projects that could have potential cumulative~00 the Northwest Range without actually analyzing what those impacts will be.	Chapter 4 does not list "projects" but describes in detail all activities, regardless of by whom, taking place in the TMAA in the Gulf of Alaska; reference to the "Northwest Range" is not clear in comment. For the purposes of determining cumulative effects in this chapter, the Navy reviewed environmental documentation regarding known current and past Federal and non-Federal actions associated with the resources analyzed in

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			Chapter 3. Additionally, projects in the planning phase were considered, including reasonably foreseeable (rather than speculative) actions that have the potential to interact with the proposed Navy action.
Katherine McLaughlin - 11		*The Navy's alternative analysis is also inadequate. The Navy only presents three options - maintain the status quo, add more training, or add even more training. It does not consider - or blithely dismisses - any other alternatives, some employed by the Navy itself in other training exercises and ranges.	The no-action alternative can be thought of in terms of continuing with the present course of action until that action is changed. (46 Fed Reg 18026, at 18027). Alternatives 1 and 2 discuss the increase from these levels. This is the approach properly taken in developing alternatives for the EIS/OEIS. (See #3 of CEQ's Forty Most Asked Questions). The Navy has discussed all alternatives that were considered but eliminated in Section 2.3.2 and the consideration of the no-action alternative, alternative 1, and alternative 2 within Chapters 3 and 4 ensures the Navy's compliance under NEPA.
Katherine McLaughlin - 12		*Finally - and most critically - the Navy does not set forth adequate measures to mitigate the harmful effects of sonar. Its proposed mitigation measures basically boil down to "safety zones" (1,000 yard power-down and 200 yard shut down) around the sonar maintained primarily by on-board visual monitors. These are the same measures that federal courts have found to be "woefully inadequate and ineffectual." (For instance, studies show that visual monitoring only spots about 5% of marine mammals. Statistically, a 5%"success" rate clearly does not cut it) The Navy's refusal to employ better mitigation measures is astounding, because it has used more protective measures during previous training. As NRDC discovered during previous litigation against the Navy (and as our recent settlement agreement has allowed us to make public), the Navy bas adopted, during previous exercises, some of the same mitigation measures we have repeatedly beseeched it to employ and which it now claims it cannot employ. These measures include siting exercises beyond the continental shelf and Gulf Stream, relocating exercises out of important habitat and to avoid certain species, and using a technique called "simulated geography" to avoid canyons and near-shore areas on at least three of its major ranges. It also restricted sonar use at night when marine mammals are harder to detect, as well as minimized the use of sonar from multiple sources at the same time. Although in Chapter 5 of the DEIS the Navy goes to some pain to describe "alternative mitigation measures considered but eliminated" - primarily for "training effectiveness" reasons - its previous	Please see response to AMCC – 7.

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		adoption of the exact same measures belies its argument The Navy's claim that it cannot implement more protective mitigation measures is therefore completely disingenuous.	
National Data Buoy Center - 1		[Graphic attached] Amy (Burt), NDBC has identified the buoys/moorings that are potentially in the GOA exercise operating area. The attached graphic lists these stations, positions and watch circle radii that need to be avoided. Additional information is contained on our website (http://www.ndbc.noaa.gov/) but please don't hesitate to contact me if you have any questions. Best regards, Craig	Thank you for the graphic and the website. The Navy is aware of the NDBC DART buoys and always deploys with the latest NOAA charts. The location of the buoys and the watch circle radii will be observed by the Navy during its activities in the TMAA.
National Data Buoy Center - 2		Amy, Thank you for providing the National Data Buoy Center (NDBC) this information. We were not aware of the proposed naval training exercise in the GOA. I ask that you include statement that they need to avoid interference with The National Data Buoy Center's DART (Deep-ocean Assessment and Reporting of Tsunamis) and our automated weather reporting buoys and moorings in the exercise area. These networks provide critical weather and tsunami warning data to the American public. For specific locations of the buoys/moorings in this area, please refer to http://www.ndbc.noaa.gov/. We will also provide this information to the Navy contact you provided below. Best regards, Craig	Please see response to National Data Buoy Center - 1.
Native Village of Afognak		January 22nd, 2010 ATTN: Mrs. Amy Burt - Gulf of Alaska EIS/OEIS project Manager 1101 Tautog circle, Suite 203 Silverdale, WA 98315-1101 Department of the Navy: On behalf of the Native Village of Afognak, a federally recognized tribe of the Kodiak Archipelago, whose mission is to protect our traditional use areas of our tribal members, we are writing in response to the Draft Environmental Impact Statement for Navy Training Activities in the Gulf of Alaska. We would like to state that we do not support activities that may adversely affect the marine life in the proposed TMAA. Not only do our members rely on the ocean for subsistence, but also many make their living from the ocean. In closing, we understand the importance of the Navy being prepared, but not at the expense of our marine life and our	This comment is duly noted. Please note, use of the words "may adversely affect" in the EIS/OEIS are specific to the requirements of the Endangered Species Act and this finding ("may adversely affect") is used when there is any potential that a "Threatened" or "Endangered" species may be present in an area and the activities cannot be proven to be beneficial. The finding does not indicate that all marine life in the TMAA will be adversely affected or that any resulting effects would be significant. As presented in Chapter 3.12 of the EIS/OEIS, there will be no adverse impacts to commercial/recreational fishing, subsistence fishing, civilian access, or tourism as a result of the Preferred Alternative.

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		ocean environment. The Native Village of Afognak strongly supports the No Action alternative. Sincerely, Melissa Borton, Tribal Administrator	
Native Village of Eyak - 1		Attn: Mrs. Amy Burt - Gulf of Alaska EIS/OEIS Project Manager Re: Comments on Gulf of Alaska Navy Training Activities EIS/OEIS Dear Mrs. Burt, I am writing on behalf of the Native Village of Eyak (NVE) to comment on the Gulf of Alaska Navy Training Activities EIS/OEIS. NVE is a federally recognized tribe with our traditional use area primarily in the Prince William Sound, the Copper River, and the Gulf of Alaska. We are based in Cordova, Alaska, where most of our members currently reside. Since Cordova is an isolated rural community accessible only by air or water, the cost of living is extremely high. For that reason, the majority of our people rely heavily on subsistence hunting, fishing, and gathering for their survival. Consequently, it is imperative that we manage the environment and aquatic resources in the most sustainable and judicious manner. The health and productivity of our environment is in direct correlation with the health and productivity of our community. The Native Village of Eyak supports the mission of the Navy and the need for readiness training. However, we are very concerned about the North Pacific and Gulf of Alaska ecosystems and encourage the Navy to take every possible precaution to protect this environment. The Gulf of Alaska and Prince William Sound are very important parts of our traditional homeland. NVE deems it vitally important to ensure that the Navy training activities do not adversely impact our aquatic resources. NVE has several concerns in relation to the training activities.	This comment is duly noted.
Native Village of Eyak - 2		The proposed activities would release a substantial amount of hazardous materials into the marine environment. While the draft EIS contains information on the hazardous content and the pounds of hazardous materials in the individual weapons expended under each alternative, the FEIS should include a table listing the specific content and amounts of the hazardous materials contained in the total expended materials under each alternative.	The total amount of expended and hazardous materials for each alternative is summarized in Tables 3.2-10, 3.2-14, and 3.2-19. The hazardous constituents of each type of ordnance are listed in Section 3.2.1.1. The amount of each hazardous constituent is an approximation based on the best information available. The exact amount of each hazardous constituent in each piece of ordnance varies. For example (pg. 3.2-6 of the

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			EIS/OEIS), "Based on standards established by American Society for Testing and Materials International, each steel bomb body or fin also may contain small percentages of carbon, manganese, phosphorus, sulfur, copper, nickel, chromium, molybdenum, vanadium, columbium, or titanium, although typically present at less than 1 percent by weight." Section 3.2 identifies the total amount of hazardous materials for each ordnance type, and possible hazardous constituents when information was available. The effects of all expended materials would be equivalent to the sum of individual effects because of the large area in GOA, the low areal density of expended materials, and the low percentage of hazardous materials (about 3 percent of expended materials would be considered hazardous).
Native Village of Eyak - 3		The EIS states that releasing individual expended materials would not have a significant effect on the environment, but does not mention whether the cumulative effect of adding those contaminants into the marine environment was analyzed. Release of toxic substances in the water may be quickly diluted; however, some toxic substances have the potential to bioaccumulate in the food chain. Will the Navy be able to ensure that our subsistence foods will still be safe to eat?	The Cumulative effects of expended materials have been analyzed in Section 4.2.2 of the Final EIS/OEIS. Additionally, the Navy's analysis shows that releases of expended materials from the Proposed Action (through leaching and direct release) would not achieve the levels of concentration that would harm biological resources as described in Section 3.2, Expended Materials. The majority of expended materials used in the Proposed Action are heavy objects that will sink to the bottom of the water column. Encrustation and burial in the substrate prevent leaching from expended materials, thus further avoiding bioaccumulation. Any leaching that occurs will be diluted by ocean currents in the large and dynamic open ocean environment of the GOA. For further discussion on bioaccumulation, please see response to CDFU – 9.
Native Village of Eyak - 4		The Gulf of Alaska supports habitats of threatened and endangered populations of marine mammals and salmon. These populations have already been impacted by the Exxon Valdez Oil Spill and have just recently begun to recover. Marine mammals and fish may be physiologically or behaviorally affected as a result of the proposed activities. The effects of training activities could result in direct physical injury, death, or failure to reach the next developmental stage.	The proposed actions should not have any effect on populations of marine mammals (see Section 3.8) or salmon (see Section 3.6.1.1) in the Gulf of Alaska and while it may adversely affect those species, it should not impact their recovery. Please note, the words "may adversely affect" in the EIS/OEIS are specific to the requirements of the Endangered Species Act and that finding is used when there is any potential that a "Threatened" or "Endangered" species may be present in an area and the activities cannot be proven to be beneficial. The finding does not indicate that any resulting effects would be significant. Additionally, the proposed training activities should not result in direct physical injury, death, or failure to reach the next developmental stage for any marine mammals and should not have an impact on populations of

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			fish. While individual fish may be harmed if they co-occur with some activities that use explosives, this should not have any impact on the overall population. Please see Section 3.6.2 for potential impact discussion for Fish.
Native Village of Eyak - 5		Elevated concentrations of certain chemicals can cause adverse effects on aquatic biota including reduced survival, impaired reproduction, and reduced growth. No long term population studies have been conducted for previous Naval training exercises. Will the Navy be able to ensure that their training activities will not affect the long term productivity of marine mammals and fish populations?	Please see response to Native Village of Eyak – 3. Additionally, there have been no long-term population studies on fish or marine mammals following Navy training activities in other training areas because there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of marine mammal and fish populations.
Native Village of Eyak - 6		We appreciate the opportunity to comment on the draft EIS/OEIS and request that the Native Village of Eyak be kept informed on environmental issues and job and business opportunities with this exercise on a government to government basis. Sincerely, Native Village of Eyak Traditional Council, Robert Henrichs, President *10,000 years in our Traditional Homeland, Prince William Sound, the Copper River Delta, & the Gulf of Alaska*	This comment is duly noted.
Natural Resources Defense Council (NRDC) - 1		**January 4, 2010** **NATURAL RESOURCES DEFENSE COUNCIL** *Re: Petition for Extension of Public Comment Period on the Draft Environmental Impact Statement/Overseas Environmental Impact Statement for the Gulf of Alaska Navy Training Activities* Dear Mrs. Burt: On behalf of the Natural Resources Defense Council ("NRDC") and our 1.3 million members and activists, I am writing to petition the Navy for an extension of the public comment period on its Draft Environmental Impact Statement/Overseas Environmental Impact Statement for the Gulf of Alaska Navy Training Activities ("GOA DEIS"). Notice of the comment period was published in the Federal Register on December 11, 2009. Sec 74 Fed. Reg. 65761. The public has been given only 45 days - over religious and New Years holidays - to submit comments by January 25, 2010 on over 900 pages of dense information. In light of the voluminous information provided by the Navy in justifying its plans and the extensive range of activity proposed, we respectfully request an extension to submit written comments or at least 30 days until February 25, 2010. Such	Please see response to AMCC – 16.

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		an extension is necessary to fully protect the public interest by giving citizens some time to thoroughly analyze the Navy's proposal and submit comments on the critical issues raised therein.	
NRDC - 2		The Navy's GOA DEIS raises many issues that the public has never been able to address before. Notably, some of the Navy's activities may take place in critical habitat for North Pacific right whales and may affect humpback whale feeding grounds and gray whale migration routes. The public, as well as the scientific community needs sufficient time to identify, analyze, and comment on the scope of the proposed activities and on the Navy's analysis thereof. The Navy appropriately extended its initial comment periods for the Northwest Training Range Complex DEIS and its Undersea Warfare Training Range DEIS, thus providing an additional 30 days for the public to comment due to the sheer size of, and the many issues raised in, those DEISs. We believe at the very least that a similar extension is warranted here. Therefore, we strongly urge you to grant this petition and extend the comment period. As always, we would welcome discussion with the Navy at any time. Very Truly Yours, Taryn G. Kiekow Staff Attorney, Marine Mammal Protection Project, Natural Resources Defense Council	As shown on Figure 3.8-1, none of the proposed activities will take place in the designated Critical Habitat for the North Pacific right whale. Potential affects to right whale, humpback, and gray whales from Navy training are not new issues given the presentation of these issues in previous Range Complex EIS/OEIS such as the Hawaii Range Complex EIS/OEIS completed in 2008. Regarding your request for a comment period extension, please see response to NRDC – 1.
NRDC - 3		**January 25, 2010** **Natural Resources Defense Council** *Re: Draft Environmental Impact Statement/Overseas Environmental Impact Statement for the Gulf of Alaska Navy Training Activities* Dear Mrs. Burt: On behalf of the Natural Resources Defense Council ("NRDC"), Alaska Community Action on Toxics, Alaska Marine Conservation Council, Center for Biological Diversity, Cook Inletkeeper, International Fund for Animal Welfare, Juneau Group Sierra Club, Kodiak Audubon, North Gulf Oceanic Society, Oceana, Ocean Futures Society, Prince William Soundkeeper, Sierra Club Alaska Chapter, The Kodiak Gray Whale Project, Turning the Tides, and Jean-Michel Cousteau, and our millions of members and activists, thousands of whom reside in Alaska, we appreciate the opportunity to submit comments regarding the Navy's Draft Environmental Impact Statement/ Overseas Environmental	This comment is duly noted.

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		Impact Statement ("DEIS") for its Training Activities in the Gulf of Alaska ("GOA"). See 74 Fed. Reg. 65761 (Dec. 11, 2009). Please include these comments and attachments in the administrative record.[1] While our organizations recognize the Navy's important role in ensuring national security, we also value the security a clean and healthy environment provides. National security and environmental integrity are not mutually exclusive, and we encourage the Navy to train in a way that protects the valuable natural resources in the GOA. We are profoundly concerned, however, that Navy's DEIS falls short of ensuring such protection. As you are aware, the Navy's preferred alternative (Alternative 2) would dramatically increase the amount of training in the Temporary Maritime Activity Area ("TMAA") in the GOA between April and October every year. [1] We are aware that comments may be submitted separately by government agencies, individual scientists, environmental organizations, and the public. All of these comments are hereby incorporated by reference.	
NRDC - 4		The TMAA extends across 42,146 square nautical miles across the GOA south of Prince William Sound and east of Kodiak Island. The Navy plans to introduce - for the first time - extensive sonar training in the GOA[2]. Its preferred alternative would use many different sources of active sonar, totaling over 1,160 hours of sonar use every year. DEIS at 3.8-146. These training exercises would also employ a battery of other acoustic sources and explosives detonations in ocean surface and undersea areas, special use airspace, and training land areas. In addition, the Navy plans to use a Portable Undersea Tracking Range, add a second carrier strike group exercise and conduct sinking exercises in the TMAA. DEIS at ES-l. [2] The OEIS states that no active mid-frequency sonar is used in the GOA (or at least from exercises involving carrier-strike groups). OEIS at ES-II (describing the no Action Alternative). While it may be true that scripted exercises during Northern Edge or other major events do not currently involve mid-frequency sonar, that does not mean that individual units do not use sonar opportunistically while in the area, or that sonar is not used for sustainment training, unit-level exercises, equipment testing or calibration, or other purposes. We request that the Navy review activity over a reasonable time	Regarding the footnote, please note that there have been no ASW exercises involving use of mid-frequency sonar in previous Northern Edge Exercises (incl. 2004/09). Additionally, in reference to the stranded marine mammals found in the summer of 2004, see Section 3.8.4.2 and Appendix F of the EIS/OEIS. Please be aware that the referenced strandings discovered in 2004, which including two beaked whale strandings weeks before the exercise began and five discovered over a 33 day period along 1,600 miles of coastline after the exercise, have not been considered an Unusual Mortality Event by NOAA Fisheries (see Appendix F, Table F-2). As such, expenditure of resources to further investigate these strandings is not warranted. Regarding "opportunistic" sonar usage – Navy exercises and the participants are planned well in advance of any exercise commencing. As stated above, there have been no ASW exercises involving the use of mid-frequency sonar in previous Northern Edge exercises. As such, there would be no reason for a Navy asset to use active sonar, unless it was a safety related issue. In that situation, sonar use would not be considered training. However, given that the majority of training that occurred during those timeframes in the GOA was

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		period to establish an actual baseline for analysis. In previous requests to the Navy NRDC asked the Pacific Fleet review its logs for active sonar use occurring in the GOA between June 1, 2004 and July 20, 2004 - which corresponded to an unusual mortality of beaked whales in the area - and indicate in its OEIS whether mid-frequency sonar was used. The Navy did review the 2004 event in Appendix F of the OEIS and concluded that "[t]here was no ASW component to the exercise... There were no events in the Alaska Shield Northern Edge exercise that could have caused or been related to any of the strandings ... " OEIS at F-27. As noted above, just because the exercises during Northern Edge did not involve mid-frequency sonar does not mean that individual units were not using sonar opportunistically or for other purposes. We request that the Navy disclose whether ANY sonar is or has been used in the GOA over a reasonable time period (at least as far back as 2(04), including for sustainment training, unit-level exercises, equipment testing or calibration, or any other purpose.	in open water, without submarine assets involved, it is highly unlikely that “opportunistic” sonar was used in training.
NRDC - 5		The Navy also plans to abandon at least 352,000 pounds of spent material (both hazardous and non hazardous) in the TMAA every year, including 360 bombs, 66 missiles, 644 targets and pyrotechnics, 26,376 gunshells, 11,400 small caliber rounds, and 1,587 sonobuoys. Over 10,300 pounds of this expended material is hazardous. DEIS at ES-15 to 28; 3.2-28 to 34; 3.6-34.	Please see response to Faust & Bailey – 2.
NRDC - 6		These proposed training activities would pose significant risk to whales, fish, and other wildlife that depend on sound for breeding, feeding, navigating, and avoiding predators-in short, for their survival. Under Alternatives 1 and 2, the Navy would employ mid-frequency active sonar, which has been implicated in mass injuries and mortalities of whales around the globe.3 The same technology is known to affect marine mammals in countless other ways, inducing panic responses, displacing animals, and disrupting crucial behavior such as foraging. By the Navy's own estimates, sonar training exercises from its preferred alternative will result in more than 425,000 marine mammal "takes" (behavioral impacts, harassment, injury) every year - over 2.125 million takes during the course of the permit it must obtain under the Marine Mammal Protection Act. DEIS at 3.8-148. In all, the Navy expects to "take" more than 20 different species of marine mammals, including 7 endangered species, in the TMAA. DEIS at 3.8-1 to 4. The GOA training activities would also affect fisheries and essential fish habitat-and release a large amount of hazardous and expended materials into the waters. See	The Navy shares your desire to preserve marine life. The Navy believes that the proposed training will not pose a significant risk to whales, fish, and other wildlife given that these same activities have been conducted for many years in other Range Complexes with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals, fish, or wildlife at those locations. Please see the recent results supporting this as presented in training ranges monitoring reports available at available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]. A integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the EIS/OEIS. In addition, the Navy implements protective measures during its training events as developed with NMFS as a cooperating agency. Please see Appendix F regarding a review of sonar related stranding events. The Navy will continue to implement the monitoring and research programs where training has been occurring to determine if there are determinable impacts as a result of those activities and will do so in the TMAA associated with future training occurring there. The Navy will continue to be a leader in funding of research to

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		Appendices A and B for a detailed discussion of impacts. ____________________ 3 Military sonar generates intense sound that can induce a range of adverse effects in whales and other species - from significant behavioral changes to injury and death. The most widely reported and dramatic of these events are the mass strandings of beaked whales and other marine mammals that have been associated with military sonar use. A brief summary of the stranding record appears in Appendix B.	better understand the potential impacts of Navy training activities and to operate with the least possible impacts while meeting training requirements.
NRDC - 7		The National Environmental Policy Act ("NEPA") requires the Navy to employ rigorous standards of environmental review, including a full explanation of potential impacts, a comprehensive analysis of all reasonable alternatives, a fair and objective accounting of cumulative impacts, and a thorough description of measures to mitigate harm. Unfortunately, the DEIS released by the Navy falls far short of these mandates and fails to satisfy the Navy's legal obligations under NEPA. Before issuing a final EIS, the Navy must revise the environmental impacts, alternatives, cumulative impacts and mitigation analysis in the DEIS (described in detail in Appendix A). It must also fully address the considerable scientific record that has developed around sonar and whale injury and mortality, and adjust its acoustic impacts analysis and assessment model accordingly (discussed in Appendices B and C).	This comment is duly noted. The Navy agrees and in fact complies with all applicable environmental laws, including NEPA. As such, the Navy has developed this EIS/OEIS including the pertinent sections you cited to meet those purposes as well as others. Please see Chapter 2 for a description of the proposed actions and alternatives including selection criteria and alternatives not considered. Please see Chapter 3 (specifically Section 3.6 on Fish and Section 3.8 on marine mammals) with regard to affected environment and environmental consequences. Please see Chapter 4 with regard to cumulative impacts. Please see Appendix F on cetacean strandings with regard to a full review of the scientific record concerning marine mammal strandings and sonar use. Please see Appendix D on a discussion of the acoustic impact modeling approach, which addresses the scientifically established criteria for injury and mortality.
NRDC - 8		A few additional concerns are highlighted below. One of our primary concerns is the paucity of survey data necessary to estimate marine mammal density or distribution. Without these estimates, it is impossible to adequately evaluate the impacts on marine mammals or to estimate harm, as required by NEPA. Nor can the Navy support its environmental analysis and take estimates.	Section 3.8.2 in the DEIS discusses the density estimates used in the DEIS analysis with more detail provided in Appendix E. These estimates and the method for analysis were coordinated with National Marine Fisheries Service (NMFS) as a cooperating agency. In addition, in April 2009 the Navy funded and NMFS conducted the Gulf of Alaska Line-Transect survey (GOALS) to address the data needs for additional information. Line-transect survey visual data to support distance sampling statistics and acoustic data were collected over a 10-day period both within and outside the TMAA. Please see Section 3.8.2.1 for full discussion on the survey.
NRDC - 9		A closely related concern is the Navy's failure to protect any area within the TMAA from sonar training activities. There is a general consensus among the scientific community that "[p]rotecting marine mammal critical habitat is ...the most effective mitigation measure currently available" to reduce	With regard to protecting marine mammal habitat, the Navy altered the boundary of the TMAA to avoid the Critical Habitat boundary established for the Stellar sea lions and the TMAA is many miles from the protective areas established for right whale, sea otter, and beluga whale; there is no designated

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		the harmful impacts of mid-frequency sonar on marine mammals.[4] Nonetheless, the DEIS does not even consider establishing any protection areas in the TMAA where sonar training would be limited or excluded. [4] See Letter from Jane Lubchenco, Under Secretary of Commerce for Oceans and Atmosphere to Nancy Sutley, Chair, Council on Environmental Quality dated Jan. 19,2010, available at ht1]:I/www.nrdc.orgimediaJdocs/lOOI19.pdf; see also Agardy, T., Aguilar Soto, N., Canadas, A, Engel, M., Frantzis, A, Hatch, L., Hoyt, E., Kaschner, K., LaBrecque, E., Martin, V., Notarbartolo di Sciara, G., Pavan, G., Servidio, A, Smith, B., Wang, J., Weilgart, L., Wintle, B., and Wright, A A global scientific workshop on spatio-temporal management of noise. Report of workshop held in Puerto Calero, Lanzarote, (June 4-6,2007); ECS Working Group: Dolman, S., Aguilar Soto, N., Notabartolo di Sciara, G., Andre, M., Evans, P., Frisch, H., Gannier, A, Gordon, J., Jasny, M., Johnson, M., Papanicolopulu, 1., Panigada, S., Tyack, P., and Wright. A Technical report on effective mitigation for active sonar and beaked whales. Working group convened by European Cetacean Society, (2009); OSPAR Commission, Assessment of the environmental impact of underwater noise. OSPAR Biodiversity Series, (2009); Parsons, E.C.M., Dolman, S.J., Wright, A.I., Rose, N.A., and Burns, W.c.G. Navy sonar and cetaceans: just how much does the gun need to smoke before we act? Marine Pollution Bulletin 56: 1248-1257.	marine mammal habitat in the TMAA by design. In addition, please see Section 5 detailing the Navy's standard protective measures developed in cooperation with NMFS which will provide additional protection to marine mammals detected in the vicinity of sonar training events.
NRDC - 10		Until sufficient information on the density and distribution of marine mammals is obtained - and any salient protection areas established - the Navy should not increase sonar training in the GOA. We recommend that the Navy: (1) obtain additional data on marine mammal density and distribution in the TMAA, (2) re-analyze its impacts analysis, take estimates, and alternatives and mitigation analysis accordingly, and (3) reissue its DEIS. Should the Navy proceed before obtaining sufficient density and distribution information, we believe the law requires the adoption of the No Action Alternative until sufficient information is obtained.	Section 3.8.2 and Appendix E in the EIS/OEIS discusses the density estimates used in the EIS/OEIS analysis. These estimates and the method for analysis were coordinated with National Marine Fisheries Service (NMFS) as a cooperating agency. In April 2009, the Navy also funded and NMFS conducted the Gulf of Alaska Line-Transect Survey (GOALS) to address the data needs for additional information. Line-transect survey visual data to support distance sampling statistics and acoustic data were collected over a 10-day period both within and outside the TMAA. Please see Section 3.8.2.1 for full discussion on the survey. Previous estimates of marine mammal densities were altered based on this newly obtained information although the changes required were not substantial and largely verified the previous estimate. The information used to derive the density estimates (detailed in Appendix E) are based on the best currently available science and provide sufficient information for an informed analysis.
NRDC - 11		**The Navy Has Not Taken a "Hard Look" Under NEPA** NEPA requires that the potential environmental impacts of	The EIS/OEIS has taken a “hard look” at potential environmental consequences of the proposed action and

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		any "major Federal actions significantly affecting the quality of the human environment" be considered through the preparation of an environmental impact statement ("EIS"). Robertson v. Methow Valley Citizens Council, 490 U.S. 332,348 (1989); 42 U.S.C. § 4332. The fundamental purpose of an EIS is to compel decision-makers to take a "hard look" at a particular action - both at the environmental impacts it will have and at the alternatives and mitigation measures available to reduce those impacts - before a decision to proceed is made. 40 C.F.R. §§ 1500.1(b), 1502.1; Baltimore Gas & Electric v. NRDC, 462 U.S. 87,97 (1983); Robertson, 490 U.S. at 349. While NEPA "does not commend the agency to favor an environmentally preferable course of action," an agency may only make a decision to proceed after taking a "hard look" at environmental consequences. Sabine River Auth. v. Dep't of Interior, 951 F.2d 669, 676 (5th Cir. 1992)(internal citations omitted). This "hard look" requires agencies to obtain high quality information and accurate scientific analysis. 40 C.F.R. § 1500.1(b). It is impossible to characterize the DEIS as taking a "hard look" because of the Navy's failure to obtain information regarding marine mammal densities and distribution. The flaws stemming from this failure reverberate throughout the DEIS, most notably in the Navy's impacts analysis, take estimates and mitigation proposals.	alternatives, and provides sufficient information for careful agency decision-making. To address your concerns please see Section 3.8.2 and Appendix E in the DEIS discussing the derivation of density estimates for the analysis. The distribution information specific to species is contained in the body of Section 3.8 beginning at 3.8.1.1 and running through 3.8.5.4. In addition, an April 2009 survey of the area was conducted (the Gulf of Alaska Line-Transect Survey [GOALS]) to address the data needs for density analysis. Line-transect survey visual data to support distance sampling statistics and acoustic data were collected over a 10-day period both within and outside the TMAA. Please see Section 3.8.2.1 for full discussion on the survey.
NRDC - 12		**The Navy Lacks Sufficient Information** NEPA requires agencies to ensure the "professional integrity, including scientific integrity" of material relied upon in an EIS. 40 C.F.R. § 1502.24. To that end, agencies must make every attempt to obtain and disclose data necessary to their analysis. The simple assertion that "no information exists" will not suffice; unless the costs of obtaining the information are exorbitant, NEPA requires that it be obtained. 40 C.F.R. § 1502.22(a). The Navy simply has not obtained the required information. The Navy is unable to establish densities for many marine mammal populations in the TMAA, including blue whales, North Pacific right whales and sei whales - all of which are endangered. DEIS at 3.8-2. Nor is it able to estimate the density of harbor porpoises, which are particularly vulnerable to acoustic impacts. DEIS at 3.8-3. The Navy argues that blue whales, North Pacific right whales and sei	The majority of the information the Navy used regarding marine mammals in the Gulf of Alaska comes from the National Marine Fisheries Service Stock Assessment reports as detailed in Section 3.8.2 and Appendix E of the DEIS. In 2009, the Navy did fund the Gulf of Alaska Line-Transect Survey (GOALS) to better refine the density data and those survey results have been incorporated the analysis in the EIS/OEIS. For species that are so rare they are seldom encountered at sea in the Gulf of Alaska and therefore no density information exists, estimations have been made as appropriate. Not only would the cost to identify the number of individuals of rare species present in the Gulf of Alaska be exorbitant, no amount of data would change the fundamental fact that these species are rare. As a result of being rare, any predictive modeling will result in a finding that exposures are unlikely to occur. However, in cooperation with NMFS and as detailed in Section 3.8.7.6 and Table 3.8-8, the Navy has

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		whales are "too few in number to allow for quantitative analysis," but it cannot escape its responsibilities under NEPA simply by claiming that whales are "very rare." DEIS 3.8-2, 5,9. The "rareness" and low abundance of those whales, if anything, should warrant additional monitoring (including acoustic and visual), safeguards and protections - particularly of North Pacific right whales, one of the most endangered species of whales on the planet.	accounted for the possible exposures of rare species. In addition, all marine mammals (no matter the species) will be afforded the maximum protection provided by the mitigation measures detailed in Section 5 of the EIS/OEIS.
NRDC - 13		And although the DEIS claims that blue whales are "rare" in the GOA, a 2009 study presents new evidence indicating that as the northeastern Pacific population recovers from whaling, blue whales increasingly may be returning to former GOA feeding grounds. These whales appear to be part of the same stock that is seen off of California.[5] [5] See Calambokidis J, Barlow J, Ford JKB, Chandler TE, Douglas AB. 2009. Insights into the population structure of blue whales in the eastern North Pacific from recent sightings and photographic identification. Marine Mammal Science 25 :816-832.	This reference was cited and used in the development of the Draft EIS/OEIS. The inclusion of this study suggesting that the population may be returning to former feeding areas did not, however, change the current rare status of blue whales in the Gulf of Alaska as assessed by technical experts and based on the best currently available information.
NRDC - 14		The Navy further acknowledges that the existing information for other species and habitat in the GOA is extremely "limited" and "localized." DEIS at 3.8-9. For instance, with the exception of Rone et al. (2009), none of the surveys focused on the TMAA itself - most surveyed nearshore areas outside the TMAA. DEIS at 3.8-9. In addition, some of the surveys were designed to count species other than those targeted in the density estimate.[6] Recognizing the dearth of data, the Navy did fund a targeted 10-day marine mammal line-transect survey conducted by Rone et al. in April 2009 that yielded the most direct data available on fin whales and humpback whales in the TMAA.[7] But that survey - hampered by several "challenges" including "limited survey time, a large survey area, inclement weather, and the lack of arrival of sonobuoys" [8] - is inadequate to establish abundance and density estimates for most marine mammals in the TMAA or to identify important marine mammal habitat. Despite these challenges, however, the survey encountered an "unexpectedly large number" of sightings of marine mammals.[9] This suggests that the TMAA represents rich habitat for cetaceans, particularly in continental shelf and slope waters, that requires further study. Having sufficient data is essential for the Navy to meet its responsibilities under NEPA. The	Section 3.8.2 and Appendix E of the EIS/OEIS provide a description of the methods for establishing the density of marine mammals in the area for analysis. The Navy has used the best available science, data, and analytical methodologies for determining potential impacts as developed with NMFS as the regulator. The information in the EIS/OEIS was in large part derived from NMFS latest stock assessment reports to determine the abundance and density estimates for most marine mammals in the TMAA. In addition, while it is clear that the Gulf of Alaska is, in general, important marine mammal habitat, the locations and boundaries for species specific Critical Habitat have been established and are discussed in the EIS/OEIS in Section 3.8. Additionally, CEQ regulation at 40 CFR §1502.24 requires the Navy to ensure the "professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements" and to "identify any methodologies used and make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement." Navy has met this requirement. The EIS/OEIS represents the best available science and most applicable science on species and distribution. The Navy has taken a hard look through its analysis and has considered competing and contradictory scientific research. Under 40 CFR §1502.22, NEPA allows for

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		Navy cannot issue a final EIS (nor can the National Marine Fisheries issue a Biological Opinion under the Endangered Species Act or an incidental take permit under the Marine Mammal Protection Act) without adequate information on densities and distributions of marine mammals in the TMAA. [6] For example, the Moore et al survey of gray whales was designed to measure pinnipeds. See Moore, S.E., K.M. Wynne, J. Clement-Kinney, and J.M. Grebmeier, 2007. Gray whale occurrence and forage southeast of Kodiak Island, Alaska. Marine Mammal Science 23(2):419-428. [7] See Rone, B., A. Douglas, P. Clapham, A. Martinez, L. Morse and J. Calambokidis. 2009. Cruise Report for the April 2009 Gulf of Alaska Line-Transect Survey (GOALS) in the Navy Training Exercise Area. Report issued by National Marine Mammal Laboratory and Cascadia Research. Naval Postgraduate School Tech Report # NPS-OC-09-007. [8] Id. at 15. [9] Id.	recognizing incomplete and unavailable information. Information on species density found in Tables 3.8-1 and 3.8-2 of the EIS/OEIS was compiled from NMFS Stock Assessments as well as the 2009 GOALs survey and two other vessel surveys in the GOA. Therefore, density data has been generated based on available data in coordination with technical staff from NMFS.
NRDC - 15		Until the Navy collects the necessary information, it may be significantly underestimating marine mammal densities and thereby affecting its impact analysis and take estimates. To meet its responsibilities under NEPA, Navy should sponsor a multi-year, multi-seasonal survey effort within the TMAA that can serve as a basis for both improved environmental assessment and mitigation. Based on the results of those surveys, the Navy may need to revise its alternative analysis and site at least some of its proposed exercises in lower value marine mammal habitat elsewhere in the GOA, or adopt the No-Action Alternative. Until then, the Navy's NEPA analysis remains arbitrary and capricious.	The statement that the U.S. Navy underestimates marine mammal densities is not correct. As discussed in Section 3.8.2 and Appendix E in the E/OEISIS, the density estimates used are those provided by the NMFS stock assessment reports. Also, methods used to derive densities otherwise have erred on the side of overestimation when information is not definitive for the Gulf of Alaska or the TMAA. However, the Navy will be conducting monitoring and research associated with the proposed actions as detailed in Section 5.2.1.4. In addition, the Navy has drafted an Integrated Comprehensive Monitoring Plan to coordinate research between the various training areas with regard to potential impacts from Navy training on marine species and the effectiveness of established mitigation measures. Regarding your comment about the Navy's NEPA analysis being arbitrary and capricious, please see response to NRDC – 14.
NRDC - 16		**The Navy Fails to Consider Effective Mitigation** There is general consensus that protection areas - in which the use of mid-frequency sonar would not occur - represent the most effective means currently available to reduce the impacts of mid-frequency sonar on marine marnmals.[10] The National Oceanic Atmospheric Administration ("NOAA") recently completed a review of the Navy's sonar mitigation. It concluded that "ongoing mitigation efforts, in our view,	The Navy TMAA was adjusted to avoid established Critical Habitat boundaries so the Navy did make provision for protection areas when it established the boundary of the area under consideration. Other areas, such as seamount and slope habitat conservation areas designed to limit impacts from fishing, will not be subjected to significant impacts from Navy training activities. In addition, as provided in Section 5, mitigation measures will

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		must do more" to address uncertainties and protect marine mammals.[11] NOAA emphasized the importance of habitat identification and avoidance, stating that "[p]rotecting important marine mammal habitat is generally recognized to be the most effective mitigation measure currently available."[12] Yet the Navy makes no provision whatsoever for protection areas in the TMAA. [10] Supra, note 4. [11] See Letter from Jane Lubchenco, Under Secretary of Commerce for Oceans and Atmosphere to Nancy Sutley, Chair, Council on Environmental Quality dated Jan. 19,2010, available at http://www.nrdc.orglmediaJdocs/100119.pdf [12] Id.	be implemented as appropriate whenever marine mammals are detected and regardless of their location. In this manner, Navy mitigation measures will afford the maximum protection to all marine animals, regardless of the species or area. In addition, the concept of geographical limitations is inconsistent with the requirements for training in the TMAA. It would be impractical to train while attempting to avoid geographic protection areas, and would certainly remove the realism needed for accomplishing this critical training.
NRDC - 17		Appendix A contains a detailed description of mitigation measures that the Navy can and should - adopt.	This comment is duly noted. However, please note that the U.S. Navy, in conjunction with NMFS and USFWS, has determined what mitigation it can effectively use during its training and testing activities. Through careful exploration of all mitigation measures to determine which were the most effective, the Navy has chosen the existing measures to mitigate harm to marine mammals while still being able to meet its operational needs to train for real-world conditions.
NRDC - 18		At a minimum, however, the Navy must assess the value of marine mammal habitat [13] both in the TMAA itself and the broader GOA, and protect any higher-value areas identified. [13] NOAA has committed to conduct a series of workshops to learn more about marine mammal "hotspots," particularly through available predictive models. Based on the results of these workshops, NOAA will consider additional measures to reduce harm from sonar. in future rulemakings and authorizations under the Marine Mammal Protection Act.	The Navy considered the best available science in preparation of this EIS/OEIS and is in consultation with NMFS as the regulator and a cooperating agency with regard to the proposed action and any resultant mitigation measures as conditions of anticipated authorizations under the MMPA or reasonable and prudent measures resulting from issuance of a Biological Opinion under ESA. Note that, at present, there is no established means for an "assessment of value" for marine mammal habitat, even if it was possible to define the value boundaries of marine mammal habitats, with any reasonable degree of certainty.
NRDC - 19		We recognize that predictive habitat modeling to determine potential marine mammal hotspots is hindered by the lack of survey data in the TMAA, which is why additional surveys absolutely must be undertaken before the Navy issues a final EIS. The survey data can then be used to generate a predictive habitat model upon which appropriate mitigation can be based.	As discussed in the opening paragraphs of Section 3.8, Navy recognizes that there is a lack of data with regard to some marine mammals in the Gulf of Alaska and the TMAA; however, marine mammal presence predictive modeling in the detail necessary for exercise planning is many years, if not decades, from being realized. Given the current state of knowledge, marine mammal predictive modeling is not a function of density data from any one area but is a function of the general lack of understanding for the fundamental parameters resulting in the presence of marine mammals of a

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			particular species within changing environmental conditions over seasonally lasting years and/or decades. Combined with the recovery of large whales following the end to generalized whaling and industrial fishing protections for smaller marine mammals and sea turtles, predictions of what constitutes habitat for a species will remain in flux. Until better science is developed, the Navy relies on implementation of mitigation measures, as detailed in Section 5, whenever marine mammals are encountered, providing the maximum practical mitigations no matter where marine mammals may occur.
NRDC - 20		Already there exists important marine mammal habitat that can be readily identified. The TMAA is only 16 nautical miles west of critical habitat for the highly endangered North Pacific right whale (DEIS at 3.8- 22, 23) and directly adjacent to critical habitat for Steller sea lions (DEIS 3.8-34).	Yes, the Navy recognized these areas as important and, in the case of the Steller sea lion habitat, adjusted the boundary of the TMAA to avoid that habitat.
NRDC - 21		The North Pacific right whale is among the most endangered species of cetaceans in the world. [14] Mid-frequency sound below 140 dB has been shown to disrupt foraging in right whales and cause them to ascend rapidly to just below the surface where they face a significantly greater risk of ship strike.[15] At a minimum, the Navy should establish a sufficient buffer between these critical habitats and the TMAA. [14] See. e.g., Committee on the Status of Endangered Wildlife in Canada (COSEWIC), COSEWIC Assessment and Update Status Report on the North Pacific Right Whale Eubalaena japonica in Canada (2004). [15] See D.P. Nowacek, M.P. Johnson, and P.L. Tyack, North Atlantic Right Whales (Eubalaena glacialis) Ignore Ships but Respond to Alerting Stimuli, 271 Proceedings of the Royal Society of London, Part B: Biological Sciences 227 (2004).	As discussed in 3.8.7.3, the study referenced (by Nowacek et al. 2004) on right whales in the Atlantic exposed those whales to a sound designed to be an "alert stimuli" and was nothing like Navy sonar or any other Navy sound source. The "alert stimuli" signal was an 18 min exposure consisting of three 2-minute signals played sequentially three times over. The three signals had a 60 percent duty cycle and consisted of: (1) alternating 1-sec pure tones at 500 Hz and 850 Hz; (2) a 2-sec logarithmic down-sweep from 4,500 Hz to 500 Hz; and (3) a pair of low (1,500 Hz)-high (2,000 Hz) sine wave tones amplitude modulated at 120 Hz and each 1-sec long. The purposes of the alert signal were (a) to provoke an action from the whales via the auditory system with disharmonic signals that cover the whales estimated hearing range; (b) to maximize the signal to noise ratio (obtain the largest difference between background noise) and c) to provide localization cues for the whale. Five out of six whales reacted to the signal designed to elicit such behavior, which is not how Navy sonar works. A discussion of potential impacts to North Pacific right whales and Steller sea lions from sound sources proposed for use in the TMAA is presented in Section 3.8.7 of the FEIS/OEIS. Species acoustic thresholds for the North Pacific right whale and the Steller sea lion can be found in Sections 3.8.3.4 and 3.8.3.7, respectively.
NRDC - 22		In addition, the Navy should protect feeding grounds for humpback whales and gray whale migratory routes.[16]	As provided in Section 5, mitigation measures will be implemented for gray whale and humpback whales no matter

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		[16] Gray whales migrate through this area twice a year. While they usually maintain a distance of less than 2km to the shore, they are known to move further offshore south of Kodiak Island. Peak abundance is generally in April through May for the northbound migration, and November through December for the southbound migration. In addition, some groups of gray whales form resident feeding aggregations that maintain a presence in the GOA throughout the summer feeding season off of Kodiak Island, peaking in September through November. See Moore SE, Wynne KM, Kinney IC, Grebmeier JM, Gray whale occurrence and forage southeast of Kodiak Island. Alaska. Marine Mammal Science 23:419-428 (2007).	where these species are located. Also note that the closest point of the TMAA is 22 km from shore which provides some standoff from the main feeding areas of these species and is farther than the 2 km distance from the shore that was referenced in the comment.
NRDC - 23		The Navy should also protect areas of high bathymetric relief, where there are likely to be high concentrations of beaked whales and other deep diving species.	As provided in Section 5, mitigation measures will be implemented as appropriate whenever marine mammals are detected. In this manner, the Navy mitigation measures will decrease adverse impacts in all areas. In addition, the concept of geographical limitations is inconsistent with the requirements for training in the TMAA. Seamounts or areas of bathymetric relief are often used by submarines to hide or mask their presence, requiring the need to train in that complex ocean environment. If the Navy were restricted from training near sea mounts or areas of bathymetric relief, they may be unable to do so when faced with an actual threat. It would be impractical to train while attempting to avoid all areas of "high bathymetric relief," and would certainly remove the realism needed for accomplishing this critical training.

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NRDC - 24		**Conclusion** For the reasons set forth above and in greater detail in the Appendices below and attached critique by Dr. David Bain, we urge the Navy to satisfy its obligations under NEPA and other applicable laws. To that end, the Navy should conduct multi-year, multi-seasonal surveys to obtain adequate information on densities and distributions of marine mammals in the TMAA. These surveys would serve as a basis for predictive habitat modeling and protective mitigation. Once the Navy obtains additional data on marine mammal density and distribution, it should re-analyze its impacts analysis, take estimates and mitigation measures accordingly and reissue its DEIS. Until this additional information is obtained, the Navy should only consider the No Action Alternative. Thank you for your consideration of our comments, and we welcome the opportunity to discuss this matter with you at any time. Sincerely, Taryn Kiekow, Staff Attorney	Please see responses above for details on response to this summary of previous comments.
NRDC - 25	NRDC - Appendix A - 1	**APPENDIX A** **THE NAVY'S DEIS IS FATALLY FLAWED AND FAILS TO COMPLY WITH THE BASIC REQUIREMENTS OF NEPA** As set forth below, the Navy's DEIS does not meet the rigorous standards set forth in the National Environmental Policy Act. We urge the Navy to reissue its EIS and substantially alter the approach it has taken thus far. The Navy's scope of review must be expanded, its alternatives analysis broadened, its mitigation plan significantly improved, and its impact assessment revised to reflect the scientific evidence of mid frequency sonar's effects on marine life. These critical steps must be undertaken if the Navy's EIS is to comply with federal law. <u>1. Legal Framework: The National Environmental Policy Act</u> The National Environmental Policy Act of 1969 ("NEPA") "declares a broad national commitment to protecting and promoting environmental quality." Robertson v. Methow Valley Citizens Council, 490 U.S. 332,348 (1989). NEPA establishes a national policy to "encourage productive and enjoyable harmony between man and his environment" and "promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man." 42 U.S.C. § 4321. In order to achieve its	As explained above, the Navy's statement of the purpose and need for the proposed action is detailed and specific, the scope of the proposed action is described in exhaustive detail after careful assessment of training and RDT&E requirements, and the development of alternatives has been conducted according to the highest standards and requirements of NEPA. The EIS/OEIS is the product of extensive analysis applying best available science, including methodologies for analyzing impacts of MFA sonar on marine mammals that were developed in close consultation with NMFS. The Navy has developed, refined and adopted mitigation measures to address environmental impacts in every affected resource area, and has identified any unavoidable impacts of the proposed action. The Navy has further conducted an appropriate analysis of cumulative effects of its proposed action. The EIS/OEIS takes a "hard look" at potential environmental consequences of the proposed action and alternatives, and provides sufficient information for careful agency decision-making.

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		broad goals, NEPA mandates that "to the fullest extent possible" the "policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with [it]." 42 U.S.C. § 4332. Central to NEPA is its requirement that, before any federal action that "may significantly degrade some human environmental factor" can be undertaken, agencies must prepare an EIS. Steamboaters v. F.E.R.C, 759 F.2d 1382, 1392 (9th Cir. 1985) (emphasis in original). The requirement to prepare an EIS "serves NEPA's action forcing purpose in two important respects." Robertson, 490 U.S. at 349. First, "the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts[,]" and second, "the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision." Id. (emphasis added). As the Supreme Court explained: "NEPA's instruction that all federal agencies comply with the impact statement requirement... 'to the fullest extent possible' [cit. omit.] is neither accidental nor hyperbolic. Rather the phrase is a deliberate command that the duty NEPA imposes upon the agencies to consider environmental factors not be shunted aside in the bureaucratic shuffle." Flint Ridge Development Co. v. Scenic Rivers Ass'n, 426 U.S. 776,787 (1976). The fundamental purpose of an EIS is to force the decision-maker to take a "hard look" at a particular action - at the agency's need for it, at the environmental consequences it will have, and at more environmentally benign alternatives that may substitute for it before the decision to proceed is made. 40 C.F.R. §§ 1500.1(b), 1502.1; Baltimore Gas & Electric v. NRDC, 462 U.S. 87, 97 (1983). This "hard look" requires agencies to obtain high quality information and accurate scientific analysis. 40 C.F.R. § 1500.1(b). "General statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided." Klamath-Siskiyou Wilderness Center v. Bureau of Land Management, 387 F.3d 989, 994 (9th Cir. 2004) (quoting Neighbors of Cuddy Mountain v. United States Forest Service, 137 F.3d 1372, 1380 (9th Cir. 1998». The law is clear that the EIS must be a pre-decisional, objective, rigorous, and neutral	

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		document, not a work of advocacy to justify an outcome that has been foreordained. In nearly every respect, the Navy's DEIS fails to meet the high standards of rigor and objectivity required under NEPA. The Navy has failed to conduct the "hard look" necessary to thoroughly examine the many environmental consequences of its proposed action.	
NRDC - 26	NRDC - Appendix A - 2	**II. The Navy Fails to Properly Analyze Impacts on Marine Mammals** The Navy's DEIS does not properly analyze the environmental impacts. Its analysis also substantially understates the potential effects of sonar on marine wildlife. For instance, the Navy fails to acknowledge risks posed to a wide range of marine species including the highly endangered North Pacific right whale - from its training activities. The DEIS concludes that only one Dall' s porpoise would suffer serious injury or die during the many hours of proposed sonar training. DEIS at 3.8-148. The Navy reaches this conclusion by excluding relevant information adverse to its interests, using approaches and methods that are unacceptable to the scientific community and ignoring entire categories of impacts. As discussed in detail in Appendix C and the attached critique by Dr. David Bain, the Navy's assessment of acoustic impacts is also highly problematic.	The Draft EIS/OEIS used the most current, relevant scientific information, in many cases in coordination with the National Marine Fisheries Service, to develop the analysis on sonar training and potential impacts to marine mammals. The analysis is very thorough and complete in this regard. The Navy feels the estimated “takes” (found in Tables 3.8-14 and 3.8-17 of the EIS/OEIS) are overestimates for numerous reasons, three of which are described below: 1) Where a range of density estimates existed, or where densities were seasonal, the modeling considered only the greatest density. This assumption leads to more animals within a sonar’s range, and therefore more takes. 2) The modeling estimates do not consider the positive impacts of the Navy’s mitigation measures. In reality, many of the estimated takes (primarily PTS and TTS) would be eliminated due to power down procedures in place as a marine mammal approaches a sonar source. 3) All surface ship sonars are modeled as the more powerful SQS-53C, when in reality, 60% of all surface ship sonar hours proposed are significantly less powerful (225 dB compared to 235 dB of the SQS-53C).
NRDC - 27	NRDC - Appendix A - 3	**A. Acoustic Impacts on Marine Mammals** NEPA requires agencies to ensure the "professional integrity, including scientific integrity," of the discussions and analyses that appear in EISs. 40 C.F.R. § 1502.24. To that end, they must make every attempt to obtain and disclose data necessary to their analysis. See 40 C.F.R. § 1502.22(a). Agencies are further required to identify their methodologies, indicate when necessary information is incomplete or unavailable, acknowledge scientific disagreement and data gaps, and evaluate indeterminate adverse impacts based upon approaches or methods "generally accepted in the scientific community." 40 C.F.R. §§ 1502.22(2), (4), 1502.24. Such requirements become acutely important in cases where, as here, so much about a program's impacts depend on newly emerging science.	The marine mammal acoustical analysis is based on the use of the best available and applicable science (see Section 3.8 and Appendix D) as it applies to mid-frequency and high-frequency sources used during training in the GOA TMAA. The Navy has been thorough in its use of all relevant information. The analysis is in full compliance with NEPA.

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		In this case, the Navy's assessment of impacts is consistently undermined by its failure to meet these fundamental responsibilities of scientific integrity, methodology, investigation, and disclosure. As set forth in greater detail in Appendix C and the attached critique by Dr. Bain, the DEIS disregards a great deal of relevant information adverse to the Navy's interests, uses approaches and methods that would not be acceptable to the scientific community, and ignores whole categories of impacts. In short, it leaves the public with an analysis of harm-behavioral, auditory, and physiological-that is at odds with established scientific authority and practice. The Navy must revise its acoustic impacts analysis, including its thresholds and risk function, to comply with NEPA.	
NRDC - 28	NRDC - Appendix A - 4	**B. Other Impacts on Marine Mammals** The activities proposed for the GOA may have impacts that are not limited to the effects of ocean noise. Unfortunately, the Navy's analysis of these other impacts is cursory and inadequate. First, the Navy fails to adequately assess the impact of stress on marine mammals, a serious problem for animals exposed even to moderate levels of sound for extended periods. [17] DEIS at 3.8-72 to 73. As the Navy has previously observed, stress from ocean noise-alone or in combination with other Stressors, such as biotoxins-may weaken a cetacean's immune system, making it "more vulnerable to parasites and diseases that normally would not be fatal."[18] Moreover, according to studies on terrestrial mammals, chronic noise can interfere with brain development, increase the risk of myocardial infarctions, depress reproductive rates, and cause malformations and other defects in young-all at moderate levels of exposure. [19] Because physiological stress responses are highly conservative across species, it is reasonable to assume that marine mammals would be subject to the same effects. Yet despite the potential for stress in marine mammals and the significant consequences that can flow from it, the Navy unjustifiably assumes that such effects would be minimal. [17] See National Research Council, Ocean Noise and Marine Mammals. [18] Navy, Hawaii Range Complex Draft Environmental Impact Statement! Overseas Environmental Impact Statement at 5-19 to 5-	First, exposure to mid or high frequency active sonar will not result in a chronic noise in the GOA TMAA. Sonar pings are brief and intermittent with animals exposed at most approximately 2 times a minute for several minutes if undetected. Given the manner in which sonar is typically used, and the movement of the participants, it is extremely unlikely that individual animals would be exposed to sonar for extended periods. Studies of odontocetes chased during purse seining of tuna showed stress effects when pursued for long periods (30-40 minutes) but most of those animals recovered (Edwards 2007 International Journal of Comparative Psychology, 20: 217-227). Since the impact from noise exposure and the Navy training events in general should be transitory given the movement of the participants, any stress responses should be short in duration and have less than significant consequences.

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		20 (2007). Additional evidence relevant to the problem of stress in marine mammals is summarized in AJ. Wright, N. Aguilar Soto, AL. Baldwin, M. Bateson, C.M. Beale, C.Clark, T. Deak, E.F. Edwards, A Fernandez, A Godinho, L. Hatch, A Kakuschke, D. Lusseau, D. Martineau, L.M. Romero, L. Weilgart, B. Wintle, G. Notarbartolo di Sciara, and V. Martin, Do marine mammals experience stress related to anthropogenic noise?, 20 International Journal of Comparative Psychology, 274-316 (2007); see also T.A Romano, MJ. Keogh, C. Kelly, P. Feng, L. Berk, C.E. Schlundt, D.A Carder, and U. Finneran, Anthropogenic Sound and Marine Mammal Health: Measures of the Nervous and Immune Systems Before and After Intense Sound Exposure, 61 Canadian Journal of Fisheries and Aquatic Sciences 1124, 1130-31 (2004). [19] See, e.g.E.F. Chang and M.M. Merzenich, Environmental Noise Retards Auditory Cortical Development, 300 Science 498 (2003) (rats); S.N. Willich, K. Wegscheider, M. Stallmann, and T. Keil, Noise Burden and the Risk of Myocardial Infarction, European Heart Journal (2005) (Nov. 24, 2005) (humans); F.H. Harrington and AM. Veitch, Calving Success of Woodland Caribou Exposed to LowLevel Jet Fighter Overflights, 45 Arctic vol. 213 (1992) (caribou).	
NRDC - 29	NRDC - Appendix A - 5	Second, the Navy fails to consider the risk of ship strikes with large cetaceans, as exacerbated by the use of active acoustics. DEIS at 3.8.3 and 3.8.4 generally. For example, right whales have been shown to engage in dramatic surfacing behavior, increasing their vulnerability to ship strikes, on exposure to mid-frequency alarms above 133 dB re 1 ~a (SPL)-a level of sound that can occur many tens of miles away from the sonar systems slated for the GOA.[20] DEIS 3.8-96. [20] Nowacek et al., North Atlantic Right Whales, 271 Proceedings of the Royal Society of London, Part B: Biological Sciences at 227. The North Pacific right whale is an endangered species closely related to the studied North Atlantic right whale.	Ship strikes were discussed in the Draft EIS/OEIS, Section 3.8.7.6. Results of the research by Nowacek et al (2004) where right whales reacted to an "alert stimuli", used a sound source that has almost no correlation to MFA sonar (Section 3.8.3.4). The results of that study were, however, used to develop the risk function from which the quantification of predicted exposures was derived.
NRDC - 30	NRDC - Appendix A - 6	A conservative approach would assume that other large whales (which, as the DEIS repeatedly notes, are already highly susceptible to vessel collisions) are subject to the same hazard. For instance, fin whales also occur within the GOA and appear to be particularly vulnerable to ship strikes.[21] Indeed, in a recent 16-year survey of ship strikes in Washington State waters, fin whales "had the highest incidence of ante-mortem ship strike" of the seven species of large whales examined.[22] Even the DEIS finds that "[w]orldwide historical records indicate fin whales were the	The Draft EIS/OEIS does in fact discuss the potential for mortality and injury to whales (including fin whales) in terms of the likelihood of striking them. The EIS/OEIS describes the factors that may help to avoid collisions with all marine mammals in Section 3.8.8. The document cited in the comment, Douglas 2008, documents no Navy collisions and also reports that Navy has tighter and more restrictive procedures for both watchstander and reporting that typical vessel traffic in the area.

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		most likely species to be struck by vessels." DEIS at 3.8-16. But the DEIS then dismisses the effects of vessel strikes on fin whales based solely on an "unpublished preliminary summary of opportunistically collected reports." DEIS at 3.8-16. The DEIS fails to discuss even the potential for mortality or injury to fin whales from ship strikes. NEPA's hard look requires the Navy to undertake a far more detailed examination of this potentially significant source of mortality for fin whales under even the No Action Alternative, as well as from the increase in vessel traffic that would occur under Alternatives 1 and 2. [21] See http://www.cascadiaresearch.org/WestportBm20090113.htm [22] Annie B. Douglas, Incidence of ship strikes of large whales in Washington State, Journal of the Marine Biological Association of the United Kingdom, 2008, 88(6), 1121-1132, available at http://www.cascadiaresearch.orglreportslDouglaso/o20et%20al%20 2008Incidence% 20of%20ship%20strikes%200f%20large%20whales.pdf.	
NRDC - 31	NRDC - Appendix A - 7	Third, in the course of its training activities, the Navy would release a host of toxic chemicals, hazardous materials and waste into the marine environment that could pose a threat to marine mammals over the life of the range. Under its preferred alternative, the Navy also plans to abandon at least 352,000 pounds of spent material (both hazardous and non hazardous) in GOA waters every year, including 360 bombs, 66 missiles, 644 targets and pyrotechnics, 26,376 gunshells, 11,400 small caliber rounds, and 1,587 sonobuoys. Over 10,300 pounds of this expended material is hazardous. DEIS at ES15 to 28; 3.2-28 to 34; 3.6-34. Nonetheless, the DEIS fails to adequately consider the cumulative impacts of these toxins on marine mammals from past, current, and proposed training exercises. Careful study is needed into the way toxins might disperse and circulate within the area and how they may affect marine wildlife.	Past expenditures are part of the baseline environmental conditions described in Section 3.2.1.1 of the EIS/OEIS. The EIS/OEIS, Section 3.2.2, evaluated the proposed future expenditure and environmental result of a variety of training materials. Both qualitative and quantitative assessments of these expenditures conclude that their effects on water quality and bottom sediments, and on the biota that inhabit these environments, would be negligible. A cumulative impact is the sum of the Proposed Action's effects and the effects of other projects. Thus, while the combined ocean discharges of wastewater treatment plants, urban runoff, marine vessels, and other sources may result in unhealthful concentrations of marine pollutants, the Navy's expended training materials would not contribute to that impact because expended training materials contain hazardous constituents, such as residual explosives, not found in pollutants from other sources.
NRDC - 32	NRDC - Appendix A - 8	The Navy's assumption that expended materials and toxics would dissipate or become buried in sediment leads to a blithe conclusion that releases of hazardous material would have no adverse effects. Given the amount of both hazardous and nonhazardous materials, this discussion is inadequate under NEPA.	The EIS/OEIS document presents a thorough description and analysis in Section 3.2 of amounts and types of specific training materials as well as chemical composition and breakdown processes of expended materials. The total amounts of expended and hazardous materials for each alternative are summarized in Tables 3.2-10, 3.2-14, and 3.2-19.

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			Based on the best available science, no individual expended materials would result in water or sediment toxicity surrounding the expended item. No water or sediment toxicity would occur, so no adverse effects on marine organisms would be expected. In addition, as identified in Section 3.2.1.1, a recent study of similar Canadian military operations in the Strait of Georgia found that few biological impacts resulted from ordnance and other materials expended during its operations (Canadian Forces Maritime Experimental and Test Ranges [CFMETR] 2005). The Navy has taken a hard look through its analysis and has considered the best available in supporting its conclusions, which would be considered adequate under NEPA. Text on PCBs from SINKEX vessels and leaching rate of copper thiocyanate from sonobuoys have been added to Sections 3.2.2.6 and 3.2.1.1, respectively.
NRDC - 33	NRDC - Appendix A - 9	Fourth, the Navy does not adequately analyze the potential for and impact of oil spills. As evidenced by the 1989 Exxon Valdez oil spill, there is a significant existing risk of an oil spill in the GOA. This risk is exacerbated by increasing the tempo and intensity of Navy training, which will involve more vessels, more transits, and longer missions throughout the TMAA.[23] In light of this history and the extraordinarily valuable and sensitive natural resources that occur in the GOA, the Navy must evaluate its spill response plan and station salvage equipment accordingly. [23] We note that the Navy should include in its analysis and disclose to the public a chart that shows how its operating areas overlap shipping lanes, recommended routes, and Areas to Be Avoided as an indication of the potential for conflict with other vessels.	The analysis presented in the EIS/OEIS is limited to the activities and reasonable outcomes of such activities. As accidents involving other vessels and oil spills are not reasonably foreseeable, nor anticipated, the impact of such occurrences are not addressed or analyzed. Preventing oil spills is one of the Navy's top priorities. The Navy conducts all training exercises in the TMAA under guidance provided in OPNAVINST 5090.1C, Environmental Readiness Program Manual. All Navy vessels have Navy Shipboard Oil Spill Contingency Plans (SOSCPs), which identifies shipboard procedures for preventing, reporting, and responding to oil spills originating on the ship. Effective oil spill planning and response is an important issue for the Navy, for regulatory agencies, and for the public. Commanding officers make every effort to minimize oil spill risks across all Navy operations through application of aggressive spill prevention measures. All ships strive to continuously reduce oil spills through proper preparation, rigid adherence to published procedures, and application of the full measure of command attention to any operation involving movement of oil and oily waste.
NRDC - 34	NRDC - Appendix A - 10	Finally, the Navy's analysis cannot be limited only to direct effects, i.e., effects that occur at the same time and place as the training exercises that would be authorized. 40 C.F.R. § 1508.8(a). It must also take into account the activity's indirect effects, which, though reasonably foreseeable (as the DEIS acknowledges), may occur later in time or are	The potential for indirect effects on marine mammals has been considered in Section 3.8 in developing the methodology for assessing acoustic impacts, and it is thereby acknowledged that direct acoustic harassment of an individual can lead to other, indirect effects. The likely existence of such effects is accounted for in the estimation of "take" and they are

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		further removed. 40 C.F.R. § 1508.8(b). This requirement is particularly critical in the present case given the potential for sonar exercises to cause significant long-term impacts not clearly observable in the short or immediate term (a serious problem, as the National Research Council has observed).[24] Thus, for example, the Navy must not only evaluate the potential for mother-calf separation but also the potential for indirect effects-on survivability-that might arise from that transient change. 40 C.F.R. § 1502.16(b). Without further consideration of these impacts, and mitigation and alternatives developed to address those impacts, the DEIS does not pass NEPA muster. [24] "Even transient behavioral changes have the potential to separate mother-offspring pairs and lead to death of the young, although it has been difficult to confirm the death of the young." National Research Council, Ocean Noise and Marine Mammals at 96.	otherwise not predictable or amenable to quantification. In addition, as described in this analysis, the training activities being analyzed have been performed for decades in the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations. The Navy's analysis indicates and this history indicates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS.
NRDC - 35	NRDC - Appendix A - 11	**C. Other Impacts on Wildlife** The same concerns that apply to marine mammals - such as injury or death from mid frequency active sonar, collisions with ships, bioaccumulation of toxins, and stress apply to sea turtles, birds and other biota as well. The Navy must adequately evaluate impacts and propose mitigation for each category of harm. 40 C.F.R. §§ 1502.14, 1502.16. The effects of mid-frequency active sonar on sea turtles are glossed over on the grounds that their best hearing range appears to occur below 1 kHz. DEIS at 3.7-5 to 6. But having their best acoustic sensitivity in this range does not mean that sea turtles are oblivious to noise at higher frequencies. As the Navy admits, juvenile and adult loggerheads hear sounds all the way up to 1 kHz, suggesting that they continue to detect sounds at higher levels, including potentially the lower end of the intense mid-frequency sources intended for the range. Furthermore, they have been shown to engage in startle and escape behavior - behavior that may involve diving and surfacing - and to experience heightened stress in response to vessel noise. Thus, a more rigorous analysis of potential impacts of mid-frequency sonar is necessary.	The Navy has analyzed potential impacts from ship strikes, bioaccumulation of toxins, and stress on multiple species within the marine resources sections; Sections 3.5-3.9. The Navy has included mitigation measures for each resource within each respective section and within Chapter 5; mitigation measures. Regarding sea turtles, while there are some sea turtles that may be able to hear sounds at 1 kHz, there is a very large difference between sounds at 1 kHz and sounds at 3.5 kHz than would be evident in simply looking at the difference between the numbers (a delta of -2.5). As presented in Section 3.7 regarding leatherback turtles in the TMAA, current best available science and all available indications are that they are not likely able to hear mid-frequency sonar. Regarding bioaccumulation, please see response to CDFU – 9.
NRDC - 36	NRDC - Appendix A - 12	Nor is the Navy's reasoning with regard to seabirds any more sound. Although the Navy acknowledges that "little is known about the general hearing or underwater hearing capabilities of birds" (DEIS at 3.9-7), it then inexplicably	Within the GOA, there are only non-threatened/endangered seabird species found that would potentially be affected by sonar. The short-tailed albatross is a surface feeding species that does not dive underwater for prey. Even when plunging

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		concludes that because there is "no evidence that birds utilize sound underwater to forage or locate prey... [any] effects were unlikely". DEIS at 3.9-8. Such reasoning does not bear up to any serious scrutiny. Seabirds occur in the GOA, dive underwater (in some cases to depths of hundreds of feet), and are sensitive to same frequencies used by the Navy's acoustic sources. They must receive further analysis in the DEIS, both for the direct impacts they may suffer on exposure to the Navy's acoustic sources and for the impacts they may incur indirectly through depletion of prey species and hard bottom habitat. 40 C.F.R. § 1502. 16(a), (b). Without further consideration of these species, the Navy's review is incomplete.	short distances, there is no evidence that the species use sound to locate prey or would be underwater long enough to be injured by sonar. Therefore, the likelihood that seabirds would be affected by sonar based on their foraging behavior is unlikely. For more information on the short-tailed albatross, see response to Greg Brown – 17. Other seabird populations that may dive would only be found near prey in shallower areas (including seamounts) or in areas of upwelling. Almost all areas where diving seabirds would be found would be outside the TMAA. In a small percentage, non-threatened/endangered diving individuals would be found near seamounts within the TMAA but any injury would be rare and only affect individuals diving at the moment of a sonar ping and would certainly not affect populations of any seabirds.
NRDC - 37	NRDC - Appendix A - 13	**III. The Navy Failed to Analyze the Impacts on Fish and Fisheries** The GOA is a highly productive region for fish populations. It supports some of the most productive and commercially important fisheries in the United States (including salmon, halibut, crab, shrimp, pollock, Pacific cod, and mackerel fisheries). The TMAA supports six species of salmonoids - five of which are designated as "endangered" or "threatened" (Chinook, coho, chum, pink, and sockeye salmon and steelhead trout). The TMAA also supports hundreds of other species, including Pacific halibut, groundfish (walleye pollock, Pacific, sablefish, rockfishes, rex sole, Dover sole, arrowtooth flounder, etc.), dungeness crab, and scallops. In addition, 68 fish and invertebrate species with federally designated essential fish habitat occur in the TMAA. In its DEIS, the Navy fails to acknowledge the impacts of anthropogenic sound on fish, fisheries and essential fish habitat. On the one hand, the Navy claims that there is a "dearth of empirical information on the effects of exposure to sound, [especially] sonar...." DEIS at 3.6-43. Yet on the other hand it ignores a wide-range of scientific studies on the impacts of noise on fish, claiming the studies "would be very difficult to extrapolate" and "focused on behavior of individuals of a few species and it is unlikely their responses are representative of the wide diversity of other marine fish species." DEIS at 3.6-27, 43. The Navy is therefore able to conclude - without basis –that noise from its training activities - including both mid-frequency active sonar and	Assessment of sounds was presented in the Draft EIS/OEIS for the various acoustic sources expected in the GOA TMAA as a result of training activities. The range of acoustic effects analyzed includes no effect, small behavioral effects, significant behavioral effects, temporary loss of hearing, and physical damage. Scientific studies concerning sounds relevant to Navy activities in the GOA TMAA were evaluated in the EIS/OEIS. See Section 3.6.1.4 for discussion on hearing ranges in fish and also Sections 3.6.2.3 through 3.6.2.5 for discussion of effects of proposed actions on fishes (explosive sounds, sonar usage, etc.) This information is based on the best available science and research being conducted by the Navy, which includes some of the foremost researchers and experts on hearing in fishes. For additional information, please see responses to Greg Brown – 11 through 15.

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		underwater detonations - would have no significant impact on fish, fisheries and essential fish habitat. The Navy's conclusion not only contradicts the available scientific literature on noise but also ignores the valid concerns of fishermen. For example, fisherman concerned with declining catch rates wrote letters opposing the Navy's proposal to build an Undersea Warfare Training Range off the coast of North Carolina in 2005. Those fishermen reported sharp declines in catch rates in the vicinity of Navy exercises.	
NRDC - 38	NRDC - Appendix A - 14	**A. Decline in Catch Rates** For years, fisheries in various parts of the world have complained about declines in their catch after intense acoustic activities (including naval exercises) moved into the area, suggesting that noise is seriously altering the behavior of some commercial species.[25] A group of Norwegian scientists attempted to document these declines in a Barents Sea fishery and found that catch rates of haddock and cod (the latter known for its particular sensitivity to low-frequency sound) plummeted in the vicinity of an airgun survey across a 1600-square-mile area. In another experiment, catch rates of rockfish were similarly shown to decline.[26] Drops in catch rates in these experiments range from 40 to 80 percent.[27] A variety of other species, herring, zebrafish, pink snapper, and juvenile Atlantic salmon, have been observed to react to various noise sources with acute alarm.[28] In their comments on the Navy's Draft Environmental Impact Statement for the proposed Undersea Warfare Training Range off the coast of North Carolina, several fishermen and groups of fishermen independently reported witnessing sharp declines in catch rates of various species when in the vicinity of Navy exercises. [29] These reports are also indicative of behavioral changes -such as a spatial redistribution of fish within the water column - that could similarly affect the fisheries in the GOA. [25] See "'Noisy' Royal Navy Sonar Blamed for Falling Catches," Western Morning News, Apr. 22, 2002 (sonar off the u.K.); Percy J. Hayne, President of Gulf Nova Scotia Fleet Planning Board, "Coexistence of the Fishery & Petroleum Industries," www.elements.nb.ca/themelfuels/percy/hayne.htm (accessed May 15,2005) (airguns off Cape Breton); R.D. McCauley, J. Fewtrell, AJ.	Acoustic effects other than hearing loss were analyzed in the EIS/OEIS. The range of acoustic effects analyzed includes no effects, small behavioral effects, significant behavioral effects, temporary loss of hearing, and physical damage. Scientific studies concerning sounds relevant to Navy activities in the GOA TMAA were evaluated in the EIS/OEIS. The Draft EIS/OEIS included new findings by Popper et al. (2007) who exposed rainbow trout, a fish sensitive to low frequencies, to high-intensity low-frequency sonar (215 dB re 1 μPa2 170-320 Hz) with receive level for two experimental groups estimated at 193 dB for 324 or 648 seconds. Fish exhibited a slight behavioral reaction, and one group exhibited a 20-dB auditory threshold shift at one frequency. No direct mortality, morphological changes, or physical trauma was noted as a result of these exposures. While low-frequency sonar is not included in the Proposed Action, these results of low-frequency sonar effects on low-frequency sensitive rainbow trout are encouraging in that similar results may be found with mid-frequency active sonar use when applied to mid-frequency sensitive fish. The effects of airguns (used in seismic surveys) on fish are undoubtedly more extreme than those of MFA sonar because of the intensity and broad bandwidth of the airgun sound source.

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		Duncan, C. Jenner, M.-N. Jenner, J.D. Penrose, R.I.T. Prince, A Adhitya, J. Murdoch, and K. McCabe, Marine Seismic Surveys: Analysis and Propagation of Air-Gun Signals, and Effects of Air-Gun Exposure on Humpback Whales, Sea Turtles. Fishes, and Squid 185 (2000) (airguns in general). [26] A Engas, S. L~kkeborg, E. Ona, and AV. Soldal, Effects of Seismic Shooting on Local Abundance and Catch Rates of Cod (Gadus morhua) and Haddock <Melanogrammus aeglefinusl, 53 Canadian Journal of Fisheries and Aquatic Sciences 2238-49 (1996); J.R. Skalski, W.H. Pearson, and C.I. Malme, Effects of Sound from a Geophysical Survey Device on Cateh-Per-Unit-Effort in a Hookand- Line Fishery for Rockfish (Sebastes spp.}, 49 Canadian Journal of Fisheries and Aquatic Sciences 1357-65 (l992). See also S. L9lkkeborg and AV. Soldal, The Influence of Seismic Exploration with Airguns on Cod (Gadus morhua) Behaviour and Catch Rates, 196 ICES Marine Science Symposium 6267 (1 993). [27] Id. [28] See J.H.S. Blaxter and R.S. Batty, The Development of Startle Responses in Herring Larvae, 65 Journal of the Marine Biological Association of the u.K. 737-50 (1985); F.R. Knudsen, P.S. Enger, and O. Sand, Awareness Reactions and Avoidance Responses to Sound in Juvenile Atlantic Salmon, Salmo salar L., 40 Journal of Fish Biology 523-34 {I 992); McCauley et al., Marine Seismic Surveys at 126-61. [29] See comments compiled by the Navy and posted on the Undersea Warfare Training Range EIS site, available at http://www.projects.earthtech.comlUSWTR (e.g., comments of S. Draughon, S. Fromer, L. and F. Gromadzki, D. Pendergrast, and North Carolina Watermen United).	
NRDC - 39	NRDC - Appendix A - 15	**B. Permanent Injury and Mortality** The Navy's conclusion that underwater noise will result in only "minimal harm" to fish ignores the scientific literature. A number of studies, including one on non-impulsive noise, show that intense sound can kill eggs, larvae, and fry outright or retard their growth in ways that may hinder their survival later.[30] Significant mortality for fish eggs has been shown to occur at distances of 5 meters from an airgun source; mortality rates approaching 50 percent affected yolksac larvae at distances of 2 to 3 meters.[31] With respect to mid-frequency sonar, the Navy itself has noted that "some sonar levels have been shown [in Norwegian studies] to be powerful enough to cause injury to particular size classes of juvenile herring from the water's surface to the seafloor." [32] Also, larvae in at least some species are known to use sound in selecting and orienting toward settlement sites.[33]	Please see response to AMCC – 13.

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		Acoustic disruption at that stage of development could have significant consequences.[34] Although the Navy acknowledges that eggs and larvae may be more susceptible to sound, it caveats that acknowledgement with the excuse that "more well-controlled studies are needed." DEIS at 3.6-43. However, federal law does not allow the Navy to ignore the valid scientific studies that have already been conducted simply because they are contrary to its interest. As the Navy is aware after recently completing consultation with both NMFS (for salmon) and the U.S. Fish and Wildlife Service (for bull trout) over its Explosive Ordinance Disposal ("EOD") training exercises in Puget Sound, underwater explosions are responsible for high direct mortality to fish species present in the area. Indeed, the underwater detonation of just five pounds of plastic explosives has been observed to kill over 5,000 fish with swim bladders, with more accurate estimates ranging as high as 20,000 fish. There are a variety of live-fire training exercises, some of which involve underwater explosions of torpedoes and other ordnance that will take place in the GOA. Given the variety of fish and fisheries inhabiting these waters, the Navy's failure to analyze these effects in significant detail is stunning. [30] See,e.g., C. Booman, J. Dalen, H. Leivestad, A. Levsen, T. van der Meeren, and K. Toklum, Effecter av luftkanonskyting oa egg, larver og yngel <Effects from Airgun Shooting on Eggs. Larvae, and Fry>. 3 Fisken og Havet 1-83 (1996) (Norwegian with English summary); 1. Dalen and G.M. Knutsen, Scaring Effects on Fish and Harmful Effects on Eggs. Larvae and Fry by Offshore Seismic Explorations, in H.M. Merklinger, Progress in Underwater Acoustics 93-102 (1987); A. Banner and M. Hyatt, Effects of Noise on Eggs and Larvae of Two Estuarine Fishes, 1 Transactions of the American Fisheries Society 134-36 (1973); L.P. Kostyuchenko, Effect of Elastic Waves Generated in Marine Seismic Prospecting on Fish Eggs on the Black Sea, 9 Hydrobiology Journal 45-48 (1973). [31] Booman et al., Effecter av luftkanonskyting pa egg, larver og yngel at 1-83. [32] Navy, Draft Environmental Impact Statement! Overseas Environmental Impact Statement for the Southern California Range Complex 3.7-66 to 3.7-67 (2008). In the GOA, the Navy would operate sonar at higher levels than those used in the Norwegian studies.	

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		[33] S.D. Simpson, M. Meekan, J. Montgomery, R. McCauley, R., and A. Jeffs, Homeward Sound, 308 Science 221 (2005). [34] Popper, Effects of Anthropogenic Sounds at 27.	
NRDC - 40	NRDC - Appendix A - 16	**C. Hearing Loss** One series of recent studies showed that passing airguns can severely damage the hair cells of fish (the organs at the root of audition) either by literally ripping them from their base in the ear or by causing them to "explode."[35] Fish, unlike mammals, are thought to regenerate hair cells, but the pink snapper in these studies did not appear to recover within approximately two months after exposure, leading researchers to conclude that the damage was permanent.[36] It is not clear which elements of the sound wave contributed to the injury, or whether repetitive exposures at low amplitudes or a few exposures at higher pressures, or both, were responsible.[37] As with marine mammals, sound has also been shown to induce temporary hearing loss in fish. Even at fairly moderate levels, noise from outboard motor engines is capable of temporarily deafening some species of fish, and other sounds have been shown to affect the short term hearing of a number of other species, including sunfish and tilapia.[38] For any fish that is dependent on sound for predator avoidance and other key functions, even a temporary loss of hearing (let alone the virtually ~permanent damage seen in snapper) will substantially diminish its chance of survival.[39] [35] R. McCauley, J. FewtrelJ, and AN. Popper, High Intensity Anthropogenic Sound Damages Fish Ears, 113 Journal of the Acoustical Society of America 640 (2003). [36] Id. at 641 (some fish in the experimental group sacrificed and examined 58 days after exposure). [37] Id. [38] A.R. Scholik and H.Y. Yan, Effects of Boat Engine Noise on the Auditory Sensitivity of the Fathead Minnow. Pimephales promelas, 63 Environmental Biology of Fishes 203-09 (2002); AR. Scholik and H.Y. Yan, The Effects of Noise on the Auditory Sensitivity of the Bluegill Sunfish, Lepomis macrochirus, 133 Comparative Biochemistry and Physiology Part A at 43-52 (2002); M.E. Smith, AS. Kane, & AN. Popper, Noise-Induced Stress Response and Hearing Loss in Goldfish (Carassius auratus}, 207 Journal of Experimental Biology 427-35 (2003); Popper, Effects of Anthropogenic Sounds at 28. [39] See Popper, Effects of Anthropogenic Sounds at 29; McCauley et al., High Intensity Anthropogenic Sound Damages Fish Ears, at	The Navy has provided the best available science in reviewing impacts to fish from mid-frequency sonar. Page 3.6-41 and discussion therein explains various studies thus far into the impact of sonar on varying fish species. Since release of the Draft EIS/OEIS, a new study has been published by *Doksaeter, et. al* that is also explained in the FEIS in this same section. While the effects of sound on all species of fish have not been studied, leaving much unknown, there are reasonable extrapolations that can be made based on the general anatomy of fish and from the representative species that have been studied. NEPA allows us to explore something such as this with scientific uncertainty in an EIS/OEIS setting. Based on those studies and as detailed in Section 3.6, it is unlikely that sonar will adversely affect most fish given most fish cannot hear in the frequency range of the mid and high frequency sonar Navy is proposing to use. In addition, Navy has been conducting these same training activities in locations such as Southern California and the East Coast for many decades and both of which support healthy and diverse fisheries. For more information, please see response to NRDC – 39.

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NRDC - 41	NRDC - Appendix A - 17	**D. Breeding Behavior** NMFS has observed that the use of mid-frequency sonar could affect the breeding behavior of certain species, causing them, for example, to cease their spawning choruses, much as certain echolocation signals do.[40] The repetitive use of sonar and other active acoustics could thus have significant adverse behavioral effects on some species of fish and those who depend on them. [40] Letter from Miles M. Croom, NMFS Southeast Regional Office, to Keith Jenkins, Navy (Jan. 31,2006); see also J.J. Luczkovich, "Potential Impacts of the U.S. Navy's Proposed Undersea Warfare Training Range on Fishes" (2006) (presentation to Navy).	The EIS/OEIS included new findings by Popper et al (2007) who exposed rainbow trout, a fish sensitive to low frequencies, to high-intensity low-frequency sonar (215 dB re 1 μPa2 170-320 Hz) with receive level for two experimental groups estimated at 193 dB for 324 or 648 seconds. Fish exhibited a slight behavioral reaction, and one group exhibited a 20-dB auditory threshold shift at one frequency. No direct mortality, morphological changes, or physical trauma was noted as a result of these exposures. While low-frequency sonar is not included in the Proposed Action, these results of low-frequency sonar effects on low-frequency sensitive rainbow trout suggests that similar results may be found with mid-frequency active sonar use when applied to mid-frequency sensitive fish. The assessment for the proposed mid-frequency sound sources (at or above the 3.5 kHz center frequency) suggests that with few exceptions, fish cannot hear sounds above about 3 kHz (Popper 2003, Hastings and Popper 2005). Thus, it is expected that most fish species would not be able to hear the mid-frequency sonar proposed for use in the TMAA. If responses to mid-frequency sonar use do occur, behavioral responses would be brief, reversible, and not biologically significant. Sustained auditory damage is not expected. Sensitive life stages (juvenile fish, larvae and eggs) very close to the sonar source may experience injury or mortality, but below the level of loss of larval and juvenile fish from natural causes. The use of Navy mid-frequency sonar would not compromise the productivity of fish or adversely affect their habitat.
NRDC - 42	NRDC - Appendix A - 18	In sum, the Navy arbitrarily dismisses the potential for adverse impacts on fish. The Navy also capriciously dismisses the notion that fisheries in the area would suffer economic loss, even though - judging by the comments from North Carolina fishermen in 2005 - its training activities appear to have disrupted fishing in the past. Just like the training proposed in North Carolina, the available evidence here underscores the need for a more serious and informed analysis than the Navy currently provides. To comply with the requirements of NEPA, the Navy should rigorously analyze the potential for behavioral, auditory, and physiological impacts on fish, including the potential for population-level effects, using models of fish distribution and	The Navy has conducted a thorough and complete analysis considering fish species and habitat. The Navy has found through the analysis that the proposed actions would have no significant impacts to fish species and/or their habitat. Certain types of training activities would not take place in certain habitats, for example, SINKEXs can only occur in waters that meet depth and distance from shore requirements. Therefore, a SINKEX could not occur on a seamount that is not more than 6,000 feet under sea level.

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		population structure and conservatively estimating areas of impact from the available literature. 40 C.F.R. § 1502.22. The Navy must also meaningfully assess the economic consequences of reduced catch rates on commercial and recreational fisheries (as well as on marine mammal foraging) in the GOA. It should also consider avoiding essential fish habitat, spawning grounds and other areas of important habitat for fish species, especially hearing specialists. Notably, as with marine mammals, the Navy does not consider exclusion of important fish habitat or fisheries in the TMAA.	
NRDC - 43	NRDC - Appendix A - 19	**IV. The Navy's Proposed Mitigation Measures Fail to Protect Marine Wildlife** To comply with NEPA, an agency must discuss measures designed to mitigate its project's impact on the environment. See 40 C.F.R. § 1502.14(f). There is a large and growing set of options for the mitigation of noise impacts to marine mammals and other marine life, some of which have been imposed by foreign navies[41]-and by the Navy itself, in other contexts-to limit harm from high-intensity sonar exercises. Yet here the Navy does little more than set forth an abbreviated set of measures, dismissing effective measures out of hand. All of the mitigation that the Navy has proposed for sonar impacts boils down to the following: a very small safety zone around the sonar source, maintained primarily with visual monitoring by personnel with other responsibilities, with aid from shipboard passive monitoring when personnel are already using such technology. Under the proposed scheme, operators would power-down the system if a marine mammal is detected within 1,000 yards and shut-down the system if a marine mammal is detected within 200 yards. DEIS at 5-8 to 13. [41] See S.I. Dolman, C.R. Weir, and M. Jasny, Comparative Review of Marine Mammal Guidance Implemented during Naval Exercises, _Marine Pollution Bulletin _ (Dec. 12, 2008).	Each nation has its own training needs based on that nation's forces, capabilities and missions. For the U.S. Navy, the ability to conduct ASW around varying underwater topography is critically necessary in order to fight the growing submarine threat. The Navy, in cooperation with NMFS, has developed effective mitigation measures as described in the EIS/OEIS. As described in more detail to specific comments that follow, several measures were eliminated because they were determined to be infeasible, present a safety risk, provide no known or ambiguous protective benefits, or have an unacceptable impact on training fidelity.
NRDC - 44	NRDC - Appendix A - 20	This mitigation scheme disregards the best available science on the significant limits of visual monitoring. Visual detection rates for marine mammals generally approach only 5 percent. Moreover, the species perhaps most vulnerable to sonar-related injuries, beaked whales, are among the most difficult to detect because of their small size	The Navy's mitigation plan is more than just visual monitoring. Aerial monitoring and passive acoustic monitoring are used as well. The EIS/OEIS, Chapter 5.0, Mitigation Measures, presented the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events. Navy does not

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		and diving behavior. It has been estimated that in anything stronger than a light breeze, only one in fifty beaked whales surfacing in the direct track line of a ship would be sighted; as the distance approaches 1 kilometer, that number drops to zero.[42] Right whales are also notoriously hard to detect, and the Navy plans to train next to critical habitat for the highly endangered North Pacific right whale. Right whales are uniquely vulnerable to ship strikes because they often hover on or near the surface of the water. Due to their dark coloration and lack of a dorsal fin, however, they are difficult to detect. The Navy's reliance on visual observation as the mainstay of its mitigation plan is therefore profoundly misplaced. [42] J. Barlow and R. Gisiner, Mitigating. Monitoring, and Assessing the Effects of Anthropogenic Noise on Beaked Whales, 7 Journal of Cetacean Research and Management 239-249 (2006).	expect that 100% of the animals present in the vicinity of training events will be detected and therefore, acoustic impact modeling quantification is not reduced as a result of mitigation effectiveness. In addition, the probability of trackline detection is for visual observers during a survey. In general, there will be more ships, more observers present on Navy ships, and additional aerial assets all engaged in exercise events having the potential to detect marine mammals, than is present on a single, generally smaller (having a lower height of eye), survey ship.
NRDC - 45	NRDC - Appendix A - 21	Further, the Navy's assurances that it will consider when planning exercises, several conditions that contribute to marine mammal stranding events provides no reassurance. Among the conditions the Navy will "consider" include: (1) areas of 1,000 m depth near a shoreline where there is a rapid change in bathymetry; (2) multiple ships or submarines operating sonar; (3) chokepoints and embayments; and (4) the historical presence of strong surface ducting conditions. DEIS at 5-12 to 13. While we applaud the Navy for recognizing these conditions of concern, NEPA requires more. The Navy must impose concrete mitigation measures rather than rhetorical issues of concern. The Navy's ineffective mitigation measures are all the more remarkable given its adoption of more protective measures during previous training. For example, the Atlantic Fleet has repeatedly sited exercises beyond the continental shelf and Gulf Stream, relocated exercises out of important habitat and to avoid certain species, and used a technique called "simulated geography" to avoid canyons and near-shore areas on at least three of its major ranges. It has also restricted sonar use at night when marine mammals are harder to detect, as well as minimized the use of sonar from multiple sources at the same time.[43] In this light, the Navy's claims that it cannot implement more protective mitigation measures ring false. DEIS at 5-28 to 41. Although the Navy goes to some pain to describe "alternative mitigation	Examples cited for the Atlantic Fleet are not necessarily relevant in the GOA where the species and the environment differ. It is critical that Navy be able to conduct ASW training in a variety of environment and bathymetric conditions, including in the vicinity of canyons. The canyon allows a submarine to hide in an area that is shadowed by the canyon walls because the active transmission cannot reach the sub via the bottom bounce path. Therefore, it is critical to operate MFA sonar in areas of high bathymetric variability. The Navy, in conjunction with the NMFS, has considered numerous mitigation measures during the development of this EIS/OEIS (Chapter 5). The mitigation measures adopted were determined to be the most effective and scientifically supported measures.

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		measures considered but eliminated" -primarily for "training effectiveness" reasons-its previous adoption of the same measures belies its argument. Clearly the Navy has done more to mitigate the harmful effects of sonar in previous exercises than what it proposes for the GOA. It can, and must, do more to mitigate the harm on marine wildlife. [43] Final Comprehensive Overseas Environmental Assessment for Major Atlantic Fleet Training Exercises February 2006, Prepared for United States Fleet Forces Command in accordance with Chief of Naval Operations Instruction 5090.IB pursuant to Executive Order 12114; See also Atlantic Fleet Exercises Using Mid-Frequency Sonar Mitigation Chart.	
NRDC - 46	NRDC - Appendix A - 22	**A. Protection Zones** As discussed above, there is scientific consensus that geographic mitigation represents the most effective means currently available to reduce the impacts of mid-frequency sonar on marine mammals.[44] The Navy should obtain additional data on marine mammal density and distribution in the TMAA, which would serve as a basis for predictive habitat modeling. Based on that additional information, the Navy should consider adopting protection zones in the GOA where sonar activity will be banned. [44] Supra, note 4.	Please see response to K. McLaughlin – 6.
NRDC - 47	NRDC - Appendix A - 23	**B. Mitigation of Navy Debris and Expended Material** The DEIS fails to set forth any mitigation measures concerning the massive amount of discarded debris and expended materials associated with the increased training in the GOA. The Navy claims that ocean currents will rapidly disperse the expended materials and thus no mitigation is required. "In NEPA's demand that an agency prepare a detailed statement on 'any adverse environmental effects which cannot be avoided should the proposal be implemented,' is an understanding that the EIS will discuss the extent to which adverse effects can be avoided." Robertson, 490 U.S. at 352-53. The Navy's "all-or-nothing approach" is not a sufficient discussion of how the adverse impacts of expended material can be avoided. By failing to explore mitigation measures for expended materials, the Navy does not even attempt to avoid, minimize, rectify, reduce, or compensate for its dumping of debris - all of which are options included in the CEQ regulation's definition	Mitigation under NEPA is implicitly limited to those effects that are determined to be significant. Activities that are categorically excluded or that are addressed in an Environmental Assessment clearly have effects, albeit minor, non-significant effects; there is no requirement under NEPA that mitigation measures be identified for these effects. Similarly, non-significant effects described in an EIS/OEIS require no discussion of potential mitigation measures - the mitigation discussion necessarily focuses on those impacts determined to be significant. The EIS/OEIS analysis determined that the low-density deposition of mostly inert remnants of military training materials over vast areas of ocean bottom, where individual items would have little or no effect on their surroundings, was not a significant impact. Additionally, the Navy's training activities already incorporate substantial "mitigation" for the expenditure of training materials. Since World War II, the use of simulation technology, non-explosive training rounds, green training

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		of "mitigation." 40 C.F.R. § 1508.20.	rounds, and retrievable targets, along with the evolution of more-efficient training programs and the overall reduction in quantities of potentially hazardous materials in expendable training materials have substantially decreased both the quantities of expended materials and their effects on the environment. In keeping with its emphasis on environmental stewardship, the Navy will continue to seek appropriate opportunities to further refine its training activities and further reduce the environmental effects of expended training materials.
NRDC - 48	NRDC - Appendix A - 24	B. Other Mitigation Measures In addition to the specific protection zones set forth above, the Navy should adopt the following measures: 1) Seasonal avoidance of marine mammal feeding grounds, calving grounds, and migration corridors;	This mitigation measure was eliminated from further consideration as explained in Section 5.2.1.6 of the EIS/OEIS. (Avoiding habitats and complex/steep bathymetry, including seamounts, and employing seasonal restrictions).
NRDC - 49	NRDC - Appendix A - 25	2) Avoidance of or extra protections in other federal and state marine protected areas, including the Waketickeh Creek Marine Protected Area, Copalis Marine Protected Area, Quillayute Needles Marine Protected Area, and other Marine Protected Areas in the areas considered.	Please note that the areas mentioned in the comment are located in the Hood Canal and within the Olympic Coast National Marine Sanctuary in the State of Washington, not in Alaska. Additionally, there are no MPAs within the TMAA. Furthermore, this mitigation measure was eliminated from further consideration as explained in Section 5.2.1.6 of the EIS/OEIS. (Limiting the active sonar event locations).
NRDC - 50	NRDC - Appendix A - 26	3) Avoidance of bathymetry likely to be associated with high-value habitat for species of particular concern, including submarine canyons and large seamounts, or bathymetry whose use poses higher risk to marine species;	This mitigation measure was eliminated from further consideration as explained in Section 5.2.1.6 of the EIS/OEIS. (Avoiding habitats and complex/steep bathymetry, including seamounts, and employing seasonal restrictions).
NRDC - 51	NRDC - Appendix A - 27	4) Avoidance of fronts and other major oceanographic features, such as the California Current and other areas with marked differentials in sea surface temperatures, which have the potential to attract offshore concentration of animals, including beaked whales;[45] [45] See, U. Carretta et al., U.S. Pacific Marine Mammal Stock Assessments: 2007 at 142 (reporting that "Baird's beaked whales have been seen primarily along the continental slope from late spring to early fall.").	Avoiding such large-scale oceanographic features would be incompatible with Navy training objectives identified in the purpose and need without demonstrable benefit.
NRDC - 52	NRDC - Appendix A - 28	5) Avoidance of areas with higher modeled takes or with high-value habitat for particular species; 6) Concentration of exercises to the maximum extent practicable in abyssal waters and in surveyed offshore habitat of low value to species;	With implementation of the Proposed Action, exposure to mid or high frequency active sonar is not a constant occurrence in the GOA TMAA. Given the manner in which sonar is typically used, there are no areas with higher modeled takes. Avoiding habitat features and limiting sonar activities as described would be incompatible with the purpose and need without

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			demonstrable benefit. See Chapter 5 regarding the analysis of similar alternatives that were rejected from further analysis.
NRDC - 53	NRDC - Appendix A - 29	7) Use of sonar and other active acoustic systems at the lowest practicable source level, with clear standards and reporting requirements for different testing and training scenarios;	Operators of sonar equipment are trained to be aware of the environmental variables affecting sound propagation. In this regard, the sonar equipment power levels are always set consistent with mission requirements. Active sonar is only used when required by the mission since it has the potential to alert opposing forces to the sonar platform's presence. The Navy remains committed to using passive sonar and all other available sensors in concert with active sonar to the maximum extent practicable consistent with mission requirements.
NRDC - 54	NRDC - Appendix A - 30	8) Expansion of the marine species "safety zone" to a 4km shutdown, reflecting international best practice, or 2 km, reflecting the standard prescribed by the California Coastal Commission;[46] [46] California Coastal Commission, Adopted Staff Recommendation on Consistency Determination CD-08606 (2007); Approved Letter from M. Delaplaine, California Coastal Commission, to Rear Adm. Len Hearing, Navy (Jan. 11, 2007).	The current power down and shut down zones are based on scientific investigations specific to MFA sonar for a representative group of marine mammals. They are based on the source level, frequency, and sound propagation characteristics of MFA sonar. The zones are designed to preclude direct physiological effect from exposure to MFA sonar. Specifically, the current power-downs at 500 yards and 1,000 yards, as well as the 200 yard shut-down, were developed to minimize exposing marine mammals to sound levels that could cause TTS and PTS. These safety zone distances were based on experiments involving distances at which the onset of TTS and PTS were identified. They are also supported by the scientific community and NMFS.
NRDC - 55	NRDC - Appendix A - 31	9) Suspension or relocation of exercises when beaked whales or significant aggregations of other species, such as killer whales, are detected by any means within the orbit circle of an aerial monitor or near the vicinity of an exercise;	Any marine mammal sighting during an exercise is reported within the chain of command in order to facilitate implementation of appropriate protective measures.
NRDC - 56	NRDC - Appendix A - 32	10) Use of simulated geography (and other work-arounds) to reduce or eliminate chokepoint exercises in near-coastal environments, particularly within canyons and channels, and use of other important habitat;	Please note that the TMAA is not considered a "near-coastal" environment and there are no chokepoint exercises proposed for the GOA proposed action. Additionally, as provided in Section 5, mitigation measures will be implemented as appropriate whenever marine mammals are detected. In this manner, the Navy mitigation measures will afford the maximum protection to all marine animals, regardless of the species or area. In addition, the concept of geographical limitations is inconsistent with the requirements for training in the TMAA. Seamounts or areas of bathymetric relief are often used by submarines to hide or mask their presence, requiring the need to train in that complex ocean environment. If the Navy were restricted from training near sea mounts or areas of bathymetric relief, they may be unable to do so when faced

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			with an actual threat. It would be impractical to train while attempting to avoid all areas of "high bathymetric relief," however that would be defined, and would certainly remove the realism needed for accomplishing this critical training.
NRDC - 57	NRDC - Appendix A - 33	11) Avoidance or reduction of training during months with historically significant surface ducting conditions, and use of power-downs during significant surface ducting conditions at other times;	This mitigation measure was eliminated from further consideration as explained in Section 5.2.1.6 of the EIS/OEIS. (Reducing power in significant surface ducting conditions).
NRDC - 58	NRDC - Appendix A - 34	12) Use of additional power-downs when significant surface ducting conditions coincide with other conditions that elevate risk, such as during exercises involving the use of multiple systems or in beaked whale habitat;	This mitigation measure was eliminated from further consideration as explained in Section 5.2.1.6 of the Draft EIS/OEIS. (Reducing power in significant surface ducting conditions).
NRDC - 59	NRDC - Appendix A - 35	13) Planning of ship tracks to avoid embayments and provide escape routes for marine animals;	This restriction is not applicable to training in the GOA TMAA. Exercises involving sonar are performed offshore in the TMAA and are thus located away from embayments.
NRDC - 60	NRDC - Appendix A - 36	14) Suspension or postponement of chokepoint exercises during surface ducting conditions and scheduling of such exercises during daylight hours;	This restriction is not applicable to training in the GOA because there are no chokepoint exercises proposed for the GOA proposed action.
NRDC - 61	NRDC - Appendix A - 37	15) Use of dedicated aerial monitors during chokepoint exercises, major exercises, and near-coastal exercises;	As stated in 5.2.1.3, airborne assets when available already monitor for the presence of marine mammals with no reported incidents where marine mammals were overlooked during an exercise or where aerial assets were unable to perform their duties while watching for marine mammals; therefore, the allocation of additional airborne assets is not well justified. In addition, the presence of additional aircraft (not involved in the exercise) near naval exercises would present safety concerns for both commercial and naval observers because ASW training exercises are dynamic, can last several hours or days, and cover large areas of ocean several miles from land. Additionally, no chokepoint exercises are proposed, and the TMAA is not considered a near-shore environment.
NRDC - 62	NRDC - Appendix A - 38	16) Use of dedicated passive acoustic monitoring to detect vocalizing species, through established and portable range instrumentation and the use of hydrophone arrays off instrumented ranges;	The Navy will continue to use its passive detection capabilities to the maximum extent practicable consistent with the mission requirements to alert training participants to the presence of marine mammals in an event location.
NRDC - 63	NRDC - Appendix A - 39	17) Modification of sonobuoys for passive acoustic detection of vocalizing species;	Sonobuoy modification is not warranted for the limited scope and type of activities as proposed in this EIS/OEIS.

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NRDC - 64	NRDC - Appendix A - 40	18) Suspension or reduction of exercises outside daylight hours and during periods of low visibility;	This mitigation measure was eliminated from further consideration as explained in Section 5.2.1.6 of the EIS/OEIS. (Suspending training at night, periods of low visibility and in high sea-states when marine mammals are not readily visible).
NRDC - 65	NRDC - Appendix A - 41	19) Use of aerial surveys and ship-based surveys before, during, and after major exercises;	Navy lookouts undergo extensive training to include on-the job instruction under supervision of an experienced lookout followed by completion of Personnel Qualification Standard Program. NMFS-approved Marine Species Awareness Training is required before every sonar exercise. As stated in 5.2.1.3, airborne assets when available already monitor for the presence of marine mammals with no reported incidents where marine mammals were overlooked during an exercise or where aerial assets were unable to perform their duties while watching for marine mammals; therefore, the allocation of additional airborne assets is not well justified. In addition, the presence of additional aircraft (not involved in the exercise) near naval exercises would present safety concerns for both commercial and naval observers because ASW training exercises are dynamic, can last several hours or days, and cover large areas of ocean several miles from land.
NRDC - 66	NRDC - Appendix A - 42	20) Use of all available range assets for marine mammal monitoring;	All assets involved in training exercises in the GOA TMAA conduct surveillance of the area in which they are training. All marine mammal sightings are reported to the chain of command.
NRDC - 67	NRDC - Appendix A - 43	21) Use of third-party monitors for marine mammal detection;	This mitigation measure was eliminated from further consideration as explained in Section 5.2.1.6 of the EIS/OEIS. (Augmenting Navy lookouts on Navy vessels providing surveillance of ASW or other training events with non-Navy personnel; and Employing non-Navy observers on non-military aircraft or vessels)
NRDC - 68	NRDC - Appendix A - 44	22) Establishment of long-term research, to be conducted through an independent agent such as the National Fish and Wildlife Foundation, on the distribution, abundance, and population structuring of protected species in the GOA, with the goal of supporting adaptive geographic avoidance of high value habitat. Notably, additional critical habitat is likely to be identified in the GOA, and research should be undertaken to identify this critical habitat;	Section 5.2.1.3 of the EIS/OEIS describes the Navy's conservation measures, which include the application of adaptive management principles and the Navy's research efforts. The Navy is confident that its measures ensure continued, effective environmental stewardship. Furthermore, as a leader in environmental stewardship, the Navy will continue to refine its monitoring plan as new data is received and continue to share its information with the scientific community and the public for input.
NRDC - 69	NRDC - Appendix A - 45	23) Application of mitigation prescribed by state regulators, by the courts, by other navies or research centers, or by the U.S. Navy in the past or in other contexts;	The Navy has worked closely with NMFS to develop mitigation measures appropriate for the proposed action. Adopting mitigation measures of foreign nation navies was eliminated

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			from further consideration as explained in Section 5.2.1.6 of the EIS/OEIS.
NRDC - 70	NRDC - Appendix A - 46	24) Avoidance of fish spawning grounds and of important habitat for fish species potentially vulnerable to significant behavioral change, such as wide-scale displacement within the water column or changes in breeding behavior;	The analysis in this EIS/OEIS indicates that the proposed activities would pose no threat to fish populations, therefore this measure would be unnecessary.
NRDC - 71	NRDC - Appendix A - 47	25) Evaluating before each major exercise whether reductions in sonar use are possible, given the readiness status of the strike groups involved;	Evaluating feasibility of powerdown procedures prior to exercises was considered for all activities. The fact that a major exercise is underway does not make a power down less likely, power down procedures will be conducted consistently in the GOA.
NRDC - 72	NRDC - Appendix A - 48	26) Dedicated research and development of technology to reduce impacts of active acoustic sources on marine mammals;	As described in Section 5.2.1.3, the Navy is planning to implement a comprehensive monitoring plan to determine if there are any observable effects from training activities. The Navy takes environmental stewardship very seriously and has been and will continue to be a leading sponsor of marine mammal research. The Navy provides a significant amount of funding and support to marine research. In the past five years the agency funded over $100 million ($26 million in FY08 alone) to universities, research institutions, federal laboratories, private companies, and independent researchers around the world to study marine mammals. For additional information on Navy research efforts, refer to page 5-20 of the EIS/OEIS. The Navy's mitigation measures are effective at minimizing impacts to marine mammals.
NRDC - 73	NRDC - Appendix A - 49	27) Establishment of a plan and a timetable for maximizing synthetic training in order to reduce the use of active sonar training;	The EIS/OEIS discussed the value and use of synthetic training, and specifically the limits of simulation as it applies to ASW in Section 2.3.2.4.
NRDC - 74	NRDC - Appendix A - 50	28) Prescription of specific mitigation requirements for individual classes (or sub-classes) of testing and training activities, in order to maximize mitigation given varying sets of operational needs; and	These measures were included in the EIS/OEIS in Section 5.2.1.2 – Measures for Specific Training Events. Specifically, measures for specific training events such as: MFAS activities, Lookout and watchstander responsibilities and operating procedures specific to ordnance and sonobuoy employment.
NRDC - 75	NRDC - Appendix A - 51	29) Timely, regular reporting to NOAA, state coastal management authorities, and the public to describe and verify use of mitigation measures during testing and training activities.	The Navy does provide reports to NMFS as part of the MMPA permit and those reports are available to the public via NMFS's website. Please note that monitoring reports from exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. (Please see the recent results supporting this as presented in training ranges monitoring reports "Marine Mammal Monitoring for the U.S. Navy's Hawaii Range

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			Complex (HRC) and Southern California Range Complex (SOCAL)" available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). An integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the EIS/OEIS.
NRDC - 76	NRDC - Appendix A - 52	Consideration of these measures is minimally necessary to satisfy the requirements of NEPA, and we note that similar or additional measures may be required under the Marine Mammal Protection Act, Endangered Species Act, and other statutes.	This EIS/OEIS fully meets the requirements of NEPA. The Navy is in complete compliance with the Marine Mammal Protection Act, the Endangered Species Act, and all other applicable statutes.
NRDC - 77	NRDC - Appendix A - 53	**V. The Navy Fails to Properly Analyze Cumulative Impacts** In order to satisfy NEPA, an EIS must include a "full and fair discussion of significant environmental impacts." 40 C.F.R. § 1502.1. It is not enough, for purposes of this discussion, to consider the proposed action in isolation, divorced from other public and private activities that impinge on the same resource; rather, it is incumbent on the Navy to assess cumulative impacts as well, including the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future significant actions." Id. § 1508.7. A meaningful cumulative impact analysis must identify (1) the area in which the effects of the proposed project will be felt; (2) the impacts that are expected in that area from the proposed project; (3) other actions-past, present, proposed, and reasonably foreseeable-that have had or are expected to have impacts in the same area; (4) the impacts or expected impacts from these other actions; and (5) the overall impact that can be expected if the individual impacts are allowed to accumulate. Grand Canyon Trust v. FAA, 290 F.3d 339, 345 (D.C. Cir. 2002) (quotation and citation omitted). The, Navy "cannot treat the identified environmental concern in a vacuum." TOMAC v. Norton, 433 F.3d 852, 863 (D.C. Cir. 2006) (quoting Grand Canyon Trust, 290 F.3d at 345).	Cumulative impacts have been considered in the EIS/OEIS. As required under NEPA, the level and scope of the analysis are commensurate with the potential impacts of the action as reflected in the resource-specific discussions in Chapter 3. The EIS/OEIS considered its activities alongside those of other activities in the region. The entire EIS/OEIS provides the cumulative impacts analysis, not just Chapter 4. Chapter 3, in particular, provides the past and present impacts and environmental conditions that represent the baseline, and Chapter 3 also discusses the consequences or potential future impacts from Navy activities. Chapter 4, then, discusses the other reasonably foreseeable activities to the extent they are known and the incremental impact of the Navy's proposal when added to past, present, and future impacts.
NRDC - 78	NRDC - Appendix A - 54	The Navy's cumulative impact analysis fails to meet these basic requirements. Nowhere in its cumulative impact analysis does the Navy consider-let alone reach the conclusion-that the sum of the various environmental impacts that are enumerated will be limited. DEIS at 4-1 to	Please see response to NRDC-77.

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		27. The Navy's analysis cannot provide such support because the Navy fails to explain what the sum of these impacts is expected to be. NEPA requires more than just a recital of possible impacts: it requires the Navy to actually analyze the overall impact of the accumulation of individual impacts. Grand Canyon Trust, 290 F.3d at 345. The DEIS fails to make this analysis.	
NRDC - 79	NRDC - Appendix A - 55	The Navy must also consider the full effects of its sonar training. It simply assumes that all behavioral impacts are short-term in nature and cannot affect individuals or populations through repeated activity-even though the anticipated takes at its preferred alternative would affect the same populations.	The conclusion that sonar effects are short-term in nature is based on the analysis of the proposed sonar activities. Those activities, very short-term in nature, and spread out both temporally and geographically, are not likely to significantly impact any species of fish or marine mammal.
NRDC - 80	NRDC - Appendix A - 56	Nor does the Navy consider the potential for acute synergistic effects from sonar training. Although the DEIS discusses the potential for ship strike in the training area (DEIS 4-20 to 21), it does not consider the greater susceptibility to vessel strike of animals that have been temporarily harassed or disoriented by certain noise sources. The absence of analysis is particularly glaring in light of the Haro Strait incident, in which killer whales and other marine mammals were observed fleeing away from the sonar vessel at high speeds.[47] Neither does the Navy consider the synergistic effects of noise with other stressors in producing or magnifying a stress-response.[48] For these reasons alone, the Navy should have concluded that the cumulative and synergistic impacts from sonar training are significant and focused its efforts to analyze and develop mitigation measures to avoid those impacts. [47] Christopher Dunagan, Navy Sonar Incident Alarms Experts, Bremerton Sun, May 8, 2003. [48] A.J. Wright, N. Aguilar Soto, AL. Baldwin, M. Bateson, C.M. Beale, C.Clark, T. Deak, E.F. Edwards, A Fernandez, A Godinho, L. Hatch, A. Kakuschke, D. Lusseau, D. Martineau, L.M. Romero, L. Weilgart, B. Wintle, G. Notarbartolo di Sciara, and V. Martin, Do marine mammals experience stress related to anthropogenic noise?, 20 International Journal of Comparative Psychology, 274-316 (2007); see also Andrew J. Wright, Natacha Aguilar Soto, Ann L. Baldwin, Melissa Bateson, Colin M. Beale, Charlotte Clark, Terrence Deak, Elizabeth F. Edwards, Antonio Fernandez, Ana Godinho, Leila Hatch, Antje Kakuschke, David Lusseau, Daniel Martineau, L. Michael Romero, Linda Weilgart, Brendan Wintle, Giuseppe Notarbartolo-di-Sciara, and Vidal Martin, Anthropogenic	There has been no scientific reports indicating that marine mammals may be more susceptible to vessel strikes as a result of exposure to sonar. As discussed, for example in section 3.8.3.4 concerning right whales, sound sources have been specifically used to deter ship strikes and in other cases as acoustic deterrence devices to keep marine mammals from becoming entangled in fishing nets. The Navy has not found any information to suggest that animals exposed to MFA/HFA sonar would be more susceptible to vessel collisions. Additionally, Appendix F describes Haro Strait incident in detail and also highlights the variability of observer reports with regards to orca behavior on May 5, 2003 which included observer reports ranging from the orca resting along the shoreline, to having high rates of active surface behavior, to a determination they were "annoyed"; None of these would seem create a greater susceptibility to a vessel strike. Chapter 4 presents an analysis of cumulative impacts from Navy training activities. As detailed, Navy training activities constitute a very small contribution to human activities in the area. Specifically regarding cumulative acoustic impacts, see section 4.2.8.3. Regarding mitigation measures used during training with active mid-frequency sonar, see Chapter 5.

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		noise as a stressor in animals: a multidisciplinary perspective. 20 International Journal of Comparative Psychology, 250-273 (2007).	
NRDC - 81	NRDC - Appendix A - 57	The Navy acknowledges that the GOA is crowded with human and military activities, many of which introduce noise, chemical pollution, debris, and vessel traffic into the habitat of protected species. DEIS at 4-1 to 7; 4-18-27. Yet it inexplicably fails to conclude what the cumulative effects will be for all those activities. Given the scope of the proposed action, the deficiencies of the Navy's cumulative impacts assessment represents a critical failure of the DEIS. At a minimum, the Navy must evaluate the potential for cumulative impacts on populations that would occur in and near the GOA, clearly define the extent of expected cumulative impacts, and assess the potential for synergistic adverse effects (such as from noise in combination with ship-strikes).	Please see Chapter 4 regarding the cumulative effects analyses in the EIS/OEIS that deals with the combined cumulative and, as applicable, the known synergistic effects of Navy's proposed actions on the resources in the TMAA. In general, Navy training is a very small subset of the activities taking place in the TMAA and thus in comparison contributes very to any potential cumulative impacts in the area. Specifically for a broad discussion of cumulative impacts on Marine Mammals, see Section 4.2.8. For a discussion of cumulative impacts relating to Marine Mammals and Ship Strikes see Section 4.2.8.2; this section in particular highlights the small contribution of Navy training to the cumulative impacts taking place in the TMAA. For a discussion of Anthropogenic Sound ("noise") see Section 4.2.8.3. For detailed information, see Section 3.8 as analyzed for each species in the TMAA. For example, see Section 3.8.3.3 regarding the context for ship strikes of humpback whales in Alaska waters; the same is repeated for all other species for which ship strike data is available. The "Other Threats" sub-section in the species write-ups also contains a discussion of "anthropogenic noise" as it relates to the species.
NRDC - 82	NRDC - Appendix A - 59	**VI. The Navy Fails to Properly Analyze Reasonable Alternatives** NEPA requires agencies to consider alternatives to their proposed actions. To comply with NEPA, an EIS must "inform decision-makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." 40 C.F.R. § 1502.1. This alternatives requirement has been described in regulation as "the heart of the environmental impact statement." Id. § 1502.14. The courts describe the alternatives requirement equally emphatically, citing it as the "linchpin" of the EIS. Monroe County Conservation Council v. Volpe, 472 F.2d 693 (2d Cir. 1972). The agency must therefore "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." 40 C.F.R. § 1502.14(a). Consideration of alternatives is required by (and must conform to the independent terms of) both sections 102(2)(C) and 102(2)(E) of NEPA. Here, the Navy's	The Navy complied with NEPA requirements in the development and consideration of alternatives. This FEIS/OEIS analyzes all alternatives in Section 2.3 and explains why the Navy has considered but eliminated alternatives in Section 2.3.2. As explained in Section 2.3.2, a reduction in levels of training within the GOA ATAs would not support the Navy's Purpose and Need and was therefore eliminated from further consideration. Further information can be found in response to MMC – 2. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.

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		alternatives analysis misses the mark. **A. Failure to Identify Environmental Impact-Based Alternatives** The Navy claims it "considers potential environmental impacts" while executing its responsibilities under federal law, including NEPA. DEIS at 1-1. But the Navy's alternatives were not selected to "inform decision-makers and the public" of how the Navy could "avoid or minimize adverse impacts or enhance the quality of the human environment." 40 C.F.R. § 1502.1. Instead, as discussed in the DEIS and below, the Navy chose alternatives based on factors unrelated to the proposed action's environmental impacts.	
NRDC - 83	NRDC - Appendix A - 60	Further, at no point in the DEIS does the Navy discuss how the alternatives pose different environmental choices for the public and decision makers. The DEIS fails entirely to comply with NEPA's regulations, requiring the Navy to "present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among option by the decision maker and the public." 40 C.F.R. § 1502.14. The Navy fails to sharply define the environmental issues applicable to each alternative and include these differences in a comparison of alternatives. There is simply no comparison of the risks and benefits of each alternative site showing what is and is not known and what species and habitats would be most at risk from each alternative.	The EIS/OEIS presents the environmental impacts of the proposal and the alternatives in a directly comparative manner within the executive summary as well as at the conclusion of each resource section. Within each resource section, impacts from the No Action Alternative are presented, followed by thorough discussions of Alternative 1 and Alternative 2 that discuss potential impacts of the action alternatives as they relate to impacts presented under the No Action Alternative. In this manner, the EIS/OEIS does indeed satisfy NEPA regulations to "present the environmental impacts of the proposal and the alternatives in comparative form".
NRDC - 84	NRDC - Appendix A - 61	**B. Identification of Alternative Sites** The DEIS does not include any discussion of alternative sites, instead proposing a No Action alternative (maintaining the current level of activities), Alternative 1 (increasing training activities, including sonar training), and the preferred Alternative 2 (increasing training activities, sonar training, additional strike exercises and range enhancements). The Navy's analysis is devoid of geographic alternatives. The information the Navy does include indicates that factors of convenience and cost dominated the decision. Factors of mere convenience alone cannot dictate an agency's choice of alternatives to evaluate in an EIS. An agency must discuss all reasonable alternatives-those that will accomplish the purpose and need of the agency and are practical and feasible-not simply those it finds most	The statement of the purpose and need for the agency action appropriately defines the range of alternatives to be addressed in an EIS/OEIS. In identifying the purpose and need for a major federal action, the agency must consider the goals of Congress, and federal law such as those expressed in the agency's statutory authorization to act. With regard to the GOA EIS/OEIS, the purpose and need for the agency action is clearly defined. The purpose and need for Proposed Action is to provide a training environment consisting of ranges, training areas, and range instrumentation with the capacity and capabilities to fully support required training tasks for operational units. As the EIS/OEIS states, the purpose and need furthers the Navy's execution of its statutory roles and responsibilities under Title 10 of the United States Code. Please note that Navy training is not a matter of cost or convenience. Navy assets must travel a long way to participate

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		convenient. 40 C.F.R. § 1502.14.	in joint training activities to receive the training required to fulfill its Title 10 responsibility.
NRDC - 85	NRDC - Appendix A - 62	"The primary purpose of the impact statement is to compel federal agencies to give serious weight to environmental factors in making discretionary choices." /-291 Why? Ass'n v. Bums, 372 F.Supp. 233, 247 (D. Conn. 1974). If an agency is permitted to consider and compare the environmental impacts of its proposed action with only equally convenient alternatives-and permitted to omit from such analysis any alternatives that are less convenient, no matter that they might result in significant environmental benefits-this purpose would be thwarted. Carefully siting the activities proposed to occur in the range to avoid concentrations of vulnerable and endangered species and high abundances of marine life is the most critical step the Navy can take in reducing the environmental impacts of this project. Because the Navy has failed to undertake an alternatives analysis that allows it to make an informed siting choice, however, the DEIS is inadequate and must be revised.	The Navy has developed and fully analyzed appropriate alternatives based on this statement of the purpose and need for the Proposed Action. The EIS/OEIS does not, as this comment suggests, summarily dismiss exclusions from its alternatives analysis. As the EIS/OEIS states, and as stated in public articulations of the professional military judgment of senior Navy leaders, alternatives that would impose limitations on training locations within the GOA ATA's, would not support the purpose and need. The analysis mandated by NEPA is not an evaluation of alternative means to accomplish the general goal of an action. Rather, alternatives to be evaluated should be those that reasonably satisfy the specific purpose and need for the agency action. The underlying need is to conduct training of a specific nature, type, and scope that is required to ensure Navy personnel and units are fully trained. The EIS/OEIS appropriately limits its analysis to alternatives that meet the Navy's congressionally mandated training mission. Moreover, the Navy has proposed extensive mitigation measures to reduce any potential impacts on marine species and marine resources.
NRDC - 86	NRDC - Appendix A - 63	**C. Other Reasonable Alternatives** The DEIS fails to consider any alternatives beyond increasing the level of training. Therefore, many reasonable alternatives are missing from the Navy's analysis that might fulfill that purpose while reducing harm to marine life and coastal resources. For example: (1) The DEIS fails entirely to consider avoiding seasonal habitat, or any other seasonal variation in marine life abundance (such as migration routes). Omitting even the mere consideration of any alternative that recognizes the need to protect endangered and sensitive marine life is unacceptable.	See response to NRDC – 85.
NRDC - 87	NRDC - Appendix A - 64	(2) The DEIS fails to include a range of mitigation measures among its alternatives. Many such measures have been employed by the U.S. Navy in other contexts, as discussed above; and there are many others that should be considered. Such measures are reasonable means of reducing harm to marine life and other resources on the proposed range, and their omission from the alternatives analysis renders that analysis inadequate.	The range of mitigations has been discussed in Section 5 and those apply to all alternatives. The mitigations proposed have been reviewed by Navy and NMFS based on their effectiveness, practicality, and impact on the military readiness activity as required under the amendments to MMPA.

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NRDC - 88	NRDC - Appendix A - 65	(3) The Navy's statement of purpose and need contains no language that would justify the limited set of alternatives that the Navy considers (or the alternative it ultimately prefers). Yet it is a fundamental requirement of NEPA that agencies preparing an EIS specify their project's "purpose and need" in terms that do not exclude full consideration of reasonable alternatives. 40 C.F.R. § 1502.13; City of Carmel-by-the-Sea v. United States Dep't of Transp. , 123 F.3d 1142, 1155 (9th Cir. 1997) (citing Citizens Against Burlington, Inc. v. Busey, 938 F.2d 190, 196 (D.C. Cir. 1991)). "The existence of a viable but unexamined alternative renders an environmental impact statement inadequate," Idaho Conservation League v. Mumma, 956 F.2d 1508, 1519 (9th Cir. 1992), and an EIS errs when it accepts "as a given" parameters that it should have studied and weighed. Simmons v. U.S. Army Corps of Eng'rs, 120 F.3d 664, 667 (7th Cir. 1997). In sum, the DEIS shortchanges or omits from its analysis reasonable alternatives that might achieve the Navy's core aim of testing and training while minimizing environmental harm. For these reasons, we urge the Navy to revise its DEIS to adequately inform the public of all reasonable alternatives that would reduce adverse impacts to whales, fish, and other resources. 40 C.F.R. § 1502.1.	Section 1.1 of the EIS/OEIS identifies that the core of the EIS/OEIS is the development and analysis of different alternatives for achieving the Navy’s objectives. Alternatives are not required to avoid environmental harm. Alternatives development is a complex process, particularly in the dynamic context of military training. The touchstone for this process is a set of criteria that respond to the naval readiness mandate as it is implemented in the GOA ATA's. The criteria for developing and analyzing alternatives to meet these objectives are set forth in Section 2.3.1. This Section in 2.3.1, combined with the purpose and need statement in Section 1.4 (along with background information that precedes this statement) adequately justifies the set of alternatives presented in the EIS/OEIS.
NRDC - 89	NRDC - Appendix A - 66	**VII. The Navy Fails to Analyze the Impacts on Wildlife Viewing Interests and Recreation** Just as it fails to consider the direct, indirect, and cumulative impacts of increased training in the GOA on the region's marine mammals and other fish and wildlife, the DEIS does not adequately consider the effects on wildlife viewing and other wildlife dependent recreational interests. The DEIS makes no mention of the value lost from the harm to marine mammals that attract a number of our organizational members and members of the public to the potentially affected areas of the GOA. Nor does it address the potential economic value lost from decreased tourism (e.g., whale watching, cruise ships, etc.), particularly those areas centered on observing whales and other marine mammals in their natural habitats. One of NEPA's explicit purposes is to "assure esthetically and culturally pleasing surroundings," 42 U.S.C. 4331(b)(2), and case law makes clear that an agency must adequately consider such recreational impacts in its NEPA analysis. See, e.g., Lujan v. NWF, 497 U.S. 871, 887 (1990) ("no doubt that recreational	These potential impacts were analyzed in the EIS/OEIS in Section 3.12 – Socioeconomics. In short, the proposed activities, largely similar in number and scope to those conducted for years, have not negatively impacted these resource areas in the past nor are they expected to in the future. Any recreational area and tourism impacts have been considered within Socioeconomics – 3.12 and any impacts relating to EO 12898 or EO13045 have been analyzed within Environmental Justice and Protection of Children – 3.13. None of these resource sections show an appreciable effect as a result of Navy training. Furthermore, no restrictions on vessel traffic or transits would occur, even during Navy training activities.

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		use and aesthetic enjoyment are among the sorts of interests NEPA [was] specifically designed to protect"); LaFlamme v. FERC, 852 F.2d 389, 401 (1988) (because "there were substantial questions raised regarding whether the project may significantly affect recreational use in the project area, and that PERC failed to explain or discuss" these impacts, the court found that "this record reflects a decision which is neither 'fully informed or well-considered,>t, and therefore concluded the agency's decision not to prepare an EIS was unreasonable).	
NRDC - 90	NRDC - Appendix A - 67	**VIII. Project Description and Meaningful Public Disclosure** Disclosure of the specific activities contemplated by the Navy is essential if the NEPA process is to be a meaningful one. See, e.g., LaFlamme v. F.E.R.C, 852 F.2d 389,39 (9th Cir. 1988) (noting that NEPA's goal is to facilitate "widespread discussion and consideration of the environmental risks and remedies associated with [a proposed action]").	The EIS/OEIS provides a complete and thorough description of the proposed activities.
NRDC - 91	NRDC - Appendix A - 68	For meaningful public input, the Navy must describe source levels, frequency ranges, duty cycles, and other technical parameters relevant to determining potential impacts on marine life. The DEIS provides some of this information, but it fails to disclose sufficient information about active sonobuoys, acoustic device countermeasures, training targets, or range sources that would be used during the exercises. DEIS at Appendix H. And the DEIS gives no indication of platform speed, pulse length, repetition rate, beam widths, or operating depths-that is, most of the data that the Navy used in modeling acoustic impacts.	To the extent possible, the EIS/OEIS presents acoustic source and technical information in Appendix H. Additionally, Appendix D discusses some of this information as it relates to acoustic modeling efforts.
NRDC - 92	NRDC - Appendix A - 69	The Navy-despite repeated requests-has not released or offered to release CASS/GRAB or any of the other modeling systems or functions it used to develop the biological risk function or calculate acoustic harassment and injury. See, e.g., DEIS at Appendix D.	The CASS/GRAB program is proprietary and not available for public release, however, approximate results can be obtained using other mathematical models commonly available to those with the technical expertise to utilize those tools.
NRDC - 93	NRDC - Appendix A - 70	In addition, the Navy has also ignored repeated Freedom of Information Act requests regarding information and reports cited in the DEIS. These models, reports, and requests for information must be made available to the public, including the independent scientific community, for public comment to be meaningful under NEPA and the Administrative Procedure Act. 40 C.F.R. §§ 1502.9(a), 1503.1(a) (NEPA); 5	The model has been evolving in response to new data and will be subject to independent peer review for conferences or journal submissions. The EIS/OEIS provides all source levels, frequency ranges, duty cycles, and other technical parameters relevant to determining potential impact on marine life unless this information was classified (See Chapter 2, Tables 2-2 and 2-3).

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		U.S.C. § 706(2)(0) (APA). In addition, guidelines adopted under the Data (or Information) Quality Act also require their disclosure. The Office of Management and Budget's guidelines require agencies to provide a "high degree of transparency" precisely "to facilitate reproducibility of such information by qualified third parties" (67 Fed. Reg. 8452, 8460 (Feb. 22,2002»; and the Defense Department's own data quality guidelines mandate that "influential" scientific material be made reproducible as well. We encourage the Navy to contact us immediately to discuss how to make this critical information available.	The Navy has not ignored FOIA requests, but as stated above, some of the information is export controlled and not available for public release. However, based on the information provided in the EIS/OEIS, others with the required technical expertise can use the existing information to calculate similar results. Approximate results can be obtained using other mathematical models commonly available to those with the technical expertise to utilize those tools. The NEPA requirements were met in the EIS/OEIS. The analysis contained within the EIS/OEIS is complete and fully supports the conclusions.
NRDC - 94	NRDC - Appendix A - 71	**IX. Compliance With Other Applicable Laws** A number of other statutes and conventions are implicated by the proposed activities. Among those that must be disclosed and addressed during the NEPA process are the following: (1) The Marine Mammal Protection Act ("MMPA"), 16 U.S.C. § 1361 et seq., which requires the Navy to obtain a permit or other authorization from NMFS or the U.S. Fish and Wildlife Service prior to any "take" of marine mammals. The Navy must apply for an incidental take permit under the MMPA, and NRDC will submit comments regarding the Navy's application to NMFS at the appropriate time.	The Navy is fully engaged in the MMPA process with NMFS as described in Chapter 6 of the EIS/OEIS. In November 2009, NMFS received the Navy's application for the incidental take of marine mammals incidental to Navy training activities in the GOA TMAA. A Notice of Rulemaking was published on 03 Feb, 2010, and the comment period ended on 05 Mar, 2010.
NRDC - 95	NRDC - Appendix A - 72	(2) The Endangered Species Act, 16 U.S.C. § 1531 et seq., which requires the Navy to enter into formal consultation with NMFS or the U.S. Fish and Wildlife Service, and receive a legally valid Incidental Take Permit, prior to its "take" of any endangered or threatened marine mammals or other species, including fish, sea turtles, and birds, or its "adverse modification" of critical habitat. See, e.g., 1536(a)(2); Romero-Barcelo v. Brown, 643 F.2d 835 (1st Cir. 1981), rev'd on other grounds, Weinberger v. Romero-Barcelo, 456 U.S. 304, 313 (1982). Given the scope and significance of the actions and effects it proposes, the Navy must engage in formal consultation with NMFS and the U.S. Fish and Wildlife over the numerous endangered and threatened species in the GOA.	The Navy has initiated consultation with NMFS on the potential that implementation of the proposed action may affect listed species. Additionally, please see response to Greg Brown – 17.
NRDC - 96	NRDC - Appendix A - 73	(3) The Coastal Zone Management Act, and in particular its federal consistency requirements, 16 U.S.C. § 1456(c)(l)(A), which mandate that activities that affect the natural resources of the coastal zone-whether they are located "within or outside the coastal zone"-be carried out "in a	Please see response to Carolyn Heitman – 33.

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		manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs." The Navy must fulfill its CZMA commitments along the Alaska coast.	
NRDC - 97	NRDC - Appendix A - 74	(4) The Magnuson-Stevens Fisheries Conservation and Management Act, 16 U.S.C. § 1801 et seq. ("MSA"), which requires federal agencies to "consult with the Secretary [of Commerce] with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken" that "may adversely affect any essential fish habitat" identified under that Act. 16 U.S.C. § 1855 (b)(2). In turn, the MSA defines essential fish habitat as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." 16 U.S.C. § 1802 (10). The GOA contains such habitat. As discussed at length above, anti-submarine warfare exercises alone have the significant potential to adversely affect at least the waters, and possibly the substrate, on which fish in these areas depend. Under the MSA, a thorough consultation is required.	The Navy, as put forth in the Final EIS/OEIS, has concluded that impacts to EFH would be minimal and temporary, which is the Navy's determination of what constitutes an adverse impact (ref. NMFS regs, life in EFHA).
NRDC - 98	NRDC - Appendix A - 75	(5) The Marine Protection, Research and Sanctuaries Act, 33 U.S.C. § 1401 et seq., which requires federal agencies to consult with the Secretary of Commerce if their actions are "likely to destroy, cause the loss of, or injure any sanctuary resource." 16 U.S.C. § 1434(d)(1). Since the Navy's exercises would cause injury and mortality of species, consultation is clearly required if sonar use takes place either within or in the vicinity of the sanctuary or otherwise affects its resources. Since sonar may impact sanctuary resources even when operated outside its bounds, the Navy should indicate how close it presently operates, or foreseeably plans to operate, to such sanctuary and consult with the Secretary of Commerce as required. In addition, the Sanctuaries Act is intended to "prevent or strictly limit the dumping into ocean waters of any material that would adversely affect human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities" (33 U.S.C. § 1401(b», and prohibits all persons, including Federal agencies, from dumping materials into ocean waters, except as authorized by the Environmental Protection Agency. 33 U.S.C. §§ 1411, 1412(a). The Navy has not indicated its intent to seek a permit under the statute.	The Marine Protection, Research and Sanctuaries Act is addressed in Sections 3.2, 3.3 of the FEIS/OEIS. The Navy is in compliance with the Marine Protection, Research and Sanctuaries Act; there are no National Marine Sanctuaries located within the boundaries of the TMAA or in the state of Alaska. The expenditure of training materials in the GOA during Navy activities does not fall within the statutory definition of "dumping" under MPRSA.

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NRDC - 99	NRDC - Appendix A - 76	(6) The Migratory Bird Treaty Act, 16 U.S.C. § 703 et seq. ("MBTA"), which makes it illegal for any person, including any agency of the Federal government, "by any means or in any manner, to pursue, hunt, take, capture, [or] kill" any migratory birds except as permitted by regulation. 16 U.S.C. § 703. After the District Court for the D.C. Circuit held that naval training exercises that incidentally take migratory birds without a permit violate the MBTA, (see Center for Biological Diversity v. Pirie, 191 F. Supp. 2d 161 (D.D.C. 2002) (later vacated as moot», Congress exempted some military readiness activities from the MBTA but also placed a duty on the Defense Department to minimize harms to seabirds. Under the new law, the Secretary of Defense, "shall, in consultation with the Secretary of the Interior, identify measures-- (1) to minimize and mitigate, to the extent practicable, any adverse impacts of authorized military readiness activities on affected species of migratory birds; and (2) to monitor the impacts of such military readiness activities on affected species of migratory birds." Pub.L. 107-314, § 315 (Dec. 2, 2002). As the Navy acknowledges, many migratory birds occur within the GOA. The Navy must therefore consult with the Secretary of the Interior regarding measures to minimize and monitor the effects of the proposed range on migratory birds, as required.	As stated in the EIS/OEIS (Sections 3.9.2.4- 3.9.2.6), implementation of the alternatives including the Proposed Action would not have a significant impact on any population of migratory birds, would comply with the MBTA, and would not require a permit under the MBTA.
NRDC - 100	NRDC - Appendix A - 77	(7) Executive Order 13158, which sets forth protections for marine protected areas ("MPAs") nationwide. The Executive Order defines MPAs broadly to include "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." E.O. 13158 (May 26, 2000). It then requires that "[e]ach Federal agency whose actions affect the natural or cultural resources that are protected by an MPA shall identify such actions," and that, "[t]o the extent permitted by law and to the maximum extent practicable, each Federal agency, in taking such actions, shall avoid harm to the natural and cultural resources that are protected by an MPA." [d. The Navy must therefore consider and, to the maximum extent practicable, must avoid harm to the resources of all federally- and state-designated marine protected areas. The proposed activities also implicate the Clean Air Act and Clean Water Act as well as other statutes protecting the	The Navy has followed the guidelines of EO 13158. Additionally, there are no federally designated MPAs in the TMAA. Furthermore, Sections 3.1, Air Quality, and Section 3.3, Water Resources, evaluate the effects of Navy training activities on air and water quality, respectively. Navy training activities in the TMAA would not result in violations of any State or federal air or water quality regulation. Cumulative effects of air quality and water quality are analyzed in Sections 4.2.1 and 4.2.3, respectively. Finally, the information on the Clean Water Act in Section 3.3.2.2 is not applicable to training in the Gulf of Alaska because training activities occur further than 12 nautical miles from shore. All Navy waste discharges beyond 12 nautical miles would be conducted in accordance with standard operating procedures and best management practices as outlined in OPNAVINST 5090.1C, and as described in Section 3.3.1.2 of the EIS/OEIS. Discussion of wastewater discharges in Section 3.3.2.2 of the Final EIS/OEIS has been deleted.

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		public health. The Navy must comply with these and other laws	
NRDC - 101	NRDC - Appendix A - 78	**X. Conflicts with Federal State and Local Land-Use Planning** NEPA requires agencies to assess possible conflicts that their projects might have with the objectives of federal, regional, state, and local land-use plans, policies, and controls. 40 C.F.R. § 1502.16(c). The Navy's training and testing activities may affect resources in the coastal zone and within other state and local jurisdictions, in conflict with the purpose and intent of those areas. The consistency of Navy operations with these landuse policies must receive more thorough consideration.	The proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. Furthermore, the Navy is in compliance with the CZMA. For more information on CZMA requirements, please see response to Carolyn Heitman - 33.
NRDC - 102	NRDC - Appendix B	Appendix B – Impacts of Sonar	The issues addressed in this Appendix were responded to directly within the NRDC comments above.
NRDC - 103	NRDC - Appendix C	Appendix C – CRITIQUE OF THE RISK ASSESSMENT MODEL EMPLOYED TO CALCULATE TAKES IN THE HAWAII RANGE COMPLEX SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT STATEMENT David E. Bain, Ph.D.	This appendix contains the individual comments made by Dr. Bain, and are individually addressed below.
NRDC - 104	NRDC - Appendix C David Bain - 1	[Provided as appendix to Kiekow (Natural Resources Defense Council) comment] CRITIQUE OF THE RISK ASSESSMENT MODEL EMPLOYED TO CALCULATE TAKES IN THE HAWAII RANGE COMPLEX SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT STATEMENT David E. Bain, Ph.D. Abstract 1. Rather than using a fixed received level threshold for whether a take is likely to occur from exposure to mid-frequency sonar, the Navy proposed a method for incorporating individual variation. Risk is predicted as a function of three parameters: 1) a basement value below which takes are unlikely to occur; 2) the level at which 50% of individuals would be taken; and 3) a sharpness parameter intended to reflect the range of individual variation. This paper reviews whether the parameters employed are based on the best available science, the implications of uncertainty in the values, and biases and limitations in the model. Data were incorrectly interpreted when calculating parameter values, resulting in a model that underestimates takes.	The commenter stated that data were incorrectly interpreted by NMFS when calculating parameter values, resulting in a model that underestimates takes. NMFS, in its regulatory capacity for the MMPA, chose the data sets, interpreted the data, and set parameters for the risk function analysis to quantify exposures to mid-frequency sound sources that NMFS may classify as Level B takes for military readiness activities. Of primary importance to the commenter was that the risk function curves specified by NMFS do not account for a wide range of frequencies from a variety of sources (e.g., motor boats, seismic survey activities, “banging on pipes”). In fact, all of the commenter’s comments concerning “data sets not considered” by NMFS relate to sound sources that are either higher or lower in frequency than MFA sonar, are contextually different (such as those presented in whale watch vessel disturbances or oil industry activities), or are relatively continuous in nature as compared to intermittent sonar pings. These sounds from data sets not considered have no relation to the frequency or duration of a typical Navy MFA sonar as described in the EIS/OEIS. As discussed above and in the EIS/OEIS, NMFS selected data sets that were relevant to MFA sonar sources and selected

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			parameters accordingly. In order to satisfy the commenter's concern that a risk function must be inherently precautionary, NMFS could have selected data sets and developed parameters derived from a wide variety of sources across the entire spectrum of sound frequencies in addition to, or as substitutes for, those that best represent the Navy's MFA sonar. The net result, however, would have been a risk function that captures a host of behavioral responses beyond those that are biologically significant as contemplated by the definition of Level B harassment under the MMPA applicable to military readiness activities. The commenter's specific comments and the Navy's responses are provided below.
NRDC - 105	NRDC - Appendix C David Bain - 2	3. Errors included failure to recognize the difference between the mathematical basement plugged into the model, and the biological basement value, where the likelihood of observed and predicted takes becomes non-negligible; using the level where the probability of take was near 100% for the level where the probability of take was 50%; and extrapolating values derived from laboratory experiments that were conducted on trained animals to wild animals without regard for the implications of training; and ignoring other available data, resulting in a further underestimation of takes.	Given the results of the modeling for the GOA EIS/OEIS, having a lower basement value would not result in any significant number of additional takes. This was demonstrated in the Draft EIS/OEIS (Section 3.8, Table 3.8-5 on page 3.8-103) showing that less than 1% of the predicted number of harassments resulted from exposures below 140 dB. Another point the commenter articulates is that the criteria used to establish the risk function parameters should reflect the biological basement where any reaction is detectable. The MMPA was not intended to regulate any and all marine mammal behavioral reactions. Congress amended the MMPA to make clear its intention with the amendment to the MMPA for military readiness activities as enumerated in the following National Defense Authorization Act of 2004 clarification - (i) any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild [Level A Harassment]; or (ii) any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where such behavioral patterns are abandoned or significantly altered. NMFS, in its regulatory capacity for the MMPA, chose the data sets and parameters for use in the risk function analysis to regulate military readiness activities. Congress, by amending the MMPA, specifically is not regulating all conceivable behavioral reactions. NMFS, as a cooperating agency and in its role as the MMPA regulator, reviewed all available applicable data and determined that three specific data sets should be used to develop the criteria. NMFS then applied the risk function to

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			predict exposures that NMFS may classify as harassment. NMFS developed two risk curves based on the Feller adaptive risk function, one for odontocetes and one for mysticetes, with input parameters of B=120 dB, K=45, 99% point = 195 dB, 50% point = 165 dB.
NRDC - 106	NRDC - Appendix C David Bain - 3	4. In addition, uncertainty, whether due to inter-specific variation or parameter values based on data with broad confidence intervals, results in the model being biased to underestimate takes.	The risk function methodology assumes variations in responses within the species and was chosen specifically to account for uncertainties and the limitations in available data. NMFS considered all available data sets and determined it to be the best data currently available. While the data sets have limitations, they constitute the best available science.
NRDC - 107	NRDC - Appendix C David Bain - 4	5. The model also has limitations. For example, it does not take into account social factors, and this is likely to result in the model underestimating takes. This analysis has important management implications.	The commenter was concerned that if one animal is "taken" and leaves an area then the whole pod would likely follow. As explained in Appendix D of the EIS/OEIS, the model does not operate on the basis of an individual animal but quantifies exposures NMFS may classify as takes based on the summation of fractional marine mammal densities. Because the model does not consider the many mitigation measures that the Navy utilizes when it is using MFA sonar, to include MFA sonar power down and power off requirements should mammals be spotted within certain distances of the ship, if anything, it over estimates the amount of takes given that large pods of animals should be easier to detect than individual animals.

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NRDC - 108	NRDC - Appendix C David Bain - 5	6. First, not only do takes occur at far greater distances than predicted by the Navy's risk model, the fact that larger areas are exposed to a given received level with increasing distance from the source further multiplies the number of takes. This implies takes of specific individuals will be of greater duration and be repeated more often, resulting in unexpectedly large cumulative effects. Second, corrections need to be made for bias, and corrections will need to be larger for species for which there are no data than for species for which there are poor data.	Modeling accounts for exposures NMFS may classify as takes at distances up to 105 km as described in the Draft EIS/OEIS (Table 3.8-5). As discussed in Appendix D of the EIS/OEIS, the GOA TMAA contains a total of 20 distinct environmental provinces with specific sound propagation characteristics. These represent the various combinations of six bathymetry provinces, two Sound Velocity Profile provinces, and four high frequency bottom loss classes. Based on these different provinces, the Navy identified 11 different representative sonar modeling areas to fully encompass sound attenuation within the GOA TMAA. Within these provinces, sound attenuated down below 138 dB at distances out to about 105 km (Table 3.8-5). Using these sound propagation characteristics, the risk function modeling for the GOA EIS/OEIS resulted in less than 1% of the exposures that NMFS may classify as a take occurring below 140 dB. The area encompassed by this sound propagation, as determined by NMFS for exposures that may constitute harassment, avoids a bias towards underestimation because the risk function parameters were designed with this in mind.
NRDC - 109	NRDC - Appendix C David Bain - 6	7. Third, the greater range at which takes would occur requires more careful consideration of habitat-specific risks and fundamentally different approaches to mitigation.	Section 5.2.1.6 of the Final EIS/OEIS evaluates alternative and/or additional mitigations, specifically, as they relate to potential mitigation approaches. The examples of the fundamentally different approaches noted in the comment were addressed in this section of the Draft EIS/OEIS. In addition, NMFS has identified general goals of mitigation measures. These goals include avoidance or minimization of injury or death, a reduction in the number of marine mammals exposed to received levels when these are expected to result in takes, a reduction in the number of times marine mammals are exposed when these are expected to result in takes, a reduction in the intensity of exposures that are expected to result in takes, and reduction in adverse effects to marine mammal habitat. In this regard, NMFS and Navy have identified mitigation measures that are practicable and reasonably effective. For example, the safety zones reduce the likelihood of physiological harm, the number of marine mammals exposed, and the intensity of those exposures. NMFS and Navy have determined that mitigation measures in conjunction with our understanding of sonar use have protected species and populations so that impacts have been negligible in the Eastern Pacific. Mitigation measures that are

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			practicable involve those that reduce direct physiological effects within the TTS and PTS thresholds.
NRDC - 110	NRDC - Appendix C David Bain - 7	8. The population effects of Level A takes on populations are relatively easy to assess, as individuals that are killed are obviously removed from the population, and those that are injured are more likely to die whenever the population is next exposed to stress.	Navy agrees with the comment and notes that the recently documented increase in many populations of endangered and non-endangered species in the Eastern Pacific, where decades of sonar use, training, and RDT&E have occurred, would make it seem unlikely that those activities are having a significant effect on populations via Level A takes.
NRDC - 111	NRDC - Appendix C David Bain - 8	9. Temporary Threshold Shifts in captive marine mammals are commonly used as an index of physical harm (e.g., Nachtigall et al. 2003, Finneran et al. 2002 and 2005, Kastak et al. 2005). Limiting experimental noise exposure to levels that cause temporary effects alleviates ethical concerns about deliberately causing permanent injury. However, repeated exposure to noise that causes temporary threshold shifts can lead to permanent hearing loss. In fact, chronic exposure to levels of noise too low to cause temporary threshold shifts can cause permanent hearing loss.	This issue was recognized and discussed as presented in the Draft EIS/OEIS (Section 3.8.7.2). Based on prior National Oceanic and Atmospheric Administration rule makings, NMFS established that exposures resulting in Level A and B harassment cannot be considered to overlap in an analysis of impacts, otherwise the regulatory distinction between the two criteria would be lost and the take quantification required would be ambiguous. To facilitate the regulatory process, a clear and distinct division between Level A and Level B harassments was maintained as required by NMFS in its role as the regulator and a cooperating agency on the GOA EIS/OEIS.
NRDC - 112	NRDC - Appendix C David Bain - 9	10. Changes in behavior resulting from noise exposure could result in indirect injury in the wild. A variety of mechanisms for Level B harassment to potentially lead to Level A takes have been identified.	In Section 3.8.7.3 on page 3.8-98 of the EIS/OEIS, the text makes clear that the 120 dB basement value was recommended by National Marine Fisheries Service and for a many reasons including the risk approaches zero making calculations are impractical and based on a broad overview of the levels at which multiple species have been reported responding to a variety of sound sources citing to (DoN 2008, NOAA 2009).
NRDC - 113	NRDC - Appendix C David Bain - 10	Captive cetaceans Studies of captive marine mammals provide an excellent setting for identifying direct effects of sound. E.g., one of the datasets employed by the Navy consists of studies relating short-term exposure of bottlenose dolphins and belugas to high levels of noise to Temporary Threshold Shifts. The Navy (Dept. Navy 2008b, p 3-7) noted aggressive behavior toward the test apparatus, suggesting stress was another consequence of the test (see also Romano et al. 2004). Such effects would be unconditional results of noise exposure. However, extrapolation of the level at which aggression was observed to the level at which behaviorally mediated effects might occur in the wild is problematic, as this depends on how well trained the subjects were. For	This was specifically addressed in the Draft EIS/OEIS (Section 3.8.7.2) and considered as part of this decision making process. Additional data sets from wild animals were incorporated into development of the risk function parameters specifically to address this concern. Additionally, as discussed in Domjan 1998, and as cited in the Draft EIS/OEIS, animals in captivity can be more or less sensitive than those found in the wild. It does not follow, therefore, that the risk function modeling underestimates takes.

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		example, the Navy has been a leader in training dolphins and other marine mammals to cooperate with husbandry procedures. Tasks like taking blood, stomach lavage, endoscopic examination, collection of feces, urine, milk, semen and skin samples, etc. once required removing individuals from the water and using several people to restrain them. With training, painful and uncomfortable procedures can be accomplished without restraint and with a reduction in stress that has significantly extended lifespans of captive marine mammals (Bain1988).	
NRDC - 114	NRDC - Appendix C David Bain - 11	12. Right whales exposed to alerting devices consistently responded when received levels were above 135 dB re 1 µPa. Due to the small sample size (six individuals), it is unclear whether this is close to the 50% risk, the 100% risk level, or both. These data do not allow identification of B, as lower exposure levels were not tested. In mysticetes exposed to a variety of sounds associated with the oil industry, typically 50% exhibited responses at 120 dB re 1 µPa. Thus right whales may be similar to killer whales.	This comment contains an apparent factual inaccuracy with regard to the only citation provided for the repeated assertion that 50% of marine mammals will react to 120 db re 1uPa. Malme et al., (1983, 1984) indicated that for migrating whales, a 0.5 probability of response occurred at 170 dB.
NRDC - 115	NRDC - Appendix C David Bain - 12	*See Table 1: Bain Appendix H* Datasets not considered The Navy incorrectly concludes that additional datasets are unavailable. In addition to the other killer whale datasets mentioned above, data illustrating the use of acoustic harassment and acoustic deterrent devices on harbor porpoises illustrate exclusion from foraging habitat (Laake et al. 1997, 1998 and 1999, Olesiuk et al. 2002). Data are also available showing exclusion of killer whales from foraging habitat (Morton and Symonds 2002), although additional analysis would be required to assess received levels involved. The devices which excluded both killer whales and harbor porpoises had a source level of 195 dB re 1 ~a, a fundamental frequency of 10kHz, and were pulsed repeatedly for a period of about 2.5 seconds, followed by a period of silence of similar duration, before being repeated. Devices used only with harbor porpoises had a source level of 120-145 dB re 1 Pa, fundamental frequency of 10 kHz, a duration on the order of 300 msec, and were repeated every few seconds. Harbor porpoises, which the Navy treats as having a B+K value of 120 dB re µPa (with A large enough to yield a step function) in the AFAST DEIS (Dept. Navy	The data sources the commenter presents as needing consideration involve contexts that are not applicable to the proposed actions or the sound exposures resulting from those actions. For instance, the commenter's citation to Lusseau et al. (2006) involve disturbance over a three year period to a small pod of dolphins exposed to "8,500 boat tours per year", which is nothing like the type or frequency of action that is proposed by the Navy for the GOA EIS/ OEIS. In a similar manner, the example from noise used in drive fisheries are not applicable to Navy training. Navy training involving the use of active sonar typically involves ships that are located miles apart, the sound is intermittent, and the training does not involve surrounding the marine mammals at close proximity. Further, the commenter states that effects of sound sources from relatively continuous acoustic harassment devices and acoustic deterrent devices which are specifically designed to exclude marine mammals from habitat are analogous to MFA effects. However, continuous sound from stationary exclusion devices specifically designed to harass animals is fundamentally different from intermittent sonar mounted on fast moving ships during the short nature of the proposed actions.

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		2008a), 45 dB lower than the average value used in the HRC SDEIS, may be representative: of how the majority of cetacean species, which are shy around vessels and hence poorly known, would respond to mid-frequency sonar. Even if harbor porpoises were given equal weight with the three species used to calculate B+K, including them in the average would put the average value at 154 dB re 1 μPa instead of 165 dB re 1 μPa.	
NRDC - 116	NRDC - Appendix C David Bain - 13	14. An important property of the model is that the biologically observed basement value is different than the mathematical basement value. The Navy proposes using 120 dB re I ~Pa as the basement value. They indicate the selection of this value is because it was commonly found in noise exposure studies.	Please see response to NRDC – 112.
NRDC - 117	NRDC - Appendix C David Bain - 14	15. For example, many looked at changes in migration routes resulting from noise exposure, and found that 50% of migrating whales changed course to remain outside the 120 dB re 1 μPa contour (Malme et al. 1983, 1984). These results might be interpreted in several ways. They could be seen as minor changes in behavior, resulting in a slight increase in energy expenditure. Under this interpretation, they would not qualify as changes in a significant behavior, and are irrelevant to setting the basement value. They could be interpreted as interfering with migration, even though the whales did not stop and turn around, and hence 120 dB would make an appropriate B+K value rather than B value. Third, the change in course could have been accompanied by a stress response, in which case the received level at which the course change was initiated rather than the highest level received (120 dB re 1 μPa) could be taken as the biological basement value.	It is noted that an apparent factual inaccuracy with regard to the only citation provided for the repeated assertion that 50% of marine mammals will react to 120 db re 1uPa. Malme et al., (1983, 1984) indicated that for migrating whales, a 0.5 probability of response occurred at 170 dB.
NRDC - 118	NRDC - Appendix C David Bain - 15	*See Table 2: Bain Appendix* Take numbers are based on Alternative 3 in the Hawaii Range Complex SDEIS (Dept. Navy 2008b), which in turn is based on the No Action Alternative, Table 3.3.1-1. Where the number of takes approaches the size of the population, the actual number of takes will be smaller than shown in the table. However, individuals will be taken multiple times and the duration of takes will be longer than if the calculated number of takes were small. Presumably, longer and more frequent takes of individuals will have more impact on the population than takes due to single exposures.	The values suggested as parameters, the results of which are presented in Tables 2 and 3, are not reasonable given that the environmental conditions in GOA TMAA includes ambient noise (naturally occurring background noise) levels at or above those suggested by the commenter as behavioral harassment “B” basement values. The use of these results for examination of potential uncertainty and bias in the risk function as presented in the EIS/OEIS is, therefore, not informative or applicable in the GOA TMAA's context.

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		See Table 3: Bain Appendix H Table 3. Sensitivity analysis based on a model with spherical spreading for 2 km followed by cylindrical spreading.	
Ocean Conservation Research - 1		Dear Mrs. Burt, We have just received this week (December 20,2009) by US mail the, Gulf of Alaska Navy Training Activities draft EIS/OEIS, with the enclosure letter dated December 4 2009. I can not attest to the reason for the late delivery as the envelope was not stamped with a postmark. Nonetheless we believe that as was the case in the December 2005 issuance of the US Undersea Warfare Training Range (USWTR 70 Federal Register 62101-62103), the Gulf of Alaska Draft EIS/OEIS is far too lengthy and detailed, and far too important to have the public comment period constrained by a temporal conflict with the traditional American winter holidays. Therefore we respectfully request that the public comment period for this document be extended an additional 10 business days from Jan. 25 to Feb. 8, 2010. Extending the comment period would also be consistent with the extension given to the 2005 USWTR Draft EIS for much the same reason.	Please see AMCC-16.
Ocean Conservation Research - 2		Additionally I am concerned that the public hearings are all limited to Alaska. While the proposed range is closest to that state, in is in both Federal and International waters and thus subject to the concerns of all US Citizens, not just Alaskans. We believe that asking concerned US citizens and marine stakeholders to travel to Alaska in the dead of winter poses an undue burden on those who do not live in Alaska, so we request that at least two public hearings be hosted in the lower 48 states, preferably in California and/or Washington DC. This would assure that a broad representation of citizens and stakeholders could become informed about the proposed training range, and provide comments for the record. Thank you for your considering our request for an extension of the public comment period for the Gulf of Alaska Navy Training Activities Draft EIS/OEIS. Sincerely, Michael Stocker Director Cc: Admiral Patrick M. Walsh Commander US Pacific Fleet Department Of the Navy	Public hearing locations were determined based on the location of potential or perceived impacts to the human environment. Because of the large geographic area of the GOA ATA's, it would be an imprudent use of taxpayer funding to conduct public hearings where there are limited or no potential impacts. As such, the Navy chose locations that would enable it to contact as many people as possible; five locations for public hearings were chosen in Alaska: Anchorage, Cordova, Homer, Juneau, and Kodiak.

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Ocean Conservation Research - 3		Dear Mrs. Burt, We have taken the opportunity to review the Draft Environmental Impact Statement for the Gulf of Alaska Navy Training Activities (GOA-DEIS) Temporary Marine Activities Area (TMAA). While the document reflects much work and a comprehensive exploration into the possible impacts of the proposed additional uses of the GOA as required by the National Environmental Policy Act (NEPA), we believe that the GOA-OEIS leaves much to be desired if it is to be considered a guiding document for environmental stewardship~.	This comment is duly noted.
Ocean Conservation Research - 4		This observation is made in particular light of the fact that, despite our assumptions about the boundless ability of the ocean to absorb the assaults of human enterprise we are rapidly finding that the ocean is in very poor shape.	This comment is duly noted.
Ocean Conservation Research - 5		This is a consequence of reckless resource extraction (which is not under the Navy's purview) and relentless dumping and pollution (which is).	Dumping is not practiced by Navy ships. Dumping must be authorized on a case-by-case basis by the Chief of Naval Operations (CNO) N45, and is rarely requested or authorized.
Ocean Conservation Research - 6		The fact is that in many of the more extreme cases ocean environmental degradation has been a significant product of the militarization of ocean habitats. "	This comment is duly noted.
Ocean Conservation Research - 7		We are seeing that the long term accumulation of toxics and "inert" trash is causing global scale problems with impacts on all marine biota. We are seeing the gradual and slow release of chemicals bio-accumulating and bio-concentrating throughout the entire food chain - including in humans, who consume the products of the ocean at the highest tropic levels. Bio-accumulation and concentration of toxics had not been part of the models used when decisions were made to use the ocean as a chemical toilet. But now we know better. We also know that some chemicals once thought of as benign are having profound effects on biological function such as compromised reproductive health, mutation, carcinomas, and neurological damage 41 "parts per trillion" concentrations. Knowing this, it is unconscionable to continue to treat the ocean as a toxic waste dump.	As stated above, dumping is not practiced by Navy ships. Dumping must be authorized on a case-by-case basis by the Chief of Naval Operations (CNO) N45, and is rarely requested or authorized. In addition, bioaccumulation occurs where there are elevated levels of toxic compounds in the environment. The Navy's analysis shows that releases of expended materials from the Proposed Action (through leaching and direct release) would not achieve the levels of concentration in the benthic substrate and water column necessary for bioaccumulation to occur. The expended materials used in the Proposed Action are heavy objects that will sink to the bottom of the water column. Encrustation and burial in the substrate prevent leaching from expended materials, thus further avoiding bioaccumulation. Any leaching that occurs will be diluted by ocean currents in this very large and dynamic open ocean environment, the GOA. For further information on bioaccumulation, please see response to CDFU – 9.
Ocean Conservation		While many of the toxic substances in the ocean are a product of civilian dumping and unintentional runoff from	Past military practices and historical contamination sites are beyond the scope of the EIS; they are not associated with the

ID	Organization	Public Comment (Written)	Navy Response
Research - 8		terrestrial as well as marine sources, a preponderance of terrestrial Superfund sites are due to reckless military hubris. There is no indication that the Navy'has been any different in their stewardship of the sea. This is substantiated in our comments to the GOA-DEIS herein.	Proposed Action. With regard to the cumulative impacts addressed in Section 4 of the DEIS, any contamination of bottom sediments or the water column in the GOA from these sites is reflected in the current condition of the marine environment and marine resources that inhabit the GOA. In addition, the fact that the Navy is a seagoing force, and that two-thirds of the world's surface is covered by water, means that many of our environmental initiatives focus on ocean stewardship and seek opportunities to control our "ecological footprint" in relation to marine life, coastal impacts, and water quality. We have installed technology aboard our ships to keep plastics out of the ocean and safely manage our biodegradable waste stream. We are a world leader in marine mammal research, and are funding approximately $26 million annually in marine mammal-related research projects from fiscal years 2007-2009. We serve as the executive agent for the Department of Defense Coral Reef Task Force. Major ocean stewardship efforts can be seen in our comprehensive approach to managing effects on marine life for all of our training ranges and operating areas. That environmental planning documentation is being coordinated with the National Marine Fisheries Service. Furthermore, the U.S. Navy has programs in place to manage threatened and endangered species on and around our installations; safely clean up past hazardous waste sites for future reuse; explore and develop new, greener technologies for equipment design and maintenance; and recycle metal, wood and glass. Navy installations and ship's crews frequently partner with local communities on volunteer shoreline and neighborhood cleanup projects.
Ocean Conservation Research - 9		The GOA-DEIS largely concerns the addition of Anti-Submarine Warfare (ASW) activities currently not included in the existing training range and operations. As such the proposed operations will be introducing an acoustical systems component to the training range. This includes both the introduction of acoustical energy into the environment,	The Navy agrees with this comment.
Ocean Conservation Research - 10		as well as chemicals and other pollution from expendable materials, acoustical systems, and associated equipment.	Please see response AMCC 13 and AMCC 15.
Ocean Conservation Research - 11		It also includes an extra component of underwater explosives used for acoustical signals as well as for weapons ordnance.	The Navy concurs with this comment but refers to these as "at-sea explosions."

ID	Organization	Public Comment (Written)	Navy Response
Ocean Conservation Research - 12		I am limiting our comments to impacts on fish and marine mammals; and while the main focus of Ocean Conservation Research is the bioacoustic impacts of human generated noise on the marine environment, I also include our concerns for chemical pollution in the training area.	This comment is duly noted.
Ocean Conservation Research - 13		The models and assumptions used in the GOA-DEIS for chemical and toxics "mitigation" serve as a 'philosophical as well 'as a systematic model for noise pollution in as much as that while the jurisdiction and management of the training range fits within prescribed borders, acoustical energy and chemical pollutants, and their impacts to marine life and environment that would result from the proposed exercises are not so tidily constrained.	Regarding acoustical energy please see NRDC – 27. Concerning chemicals and toxins, please see AMCC –15.
Ocean Conservation Research - 14		Symptomatic of this is that while the dumping of expended materials under "Alternative 1" and Alternative 2" is not increased within US territorial waters (which are subject to NEPA and other US environmental laws), there are substantial increases of expendables dumped in non-US Territorial waters (which are not subject to US environmental laws).	As stated previously, dumping is not practiced by Navy ships. Dumping must be authorized on a case-by-case basis by the Chief of Naval Operations (CNO) N45, and is rarely requested or authorized. However, the Navy does acknowledge that there are increases of expended materials in Alternative 1 and Alternative 2 outside of non-US Territorial waters.
Ocean Conservation Research - 15		This situation clearly illustrates the effectiveness of NEPA in protecting US territorial waters, but is also shows the "avoidance relationship" that the US Navy has for NEPA and by extension other US environmental laws.	The Navy disagrees and in fact complies with all applicable environmental laws, including NEPA and its requirements.
Ocean Conservation Research - 16		The overarching problem here is that while the jurisdictional boundaries of US environmental laws are clearly defined at 12 nm from the US Coast, energy and chemical pollutants and other destructive practices in the ocean are not subject to those boundaries. Animals impacted by reckless dumping practices, marine mammal acoustical "takes," damage to fish and fisheries food-stock (and habitat)are all trans-boundary problems in the ocean. Arid just because an animal or habitat is outside of US jurisdiction, it does not mean that the damage is any less grave than damage that occurs within US territorial waters.	This comment is duly noted. Regarding acoustical energy please see response to NRDC – 27. Concerning chemicals and toxins, please see response to AMCC –15.
Ocean Conservation Research - 17		The boundaries of our Federal laws are practically established as a consequence of the likelihood of enforcement, not as an expression of diminished impacts. If the US Navy is to uphold laws which express the priorities of the American People, the impact categories outlined in the various tables and "Environmental Consequences' statements in the GOA-DEIS[1] belie the Navy's stated	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
		concern to be "stewards of the sea." .... [1] The jurisdictional distinction is made throughout the GOA-OBIS as to whether the impact standards'": and thus mitigation thresholds, adhere to NEPA (inside 12 nm) or Executive Order [EO] 12114 (outside of US Territorial waters).	
Ocean Conservation Research - 18		It is within the context of the US Navy's responsible stewardship of the ocean - along with the understanding that the ocean is in terrible shape - that I submit the following comments and concerns for the proposed activities in the Gulf of Alaska Warfare Training Range. Our overarching recommendation is the "No Action Alternative" and to not include ASW training exercises proposed in either' Alternative 1 or Alternative 2 in the Gulf of Alaska Temporary Marine Activities Area (TMAA) for the following summary reasons:	This comment is duly noted.
Ocean Conservation Research - 19		• It is becoming increasingly and shockingly clear, the ocean is in precarious shape due to continuous and expanding insults of human enterprise and adventure. This must figure into all of our deliberations and practices that compromise ocean habitat. • Of all ocean areas within US Territorial reach, the Gulf of Alaska is one of the least assaulted areas and should remain so.	The Navy agrees with this comment, is aware of the diverse biological presence in the area, and has conducted a thorough analysis of potential effects in Chapter 3 of the Draft EIS/OEIS. The Navy is confident, and the analysis indicates, that its training activities will not impact the marine environment.
Ocean Conservation Research - 20		• The US Navy has recently expanded Anti-submarine Warfare training areas in Atlantic (USWTR), the Northwest Warfare Training Range Complex. Hawaii Range Complex, and the Southern California Warfare Training Range Complex. Adding the Gulf of Alaska is not justified by any scarcity of other training areas.	To implement its Congressional mandates, the Navy needs to support and conduct current and emerging training activities in the GOA ATA's and upgrade or modernize range complex capabilities to enhance and sustain Navy training and testing. These objectives are required to provide combat capable forces ready to deploy worldwide in accordance with U.S.C. Title 10, Section 5062. The Assistant Secretary of the Navy (Installations & Environment) determines both the level and mix of training to be conducted and the range capabilities enhancements to be made within the GOA ATA's that best meet the needs of the Navy.
Ocean Conservation Research - 21		• The chemical, toxic and "inert" pollution models used in the GOA-DEIS are over simplistic and do not take into account current state of knowledge about accumulation and concentrations of chemical, toxic, and "inert" pollutant behavior throughout the entire ocean, and up and down the entire food chain - including humans.	Please see response to AMCC – 15.

ID	Organization	Public Comment (Written)	Navy Response
Ocean Conservation Research - 22		• Insufficient data provided on the sonar characteristics and source levels so a complete assessment of the potential impacts presented in the DEIS are incomplete.	Proposed sonar use in the TMAA is listed in Section 2.5.2.1.
Ocean Conservation Research - 23		• The bio-acoustic impact models used in the GOA-DEIS are over-simplistic and do not represent wild animal impacts or behaviors and do not account for the agonistic qualities and characteristics of the various signals that would be introduced into the environment.	Please see response to NRDC – 27.
Ocean Conservation Research - 24		• Mid and high frequency sonar acoustic impact data of fish is lacking and does not justify the DEIS conclusion that impacts are "negligible or non-existent."	While the effects of sound on all species of fish have not been studied leaving much unknown, there are reasonable extrapolations that can be made based on the general anatomy of fish and from the representative species that have been studied. Based on those studies and as detailed in Section 3.6, it is unlikely that sonar will adversely affect most fish given most fish cannot hear in the frequency range of the mid and high frequency sonar Navy is proposing to use. In addition, Navy has been conducting these same training activities in locations such as Southern California and the East Coast for many decades and both of which support healthy and diverse fisheries. Additionally, please see response to NRDC – 27.
Ocean Conservation Research - 25		• The mortality "risk continuum" for fish due to explosives is inadequate and suspiciously biased to appear much more benign than it is.	This comment is duly noted.
Ocean Conservation Research - 26		• The conclusion in the DEIS section on fish admits that very little is known about the impacts of sonar on fish - which contradicts the summary table statement that "sonar used in Navy exercises would result in minimal harm to fish or EFH."	See comment response to Ocean Conservation Research – 24.
Ocean Conservation Research - 27		• The exposure risk models of marine mammals appear to contain many examples of "statistical manipulations of convenience" which erodes both the credibility of the models and the integrity of the entire GOA-DEIS.	This comment is duly noted. Please see response to NRDC – 27.
Ocean Conservation Research - 28		• The model of bioacoustic impact of explosives on marine mammals is over simplistic. It models the animals as "linear input devices" and does not account for synergistic effects of stress on the animal or the destruction of habitat and food sources.	The criteria described in Section 3.8 involving explosives and marine mammals was developed in cooperation with National Marine Fisheries Service (NMFS) and has been used extensively for years by NMFS for all activities involving these types of impacts in the water; for examples see [http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications]. Additionally, please see response to NRDC – 27.

ID	Organization	Public Comment (Written)	Navy Response
Ocean Conservation Research - 29		• The issuance of the DEIS over the winter holidays - truncating the available comment period is cause for suspicions that the Navy is disingenuous about seeking public input on this cumbersome, comprehensive, but nonetheless inadequate document. This established a justifiable foundation of mistrust as we evaluated the document. We have substantiated these assertions below. Given the limited time that was available for review we had to focus on the more obvious concerns. If we actually had the full 45 days required by NEPA not interrupted by holidays and obligatory year-end activities our comments would be much more comprehensive and infonnative. Nonetheless we were able to provide the forgoing, which more than adequately substantiates our recommendation that the "No Action Alterative;' is the preferred alternative for the GOA-DEIS.	Please see response to AMCC– 16.
Ocean Conservation Research - 30		**"Expended Materials"** While Ocean Conservation Research is focused on understanding and finding solutions to the impacts of human generated noise on marine life, we are compelled to Comment on the chemical, toxics, and "inert" pollution from expended materials in the proposed DEIS. This is because, as indicated above, this dumping of chemicals in the ocean needs to be curtailed. The US Navy's continued disregard for the mounting biological evidence that chemicals are seriously impacting the global ocean is indicative of a larger hubris that plagues the entire GOA-DEIS.	Please see response to AMCC – 15. Additionally, please note that dumping is not practiced by Navy ships.
Ocean Conservation Research - 31		This hubris is characteristically represented in the following comment from the Executive Summary section Table ES 3.1: "Outside of U.S. territory, air pollutant emissions would increase substantially, mainly from increased surface vessel and aircraft activities. • SINKEX would generate a substantial portion of the air pollutants that would be emitted under Alternative 2. • Although Alternative 2 would increase emissions of air pollutants over the No Action Alternative, emissions outside of U.S. territorial seas would not cause an air quality standard to be exceeded." Believing that air pollution (in this case) or marine pollution respects US Territorial boundaries is particularly short sighted in light of what we know about air and ocean circulation patterns; especially in the GOA and arctic waters.	Regarding air quality, please see response to NRDC–100. Additionally, please see response to AMCC – 15.

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		Also in Table ES-3: Summary of Effects: "Expended materials under Alternative 1 would not have a substantial effect on the marine environment." The phrase "substantial effect" needs to be more dearly defined, because the numbers and weights of materials expended annually (under preferred Alternative 2) provided in Table 3.2-18 and Table 3.2-19 indicate 10,000 lbs. of hazardous materials per year. Without even evaluating the toxicity of the specific materials, 10,000 lbs. per year is not insignificant.	
Ocean Conservation Research - 32		Our current state of knowledge about the impacts of hazardous substances on marine life, and the effects of bio-concentration as hazardous materials move up the trophic levels do not constitute an inconsequential impact. Hazardous materials are not static; they are hazardous because they are dynamic. And just because a deposit of hazardous materials might be statistically hard to detect, we can assume that over time the accumulation of these materials in the environment will have negative impacts on marine life.	Please see above response to comment.
Ocean Conservation Research - 33		Additionally, framing the hazard in longtime frames does not decrease the impacts. For example on page 3.2-12 we find "In instances where seawater corrodes the sonobuoy, that corrosion takes at least 40 years." What will happen after 40 years? Will the ocean be somehow immune to the effects? And on page 3.2-23 "Most of these materials are relatively inert in the marine environment, and will degrade slowly." What does "relatively inert" mean? Throughout the "Expended Materials" section we find the repeated use of the phrase "quickly dispersed by (or diluted by) ocean and tidal currents" troubling.	Please see response to AMCC – 15.
Ocean Conservation Research - 34		It seems that the US Navy assumption is that once dispersed outside of the training range that the substances are no longer a problem. But we have found that chaff, plastics, and drifting chemical pollutants are a significant and growing global environmental problem because ocean currents end up pulling them into oceanic gyres where they end up in dangerous concentrations, polluting the food supply from the lowest tropic levels on up. While much of this has been accidental or incidental to global consumption, the US Navy deliberately adding to this mess - particularly with known military toxins is unconscionable.	Please see response to Roberta Highland & Robert Archibold – 2.

ID	Organization	Public Comment (Written)	Navy Response
Ocean Conservation Research - 35		**Acoustic Impacts** While we know that the ocean is largely an acoustic environment, the understanding about role of acoustics across the vast array of marine animals is rudimentary at best. In some cases we have not been able to procure evidence that our noises have any impact at all, and in other cases we are baffled by the extreme impacts that human generated noise has wrought on marine life.	This comment is duly noted.
Ocean Conservation Research - 36		As we roll back the frontiers of our ignorance it will be wise to assume precaution. This would mandate that we gather as much evidence as possible and populate our models with the most accurate, concise, and up-to-date data as possible.	This comment is duly noted. Additionally, please see response to NRDC – 27.
Ocean Conservation Research - 37		We are concerned about the impacts of the noise generated in the training range on marine animals both inside and outside of the training range. This includes impacts on migratory and resident marine mammals as well as migratory and resident fish particularly fish with a high commercial value, including but not limited to salmon, halibut, herring, haddock, Pollack, and crab, the consequent impacts on the commercial fishery, and the consequent impacts on links in the regional food chain.	Please see response to AMCC – 2.
Ocean Conservation Research - 38		Noises of concern are the noises from explosive ordinance, mid-frequency sonar, sonar jamming signals, communication and surveillance sonar, and mechanical noises associated with warfare exercises such as engine noise, propeller cavitation, and through hull transmitted mechanical noise.	Please see response to AMCC – 2.
Ocean Conservation Research - 39		One of our dominant systematic concerns expressed throughout this document is that a preponderance of audiometrics for fish and marine mammals are derived from laboratory test signals that have very little correlation to the exposure signals of concern particularly the various acoustic communication and sonar signals.	Please see response to Greg Brown – 3.
Ocean Conservation Research - 40		This situation is exacerbated by the presentation of sonar systems in the DEIS Appendix H "Acoustic Systems Descriptions" section wherein the various acoustic systems were generally described and qualified in terms of their frequency bands (Low, Mid, and High frequency) but source levels were not provided, and in most cases there was no indication of signal qualities (e.g.: short "pings" or longer data-streams). Both exposure levels and signal qualities have bearing on the biological impacts so a complete	The information listed as classified (such as source levels) is not often releasable to the public and where this is the case it has been indicated in the DEIS.

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		assessment of the potential impacts presented in the DEIS are incomplete.	
Ocean Conservation Research - 41		This is also the case with the Portable Undersea Training Range (PUTR) (section H.1.9) in terms of transponder frequencies, source levels, and signal characteristics.	The information provided in the DEIS quantifies acoustically modeled impacts using the parameters of the actual systems. It is not necessary to know the often classified details of these systems since the modeled putout of those systems has been provided.
Ocean Conservation Research - 42		Without knowing more about the signal characteristics of these devices it, is impossible to derive and accurate impact model to determine how different these signals are from the audiometric signals used to establish auditory thresholds in subject animals, or determine if there are acoustical characteristics of these signals that may be of greater concern than just their amplitude.	This comment is duly noted. Please see above regarding classified data.
Ocean Conservation Research - 43		Seminal to this discussion is the assumption that all hearing animals have a need to discriminate pitch. While mammals, including marine mammals, have organs of pitch discrimination (the cochlea) it is not clear that any other animal family has a need to discriminate pitch. It is likely that other animals have acoustical perceptions tailored to their specific habitat priorities that do not include pitch discrimination.	As described in Section 3.8, the criteria for determination of potential impacts on marine mammals was developed using the best available science and in cooperation with National Marine Fisheries Service scientists and biologists.
Ocean Conservation Research - 44		Almost without exception, all audiograms taken of marine animals are a comparison of frequency and amplitude sensitivities. It is possible that in lieu of pitch and level perceptions, that many fish (or other marine animals) could be sensitive to other characteristics of acoustical energy; that in place of level or time-of arrival differences between sound receptors, these animals can distinguish phase differences between 'particle' and 'pressure gradient' acoustical energy. In this context, time-domain cues across these physical characteristics of acoustical energy are much more important than frequency or amplitude cues.	Please see comment response to OCR – 43 above.
Ocean Conservation Research - 45		This could cut both ways in regards to the acceptable noise levels for fish in the subject environment: Up to the point where the acoustical mechanics of the noise in the environment and the acoustical compliance of the organism are in conflict with the noise levels, a particular fish may not even perceive the noise. This would explain why fish residing in extremely turbulent settings (like corvina or surf perch) can endure extreme, noise-saturated acoustical settings and still respond to subtle acoustical stimulus in	See section 3.6 for a discussion of fish hearing.

ID	Organization	Public Comment (Written)	Navy Response
		their environment[2]. This could mean that very loud but distant noise sources might have much less impact on an animal than quieter but closer noises. .... [2] J. Engelmann, W. Hi1J1ke, J. Mogdans & H. Bleckmann "Neurobiology: Hydrodynamic stimuli and the fish lateral line" 2000 Nature 408, p.51-52 .	
Ocean Conservation Research - 46		This is germane to the DEIS because the preponderance of audiograms and threshold shift procedures used to determine the acoustical sensitivities of fish in the cited studies[3] used either sinusoidal signals or band limited 'pink' noise[4]. While this statement doesn't answer many questions in regard to the impacts of the noise generated by the proposed TMAA project on various fish exposed to the noises of the program, it highlights the fact that the assumptions used to frame the impact models do not reflect the actual acoustical situation proposed in the program. This is particularly evident in the fact that some of the proposed acoustical signals will not be sinusoidal, rather some signals will include fast rise times and high "crest factors"[5] which are significantly different from sinusoidal signals. .... [3] The GOA-DEIS cites Scholik and Van. 2002 and Wysocki and Ladich, 2005. These studies also evaluate three fresh water species: The goldfish (Carassius auratus) and the Rafael catfish Platydoras costatus) both live in still, turbid waters, (thus their particular acoustical adaptations), and the sunfish (Lepomis gibbosus), a clear water inhabitant. These animals are not good models for open ocean fish that live in a completely different acoustic habitat. [4] Band limited "Pink Noise" is typically derived from Fourier Transfer derived Gaussian noise constructed from sme waves without any coherent time-domain component. [5] Crest factor is the ration of peak to RMS value of a signal. Pure sinusoidal waves have a crest factor of .707; pure "square waves have a crest factor of 1; repetitive impulse sounds have a crest factor greater than 1.	See section 3.6 for a discussion of fish hearing.
Ocean Conservation Research - 47		This shortcoming can only be addressed by doing systematic testing on various fish using signals and levels that more closely match the signals proposed for the TMAA, especially the mid frequency communication sonars that overlap the known audiological response of the subject fish and contain either rich harmonic 'content, fast rise times, and crest factors at or above unity.	See section 3.6 for a discussion of fish hearing.

ID	Organization	Public Comment (Written)	Navy Response
Ocean Conservation Research - 48		Using the actual sonar signals to determine acoustical thresholds would also clarify the impacts of the proposed signals on other marine biota, where again the preponderance of audiological or physiological impact data are taken from sinusoidal or 'pink noise' sources.	This comment is duly noted.
Ocean Conservation Research - 49		Marine invertebrates have mechanoreceptors that are adapted to the sinusoidal motions of their environment. Sometimes these motions are relatively energetic (such as the acoustical energy generated by heavy currents and wave motions), so these animals may not be as affected by extreme sinusoidal energy. On the other hand, fast rise times or high crest factors used ili some acoustical communication signals may exceed the acoustical compliance of the organism and damage it. These types of signals need to be explored with various marine invertebrates and plankton prior to excluding all of these animals from consideration of acoustic impacts in the GOA-DEIS.	The Navy conducted a thorough analysis of marine invertebrates in the Draft EIS/OEIS, using the most current and best available science, as required by NEPA. This analysis was completed in cooperation with the National Marine Fisheries Service, which is responsible for the protection of marine species. The effects of underwater explosions on invertebrates are described in Section 3.5, Marine Plants and Invertebrates. Most expended materials are inert and dense and readily sink deep into existing sediments or become covered with sediment over time. These materials would also become encrusted by chemical processes or by marine organisms that further isolates them from the environment. Once deposited, the materials would not pose a hazard to benthic communities. Because high quality habitat occupies only a small portion of the benthic environment, there is a small potential for the communities to be affected by initial impact of expended materials. However, localized impacts to bottom-dwelling organisms could occur if struck but population level effects are not anticipated.
Ocean Conservation Research - 50		**Acoustic Impacts: Fish** In chapter 3.6 on fish, and most notably under section 3.6.2.2 Assessment Framework it is stated repeatedly that there are many data gaps in the literature on the impacts of noise on fish. The remark that "it is hard to extrapolate between species or conditions" is abundantly found throughout this section, substantiating the general position that there is a high level of uncertainty in the known impacts of noise on fish.	This comment is duly noted.
Ocean Conservation Research - 51		But the absence of data does not mean the absence of harm, and precautionary practices would dictate that some known statistical mean of harm would be used to set mitigation thresholds. What is done throughout this section ambiguates the probable impacts with biased metrics. For example the correlation of impulse impact mortality relative to body mass and charge size taken from Young's equations[6] were extrapolated into tables 3.6-4: "Range of Effects for at-Sea Explosions" and table 3.6-5: "Estimated	This supposition, however, does not change the conclusion that there may be injury or mortality to individual fish but the proposed actions would not result in impacts to fish populations in the Gulf of Alaska.

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		Fish-Effects Ranges for Explosive Bombs" to indicate the distance at which I0% mortality would occur (also noted as "90% survival" in the DEIS.)[7]. This metric ambiguates the perspective that fish at or outside of the specified range have a 10% or greater survival rate. There is a mortality continuum from 10% - 100% mortality inside that range. So while for example only 10% of the fish greater than 30 lbs will be killed at 578 feet by a 500 lb. bomb, it is highly likely that the death rate will be significantly higher for smaller fish with the mortality continuum scaling down to only 10% at 1289 feet and beyond. .... [6] Young, G.A.. 1991. Concise methods for predicting the effects of underwater explosions on marine life. Naval Surface Warfare Center, Dahlgren, Virginia. [7] GOA-DEIS 3.6-31	
Ocean Conservation Research - 52		The Young paper also only states short term or instant mortality. It does not evaluate intermediate and long tern damage to the animals and their biological function that will kill them within days or weeks from the assault.[8] .... [8] McCauley et al., High Intensity Anthropogenic Sound Damages Fish Ears, J. Acoust. Soc. Am. 113 (2003).	Please see response to OCR – 51 above.
Ocean Conservation Research - 53		The type of explosive is also not integrated into the metric. Rise times of explosives have a significant bearing on mortality.[9] Different explosives have varying impulse rise times [IO] so without knowing what was used in the literature and what explosives are proposed in the GOA-DEIS this entire section along with the extrapolated metrics are meaningless. .... [9] Stocker, M "Examination and evaluation of the effects offast rise-time signals on aquatic animals" J. Acoust. Soc. Am. 120,3267 (2006) [10] Fry, Donald H 1953 "Observations on the effect ofblack powder explosions on fish life." Calif, Fish and Game v.39:2	This comment is duly noted.
Ocean Conservation Research - 54		The conclusion on the impacts of sonar on fish found in the DEIS on page 3.6-43 tidily sums it up: "the effects of sound on fish are largely unknown...There is a dearth -of empirical information on the effects of exposure to sound, let alone sonar, for the vast majority of fish."	This comment is duly noted.
Ocean Conservation		Given this admission (strengthened by the remaining text in the paragraph), the conclusion in table 3.6.10 "Because only	While the effects of sound on all species of fish have not been studied leaving much unknown, there are reasonable

ID	Organization	Public Comment (Written)	Navy Response
Research - 55		a few species of fish may be able to hear the relatively higher frequencies of mid-frequency sonar, sonar used in Navy exercises would result in minimal harm to fish or EFH" contradicts the conclusion that 'we know nothing.' Either we know nothing, or we know that no harm will come from sonar exposure. Not both. Given that "we know nothing" supersedes the assumption that no harm will come from exposure, the former statement prevails. We also do know that there are many fish that do hear well in the ranges covered by Mid frequency and High frequency sonar[11] although currently there are no published exposure tests on these animals using MF and HF sonars. The auditory bandwidth sensitivity of these fish was .probably a consequence of evolutionary pressure to hear the sounds of their main predators, the odontocetes -- indicating that other odontocete prey may as well perceive and thus be impacted by Mid or High Frequency sonars. .... [11] Mann, D.A., D.M. Higgs, W.N. Tavolga, M.J. Souza, and A.N. Popper. 2001. "Ultrasound detection by clupeiform fishes." The Journal of the Acoustical Society of America 109: 3048-3054.	extrapolations that can be made based on the general anatomy of fish and from the representative species that have been studied. Based on those studies and as detailed in Section 3.6, it is unlikely that sonar will adversely affect most fish given most fish cannot hear in the frequency range of the mid and high frequency sonar Navy is proposing to use. In addition, Navy has been conducting these same training activities in locations such as Southern California and the East Coast for many decades and both of which support healthy and diverse fisheries.
Ocean Conservation Research - 56		An important element of certainty is missing from our understanding of fish responses to MF and HF sonar signals. The Popper 2008[12] report frequently cited in the DEIS refers to contract studies on the impacts of MF and HF sonars on fish, but the paper is only used to cite known and published data about fish hearing. The impact data is not cited and the paper is a US Navy contract paper and has not been published in peer reviewed journals. .... [12] Popper, A.N. 2008. Effects of Mid- and High-Frequency Sonars on Fish. Naval Undersea Warfare Center Division. Newport, Rhode Island. Contract N66604-07M-6056	This comment is duly noted.
Ocean Conservation Research - 57		So what we are left with is data derived from audiograms taken of marine animals are a comparison of frequency and amplitude sensitivities using sinusoidal derived signals [13]. It is possible that in lieu of pitch and level perceptions, that many fish (or other marine animals) could be sensitive to other characteristics of acoustical energy; that in place of level or time-of arrival differences between sound receptors, these animals can distinguish phase differences between 'particle' and 'pressure gradient' acoustical energy. In this context, time-domain cues across these physical	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
		characteristics of acoustical energy are much more important than frequency or amplitude cues. .... [13] Most audiograms either use single frequency sinusoid signals or band limited "Pink Noise" which is typically derived from Fomier Transfer derived Gaussian noise constructed from sine waves without any coherent time...domain component. These signals are very unlike mid-frequency sonar signals.	
Ocean Conservation Research - 58		While this statement doesn't answer many questions in regard to the impacts of the noise generated by the proposed GOA training range operations on various fish exposed to the noises of the operations, it highlights the fact along with the "dearth of empirical information on the effects of exposure to sound, let alone sonar,,,[14] that fish will be exposed to signals for which we have even less data and will include signals with fast rise , ' times and high "crest factors"[15] which are significantly different from sinusoidal signals. .... [14] GOA-DEIS 3.6-43 [15] Crest factor is the ration of peak to RMS value of a signal. Pure sinusoidal waves have a crest factor of .707; pure "square waves have a crest factor of 1; repetitive impulse sounds have a crest metor greater than 1.	This comment is duly noted.
Ocean Conservation Research - 59		This shortcoming can only be addressed by doing systematic testing on various fish using signals and levels that more closely match the signals currently being used or developed for modem ASW operations, especially the mid frequency communication sonars that overlap the known audiological response of the subject fish and contain either rich harmonic content, fast rise times, and crest factors at or above unity. Using the actual sonar signals to determine acoustical thresholds would also clarify the impacts of the proposed signals on other marine biota, where again the preponderance of audiological or physiological impact data are taken from sinusoidal or 'pink noise' sources. Marine invertebrates have mechanoreceptors that are adapted to the sinusoidal motions of their environment. Sometimes these motions are relatively energetic (such as the acoustical energy generated by heavy currents and wave motions), so these animals may not be as affected by extreme sinusoidal energy. On the other hand, fast rise times or high crest factors used in some acoustical	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
		communication signals may exceed the "acoustical compliance of the organism and damage it. These types of signals need to be explored with various marine invertebrates and plankton prior to concluding that they are not impacted by loud, fast rise-time, high crest-factor sonar signals. But in the absence of evidence clearly indicating harm, the GOA-DEIS takes the "let's see if anything floats up to the surface" approach - which has left our ocean in such bad shape already.	
Ocean Conservation Research - 60		**Acoustic Impacts: Marine Mammals** While the modeling of the impacts of acoustical exposure in section 3.8.7.2 "Acoustic Effects: Assessing Marine Mammal Responses to Sound" is extensive, detailed, and comprehensive, given the other quirky statistical models found throughout the entire GOS-DEIS (and the predictable history of biased mathematical and statistical models in prior Navy DEIS ,documents), frankly I worry when the Navy's statistical modelers are given so much text space to synthesize decades of scientific study into their own home-spun complex risk-continuum. Symptoms of this are ambiguously presented in the opening gambit on Table 3.8-1[16] wherein the density of given species of concern are presented in a density metric of animals per km^2. While I understand the statistical value of having a distribution number that represents the probability of interactions within a prescribed dataset, the fact of the matter is that there is no such thing as ".0019" of a Humpback whale, or even a ".I 892 oaf Dall's porpoise." And once the statistical arguments get to this point they are in their third derivation which indicates that they are being set up for a statistical model of convenience. .... [16] GOA~DEIS section 3.8-2 through 4.	This comment is duly noted.
Ocean Conservation Research - 61		While we did review the models that use these metrics in Appendix D and at face value they appear to be based on reasonable assumptions, given some of the other biased and quirky models used in the Fish Impacts section we would need to run these models in a few scenarios to assure that they do yield cogent and credible results. For example the setting the cutoff extent of the integral to 120dB seems to be based on either excluding the harbor porpoise form the marine mammal response data set or modifying the	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
		harbor porpoise risk function to a "heaviside step function"[17] smells suspiciously like manipulations of statistical convenience. Unfortunately given the truncated comment period on the GOA-DEIS due to the issuance of this over the traditional winter holidays we did not have as much time as would be required to review the entire architecture of the US Navy statistical arguments justifying their particular models. Suffice it to say that in addition to the forgoing comments, we suspect that there are clever manipulations afoot. Of course none of these characterizations require a response under NEPA, but the following criticisms substantiate these claims. .... [17] GOA-OEIS Appendix 0-31, also Section 3.8-101	
Ocean Conservation Research - 62		There are many questionable assumptions made in the GOA-DEIS regarding the actual levels of Temporary Threshold Shift (TTS) and Permanent Threshold Shift (PTS) in marine mammals. As inferred in the DEIS, PTS levels are on marine mammals are derived numerically and not actually known. This is because we have not intentionally subjected marine mammals to PTS levels (for compassionate reasons). I will review the PTS assumptions below, but the foundation of the PTS assumptions used in the DEIS are made from data derived from TTS studies. Furthermore, these studies have all been done on test-habituated animals, and in many cases these animals are quite old. Additionally, these studies include a level of assumptions that belie the actual data. For example a study featured in the GOA-DEIS by Finneran, Carder etal. (JASA 2005)[18] used mature (18-20 years) or old (38 - 40 years) animals that have been systematically exposed to noise studies for many years. The subjects have lived in a busy environment full of anthropogenic noise, so it is highly likely that they have been habituated to the test environment. It is clear that these animals do not represent different species of wild marine animals across a broader - and mostly younger - age range, in their own environment. .... [18] James Finneran, Donald Carder, Carolyn Schlundt, Sam Ridgeway "Temporary threshold shift in bottlenose dolphins (Tursiops Truncatus) exposed to mid frequency tones." October 2005 J. Acoust. Soc. Am. 118(4) p.2696	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
Ocean Conservation Research - 63		Model inaccuracies due to habituation in the instance of this study is compounded by the fact that the test animals may employ biological protections to prepare them for their tests-protections akin to the "wincing" that visual animals use to protect their eyes from damage. Terrestrial animals have a mechanism, like "wincing" in their middle ears that protect them from damaging sounds. This mechanism is a tightening of the tensor tympani muscles around the middle ear ossicles, protecting the hearing organ from physical damage.[19] While this mechanism is fast acting in response to "surprise" stimulus, once terrestrial animals are habituated to expect loud noise, the system is activated by the expectation. In humans the mechanism kicks in when noise levels reach 75dB SL (re: 20~a) - about 10dB SL below where OSHA guidelines for TIS-level noise exposures occur in humans, and about 50dB SL below where PTS occurs. .... [19] Pierre Buser and Michel Imbert "Audition" 1992. MIT Press. p. 110 - 112.	This comment is duly noted.
Ocean Conservation Research - 64		The middle ear structure of marine mammals differs significantly from the middle ears of terrestrial animals. We are just learning about how environmental sounds are conveyed into the odontocete's inner ears. This mechanism seems to include the lipid channels in their lower jaws, [20] and the mobility of the bulla (the bone envelope that houses the cochlea and semicircular canals). While this mechanism does include the same middle ear ossicles of terrestrial mammals, these bones in cetaceans can be rigidly attached to each other and connected differently (by way of ligaments) to the tympanic membrane.[21] While the ears of the odontocetes or mysticetes do not have the same tensor tympani found in terrestrial mammals, it is probable that these hearing specialist animals would have an analogous system to protect their inner ears from periodic or occasional sound levels that would otherwise damage their organs of hearing.[22] If this assumption is correct, then the "sound test" habituated dolphins would obviously yield much higher thresholds for TTS than their wild, un-habituated counterparts - given that they will always "prepare" for acoustical assaults when asked to perform in a given testing situation.	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
		[20] Heather Koopman, Suzanne Budge, Darlene Kettell, Sara Iverson "The Influence of Phylogeny, Ontogeny and Topography on the Lipid Composition of the Mandibular Fats of Toothed Whales: Implications for Hearing" 2003 Paper delivered at the EnVironmental Consequences of Underwater Sound conference, May 2003. [21] G.N. Solntseva, "The auditory organ ofmammals"1995 p. 455 in "Sensory Systems ofAquatic Mammals' R.A. Kastelein, J.A. Thomas and P.E. Nachtigall eds. De Spit press. [22] This system might involve thetilio-regulating the viscosity, and thus the acoustical compliance of the lipids through regulating blood circulation around the organs - thereby attenuating or accentuating acoustical transfer through the organ as needed.	
Ocean Conservation Research - 65		But even assuming that the legacy of TTS testing done on these test-habituated animals does accurately reflect the TIS levels for all wild, un-habituated animals, the data used to establish an "appropriate" TTS levels all show onset of TTS occurring between 185dB and 190dB (re: I~Pa2-s). In the DEIS these levels are presented on a chart that includes three different signal types;[23] impulsive signals representing distant explosions,[24] seismic airguns,[25] and tone bursts.[26] [23] Not from Nachtigall et. AI. 2004 as stated in the DEIS. Additionally Chart 3.8.7 is mislabels "Existing TTS Data for Cetaceans when is should be labeled "Some TTS Data for Cetaceans." Many other peer reviewed TTS models exists that are not represented in the chart. [24] Finneran, J.J., C.E. Schlundt, D.A. Carder, J.A. Clark, J.A. Young, J.B. Gaspin, and S.H. Ridgway. 2000. Auditory and behavioral responses of bottlenose dolphins (Tursiops truncatus) and a beluga whale (Delphinapterus leucas) to impulsive sounds resembling distant signatures of underwater explosions. Journal of the Acoustical Society of America. 108:417-431. [25] Finneran, J.1., R. Dear, D.A. Carder, and S.H. Ridgwai 2002. Temporary shift in masked hearing thresholds in odontocetes after exposure to single underwater impulses from a seismic watergun. Journal of the Acoustical So~iety of America. 111:2929-2940. [26] Schlundt, C.E., J.J. Finneran. D.A. Carder, and S.H. Ridgway. 2000. Temporary shift in masked hearing thresholds of bottlenose dolphins, Tursiops truncatus, and white whales, Delphinapterolls leucas, after exposure to intense tones. Journal of the Acoustical Society of America, 107:3496-3508.	This comment is duly noted.
Ocean Conservation Research - 66		This disparity in signal types is noted in the text, but with the exception of two cases of TTS as a consequence of seismic signals (one at 185dB re: 1~Pa2-s and the other at 190dB)	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
		the chart represents TTS as a consequence of pure tone bursts. (It was in this Schlunt eLal. study that the test-habituated beluga whale subject attacked the testing apparatus before the tests were complete). You might say that this illustrates that there is a physiological as well as a behavioral difference in impacts between the various signals rather than the conclusion that there is a clear threshold at 195dB as indicated in the DEIS.	
Ocean Conservation Research - 67		Nonetheless the chart takes a "statistical mean" to justify raising the TTS level to 195dB.[27] This elevated level is justified in part by the statement: "Use of the minimum value would overestimate the amount of incidental harassment because many animals commented would not have experienced onset TTS"[28] This highlights one of my concerns; why do harassed animals need to experience onset of TTS? While it may be important to find the absolute value for onset of TTS in our model animal, the purpose here is to avoid harassing animals, not derive "statistical precision" on the exposure levels that will always produce TTS in test-habituated animals. For this reason the data should be used as found and as presented; that onset of TTS occurs in test-habituated animals at 185dB (re: 1I!Pa2-s). .... [27] GOJ\-DE~S Section 3.8-87 [28] GOA-DEIS Section 3.8-92	This comment is duly noted.
Ocean Conservation Research - 68		The statement in the DEIS that "The growth and recovery of TTS are analogous to those in land mammals. This means that, ~ in land mammals, cetacean [TTS] depend on the amplitude, duration, frequency content, and temporal pattern of the sound exposure"[29] is correct, but the DEIS-adapted assumptions used in the following bullet points in this section to build the argument omit the critical characteristics of"frequency content, and temporal pattern," ignoring the evidence that signal characteristics have a stronger bearing.on TTS thresholds than amplitude.[30] .... [29] GOA-DEIS Section 3.8-87 [30] Roger P. Hamemikand Wei Qiu "Energy-independent factors influencing noise-induced hearing loss in the chinchilla model" J. Acoust. Soc. Am. 110 (6), December 2001 .	This comment is duly noted.
Ocean Conservation		So the fundamental argument here is that as in the fish studies, none of the tests performed on marine mammals	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
Research - 69		used to substantiate the Navy's impact and mitigation models used signals that simulated the actual sonar signals proposed in the GOA ASW activities.	
Ocean Conservation Research - 70		Most papers cited for the DEIS used either sinusoidal tones or impulse noises. These signals do not elicit the same behavioral responses as more complex signals.[31] The test subjects of most papers cited for the DEIS were also older (over 30 years old), test-habituated animals that have been in captivity and used as test subjects for a large portion of their lives.[32] The captive animals are accustomed to coming into a test area for their livelihood and while they provide TTS data for their specific physiology, they are poor stand-ins for a majority of marine mammals that will be impacted by the GOA proposal. [31] R.A. Kastelien, D. Goodson, L. Lein, and D. de Haan. "TIte effects of acoustic alarms on Harbor Porpoise (Phocenaphocena)" 1997 P.367-383 mA.J. Read, P.R. Wiepkema, and P.E. Nachigall eds. "The Biology of Harbor Porpoise" de Spil publishers, Woemed, The Netherlands. [32] e.g. J. J. Finneran, C. E. Schlundt, D. A. Carder, J. A. Clark, J. A. Young, J. B. Gaspin, S. H. Ridgway Auditory and behavioral responses of bottlenose dolphins (Tursiops truncatus) and a beluga whale (De/phinapterus /eucas) to impulsive sounds resembling distant signatures of underwater explosions. J. Acoustical Soc. of America. V.108(I) July 2000.	This comment is duly noted.
Ocean Conservation Research - 71		In terms of the range of impact relative to signal amplitude, Kastelein and Rippe studied younger animals (harbor porpoise Phocena phocena) [33] with more appropriate test signals yielded significantly different results than the assumptions made in the GOA-DEIS. These animals demonstrated an aversion to more complex signals in the frequency range of the proposed sonars and at 130dB re: If.l.Pa@lm. (Animals used in this study were recently taken into captivity and approximately 3 years old.) [33] R.A, Kastelien, H.T. Rippe" The Effects of Acoustical Alarms on the Behavior of Harbor Porpoises ~phocena phocena) in a floating pen" Marine Mammal Science. 16(1) p. 46 -64. January 2000 . W.C. Verboom and R.A. Kastelem. "Some examples ofmanne mammal 'dIscomfort thresholds' in relation to man-made noise." June 22, 2005. Proceedings from the 2005 Undersea Defense Tecluiology conference 2005, Sponsored by TNO, P.O. Box 96864, 2509 JG The Hague, The Netherlands.	This comment is duly noted.
Ocean Conservation		While the signals used in this study were specifically designed to repel net-predatory marine mammals, the	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
Research - 72		signals are closer in form to many communication sonars than to the sinusoidal waves or band limited pink noise used in the DEIS citations. Another study by Verboom and Kastelein indicates that more complex signals induce a discomfort threshold level for younger, less habituated marine mammals (P. phocena and harbor seal Phoca vitulina) at or below 133dB re:lf.l.Pa@lm'.[34] [34] This study extrapolates a TTS level for these animals at 150 dB(w) re: 1J.lPa@lm.for the harbor seal, and 137dB(w) re: 1f.l.Pa@lm for the harbor porpoise. The paper also goes on to suggest that hearing injury - PTS, will occur in the Harbor seal and Harbor porpoise at 190dB and 180dB respectively - 50% to 500% less energy than the 195dB level that the GOA-DEIS presents as the thresholds for MMPA Level B harassment.	
Ocean Conservation Research - 73		Like the estimated PTS levels used in the DEIS, the TIS figures from the Verboom and Kastelein (2005) study are extrapolations - extrapolating from behavioral responses to noise exposure of young, healthy marine mammals against known human auditory responses. The disparity between the·TTS figures used by Verboom and Kastelein and the numbers used in the DEIS indicate a high degree of scientific uncertainty in the models and extrapolation methods used in both sets ofassumptions. I am more inclined to accept the Verboom Kastelein numbers for three reasons:. 1) they were not cited or crafted under the rubric of justifying a proposed program; 2) their studies were not funded by an agency whose desired actions would be limited by more precautionary results,[35] and 3) they are inherently more precautionary, in that they examine the thresholds of behavioral response, not the upper limits of physiological response. [35] Hal Whitehead and Linda Weilgart "Science and the management of underwater noise: Information gaps and polluter power." J. Acoust. Soc. Am., Vol. 110, No.5, Pt. 2, November 2001 142nd Meeting: Acoustical Society of America.	This comment is duly noted.
Ocean Conservation Research - 74		Regarding the estimation of PTS onset relative to TTS levels used in the DEIS,[36] I find these data troubling as well. The linear regressions adapted from the W.O. Ward et al papers[37] cited in the DEIS were all taken from human subjects - highly visually adapted terrestrial mammals. Ward's research indicates a threshold of PTS by examining the maximum recoverable TTS in human and finds that humans can recover from a TTS of 50dB without permanently damaging their hearing. The Ward studies are	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
		"conservatively" tempered in the OEIS by incorporating a study of cats by Miller[38] that indicates that cat's threshold of PTS is at 40dB recoverable TIS.[39] .... [36] GOA-DEIS 3.8-88-92 [37] e.g.: Ward., W.O. "Recovery from high values of temporary threshold shift." J. Acoust. Soc/ Am., 1960. Vol. 32:497-500. [38] Miller, J.D., C.S. Watson, and W.P. Covell. 1963. "Deafening effects ofnoise on the cat."Acta OtoLaryngologica Supplement Vol. 176:1-91. [39] The DEIS states further that "A variety ()fterrestrial mammal data sources point toward 40 dB as a reasonable estimate of the largest amount ofTS that may be induced without PTS" though no citations are provided for this statement.	
Ocean Conservation Research - 75		The cat is also a highly visually adapted terrestrial animal, though it is more dependent on aurality than humans.[40] One correlation can be deduced here is that animals that are more· dependent of sound cues are less able to recover from extreme TTS. Thus if there is a 10 dB disparity in recovery levels between humans (50dB TTS) and cats (40dB TTS), it might easily follow that cetaceans who rely almost exclusively on acoustical cues would be even less likely to recover from extreme TTS and may indicate a PTS threshold at TTS level of30dB. If we use this assumption, the onset of PTS in·cetaceans may only be 15dB above the onset ofTIS,[41] not the "conservative" 20dB modeled in the DEIS. Given the forgoing, we might assume from the data presented in the OEIS that the onset of TTS occurs at 185dB re: IJ.tPa2-s (as shown in the OEIS without incorporating the "statistical mean" tool), and that the onset of PTS could then be as low as 200dB re: 1J.tPa2-s (taking the above assumption about recoverable TTS levels in highly acoustically-adapted animals). While these revised numbers are "lower" than the proposed thresholds ofTTS and PTS (suggested for all marine mammals), they are based on assumptions that are still of questionable validity, inasmuch as they are based on extrapolated models that meld terrestrial, highly visual animals with old, test-weary odontocetes. I feel that this methodology provides a poor stand-in for a diverse variety of wild marine mammals, in their own habitat, being subjected to extreme levels of noise that they are not biologically adapted to or trained to expect. .... [40] Ralph E. Beitel "Acoustic pursuit of invisible moving targets by	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
		cats" JASA - 1996. Vol.105(6) p.3449 This paper indicates that cats will follow acoustic cues without needing to visually identify the cue, unlike humans, who will use an auditory cue to help localize a source ofnoise which they will then "look for." [41] Using the same extrapolation and linear regression found in the DBIS and using 30dB ITS as the maximum recoverable ITS level: There is a 24 dB TS difference between onset-TTS (6 dB) and onset-PTS (30 dB).The additional exposure above onset-TTS that is required to reach PTS is therefore 24 dB divided by 1.6 dB/dB, or 15dB.	
Ocean Conservation Research - 76		Regarding the DEIS section 3.8-92 "Criteria and Thresholds for Level B Harassment from Non-TTS:" The authors of this section state that there is no metric to determine the "annoyance" levels of non-verbal animals. I suggest that the subjective term "annoyance" be replaced with the more observable characteristic of "disturbance." Many papers on disturbance levels in marine mammals are available[42] and can be used in lieu of trying to find published papers on the subjective "annoyance levels." The behavioral effects section 3.8-92 does mention that "...there are few observations and no controlled measurements of behavioral disruption of cetaceans caused by sound sources with frequencies, waveforms, durations, and repetition rates comparable to those employed by the tactical sonars to be used on the proposed TMAA." This statement is the first indication in the DEIS that the authors have identified that the paucity of data derived from exposing animals to actual sonar signals is a shortcoming of the analysis. .... [42] e.g.: John R. Buck, Peter L. Tyack "An avoidance behavior model for migrating whale populations" The Journal of the Acoustical Society of America, April 2003. Volume 113, Issue 4, p. 2326 wherein gray whale avoidance threshold of 135dB re: luPa was established. See also w.e. Verboom and R.A. Kastelein. "Some examples of marine mammal 'discomfort thresholds' in relation to man-made noise." June 22, 2005. Proceedings from the 2005 Undersea Defense Technology conference 2005, Sponsored by TNO, P.O. Box 96864, 2509 JG The Hague, The Netherlands.	This comment is duly noted.
Ocean Conservation Research - 77		The "risk function adapted from Feller"[43] could prove to be a useful tool, but like any model, the output is only as good as the input. As such, any data using the trained and long-term habituated animals at the San Diego test facility must be categorically dismissed because the sec animals have been treated as "biological input devices" and thus are a very poor analogy of wild animals. Surprisingly the conclusions in	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
		the DEIS reflect exactly the opposite conclusion, although some of the shortcomings are addressed (limited species range and the animals trained for TTS tests, not behavioral tests). .... [43] GOA-DEIS 3.8-94	
Ocean Conservation Research - 78		The data from the Haro Strait incident[44] should be tailored to reflect that the J-pod orcas were already being set upon by groups of whale-watching tour-boats (of which they must be habituated) so there is a probability that their "disturbance" thresholds would have been elevated from their non-set-upon or wild habitat state. Thus the impact risk thresholds modeled with the risk function using the Haro Strait data should be weighted down by some amount. While this is reflected in the DEIS, any weighting factor would be arbitrary. .... [44] Fromm, D. 2004. "Acoustic Modeling Results of the Haro Strait For 5 May 2003." Naval Research Laboratory Report, Office of Naval Research, 30 January 2004.	This comment is duly noted.
Ocean Conservation Research - 79		In the absence of empirical data some model must be used. The risk function is heading in the right direction, but with the limited input sources the weighting should favor a lower threshold than what unweighted inputs from Haro Strait and SCC inputs would yield. We believe that the Nowacek data[45] is the "cleanest" of all three, but as noted in the DEIS the alerting signals do not approximate MFA Sonar signals, although the relatively low behavioral threshold for mysticetes is supported by Di Iorio and Clark[46] in seismic sparker signals. .... [45] Nowacek, D.P., M.P. Johnson, and P.L. Tyack. 2004. North Atlantic right whales (Eubalaena glacialis) ignore ships but respond to alerting stimuli. Proceedings of the Royal Society of London, Part B 271 :227231. [46] Lucia Di Iorio and Christopher W. Clark "Exposure to seismic survey alters blue whale acoustic communication" Biol. Lett. 23 February 2010 vol. 6 no. I 5I-54	This comment is duly noted.
Ocean Conservation Research - 80		Meanwhile excluding the fairly comprehensive and robust harbor porpoise data from the input set, or modifying the same risk function curve used in the other three inputs is arbitrary. With the paucity of data - both in terms of studies as well as species, qualified data should not be excluded	This comment is duly noted.

ID	Organization	Public Comment (Written)	Navy Response
		from the input data set, nor should any clean data be modified to accommodate for arbitrary considerations just because the data does not fit the desired outcome of the model. The fact is that the years of Kastelein data on harbor porpoises more accurately represent the behavioral responses of near wild animals because 1) these animals are the most recently wild captive animals, 2) the testing done on these animals is done with signals more characteristically akin to MF and HF sonar, 3) the tests are focused on behavioral responses, not operant conditioning, and 4) the testing environments have been specifically designed or cited to eliminate high levels of background noise and specular reflections found in most training enclosures.	
Ocean Conservation Research - 81		Additionally, tailoring the harbor porpoise data because they "inhabit shallow and coastal waters suggest[ing] a very low threshold level of response for both captive and wild animals"[47] flies in the face of glomming together mysticetes and odontocetes that do fit a convenient risk function. If the justification for melting together three disparate species under three disparate conditions is due to the paucity of behavioral data available, then the Tyack et. al[48] controlled exposure work on beaked whales should not have been excluded from the data set. This is particularly the case since the exposure tests were funded by the US Office o(Naval Research and included beaked whales - a species of particular concern. Perhaps the Tyack results were not included because they showed behavioral responses to signal Receive Levels as low as 117 dB (re: 1 J.lPa)? In section 3.8-106, Table 3.8-7a "Approximate Distance to Effects for At-Sea Explosives in the Temporary Maritime Activities Area" the metric is not stated. Are these feet or meters? Without this data the table is meaningless. [47] GOA-OBIS 3.8-101 [48] Tyack, P. et. al.. "Effects of sound on the behavior of toothed whales." J. Acoust. Soc. Am. Volume 123, Issue 5, pp. 2984-2984 (May 2008)	This comment is duly noted. The units of measure (meters) for the approximations have been added to the table.
Ocean Conservation Research - 82		Regarding the general topic of behavioral responses to explosions, it is extremely reductionist to assume that agonistic response linearly correlates to exposure level regardless of the signal source or characteristic. The DEIS assumes that the response value of an explosion is	This comment is duly noted

ID	Organization	Public Comment (Written)	Navy Response
		equivalent to the response value of other impulsive but natural sounds such as thunder or calving icebergs. I don't believe that it would be too anthropomorphic to assume the analogy to human response to explosions; and that our response to explosions in our own neighborhood, or even across town would definitely be different than our response to thunder.	
Ocean Conservation Research - 83		The clear fact is that explosions from military ordnance have the acoustical signature of things being destroyed. Regardless of the collateral damage to animals and habitat, military explosions are a product of destruction. This plays into physiological impacts and behavioral responses, but also into psychological disruption, inducing stress and anxiety, compromising biological function. The DEIS fails to bring this into the discussion.	The criteria described in Section 3.8 involving explosives and marine mammals was developed in cooperation with National Marine Fisheries Service (NMFS) and has been used extensively for years by NMFS for all activities involving these types of impacts in the water; for examples see [http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications].
Ocean Conservation Research - 84		Additionally, despite the appearances presented in the inverted impact model used to examine the impacts of explosions on fish (evaluated in this document), explosions will cause fish mortality and habitat destruction which will in turn compromise food abundance for marine mammals. To what extent is not included in the DEIS analysis.	This supposition, however, does not change the conclusion that there may be injury or mortality to individual fish but the proposed actions would not result in impacts to fish populations in the Gulf of Alaska.
Ocean Conservation Research - 85		For the foregoing reasons we advise the "No Action Alternative" be used. In the event that the US Navy sees to dismiss the foregoing arguments, or accommodates them to their best "practicable manner" and proceeds with Action Alternative 1 or Action Alternative 2, we advise the deployment of third-party (non military) aerial and marine observers to scan coastlines and littoral waters for marine mammal stranding incidents during the exercises. The GOA is sparsely populated with very long stretches of uninhabited coastline. Should some catastrophic impacts of the TMAA operations kill or maim marine mammals causing them to strand there is a high probability that the event would go unnoticed or unreported without an active, non-biased watch. Sincerely, Michael Stocker Director	Please see Section 5.2.1.6 regarding the many reasons why many of the previously suggested mitigation measures (including use of 3rd party observers are in many ways not effective) or do not meet the requirement to train in a realistic manner. With regard to monitoring during and after a training event in the Gulf of Alaska, see Section 5.2.1.4 and with regard to investigations of potential strandings, Section 5.2.1.5 discusses development of a stranding response plan in coordination with National Marine Fisheries Service.
Susan Payne - 1		Dear Commander of the Navy and Ms. Burt, Your Gulf of Alaska DEIS does not offer the NO Action option	The Forty Most Asked Questions Concerning the Council on Environmental Quality's National Environmental Policy Act Regulations, Number 3, addresses the question of No-Action alternatives. For EISs that study management levels of

ID	Organization	Public Comment (Written)	Navy Response
			Federal assets, the no-action alternative is seen as the current management level of asset usage-in this case, status-quo as the current level of usage. The no-action alternative can be thought of in terms of continuing with the present course of action until that action is changed. (46 Fed Reg 18026, at 18027).
Susan Payne - 2		and does not provide any alternatives other than more of your action using LFA, which has been demonstrated to negatively impact marine life, outright death of marine mammals and the disruption of fish migration.	As stated above, the no-action alternative can be thought of in terms of continuing with the present course of action until that action is changed. (46 Fed Reg 18026, at 18027). Alternatives 1 and 2 discuss the increase from these levels. This is the approach properly taken in developing alternatives for this EIS/OEIS. (See #3 of CEQ's Forty Most Asked Questions). The Navy has discussed all alternatives that were considered but eliminated in Section 2.3.2 and the consideration of the no-action alternative, alternative 1, and alternative 2 within Chapters 3 and 4 ensures the Navy's compliance under NEPA. Additionally, the Proposed Action does not include the integration of LFA into the alternatives considered in the Final EIS/OEIS.
Susan Payne - 3		As I have testified before, I am opposed to Navy activities that use active sonar and depleted uranium.	Your opposition to the use of sonar is noted. Please note that the use of depleted uranium is not part of the proposed action for this EIS/OEIS. For additional information, please see response to Carolyn Heitman - 44.
Susan Payne - 4		I propose that you change the dates of operations to more accurately reflect the conditions in which an attack on the US will likely occur, under the most severe conditions. This would be winter in the Gulf of Alaska. Your choice of summer in these proposed waters directly impacts migrating animals, and Endangered,	In Section 2.3.2.3 of the EIS/OEIS, the alternative of training outside of summer in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further.
Susan Payne - 5		and fishermen trying to make a living on fish such as salmon that only migrate shoreward at this time. Your assertion that you need support services leads me to conclude that this summertime mission is just a salmon and halibut charter opportunity for the Navy.	Vessels chartered by the Navy to provide exercise support will not be engaged in fishing for the Navy.
Susan Payne - 6		You talk of realistic operations, then conduct your work in the winter.	As stated previously, the alternative of training outside of summer in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy and joint training opportunities and such alternatives were considered infeasible and were not evaluated further.
Susan Payne - 7		Depleted Uranium and other toxics will enter the food chain and accumulate in the tissues of marine mammals and	As stated previously in response to your comment in number 3 above, Depleted Uranium is not part of the proposed action for

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		commercially important fish species.	this EIS/OEIS. Please see response to Carolyn Heitman - 44 Additionally, .the total amounts of expended and hazardous materials for each alternative are summarized in Tables 3.2-10, 3.2-14, and 3.2-19. The hazardous constituents of each type of ordnance, the estimated leaching rate, and the environmental fate of hazardous constituents are listed in Section 3.2.1.1, based on the best available science. The amount of each hazardous constituent is an approximation based on the best information available. The exact amount of each hazardous constituent in each piece of ordnance varies. For example (pg. 3.2-6 of the Draft EIS/OEIS), "Based on standards established by American Society for Testing and Materials International, each steel bomb body or fin also may contain small percentages of carbon, manganese, phosphorus, sulfur, copper, nickel, chromium, molybdenum, vanadium, columbium, or titanium, although typically present at less than 1 percent by weight." The effects of all expended materials would be equivalent to the sum of individual effects because of the large area in GOA, the low areal density of expended materials, and the low percentage of hazardous materials (about three percent of expended materials would be considered hazardous). The Navy's use of the TMAA would not be uniform. Based on Navy personnel experience, Navy training activities typically only use 20 percent of the available training area, as described in Section 3.2.2.3. Based on this conservative assumption and 20 years of Navy activities in the TMAA, the resulting 835 lb per nm^2 would yield a density of about 20 lb per acre, of which hazardous constituents would constitute only about 0.6 lb per acre (three percent of total). The seabed deposition of such quantities of hazardous materials would have an insignificant effect on the benthic environment.
Susan Payne - 8		We have spent millions of dollars and years trying to sell the purity of our fisheries. You in your actions on some of the most productive fisheries habitat in the world will contribute to the demise of our fish quality and our markets.	Please see Chapter 3 of the EIS/OEIS for the description and analysis and potential effects. Specifically, those effects to fisheries are found in Section 3.6. Cumulative impacts are described in Chapter 4. The continued presence of Navy training activities in the Gulf of Alaska should not result the bioaccumulation of toxic substances in marine mammals or fish, or their habitat. The Navy understands and appreciates the marine habitat. For further discussion on bioaccumulation, please see response to CDFU – 9.

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Susan Payne - 9		The cumulative effect of toxics on marine mammals will lead to deaths that cannot be quantified and attributed to your actions. How will you mitigate these impacts?	Chapter 4 of the EIS/OEIS addresses cumulative impacts on marine resources. The comment is essentially true given that as detailed in that section of the EIS/OEIS, Navy activities are an insignificant portion of human activities occurring in and around the Gulf of Alaska. The EIS/OEIS provides extensive descriptions of marine mammal mitigation. Please see Chapter 5 of the EIS/OEIS.
Susan Payne - 10		Finally, the Navy should conduct themselves under the same regulations that the general public must, the Endangered Species Act, the Marine Mammals Protection Act, and all other rules of the Land.	The Navy is in full compliance with all applicable Federal laws, regulations and statues, including the Marine Mammal Protection Act, the Endangered Species Act, and all applicable environmental laws, including NEPA and its requirements. For more information about the Navy's compliance with these and other regulatory requirements, see Section 6 of the EIS/OEIS.
Susan Payne - 11		Since your draft only allows for the continuance of these activities, then limit them to only the necessary, and locate and time them to impact the fewest. Sincerely, Susan Payne	Please see responses to Payne - 1, 2, and 4.
Andrea Peterson		My concern is that you are planning this testing at the height of our Alaskan summer in the nutrient rich waters off the Gulf of Alaska. Marine Mammal numbers are at their highest then because they are drawn to these waters to feed. I also know you will not be able to guarantee there are no marine mammals in the area being tested. Stellar sea lions and many of our whales are endangered. I'm not willing to sacrifice any of them to Naval/Air Force testing. Please find a spot without the rich environment, ocean life, and proximity to shore. This seems to be one of the worst sites and seasons possible. Whales are most active in Alaskan waters from mid April through October, and we always have some whales in our waters year round. I'm not sure what the answer is, but testing under these conditions will be damaging to our environment and ocean creatures.	As detailed in Chapter 2, none of the proposed Navy training activities involve "testing". As explained in Section 2.3.2.1 of the EIS/OEIS, a relocation of training activities would not support the Navy's purpose and need and was therefore eliminated from further consideration. In reference to your comment's guaranteeing no marine mammals will be present, the Navy's proposed mitigation measures presented in Chapter 5 and developed with National Marine Fisheries Service as a cooperating agency are not meant to suggest the ability to detect 100% of the marine mammals in the water. The mitigation measures are meant to reduce the impacts from the proposed actions while still enabling vital Navy training to occur.
Mike Peterson-1		Like many in the State of Alaska, I am concerned about the effects of sonar to the sealife within the Gulf.	The Navy has been conducting mid-frequency and high-frequency active sonar activities for decades at training ranges on the East Coast, in Hawaii, and Southern California, where for example, populations of resident beaked whales and other marine mammals appear to be thriving and fisheries remain very productive. There have been no indications for broad-scale impacts that are either injurious or of significant

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			biological impact to marine mammals or other sea life at these training ranges where the majority of Navy training at sea has been taking place for many years. As presented in Chapter 3 of the EIS/OEIS, the Navy's analysis for the Gulf of Alaska demonstrates there is little relative risk to marine species in the Gulf of Alaska.
Mike Peterson-2		As a Vietnam Veteran I remain distrustful of military motives in peaceful waters.	This comment is duly noted.
Mike Peterson-3		I would advocate for a 60 day period of observation, after the exercises, to document any and all damage that may have resulted from any testing to the marine life of the Gulf - within the boundaries as set forth by the U.S. Navy for the purpose of this training. All documented material would be turned over to State DNR, Secretary of the Interior, Dept. of Alaska Fish and Game Governor's office, and local newspaper in Anchorage, Juneau, Kodiak, Seward and Dutch harbor.	Section 5.2.1.3 describes monitoring planning for the TMAA. The Navy has begun an Integrated Comprehensive Monitoring Program for all its Range Complexes as a condition to permitting under the Marine Mammal Protection Act. The Integrated plan and the Range Complex specific monitoring plans are available on the NMFS Office of Protected Resources website. The results from those monitoring efforts will be provided by the Navy to NMFS and posted on the website as well. A monitoring plan for Navy activities in the TMAA will also be implemented with the research aims and timing tailored to questions that could be answered by studies done in the Gulf of Alaska area. For further information on the Navy's monitoring programs, please refer to AMCC – 7.
Carolyn Ramsey - 1		Dear Ms. Burt, I am writing to you as a concerned citizen and resident of Anchorage, Alaska. This letter addresses a few of my concerns about the *Gulf of Alaska Navy Training Activities Draft EIS/OEIS*. I understand that the U.S. Navy has "identified the need to support and conduct current, emerging, and future training activities". I understand that the men and women in our United States Military require such training so that they can be prepared for any and all situations that may arise. This training however needs to remain at the No Action Alternative.	This comment is duly noted. Please see response to AMCC – 3.
Carolyn Ramsey - 2		The other option would be for the U.S. Navy to find another location away from the vast marine and endangered species that inhabit our Alaskan waters.	As described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included alternate locations. Such alternatives fail to meet the purpose of and need for the proposed action. The proposed area for Navy training in the TMAA is based on the mission of Alaska Command to support the needs of military forces within Alaska, forces deploying through Alaska, and joint training needs.
Carolyn Ramsey - 3		As noted in the Draft EIS/OEIS Appendix F page F-18 "Animals in or near an intense noise source can die from profound injuries related to shock wave or blast effects."	The science of sound in the water and its effects on marine life is evolving. The Navy conducted a thorough analysis of sonar and at sea explosions in the EIS/OEIS, using the most current

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		Alaska Department of Fish and Game has developed blasting standards that say "no person may discharge an explosive that produces or is likely to produce and instantaneous pressure change greater than 2.7 pounds per square inch in the swim bladder of a fish". Considering salmon, whales and other various marine species either are fish or rely on these fish.	and best available science, and with cooperation from the National Marine Fisheries Service, which is responsible for the protection of marine species. Navy training activities that result in underwater explosions are a critical requirement of training. Precautions are taken to limit exposing marine life to the effects of an explosion as detailed in Chapter 5, mitigation measures.
Carolyn Ramsey - 4		The risk to our Alaskan food chain is unacceptable under the Alternative 1 and Alternative 2 proposals. Alaska's economy is based in natural resources and the seafood industry is its third most important natural resource. The No Action Alternative is the only option.	Please see Chapter 3 of the EIS/OEIS for the description and analysis and potential effects to natural resources in the TMAA. Specifically, those effects to the economy are found in Section 3.12 and to marine life in Sections 3.5 through 3.9. Regarding affecting fishing and tourism, please see response to AMCC - 14. Overall, the analysis in the EIS/OEIS shows that the Navy's proposed action will not significantly impact the marine environment of the GOA. As described in Chapter 4, the Navy activities proposed are small in comparison to the impact from commercial fishing in the Gulf of Alaska.
Carolyn Ramsey - 5		As noted in the Draft EIS/OEIS Appendix F page F-18 "Acoustic exposures have been demonstrated to kill marine mammals and result in physical trauma, and injury (Ketten 2005)." Mass stranding of beaked whales and porpoise have been reported in association with the use of active sonar. The disorientation and unusual behavior patterns in whales, porpoise, and many other various marine mammals have been reported in association with the use of active sonar. With the vast marine and endangered species that inhabit the Gulf of Alaska the use of active sonar in any degree is unacceptable. The No Action Alternative is the only option.	While it is true that acoustic exposures can indirectly kill marine mammals, the sound source has to be very loud and the animal very close for this to be a direct effect. Navy sonar training minimizes the chance of marine mammals being present through mitigation measures agreed upon with NMFS. Mass strandings of beaked whales have occurred as described in Appendix F, however, this occurrence is relatively rare and the conditions leading to it happening are not well understood. The Navy has conducted mid-frequency and high-frequency active sonar activities for decades with no indications of injuries to resident beaked whales at training ranges in Hawaii and Southern California. There are no indications for broad-scale impacts that are either injurious or of significant biological impact to marine mammals and the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS.
Carolyn Ramsey - 6		The temperatures of the Gulf of Alaska range from approximately 40-50 degrees, due to these cold temperatures it will take the expended ordinances hazards material much longer to degrade and dissipate therefore placing the marine ecosystem in the Gulf of Alaska in even greater danger for an even longer period of time. Again this is another reason Alternative 1 and Alternative 2 are unacceptable. The No Action Alternative is the only option.	Cold water would reduce the rate of corrosion and breakdown of expended materials (Bayliss et al. 1988), resulting in lower concentrations of hazardous materials in surrounding water quality. Water currents would disperse leaching materials, and would not result in toxicity around expended materials, as discussed in Sections 3.2.1.1 and 3.2.2. Text on the effects of temperature on the rate of corrosion has been added to Section 3.2.1.1 of the Final EIS/OEIS.

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Carolyn Ramsey - 7		I suggest that the U.S. Navy continue its development of interactive computer simulation software and hardware that can be used to train its sonar technicians. This will assist in limiting the damage done to the earth's marine life. Man-kind has been doing irrefutable damage to our earth and the life that inhabits it for many years. The damage to the ecosystem is growing each and every day.	Navy and Marine Corps training already uses of computer-simulated training and conducts command and control exercises without operational forces (constructive training) whenever possible. Increased simulation of ASW warfare does not meet the necessary requirements to maintain proficiency. Simulation training as an Alternative was considered, but eliminated in Section 2.3.2.4.
Carolyn Ramsey - 8		While I understand the United States Navy needs to train it personnel, the risk of further damage to Alaska's fragile marine environment must be kept at a minimum. This is why the No Action Alternative is the only acceptable option. Respectfully, Carolyn Ramsey.	This comment is duly noted.
Carl Ranney		I think that the shelling in the gulf won't have any major effects on the wildlife. In fact I think that the fragments from the destroyed ship if it land on flat sea bed will actually provide fish habitat.	This comment is duly noted.
Kris Ranney	Boyscouts	I was wondering if the sinking of ships in the Gulf would affect the halibut population there. As far as I know the area where you will sink ships is also home to this deep water fish species, most leave for the warmer shallow waters closer to shore in the summer but the larger fish do not come as close, some may stay over the shelf. It takes 25 years for on of these fish to go over 100 pounds, if you hit and killed a 600 pound fish it would take hundreds of years to replace!	Regulations involving SINKEX require the activities take place more than 50 miles from the coast and in over 1,000 fathoms of water, which is beyond the continental shelf. It is extremely unlikely there would be impacts to halibut as a result of conducting a SINKEX event.
Libby Riddles - 1	Blazing Kennels	Dear Mrs. Burt, I urge you to reconsider doing especially sonar testing in the Gulf of Alaska between Prince William Sound and Kodiak and also in the Seward area. Our ocean wildlife takes enough of a hit between [the following:] the occasional oil spills, the over-fishing, the acidification of the ocean, and other factors. Adding unreasonable risks to animals like sea lions, whales, seals, sea otters and other marine wildlife including the fish just doesn't make any sense.	The Navy shares your concern for marine resources The Navy is a leader in funding research to better understand marine species so that training activities can be conducted with the least possible impacts. Chapter 3 of the EIS/OEIS provides the details of the Navy's analysis and demonstrates that there is little relative risk to living marine resources from sonar use or other training exercises as proposed in the Final EIS/OEIS. Regarding an alternate location, please see response to Carolyn Ramsey – 2. Regarding oil spills, the TMAA is many miles distant from and does not include Prince William Sound where the Exxon spill occurred. In addition, Chapter 22 of OPNAVINST 5090.1C provides specific guidance on how Navy vessels underway must handle oil and oily wastes (Section 22-5 of OPNAV INST 5090.1C), hazardous materials (Section 22-6), solid wastes (Section 22-7) and medical wastes (Section 22-8). Additionally, Section 22-9 of OPNAVINST 5090.1C provides

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			very specific guidance on the requirements for preparing for and dealing with any oil or hazardous substance spills
Libby Riddles - 2	Blazing Kennels	Sonar has been proven to be very stressful to mammals that use it for navigation especially, making them prone to beaching and other health issues we are just beginning to understand.	The Navy shares your concern for marine life. All of the possible effects you describe were analyzed in the EIS/OEIS. Also, as described in the EIS/OEIS, the Navy implements protective measures during its training exercises. The Navy is a leader in funding marine mammal research to better understand them and to operate with the least possible impacts.
Libby Riddles - 3	Blazing Kennels	We depend on these animals for subsistence, and also for the tourist trade, and they deserve to exist in their own right without unnecessary harassment.	Please see response to Libby Riddles – 1.
Libby Riddles - 4	Blazing Kennels	Please reconsider doing your practice sessions in areas that are not so sensitive to ocean wildlife, and the people that depend on them.	As described in Section 2.3.2.1, the Navy considered, but rejected, other alternatives because they failed to meet the purpose of and need for the proposed action. Regarding an alternate location, please see response to Carolyn Ramsey – 2.
Libby Riddles - 5	Blazing Kennels	Explosives and sinking ships in this area seems like a really bad ideas as well, for the same reasons. Thanks you for your consideration, Libby Biddles, Iditarod Champion Alaska Resident since 1973	The Draft EIS/OEIS thoroughly analyzes the impacts from proposed Navy training activities. Additionally, please see response to AMCC – 8. Regarding a SINKEX, the vessels are treated in accordance with EPA-mandated standards. Materials that could degrade the marine environment are removed to the maximum extent possible. The SINKEX permit is described in Section 3.2.2.2.
Richard Steiner - 1	Professor, Univ of Alaska Marine Advisory Program	I strongly recommend that the exercises be re-located farther offshore, to minimize impact to the shelf ecosystem. At a minimum, no potentially impactful activities should be conducted over or near the continental slop or shelf (shallower than 1000 fm or 2000 m depth).	Anti-Submarine Warfare (ASW) training remains one of the Pacific Fleet's (and the Navy's) highest priority requirements. For the U.S. Navy, the ability to conduct ASW in a variety of environment and bathymetric conditions, including in the vicinity of canyons and in the littorals is critically necessary in order to fight the growing submarine threat. The canyon allows a submarine to hide in an area that is shadowed by the canyon walls because the active transmission cannot reach the sub via the bottom bounce path. The littorals are important due to reduced maneuvering and the unique sound propagations in shallower water. Regarding an alternate location, please see response to Carolyn Ramsey – 2.
Richard Steiner - 2	Professor, Univ of Alaska Marine Advisory Program	As well, all activities should be conducted only from October - February to minimize impacts on seasonal migrant marine mammals and birds.	In Section 2.3.2.3 of the EIS/OEIS, the alternative of training during winter in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further.

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Richard Steiner - 3	Professor, Univ of Alaska Marine Advisory Program	I recommend that any such exercises be conducted outside of 200 n. miles from shore, and only in winter, thereby minimizing impact on seasonal resources.	Regarding an alternate location, please see response to Carolyn Ramsey – 2. Additionally, such alternatives fail to meet the purpose of and need for the proposed action as an increase in the distance from shore would not allow for effective joint training. Additionally, as stated above, in Section 2.3.2.3 of the EIS/OEIS, the alternative of training during winter in the GOA TMAA was considered. However, unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further.
Richard Steiner - 4	Professor, Univ of Alaska Marine Advisory Program	As well, independent marine mammal observers need to be included to clear the safety zone, a large zone needs established (at least to verify no harmful exposure to noise) and no exercises should be conducted.	Please see the discussion in Section 5.2.1.6 which details the reasons why the previously proposed use of third party observers and a larger safety zone have been eliminated from further consideration. Also note, Sections 5.2.1.3 and 5.2.1.4 discuss the monitoring has been proposed as part of a coordinated research program to help determine the effects of exposure to marine species from Navy training activities.
Stacy Studebaker - 1		Dear Mrs. Burt, The Navy visited Kodiak on Jan. 7 to brief the community on its proposed increase of training activities in the Gulf of Alaska (GOA) Temporary Maritime Activity Area (TMAA) which encompasses 42,146-square nautical miles just to the north of Kodiak Island. What least impressed me about the meeting was the Navy's arrogance and the lack of data in its presentation.	This comment is duly noted.
Stacy Studebaker - 2		I'm all for the readiness of our military, but not at the expense of vast amounts of marine life and the health of our immediate ocean environment upon which our community makes its living.	The Navy shares your concern for marine life and has conducted a thorough analysis of potential effects from its proposed activities in Chapter 3 of the EIS/OEIS. Specifically, those effects to marine life in Sections 3.5 through 3.9, water and sediment quality in Section 3.3, and economy in Section 3.12 have been analyzed. The Navy is confident, and the analysis indicates, that its training activities will not significantly impact the resources you mention.
Stacy Studebaker - 3		With our ocean's health and its ability to sustain life already compromised from so many other factors, the cumulative impacts, which you barely address, of these training activities in our area may cause irreparable harm to ocean life and losses to our local economy.	Effects of past, present and planned Navy activities have been discussed in Chapter 4; Cumulative Impacts. For the purposes of determining cumulative effects in this chapter, the Navy reviewed environmental documentation regarding known current and past Federal and non-Federal actions associated with the resources analyzed in Chapter 3. Additionally, projects in the planning phase were considered, including reasonably foreseeable (rather than speculative)

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			actions that have the potential to interact with the proposed Navy action.
Stacy Studebaker - 4		At the meeting the Navy discussed the 900-page Draft Environmental Impact Statement that it has been preparing for the last two years. It is now being circulated for public review. The EIS was boiled down to a few information bullets on posters stating nothing the Navy is planning to do in its exercises in the GOA would have any significant impacts on the environment! Any data upon which the Navy could make such unscientific claims were absent on the posters or in the presentation and woefully inadequate in the 900 page document.	The Navy believes that we have fairly and reasonably identified possible environmental impacts from our Navy training in the TMAA in our EIS/OEIS. Thank you for your participation in this public comment process.
Stacy Studebaker - 5		The Navy's proposed training activities in the GOA would pose significant risk to whales, fish, and marine birds that depend on the area for breeding, feeding, navigating, and avoiding predators, in short, for their survival.	All species in the range of influence of Navy activities in the GOA have been analyzed for individual and population level effects. The EIS/OEIS analyzes in detail the effects of Navy actions on specific resources and has determined that there would be no significant harm to marine mammals, fish, or birds. With regard to cumulative impacts, while marine mammals, fish, and birds may be affected, Navy activities will not present significant cumulative impacts to individual species, or to populations.
Stacy Studebaker - 6		Many exercises would employ mid-frequency active sonar, used to locate submarines, which has been implicated in mass injuries and mortalities of whales around the globe. The same technology is known to affect marine mammals in countless other ways, including inducing panic responses, displacing animals and disrupting crucial behavior such as foraging.	Please see the full analysis of marine mammal strandings in Appendix F of the EIS/OEIS – Cetacean Stranding Report. The report discusses the various stranding occurrences around the world.
Stacy Studebaker - 7		The Navy estimates that its sonar training exercises in the GOA from its Preferred Alternative (Alternative 2) will result in more than 424,620 marine mammal "takes" (behavioral impacts, harassment, injury, death) every year. That's more than 2.125 million takes during the course of the Marine Mammal Protection Act permit it must seek from National Oceanic and Atmospheric Administration. Those numbers don't even account for the animals that die as a result of your experiments and quickly sink to the bottom. How can the Navy claim a FONSI on marine mammals when you are applying for such a permit?	Please see response to Greg Brown – 1.
Stacy Studebaker - 8		In all, the Navy expects to "take" more than 20 different species of marine mammals, including seven endangered	There are three known species of beaked whales in the TMAA and these are covered in Sections 3.8.4.1, 3.8.4.2, and 3.8.4.9

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		species, in the GOA. Beaked whales are barely mentioned because very little is known about them or their habitats. There may be many species of these small whales in the GOA. They dwell in deeper waters in trenches where they feed on squid and are very vulnerable to sonar because of the natural amplification and concentration of sound in marine canyons. Since they can stay underwater for up to 2 hours, it is impossible to mitigate harm to them with visual monitoring from the deck of a ship. They are among the most vulnerable and you have barely mentioned them.	with additional information provided in Appendix F concerning information specific to stranding incidents. Navy recognizes it is very difficult to detect beaked whales and the estimated exposures are not reduced by any potential for mitigation as a result. Please note that the U.S. Navy has conducted mid-frequency and high-frequency active sonar activities for decades in areas such as Southern California and Hawaii where recent research has documented the long term presence of beaked whales with no apparent impact to those animals. For further information on beaked whales and sonar, please see response to MMC – 17.
Stacy Studebaker - 9		The Navy's expanded training activities in the GOA also would affect fisheries and essential fish habitat, damage hard bottom habitat, and release into coastal waters a variety of hazardous materials such as spent rounds of ammunition and unexploded ordnance containing chromium, chromium compounds, depleted uranium and other hazardous materials. The report estimates an extraordinary amount of spent material will result from Preferred Alternative (Alternative 2) including a large increase in the weight of expended materials (352,000 pounds) and 10,300 pounds of hazardous material.	All hazardous materials associated with Navy training activities would be expended in the TMAA, which is beyond 12 nautical miles from the closest shoreline. With regard to expended and hazardous materials, please see response to AMCC - 15. With regard to depleted uranium, please see response to Carolyn Heitman - 44. Furthermore, on Aug 2nd, 2010, the Navy submitted an Essential Fish Habitat Assessment (EFHA) to NMFS for analysis of impacts of its proposed activities upon the habitat.
Stacy Studebaker - 10		That does not include entire ships the Navy plans to sink as part of its exercises.	Ship hulks used for SINKEXs would vary in weight, and estimation of the ship's weight across 8 square nautical miles would not be accurate. A SINKEX permit from the EPA would require removal of hazardous materials from ship hulks prior to sinking. Based on comments by EPA on the Draft EIS/OEIS, additional text regarding removal procedures and remaining amounts of PCBs has been added to Section 3.2.2.2 of the Final EIS/OEIS.
Stacy Studebaker - 11		No data were presented on the impacts of sonar on fish and in particular, schools of salmon that swim directly through the test area.	Section 3.6 (Fish) of the EIS/OEIS thoroughly analyzed impacts to fish, including salmon, from proposed Navy training activities, including sonar. The EIS/OEIS concludes that there is no significant impact to population levels of fish.
Stacy Studebaker - 12		Nearly all of the mitigation measures the Navy has proposed for the GOA concern the operation of a small "safety zone" around the sonar ship. Yet it is widely agreed in the scientific community that this measure is inadequate given the far-reaching effects of Navy sonar and the difficulty of spotting marine mammals from fast-moving vessels by a few people standing on the deck with binoculars. Most fishermen would agree that it is impossible, even under the best conditions in	Please see response to Katherine McLaughlin – 5 & 6.

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		the open ocean, to spot anything on the surface of the ocean. The Navy is not planning to establish any protection areas in the GOA, despite the broad recognition that geographic protection zones are the most effective available means to mitigate sonar's impacts on marine wildlife.	
Stacy Studebaker - 13		For example, no protection areas are proposed for harbor and Dall's porpoises, which are acutely sensitive to sound; for endangered gray whales, which migrate directly through the TMAA; for endangered humpback whales, sei and blue whales, which gather to feed in the TMAA; or for the critically endangered short-tailed albatross or North Pacific right whales, whose critical habitat is directly adjacent to the TMAA.	Regarding protection areas, please see response to Katherine McLaughlin – 6. Regarding the short-tailed albatross, please see response to Greg Brown – 17.
Stacy Studebaker - 14		The Navy underestimates the number of marine mammals, fish and birds that will be harassed, injured and killed because it simply does not have the density estimates needed in order to accurately make this determination. The National Environmental Policy Act (NEPA) specifically requires federal agencies to obtain the data necessary to their analysis. Here, the Navy failed to obtain data that is essential to its analysis. In addition, there are simply no reliable estimates for current or historical abundance numbers for many of the affected marine mammals in the GOA. How can you claim "Finding of No Significant Impact" when you don't even know what's there?	Please see response to AMCC - 8.
Stacy Studebaker - 15		The Navy does not attempt to address the effects of sonar and contaminants on plankton, the very base of our marine food chain and only briefly addresses the cumulative impacts on the marine ecosystem.	Effects of Navy training exercises on plankton are described in Marine Plants and Invertebrates, Sections 3.5.2.3 and 3.5.2.4.
Stacy Studebaker - 16		The Navy's alternative analysis also is inadequate. The Navy only presents three options; No Action Alternative - maintaining the present levels of training without sonar, Alternative (1) - add more training with sonar, or Alternative (2) - add even more intensive training with a lot more sonar. It does not consider any other alternatives, some employed by the Navy itself in other training exercises and ranges.	Please see response to AMCC – 4.
Stacy Studebaker - 17		Finally, and most critically, the Navy does not offer adequate measures to mitigate the harmful effects of sonar. Its proposed mitigation measures basically boil down to "safety zones" (1,000 yard power-down and 200 yard shut down) around the sonar maintained primarily by on-board visual	Please see response to AMCC - 7.

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		monitors. These are the same measures that federal courts have found to be "woefully inadequate and ineffectual." For instance, studies show that visual monitoring only spots about 5 percent of marine mammals. Statistically, a 5 percent "success" rate clearly does not cut it.	
Stacy Studebaker - 18		In conclusion, there is no scientific basis for the claims you make that nothing you are proposing to do in your test area, and in our back yard, will have any significant impacts on marine life. You are coming to Alaska to test this deadly technology because you have been legally blocked from doing so in other states and your assumption is that you can get away with it here because of our small, scattered population that won't put up much of a fuss. Please don't do any more harm to our ocean and adopt the No Action Alternative. Sincerely, Stacy Studebaker Stacy Studebaker is a biologist, a 3D-year Kodiak resident and coordinator of The Kodiak Gray Whale Project.	The Navy has not been blocked from training with active sonar in any areas of the ocean and is seeking to continue joint training in the waters of the proposed TMAA because an alternate location for Navy training in the ATAs that meets the purpose of and need for the Proposed Action does not exist. For additional information on an alternate location, please see response to Carolyn Ramsey – 2. The purpose and need of the proposed action can be found in Chapter 1 of the EIS/OEIS. In summary, in order to implement its Congressional mandates, the Navy needs to support and conduct current and emerging training activities in the GOA ATA's and upgrade or modernize training capabilities to enhance and sustain Navy training. These objectives are required to provide combat capable forces ready to deploy worldwide in accordance with U.S.C. Title 10, Section 5062.
Suzanne Torian - 1		I am categorically opposed to the Gulf of Alaska navy Training activities as proposed. Please do not allow this activity to proceed. Suzanne Torian	This comment is duly noted.
Trustees For Alaska - 1		**Trustees for Alaska** Re: Comments on Gulf of Alaska Navy Training Exercises Draft Environmental Impact Statement/Overseas Environmental Impact Statement. On behalf of the Alaska Community Action on Toxics, Alaska Marine Conservation Council, Center for Biological Diversity, Cook Inletkeeper, Kodiak Audubon Society, Kodiak Gray Whale Project, North Gulf Oceanic Society, Prince William Soundkeeper, and Turning the Tides, Trustees for Alaska submits the following comments on the Navy's Draft Environmental Impact Statement/Overseas Environmental Impact Statement for proposed Gulf of Alaska Training Exercises.[1] The Navy proposes a series of training exercises in the Gulf of Alaska (GOA) and Alaska's inland training areas, collectively referred to as the Alaska Training Areas (ATA). Within the ATA, the Navy has delineated the GOA Temporary Maritime Activity Area (TMAA), a 42,146 square nautical miles (nm) zone south of	For EISs that propose a new tempo of current training, the no-action alternative is seen as the current management level of asset usage-in this case, status-quo as the current level of training area usage. For further information, please see response to AMCC – 4.

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		Prince William Sound and east of Kodiak Island. The purpose of the Proposed Action is to achieve and maintain fleet readiness using the ATA to support and conduct current, emerging, and future training activities. Gulf of Alaska Navy Training Exercises Draft Environmental Impact Statement/Overseas Environmental Impact Statement (DEIS/OEIS) at 1-2. The need for the Proposed Action is to enable the Navy to meet its statutory responsibility to organize, train, equip; and maintain combat-ready naval forces and to successfully fulfill its current and future global mission of winning wars, deterring aggression, and maintaining freedom of the seas. Id. The DEIS/OEIS only considers three alternatives, including the no action alternative. With regards to actions in the TMAA, the two action alternatives only differ in the number of exercises (with Alternative 2, the preferred alternative, including a second' 21-day training exercise in the GOA) and the addition of a sinking exercise under Alternative 2. [1] Trustees for Alaska incorporates by reference comments submitted by other government agencies, individual scientists, environmental organizations and the public.	
Trustees For Alaska - 2		The Navy estimates that its sonar training exercises in the GOA from its Preferred Alternative (Alternative 2) will result in more than 424,620 marine mammal "takes" (behavioral impacts, harassment, injury, death) every year. DEIS/OEIS at 3.8-147. Over the course of the five year Letter of Authorization (LOA) permit, to be issued under the Marine Mammal Protection Act (MMPA), total take would exceed 2.125 million. In all, the Navy expects to "take" more than 20 different species of marine mammals, including 7 endangered species, in the GOA.	Regarding "takes" please see response to AMCC – 8. Regarding exposure methodology exposure, please see response to Katherine McLaughlin – 4.
Trustees For Alaska - 3		1. The Navy's proposed exercises and the use of mid-frequency sonar pose unacceptable harm to marine mammals and the Navy has failed to fully assess available mitigative measures. Trustees for Alaska fully supports the comprehensive comments submitted by the Natural Resources Defense Council regarding the impact of the proposed use of mid-frequency active (MFA) sonar on marine mammals in the GOA. Trustees for Alaska reiterates, briefly, the major concerns with mid-frequency sonar use in the GOA and the	The Navy fully analyzed potential impacts to marine life in section 3.8 (Marine Mammals) of the EIS/OEIS. The analysis concludes that there is no significant impact to population levels of marine mammals. Section 5.2.1.3 describes monitoring planning for the TMAA. The Navy has begun an Integrated Comprehensive Monitoring Program for all its Range Complexes as a condition to permitting under the Marine Mammal Protection Act. The Integrated plan and the Range Complex specific monitoring plans are available on the NMFS Office of Protected Resources website. The results from

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		lacking DEIS/OEIS analysis of impacts from the training exercises in the GOA.	those monitoring efforts will be provided by the Navy to NMFS and posted on the website as well. A monitoring plan for Navy activities in the TMAA will also be implemented with the research aims and timing tailored to questions that could be answered by studies done in the Gulf of Alaska area. As described in the EIS/OEIS, the Navy implements protective measures during its training exercises. These protective measures are effective at mitigating, not eliminating, risk to marine mammals. Based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy feels its protective measures are adequate.
Trustees For Alaska - 4		First, nearly all of the mitigation measures that the Navy has proposed for the GOA concern the operation of a small "safety zone" around the sonar ship. Yet it is widely agreed in the scientific community that this measure is inadequate given the far reaching effects of Navy sonar and the difficulty of spotting marine mammals from fast moving vessels.	Regarding safety zones, please see response to Katherine McLaughlin – 5.
Trustees For Alaska - 5		Second, the Navy has not proposed to establish any protection areas in the GOA, despite the broad recognition that geographic protection zones are the most effective available means to mitigate sonar's impacts on marine wildlife. For example, no protection areas are proposed for harbor porpoises, which are acutely sensitive to sound; for endangered gray whales, which migrate directly through the TMAA; for endangered humpback whales and blue whales, which gather to feed in the TMAA; for the critically endangered North Pacific right whale, who's critical habitat is directly adjacent to the TMAA; or for any other species or habitat.	Regarding protection areas, please see response to Katherine McLaughlin – 6.
Trustees For Alaska - 6		Third, the Navy's acoustics impact analysis ignores scientific studies contrary to its interests and uses methodologies not supported by the scientific community. Thus, the thresholds it sets for permanent injury, temporary injury (hearing loss) and behavioral change are invalid as a matter of science. For instance, in setting its thresholds at 195 dB for harassment and temporary injury and 215 dB for permanent injury and death, the Navy ignores a 2004 study by Nowachek et al which found that right whales respond to	Please see response to Katherine McLaughlin – 9.

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		mid-frequency sound below 140 dB (the sound caused them to stop eating and ascend rapidly to just below the surface, making them extremely vulnerable to ship strikes).	
Trustees For Alaska - 7		Finally - and most critically - the Navy does not set forth adequate measures to mitigate the harmful effects of sonar. Its proposed mitigation measures basically boil down to "safety zones" (1,000 yard power-down and 200 yard shut down) around the sonar maintained primarily by on-board visual monitors. See DEIS/OEIS at 5-12. These are the same measures that federal courts have found to be "woefully inadequate and ineffectual." Natural Resources Defense Council v. Winter, 527 F.Supp.2d 1216, 12211222 (C.D.Cal. 2008). Studies indicate that visual monitoring only spots about 5% of marine mammals. Statistically, a 5% "success" rate is absolutely insufficient to be considered an effective mitigative measure. The DEIS/OEIS is also inadequate because it fails to acknowledge that the Navy has employed other more successful mitigation measures during previous training. These measures (which include some of the same mitigation measures environmental conservation organizations have supported but the Navy now claims cannot be employed) include siting exercises beyond the continental shelf and Gulf Stream, relocating exercises out of important habitat and to avoid certain species, and using a technique called "simulated geography" to avoid canyons and nearshore areas on at least three of its major ranges. The Navy has also restricted sonar use at night when marine mammals are harder to detect, as well as minimized the use of sonar from multiple sources at the same time. Although Chapter 5 of the DEIS/OEIS describes "alternative mitigation measures considered but eliminated," it fails to explain why these measures are not employable when they have been adopted and successfully implemented in the past. See DEIS/OEIS at 5-28. The Navy's claim that it cannot implement more protective mitigation measures is therefore unsupported by the DEIS/OEIS.	Please see response to AMCC – 7.
Trustees For Alaska - 8		2. The OEIS/OEIS fails to take the requisite "hard look" at the impacts of the proposed action on endangered species and critical habitat. Several endangered and threatened species may occur within in the TMAA including: various listed salmonids (Chinook salmon, coho salmon, chum salmon, sockeye	Chapter 3 of the EIS/OEIS provides an analysis of the proposed action with regard to marine life within the TMAA. With regard to Endangered Species, Sections 3.6 (Fish), 3.7 (Sea Turtles), 3.8 (Marine Mammals), and 3.8 (Birds) provide details (including Critical Habitat) for each of these marine species. Please note, none of the sea turtles mentioned in the

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		salmon, and steelhead), various sea turtles (leatherback, loggerhead, green, and olive ridley), blue whales, fin whales, humpback whales, sei whales, sperm whales, North Pacific right whales, stellar sea lions, and short-tailed albatross. The DEIS/OEIS fails to adequately assess the impacts of the proposed action on endangered species, nor how adverse impacts will be minimized and mitigated.	comment, except leatherbacks which were analyzed in detail, are likely to be present in the TMAA (as discussed in Section 3.7, pages 3.7-1 and 3.7-2). Chapter 4 presents the potential cumulative impacts on these species. With regard to how adverse impacts will be minimized and mitigated, please See Chapter 5, Sections 5.1 through 5.2.1.2 (inclusive). Regarding the short-tailed albatross, please see response to Greg Brown – 17.
Trustees For Alaska - 9		The DEIS/OEIS fails to provide a proper analysis of the serious impacts its sonar training and expended materials will have on the critically endangered North Pacific right whales, whose critical habitat is only 12 nautical miles from the TMAA or the endangered gray whales, which migrate through the TMAA.	As noted in previous responses, the Navy's analysis of sonar and expended materials (Sections 3.8 and 3.2 of the EIS/OEIS respectively) indicates that the Proposed Action will not affect populations of North Pacific right or gray whales in the TMAA.
Trustees For Alaska - 10		3. The DEIS/OEIS fails to provide a satisfactory analysis of impacts, based on complete data. The OEIS/OEIS underestimates the number of marine mammals (and fish) that will be harassed, injured and killed because the Navy simply does not have the density estimates needed in order to accurately make this determination. The National Environmental Policy Act (NEPA) specifically requires federal agencies to obtain the data necessary to their analysis. The simple assertion that "no information exists" does not excuse the Navy from conducting the requisite analysis to fully understand the impacts of its proposed action and make a reasoned choice amongst its alternatives. See 40 C.F.R. § 1502.22(a) (unless the costs of obtaining the information are exorbitant, NEPA requires that it be obtained). The Navy failed to obtain data essential to its analysis. The Navy itself admits that it has no density estimates for endangered blue whales, North Pacific right whales, sei whales, sea turtles, California sea lion, harbor porpoise, and harbor seal.3.7-2 and 3.8-109. In addition, there are simply no reliable estimates for current or historical abundance numbers for many of the affected marine mammals in the GOA. Despite the lack of survey/density data, the Navy simply estimates that only 1 blue whale, 1 North Pacific right whale and 4 sei whales may be harmed by its use of sonar because of the "rareness" of those whales. NEPA requires more. It requires these surveys to be completed and included in the impacts analysis.	Please see response to AMCC – 8.

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Trustees For Alaska - 11		4. The DEIS/OEIS cumulative impacts analysis fails to provide quantified and detailed information about other activities that may cumulative impact the environment, including marine mammals and fish. The DEIS/OEIS cumulative impacts analysis is inadequate because it fails to provide the requisite quantified and detailed information about other activities and associated impacts. Table 4-1 simply lists projects that could have potential cumulative impacts with the proposed activity in the GOA without actually analyzing what those impacts will be. NEPA requires that agencies provide quantified and detailed information about past, present and reasonably foreseeable projects that support an analysis of the impacts associated with those other projects. Table 4-1 fails to provide the requisite detail or an analysis of how these other projects cumulative impact the environment.	The cumulative impacts analysis addresses the environmental impacts that result from the incremental impact of Navy activities when added to the past, present, or reasonably foreseeable future actions that affect the same resources. Table 4-1 succinctly depicts the categories of past, present, and reasonably foreseeable future actions that affect cetacean and fish populations. Identifying such activities and in fact comparing them for relative impacts is an appropriate approach to cumulative impacts analysis, which is what was done in Chapter 4, Section 4.2. The EIS/OEIS does more than simply compare activities; it analyzes in detail the effects of Navy actions on specific resources and places those in the context of other sources of impacts. With regard to marine mammals and fish, the cumulative impacts analysis accurately concludes that Navy activities, while they may affect species, will not present significant impacts, or population level impacts to any species.
Trustees For Alaska - 12		5. The DEIS/OEIS range of alternatives is inadequate. The Navy's range of alternatives is far too narrow in scope and has improperly failed to consider other reasonable alternatives. The Navy only considers three alternatives: the no-action alternative (maintain the status quo); increase training activities to include the use of active sonar, and; increase training activities to include the use of active sonar, conduct one additional summertime CSG exercise annually beyond that in Alternative 1, and sink up to two ships with a variety of ordnance. In other words, the DEIS/OEIS considers no action, increased training with sonar, and even more training with sonar and exercises that involve sinking vessels. The DEIS/OEIS fails to consider any other alternatives such as training measures that do not include MFA. Alternatives that include increased training with sonar and even more increased training with sonar do not amount to a "reasonable range of alternatives," as required by NEPA.	NEPA regulations both require analysis of a no-action alternative and provide that in situations involving ongoing activities, as with Navy actions in the GOA ATAs, that it is appropriate for the no-action alternative to reflect a baseline of ongoing actions. For EISs that study management levels of Federal assets, the no-action alternative is seen as the current management level of asset usage-in this case, status-quo as the current level of range usage. The no-action alternative can be thought of in terms of continuing with the present course of action until that action is changed. (46 Fed Reg 18026, at 18027). Alternatives 1 and 2 discuss the increase from these levels. This is the approach properly taken in developing alternatives for this EIS/OEIS. (See #3 of CEQ's Forty Most Asked Questions). The Navy has discussed all alternatives that were considered but eliminated because they did not meet the purpose and need in Section 2.3.2 and the consideration of the no-action alternative, alternative 1, and alternative 2 within Chapters 3 and 4 ensures the Navy's compliance under NEPA. The purpose and need of the proposed action can be found in Chapter 1 of the EIS/OEIS. In summary, in order to implement its Congressional mandates, the Navy needs to support and conduct current and emerging training activities in the GOA ATA's and upgrade or modernize training capabilities to enhance and sustain Navy training. These objectives are required to provide combat capable forces ready to deploy worldwide in accordance with U.S.C. Title 10, Section 5062.

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Trustees For Alaska - 13		The stated purpose of the Proposed Action is to achieve and maintain fleet readiness using the ATA to support and conduct, current, emerging, and future training activities. DEIS/OEIS at 1-2. The need for the Proposed Action is to enable the Navy to meet its statutory responsibility to organize, train, equip, and maintain combat-ready Naval forces and to successfully fulfill its current and future global mission of winning wars, deterring aggression, and maintaining freedom of the seas. Id. Nothing within-the purpose and need statement asserts that all action alternatives must include midfrequency sonar use. Training exercises without the use of mid-frequency sonar could take place and still meet the purpose and need and the set of criteria used to identify whether a possible alternative meets the purpose of and need for the Proposed Action. See DEIS/OEIS at 2-14 to 2-14; see also Letter from Nova Blazej, Manager, Environmental Review Office, EPA to Tom Clements, Public Affairs Officer, Pacific Missile Range Facility, Re: FEIS/OEIS for the Hawaiian Range Complex, June 10, 2008 (EPA recommended additional alternatives be evaluated and a more precautionary approach be taken regarding the use of mid-frequency active (MFA) sonar in training exercises due to the substantial uncertainty of these impacts on marine resources). As a result, the current two action alternatives do not represent an adequate range of reasonable alternatives.	Anti-Submarine Warfare (ASW) training remains one of the Pacific Fleet's (and the Navy's) highest priority requirements. Through NEPA and associated processes, the Navy is seeking the authorization to conduct ASW training using active sonar in the Gulf of Alaska. Since the 2008 letter that is referenced, monitoring and research during Navy training events has resulted in considerably less uncertainty regarding the use of sonar and potential impacts on marine resources. Please see response to Trustees For Alaska – 7 above regarding monitoring reports. In addition, the Navy has conducted mid-frequency and high-frequency active sonar activities for decades on training ranges on the East Coast or in Hawaii or Southern California where populations of resident beaked whales appear to thrive, with no indications of injuries to marine mammals. There have been no indications for broad-scale impacts that are either injurious or of significant biological impact to marine mammals and the Navy’s analysis for the Gulf of Alaska demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS.
Trustees For Alaska - 14		6. The DEIS/OEIS fails to take the requisite "hard look" analysis at the impacts associated with expended materials. The Navy estimates an extraordinary amount of spent material will result from its Preferred Alternative (Alternative 2) in the GOA. The weight of expended materials under Alternative 2 would increase to 352,000 lb(160,000 kg) per year (360-percent increase over the No Action Alternative), with the largest percentage increase from expended sonobuoys. DEIS/OEIS at 3.2-34. Navy training under Alternative 2 would deposit approximately 41lb of expended material per nm2 (5.4 kg per km2) per year over 20 percent of the TMAA. Id. The Navy bases its analysis on an assumption that training under Alternative 2 would remain consistent for a 20 year period. Id. Under this assumption, the Navy would expend approximately 3,520 tons, for a total concentration of approximately 835 lb per nm2 (110 kg per	Please see response under Susan Payne – 7.

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		km2). Id. Breaking down total tons of expended material per run in the TMAA is inappropriate because these materials are not "diluted" or spread across the entire TMAA. The Navy must identify and assess the likely levels of contaminants associated with the expended materials where those materials are to be found.	
Trustees For Alaska - 15		According to the DEIS/OEIS, expended bombs would account for most of the weight of expended materials, but the Navy asserts that the majority of this weight would be relatively inert material used as filler for practice bombs, such as concrete or sand. Id. However the DEIS/OEIS fails to provide any detail with regards to what percentage is inert.	Section 3.2 of the EIS/OEIS, Expended Materials, provides estimates of the quantities of expended materials generated annually by Navy training activities in the GOA. Energetic materials contained in training items (e.g., explosives, propellants, and pyrotechnics) are expected to be consumed (99.997%) during the normal use of the item. Thus, those portions of expended training materials remaining after use (consisting of metals, concrete, sand, etc.) are almost entirely inert. Section 3.2.2 identifies the amount of expended and hazardous material for each alternative, where the difference in the weight of expended materials and hazardous materials would be the amount of inert materials expended, such as concrete, sand, and non-hazardous metals.
Trustees For Alaska - 16		Under Alternative 2, approximately 10,300 lb (4,680 kg) per year of hazardous material would be expended (Table 3.2-19). Id. The DEIS/OEIS fails to provide a full list of the amount of each hazardous material. While the DEIS/OEIS identifies elements associated with “heavy metals," "propellants," "batteries," "explosives," and " "pyrotechnics", 'it is unclear how much of each hazardous substance is released into the environment from the training activities. Specifically, the DEIS/OEIS identifies the following hazardous substances: lead, cadmium, mercury, chromium, zinc, copper, manganese, aromatic hydrocarbons(such as benzene, toluene, and xylene), polycyclic aromatic hydrocarbons (such as naphthalene, acenaphthene, and fluoranthene),aluminum and ammonia propellant grain, arcite propellant grain, potassium hydroxide, lithium chloride, ammonium perchlorate, plastic-bonded explosives (PBX), high-explosive (HE) components, PBX-I06 explosive, PBX (AF)-108 explosive, plastic or other polymer binders, Royal Demolition Explosive (RDX, cyclotrimethylene trinitramine), High Melting Explosive (HMX, cyclotetramethylene tetranitramine), pentaerythritoltetranitrate (PETN), barium chromate, potassium perchlorate, phosphorus, titanium compounds, lead oxide, lead chromate, lead azide, fulminate of mercury,	Please see response to AMCC – 15. Also, additional information on quantities of specific potentially hazardous materials has been provided in the Final EIS/OEIS in Sections 3.2.2.5 and 3.2.2.6. With regard to regulatory compliance, the MPRSA takes precedence over the Clean Water Act in coastal waters and, as noted in the response to NRDC-98 comment, the expenditure of these materials is not “dumping” as defined under MPRSA. The London Dumping Convention specifically excludes warships from compliance.

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		molybdenum, vanadium, columbium, sodium, and nickel. The DEIS/OEIS fails to demonstrate whether the release of these materials, in these concentrations complies with the Clean Water Act, the Ocean Dumping Act, and the London Convention.	
Trustees For Alaska - 17		Trustees for Alaska highlights the following materials and lacking analysis in the DEIS/OEIS as examples of the insufficient analysis of expended materials upon the marine environment. RDX (cyclotrimethylene trinitramine), HMX (cyclotetramethylene tetranitramine) and PETN (Pentaerythritoltetranitrate) are used in bomb, missiles, blasting caps, detonation cords, etc. Most new military explosive are a mixture of RDX, HMX and plastic polymers. DEIS/OEIS at 3.3-14. However, explosives used in the training exercises (e.g. MK-82, MK-83, MK84) are older ordnances and their explosive component contain approximately 80% 2-4-6 trinitrotoluene (TNT) by mass. The toxicity of TNT in marine environments is well documented, and most studies suggest that TNT interferes with reproduction of primary producers. In high concentrations, such as those that could result from unexploded ordnances, TNT profoundly affects the reproduction capabilities of primary producers found in marine sediment. Darrar et el. "Chronic toxicity of2,4,6-trinitrotoluene to a marine polychaete and an estuarine amphipod", Environmental Toxicology and Chemistry. August 1999. The DEIS/OEIS fails to adequately assess the potential impact of TNT and quantify possible concentrations of TNT that would be deposited in the ocean.	Only a small portion of the expended training materials, by weight, would be explosives, and all but trace quantities of explosives byproducts would be consumed during their use (detonation); high-order detonations are approximately 99.997% efficient in converting explosives to non-hazardous inorganic compounds (see Page 3.2-2 of the EIS/OEIS). These trace quantities of byproducts would be quickly dispersed. Byproducts of live ordnance are addressed in Section 3.2 of the EIS/OEIS. The majority of expended materials used in the Proposed Action are heavy objects that will sink to the bottom of the water column. In items that fail to detonate (duds), the explosives and propellants usually are contained within a metal casing. Encrustation and burial in the substrate prevent leaching from expended materials. Any leaching that occurs will be diluted by ocean currents in this very large and dynamic open ocean environment. Thus, high concentrations of TNT or other explosives in marine waters surrounding expended training items are not expected.
Trustees For Alaska - 18		The DEIS/OEIS dismisses impacts associated with ammonium perchlorate on the grounds that the missiles would sink to the bottom of the ocean, where the deleterious effects would be minimized. Because of the large number of missiles being used in SINKEX (up to 28 missiles will be used), further analysis of ammonium perchlorate levels around a SINKEX area are warranted.	Ammonium perchlorate would only be present in missile propellants. Over 99 percent of propellant would be consumed during it use. Section 3.2.1.1 describes the breakdown process of propellant in the marine environment.
Trustees For Alaska - 19		The DEIS/OEIS states that copper thiocynate, a component of the batteries found in sonobuoys, "would also release cyanide, a material often toxic to marine organisms, thiocynate is tightly bound, and will form a salt or bind to bottom sediments. Therefore, the risk from thiocynate is very low." DEIS/OEIS at 3.2-14. The DEIS/OEIS insufficiently addresses the environmental impact of copper	The Navy has studied the release of copper thiocyanate from sonobuoy seawater batteries, and determined that it would achieve a peak concentration of about 0.015 microgram/liter (Department of the Navy 1993). Text describing the anticipated maximum concentration and environmental fate of copper thiocyanate from sonobuoys in the marine environment has

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		thiocynate. The DEIS/OEIS contains only two sentences that address the toxicity of thiocynate. Furthermore, the DEIS/OEIS fails to cite any research that substantiates the claim that "the risk of thiocynate is very low." While the DEIS/OEIS acknowledges that cyanide would leech from batteries containing thiocynate, it fails to provide any information about expected concentrations. This is problematic, as cyanide is extremely harmful, even in low concentrations.	been added to Section 3.2.1.1
Trustees For Alaska - 20		Flourocarbons are a component of sonobuoys. The DEIS/OEIS assert that there will be no adverse effects. DEIS/OEIS at 3.2-32. Fluorocarbons are persistent organic pollutants (POPs), and are resistant to degradation. Therefore, bioaccumulation may occur, and at high concentrations fluorocarbons can interfere with biological processes. Fluorocarbons come in all varieties, some more reactive and harmful than others. The EIS fails to quantify the specific type of fluorocarbons present in sonobouys. While a small amount of fluorocarbons would be released, the DEIS/OEIS must consider the impact of fluorocarbons as POPs, which means they will remain in the marine environment for a long time. The DEIS/OEIS fails to take this into account.	Sonobuoy compasses contain FC-77 Fluorinert® Electronics Liquid. Fluorinert®, according the Material Safety Data Sheet, has insignificant toxicity to aquatic organisms (greater than 1,000 mg/L). Although the fluorinated portions of this compound are resistant to degradation, they would not be expected to concentrate in areas of the TMAA. Text describing the fluorocarbon in sonobuoys has been added to Sections 3.2.1.1 and 3.2.2.4 of the Final EIS/OEIS. For further discussion on bioaccumulation, please see response to CDFU – 9.
Trustees For Alaska - 21		Copper is also a component of sonobuoys. Like fluorocarbons, copper can come in a variety of forms. depending on the type of copper compound (copper sulfide, copper oxide, etc.) it is more or less reactive. The EIS fails to give descript examples of the type of copper that is used to house sonobuoys. Copper can be harmful to primary producers, and in high concentrations bioaccumulation will yield high amounts of copper in fish and other marine organisms. Absent this information, the DEIS/OEIS findings cannot be supported.	The Navy has studied the release of copper thiocyanate from sonobuoy seawater batteries, and determined that it would achieve a peak concentration of about 0.015 microgram/liter (Department of the Navy 1993). Release of copper thiocyanate represents the greatest concentration of copper from expended materials because it soluble. Other forms of copper in sonobuoys would be insoluble. The expected concentration of leaching copper from insoluble forms would be less than that of copper thiocyanate from sonobuoy batteries. Therefore, the concentration of leaching copper from sonobuoys would be substantially lower than EPA water criteria of 1 µg/L. Text describing the anticipated maximum concentration and environmental fate of copper thiocyanate from sonobuoys in the marine environment has been added to Section 3.2.1.1
Trustees For Alaska - 22		Tungsten is found in CIWS (Close-in Weapons Systems). The DEIS/OEIS notes that exposure to tungsten through either inhalation or ingestion poses a threat to humans and other biological organisms. DEIS/OEIS at 3.2-11. Tests performed by Mitchell et. Al in 2001 determined that	Tungsten is a primary component of the CIWS (Close-in-weapons system), which use 20-mm rounds and would not be used in a SINKEX. SINKEX would use 5-inch naval gun shells, which do not contain tungsten. However, text describing the use and fate of tungsten in the marine environment has been

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		tungsten shot ingested by ducks had "[no] deleterious health effects." Id. Recent studies by Strigul et. al. in 2005 suggest that even in extremely low concentrations, tungsten can have a measurable impact on terrestrial ecosystems. See Strigul et. al, "Effects Of Tungsten On Environmental Systems", Chemosphere, Oct. 2005. Even extremely low concentrations, tungsten reduced total peak biomass by as much as 8%. Tungsten primarily impacts primary producers, meaning that tungsten could potentially be toxic to algae and other single-celled organisms. The research cited is irrelevant to impacts associated with the Navy's proposed training exercises because it addresses the effect of tungsten-iron and tungsten-polymer shot in ducks. However, the type of activity the Navy would be practicing would deposit shards of tungsten and tungsten powder directly into the water column, potentially harming primary producers, not larger animals. Research suggests that primary producers are profoundly impacted when tungsten is introduced into an environment, even at low concentrations. The threat to larger animals arises from bioaccumulation, not the type of direct impact assessed by Mitchell et al. This is of special concern for the SINKEX test, which would use large amounts of tungsten rounds in a very small area, potentially yielding a very high concentration of tungsten in the water column. The DEIS/OEIS analysis of tungsten fails to provide expected concentrations of tungsten in the waters surrounding training of exercises such as the SINKEX. The DEIS/OEIS analysis is also-'Wholly inadequate because it fails to address impacts to primary producers and the indirect impacts to the food chain.	added to Section 3.2. For further discussion of bioaccumulation, please see response to CDFU – 9.
Trustees For Alaska - 23		Finally, with regard to specific assessment of hazardous materials, the SINKEX analysis is inadequate for several reasons. Alternative 2 would include two SINKEX training activities. DEIS/OEIS at 3.2-34. This training activity would result in 67,800 lbs of expended material annually. While Table 3.2-23 identifies the types of ordnance used, the DEIS/OEIS fails to quantify the amount of each hazardous waste deposited in the water column.	The SINKEX discussion in Section 3.2.2.6 and Table 3.2-19 contains an estimation of the weight of hazardous materials. All ordnance used during SINKEX would fall within the same types of ordnance already covered under all the alternatives. Those sections contain explanations on the types of hazardous constituents, as well as their fate in the marine environment.
Trustees For Alaska - 24		The DEIS/OEIS acknowledges that an area of hazardous materials of relatively high concentration would be created in a SINKEX, however they fail to define what those concentrations are and fail to provide any supportive analysis for the conclusion that there will be "no measurable	The EIS/OEIS discloses that SINKEXs would result in higher densities of expended materials on portions of the ocean floor compared to other training activities in the TMAA. Those densities, presented in Section 3.2.2.6 of the EIS/OEIS, are less than about 10 pounds per acre. The majority of hazardous

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		impact on the environment." Although the DEIS/OEIS acknowledges that the 67,800 lbs of expended material would likely be concentrated within an 8 nm2 (DEIS/OEIS at 3.2-33) it provides no meaningful assessment of the actual impact to the marine environment in the vicinity of the SINKEX training exercise. As a result, all DEIS/OIES conclusions regarding the SINKEX activity are unsupportable.	materials, by weight, would be heavy metals in bomb and missile casings and naval gun shell projectiles. These materials would corrode, forming a layer of corrosion that would further decrease the rate of leaching. At such densities, the environmental effects of expended items from SINKEXs would not be expected to result in concentrations harmful to marine organisms.
Trustees For Alaska - 25		The DEIS/OIES also generally diminishes the impacts associated with expended materials by stating that "[a]ssuming deposition of expended materials on 20 percent of the TMAA, the increase in density of deposited hazardous materials would be approximately 1.2 lb per nm2 (0.2 kg per km2) per year." DEIS/OEIS at 3.2-34. The DEIS/OEIS does not explain where the 20 percent assumption comes from.	The rationale for this assumption is provided under Expended Materials in Section 3.2.2.3 (page 3.2-19, 4th full paragraph). This is a conservative assumption that likely overstates the potential impacts, rather than diminishing them. It should be noted that the Navy's use of the TMAA would not be uniform. Based on Navy personnel experience, Navy training activities typically only use 20 percent of the available training area. This is a conservative assumption. Training locations in the TMAA may vary based on training requirements.
Trustees For Alaska - 26		Furthermore, as noted above, averaging out lbs/nm fails to provide a proper assessment of the impact from expended materials. Concerns over expended materials from Navy training exercises elsewhere in the United States have also drawn significant criticism from the EPA. For example, in comments submitted by EPA over the Final EIS/OEIS for the Navy's Proposed Training at the Jacksonville Range Complex in North Carolina, EPA noted that the deposition of expended materials and their accumulation over time was identified as the greatest impact of Navy training activities. April 20, 2009 Letter from Heinz Mueller, Chief NEPA Program Officer, EPA to Kelly Proctor, JAX EIS/OEIS PM; see also Oct. 27, 2008 Letter from Heinz Mueller, Chief NEPA Program Officer, EPA to Susan Admire, Naval Facilities Engineering Command, Atlantic Division Re: DEIS/OEIS for the Navy's Proposed Training at the Cherry Point Range Complex in North Carolina. The EPA raised concerns about the direct and cumulative long-term impacts to the aquatic environment associated with the accumulation of these expended materials. Id. The DEIS/OEIS fails to fully identify, discuss and analyze the direct, indirect and cumulative short-term and long-term impacts associated with discarded debris, toxins and hazardous materials. Because the DEIS/OEIS fails to properly assess concentrations of expended materials, including hazardous materials, its subsequent analyses with	Please see response to AMCC – 15. Additionally, cumulative impacts are described in Chapter 4.

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		respect to impacts on marine mammals, fish, marine organisms, etc. is invalid. Additionally, the DEIS/OEIS analysis is lacking with regards to the impacts all expended material may have upon marine organisms and the aquatic food chain into the future. If you have any questions about these comments, please do not hesitate to contact me at 276-4244 x 107. Thank you. Sincerely, Brian Litmans, Staff Attorney	
U.S. Dept of the Interior, Office of Env Policy and Compliance		United States Department of the Interior OFFICE OF THE SECRETARY Office of Environmental Policy and Compliance 1689 C Street, Room 119 Anchorage, Alaska 99501-5126 9043.1 January 25, 2010 ER09/1234 PEP/ANC Dear Mrs. Burt: The U.S. Department of the Interior has reviewed the December 2009 Draft Environmental Impact Statement for the Gulf of Alaska Navy Training Activities. We have no comments to offer at this time. Thank you for the opportunity to comment. Sincerely, Pamela Bergmann, Regional Environmental Officer – Alaska	Thank you for reviewing the document.
Lynn Wilbur - 1		To: Mrs. Amy Burt The following bulleted notes are highlights of my opposition to the United States Navy's proposal to increase training activities, introduce new training platforms, and introduce the use of mid frequency active sonar as outlined in Alternative 2, the preferred alternative in the Draft Environmental Impact Statement for the Northern Edge Training Range in the Gulf of Alaska. While I am also opposed to Alternative 1, I focus on details described in Alternative 2 for the scope of this letter.	This comment is duly noted.
Lynn Wilbur - 2		I do not believe that the Navy has taken a "Hard Look" at the impacts from its proposed training platforms on the air, water, sediments, and marine life in the Gulf of Alaska in alternatives 1 and 2 as required by the National Environmental Policy Act.	The Navy believes it has conducted a thorough analysis of potential effects from all alternatives in Chapter 3 of the Draft EIS/OEIS. The Navy does acknowledge that while additional research or further scientific advances may provide a more definitive analysis, a NEPA document is necessarily based on information available at the time the document is prepared, and the current state of the science. Chapter 4 includes

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			cumulative analysis of all past, present, and reasonably foreseen future projects by the Navy and non-Navy activities. As such, the Navy believes it is in full compliance with NEPA.
Lynn Wilbur - 3		• Air quality-Alternative 2 proposes a 123-fold increase in emissions, including greenhouse gas emissions, and it only qualifies emissions below 3000 feet. It is a well-known fact that airborne pollutants circulate in the atmosphere and sequester in circumpolar regions. The Navy claims that no mitigation is required because "Frequent precipitation probably scavenges from the air any particulates or other pollutants that might be present" (DEIS 3.1-2)-for the Navy to assume that nature will probably clean the atmosphere of pollutants discharged during training exercises is neither acceptable mitigation nor responsible stewardship of the environment.	Air Quality is addressed in Section 3.1 of the EIS/OEIS. Air pollutants above the atmospheric inversion layer (approximately 3,000 feet) were not included in the portion of the analysis that evaluated impacts on ground-level air quality; this approach is recommended by the USEPA. However, all air pollutant emissions of the alternatives were considered when addressing other aspects of air quality, such as emissions of greenhouse gases. The phenomenon of precipitation scavenging both gaseous and particulate pollutants from the atmosphere (and depositing them on the ground or in surface waters) is well documented. Mitigation measures for air quality impacts were not determined to be required (absent any scavenging of pollutants by precipitation) because the air pollutant emissions of the proposed action would not have a significant impact on air quality.
Lynn Wilbur - 4		• Expended materials-Alternative 2 proposes to release hazardous propellants, chaff, tungsten (which is toxic to marine life), fluoride compounds, 150 x the "safe" levels of hydrogen cyanide and heavy metals from missiles, bombs, sonobuoys, unmanned aircraft, etc. into the marine environment. Propellants containing PAH, benzenes, metals, and synthetic materials including PVC plastics will be released into the water column and sediments. The proposal states that these materials will "lodge in oxygen poor sediments, corrode, or become encrusted". The Navy uses environmental impact statements from other Naval training ranges, and letters written from Navy personnel to the National Marine Fisheries Service (e.g. DoN 2008c) to make this assumption; the Navy also refers to its own studies in other geographical regions of the U.S. (e.g. Wilson et al. 2002). I do not see how the Navy can correlate oxygen poor environments in the Gulf of Mexico with the marine environment in the Gulf of Alaska, especially in the absence of any references to meaningful studies undertaken in the GOA.	Oxygen concentrations in sea floor sediments are generally low, whether in the Gulf of Mexico, the Pacific Northwest, or the Gulf of Alaska. This condition is the result of a steady influx of decomposing organic material from the upper portions of the water column and the relatively slow pace of oxygen transport from the surface to the depths of the ocean.
Lynn Wilbur - 5		It is also disturbing that the Navy plans to increase its deployment of sonobuoys by 6000%; PVC and other plastic materials are part of the expendable materials list for sonobuoys.	Please see response to AMCC – 15. Additionally, please note that the Navy does not dump or discharge plastic materials from vessels, in accordance with OPNAVINST 5090.1C (DoN 2007a). Small amounts of plastics associated with training materials would enter the water because of the design of

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		Plastic compounds and other "flotsam" from the sonobuoys will be left in the ocean as well as more than 5,000 pounds of materials expended yearly from bombing and other exercises. With plastics accumulating in the North Pacific Ocean at an increasing rate, and coupled with the harmful effects that are being seen in seabirds and in the food chain, why is the Navy proposing to add to this problem? Navy personnel on hand to answer questions at the public meeting in Juneau were completely unaware that plastic pollution is a current and enormous threat to our oceans. Even if the amount of expended materials proposed in Alternative 2 is a fraction of the total amount of garbage in the oceans today, discarding more hazardous debris and plastics in our oceans and leaving them to accumulate on the bottom or become flotsam is not responsible stewardship.	training items, such as sonobuoys.
Lynn Wilbur - 6		• Fish-the Navy admits that the TMAA encompasses highly productive areas for demersal, pelagic, groundfish, and shellfish stocks. The DEIS references a dated publication (see p. 3.616) to make a case for dismissing the effects of sound and pressure on the lateral line of fish, yet a more recent review by the same author (Hastings et al. 2005 from p. 8-1) suggests that the effects of sound and pressure on the lateral line requires more research and cannot be dismissed. The proposal criticizes the "gray literature" (wording used in Hastings et al. 2005, page 4), yet relies on its own final environmental impact statements, letters, and reviews from Navy biologists to provide the basis for its stock assessments and lack of mitigation effort. Contained in Hastings et al. 2005 is a recommendation for guidelines and criteria for studying the effects of different sound sources on fish. There exist well-referenced, peer-reviewed studies using controls that clearly show the detrimental impact of high intensity sound on the sensory organs of various commercial fish species.	Please see response to CDFU – 7. In addition, the EIS/OEIS represents the best available science and most applicable science on species and distribution. The Navy has taken a hard look through its analysis and has considered competing and contradictory scientific research. Under 40 CFR §1502.22, NEPA allows for recognizing incomplete and unavailable information. Information on species density found in Tables 3.8-1 and 3.8-2 of the EIS was compiled from NMFS Stock Assessments as well as the 2009 GOALs survey and two other vessel surveys in the GOA. Therefore, density data has been generated based on available data in coordination with technical staff from NMFS.
Lynn Wilbur - 7		Is the same mitigation that is used for sea turtles and marine mammals, i.e. using on board spotters, adequate measures for protecting our fish in the Gulf of Alaska? Do we have to rely on fish declines in order to understand the effects of sonar and missile blasts of over 200 decibels on fish, as has happened in the Baltic Sea? Neither a lack of a clear understanding of impacts of sounds on fish before proceeding with the activities as put forth in Alternative 2,	As presented in detail in Chapter 3.6 and as summarized in Section 3.6.4, there may be impacts to individual fish from some activities but there are no anticipated impacts to fish populations. Given that most fish cannot hear mid-frequency sonar (which is for example within the frequency of sonar used by NOAA in acoustic trawl surveys) or high frequency sonar (like fathometers and fish-finders) it is unlikely there will be any impacts to fish from the use of sonar by the Navy in the TMAA.

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		nor an adequate mitigation plan is good stewardship.	
Lynn Wilbur - 8		• Marine mammals-Beaked whales have become a case study for effects of sonar on marine mammals, which was catalyzed by the Bahamas incident in 2000. There are three species of beaked whales in the GOA mentioned in the DEIS, as well as the critically endangered north Pacific right whale and the blue whale. In the DEIS the Navy is using abundance estimates based upon a one day survey, and generalizes results from a comprehensive and well coordinated study of several years duration of cetacean abundance off the coasts of California, Oregon, and Washington (see Appendix E-2) in order to make abundance estimates in the GOA. It is also using depth distribution measurements against the advice of the very author that it cites (see DEIS E-12).	The majority of the information the Navy used regarding marine mammals in the Gulf of Alaska comes from the National Marine Fisheries Service Stock Assessment reports as detailed in Section 3.8.2 and Appendix E of the EIS/OEIS. In 2009, the Navy funded the Gulf of Alaska Line-Transect Survey (GOALS) to better refine the density data and those survey results have been incorporated the analysis in the EIS/OEIS. Regarding use of the dive data for Cuvier's beaked whale (as described in Appendix E, page E-12), the author cautioned about the limits of the data set, not its validity or use and that dataset represents the most complete dataset and thus the best available science.
Lynn Wilbur - 9		The Navy will rely on the use of up to three onboard spotters before commencing shipboard active sonar as part of its mitigation plan; these spotters will be expected to identify and count whales by reading Navy handbooks, watching DVDs, and using a paper wheel yet the DEIS does not indicate that they will receive essential training from qualified, seasoned, and experienced marine mammal biologists. The proposal indicates that the Navy may use aerial spotters, if they are participating in the activity, if it is safe for them to do the survey, and if they have time.	One of the primary jobs of Navy lookouts is to detect and report on any anomalies in the water and therefore their purpose and training is very different than that of biologists. While they are not expected to identify marine mammals to the Species level as some biologists could, it is not a necessary component for implementation of the mitigation measures (except for the case of bow-riding dolphins). Navy lookouts undergo extensive training to include on-the job instruction under supervision of an experienced lookout followed by completion of Personnel Qualification Standard Program that includes the NMFS-approved Marine Species Awareness Training. While the Navy is very confident that its well-trained lookouts will detect marine mammals at the surface, it does not expect that 100% of the animals present in the vicinity of training events will be detected visually or by passive acoustics. The acoustic impact modeling estimates provided in the EIS/OEIS are not reduced as a result of mitigation effectiveness, even though many marine mammals will be detected and sonar exposures will be avoided. Please see chapter 5 for a complete discussion on the Navy's mitigation measures.
Lynn Wilbur - 10		The Navy does not identify or exclude critical cetacean habitat within the TMAA and will potentially be practicing with active sonar less than 25 km from the north Pacific right whale critical habitat.	The Navy fully analyzed potential impacts to marine life, including the North Pacific right whale, in Section 3.8 (Marine Mammals) of the Draft EIS/OEIS. The analysis concludes that there is no significant impact to population levels of marine mammals. Furthermore, as stated previously, the Navy is in full compliance with the Marine Mammal Protection Act and

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			the Endangered Species Act. For more information about the Navy's compliance with these and other regulatory requirements, see Section 6 of the Draft EIS/OEIS.
Lynn Wilbur - 11		If, in the event of an unusual marine mammal stranding and/or death (USE), there will be no immediate correlation made between the sonar activity and the USE, despite scientific evidence that high intensity active sonar is harmful to whales. This means that if the National Marine Fisheries Service investigators decide that the USE has been resolved, the active sonar exercises may resume. The NMFS cannot even commit to what degree that they will be able to investigate USEs (see DEIS 5-25) and the Navy has yet to develop monitoring, unusual stranding event, or operational/communication response plans (see DEIS 5-20:24). In the SOCAL training range, three blue whales were struck by ships in the spring of 2009, yet the Navy has yet to clarify or provide details of the event, what actions were taken, and what mitigation measures were in place at the time of the ship strikes. I find the lack of study, lack of mitigation, and lack of planning highly disturbing.	Please see Appendix F regarding the potential stranding of marine mammals associated with sonar use and Section 3.8 regarding the potential effects on marine mammals. Additionally, monitoring reports from exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. (Please see the recent results supporting this as presented in training ranges monitoring reports “Marine Mammal Monitoring for the U.S. Navy’s Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)” available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). An integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the EIS/OEIS.
Lynn Wilbur - 12		I also find it disturbing that the DEIS dismisses a recommended mitigation to avoid training in the TMAA during seasonally productive times of the year, because it must "operate at any time or place to meet their training needs pursuant to Title 1O"-yet it claims that it can't train in the winter. What if the "enemy" attacks Alaska during the winter months? Why does the "any time/place" policy require that they have to train near rich and biologically productive areas, critical habitats, and marine sanctuaries, and during seasonal migrations?	In Section 2.3.2.3 of the EIS/OEIS, the alternative of training during winter in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further.
Lynn Wilbur - 13		Other recommended mitigations the DEIS dismisses are as follows: -Third party observers (TPO)-The DEIS cites security reasons and a lack of military reflexes of TPOs, and the capability of its own spotters as reasons not to allow third party observers or spotters on its vessels. However, the Navy has used NOAA observers for other training projects, and has manned its own sonar-equipped vessels (i.e. the Impeccable) with contract employees. If the Navy believes that it can provide its own spotters with the same training and skill that is required of seasoned cetacean abundance surveyors, why can't the Navy provide third party observers	Third party observers are not practical as exercise participants during training events for the reasons cited in Section 5 of the DEIS. There have been special occurrences where NOAA personnel have been onboard Navy vessels on some occasions, but generally this would not be practical. There is no requirement for identification of marine mammals to species for the mitigation measures to be implemented. The monitoring plan makes use of trained observers on dedicated survey platforms or using other equipment as required to meet the research questions of the monitoring effort.

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		with response training? The DEIS goes on to contradict its claims that it can provide adequate training for its spotters by admitting that personnel are not likely to be able to differentiate cetaceans species (see DEIS 5-30)-if spotters are incapable of identifying cetaceans to species, how is the Navy supposed to implement any type of monitoring protocol, especially in the event of a marine mammal take?	
Lynn Wilbur - 14		-Halting activities after an USE-The DEIS makes the claim that training exercises in the TMAA cannot be held up by investigations of cetacean mortalities, as they take months or years. This is not so according to scientists and experts who have investigated stranding events following military sonar exercises. In fact, experts have testified that timely autopsies and tissue necropsies are critical in determining whether or not active sonar is linked to cetacean strandings and deaths. Nevertheless, timely investigations should not be a means for the Navy to deflect its responsibilities under NEPA. -Ramping up sonar-"ramping up" the intensification of active sonar so that animals have a chance to flee a sonar training event is a NMFS recommended mitigation plan (see DEIS 5-38). The Navy should be following this recommendation irrespective of their "train as they fight" policy. It seems plausible that "ramping up" can be integrated into the Navy's sonar training exercises and still allow the Navy to retain its "train as they fight" policy. The Navy must assuredly have a history of adapting and integrating other policies in their training regimes.	Please see Appendix F regarding the potential stranding of marine mammals associated with sonar use and Section 3.8 regarding the potential effects on marine mammals. As the analysis presented in Section 3.8 indicates, the use of sonar should not result in any injury or death to any marine mammals based on the best available science. Please note that the Stranding Protocol was developed in consultation with National Marine Fisheries Service stranding Program personnel who are very aware of the time it takes to investigate a stranding event. Additionally, neither NMFS nor the Navy anticipates that marine mammal stranding events or mortality will result from the use of MFA or HFA sonar during Navy exercises within the TMAA. Given, however, the potential for naturally occurring marine mammal stranding events in GOA (e.g., natural mortality), it is possible that a stranding could co-occur with a Navy exercise even though the stranding is actually unrelated to and not caused by Navy activities. Accordingly, the Navy has included requests for take, by mortality, for three beaked whale species present in the TMAA (Baird's, Cuvier's, and Stejneger's beaked whale). Mitigations that do not allow for the purpose and need of the activity to take place are not viable mitigation measures. As explained in Section 5, there is no proof that sonar ramp-up works and it negatively impacts training so is therefore not practical.
Lynn Wilbur - 15		-Enlargement of powerdown/shutdown zones-Cetacean survey experts say that it is difficult, if not impossible, to spot cetaceans or identify them to species at distances greater than 1000 yards or in anything higher than a calm sea state of Beaufort 0-1. In the absence of proper mitigation measures, such as identifying and avoiding critical habitat, avoiding seasonal migration routes, and employing more sophisticated methods of identifying marine mammals in the vicinity of an active sonar exercise, the Navy should respect the recommended 2000-yard buffer zone.	Section 5.2.1.6 from pages 5-28 through 5-41 provides detailed explanations for why some previously used or suggested measures have been eliminated from further consideration. In the first training events authorized under the Marine Mammal Protection Act, some measures were attempted in previous training events at other locations in the past (since 2006) but were subsequently shown to be clearly ineffective or having resulted in an impact to training realism. The suite of mitigation measures proposed by Navy, developed in coordination with NMFS, and presented in Chapter 5 provides the best balance between the need to be

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			precautionary in the protection of marine mammals and the needs to realistically train at sea and afford the maximum protection to all marine animals, regardless of the species.
Lynn Wilbur - 16		-Implementing vessel speed reduction-Ship strikes are an increasing cause of cetacean deaths. The Navy must evaluate and reduce the speed of its vessels, especially following active sonar exercises in order to ensure the safety and protection of marine mammals and to ensure its mission of good environmental stewardship.	The EIS/OEIS discuss the potential for mortality and injury to whales in terms of the likelihood of striking them. The EIS/OEIS describes the factors that may help to avoid collisions with all marine mammals in Section 3.8.8. Please note that an article (Annie B. Douglas, Incidence of ship strikes of large whales in Washington State, Journal of the Marine Biological Association of the United Kingdom, 2008, 88(6), 1121-1132) documents no Navy collisions and also reports that Navy has tighter and more restrictive procedures for both watchstander and reporting that typical vessel traffic in the area. Additionally, unlike Navy vessel, commercial vessels often have the bridge located at the stern and seldom have lookouts and/or the numbers of personnel on watch on the bridge as Navy vessels do.
Lynn Wilbur - 17		-Adopting mitigation measures of foreign Navies-NATO members have taken the negative impact of active sonar on cetaceans very seriously, and NATO and the European Union have implemented treaties, exclusion zones, and restrictions on the use of sonar during military training exercises. Protecting marine life must be a priority for the US Navy if it wishes to be respected to by its allies and consider itself a world leader in good environmental stewardship. Lynn Wilbur, Sitka, Alaska	The U.S. Navy did look at other mitigations, such as ones used by other Navy's. However, as presented in Chapter 5, the Navy typically operates in a Strike Group configuration where the group focuses its efforts on conducting air strikes and/or amphibious operations ashore. This requires that the Navy train to what it calls "integrated warfare" meaning that Strike Groups must conduct many different warfare areas simultaneously. These include the ability to defend itself from attacks from submarines, mines, ships, aircraft and missiles. Other nations do not possess the same integrated warfare capabilities as the United States. As a result, many foreign nations' measures are focused solely on reducing what they perceive to be impacts involving ASW. They are not required to locate training areas and position naval forces for the simultaneous and integrated warfare elements that the Navy conducts. As a result, many nations are willing to move training to areas where they believe marine mammals may not exist and do not train in the same bathymetric and littoral environments as the U.S. Navy requires for realistic training. The US Navy in conjunction with NMFS and USFWS are therefore best suited to determine what mitigation it can effectively use during its training and testing activities to mitigate harm to marine mammals while still being able to meet its operational needs to train for real-world conditions it may face. Both the Navy and NMFS agree that no significant harm

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			to marine mammal species will result from the Navy's proposed activities.

1 **I.3 WEBSITE COMMENTS AND RESPONSE TABLE**

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Alaska Glacial Mud Co. - 1		Thank you for accepting my comments as a resident, small business owner and fisherman from Cordova, Alaska. I am concerned about the impacts of the proposed Navy training activities in the Gulf of Alaska on all levels of the food chain of our highly productive ocean ecosystem resulting from expended materials, both hazardous and non-hazardous, sonar and harassment/marine mammal takes that would affect every creature from microscopic zooplankton to protected whale species. I realize that our national security requires due diligence to prevent attacks and maintain a strong frontline. ... As a commercial fisherman and resident reliant on subsistence, I am concerned about the Gulf of Alaska supporting healthy populations given our current global environmental situation. To add additional ecological pressure and imbalance on a system that is already threatened by global climate change is like kicking a wounded player in the knee while they are already down for the count with a broken leg. I urge the Navy to consider Alaska and its oceans as some of the last remaining wilderness on the planet and respect it without kicking it while its vulnerable already. Thank you kindly, Lauren Padawer Cordova, Alaska	This comment is duly noted. As presented in Chapter 3 of the EIS/OEIS, the Navy is aware of the diverse biological presence in the area and has conducted a thorough analysis of potential effects of its proposed training activities, to include each of the concerns mentioned in the comment. The Final EIS/OEIS thoroughly analyzes the impacts of expended materials used during Navy training activities. As shown in Table 3.2-18 and 3.2-19, an estimated 352,000 lb (176 tons) of material would be expended during the training activities proposed under Alternative 2, with less than 3 percent of that material (about 5 tons) considered to be hazardous. Section 3.2 of the EIS/OEIS describes the impacts from the perspective of potentially hazardous materials such as explosives constituents. Section 3.3 describes the impacts of expended materials in terms of water and sediment quality. In addition, the existing discussion on the breakdown of hazardous materials in Environmental Consequences of Section 3.2.2, Expended Materials has been reviewed and, as appropriate, expanded. The analysis in the EIS/OEIS concludes that Expended and hazardous materials under the Proposed Action would not have a substantial effect on the marine environment.
Alaska Glacial Mud Co. - 2		I realize the public cannot be privy to information that we need to keep hidden from our enemies, however, I need more information before I am convinced that the current plans in the Gulf of Alaska are in our best national interest.	As stated in Section 1.1 of the EIS/OEIS, “The Navy's mission is to organize, train, equip, and maintain combat-ready naval forces capable of winning wars, deterring aggression, and maintaining freedom of the seas. This mission is mandated by federal law (Title 10 U.S.C. § 5062), which ensures the readiness of the United States' naval forces. The training proposed in this EIS/OEIS is needed to satisfy this requirement. Part of this training includes the use of sonar, which is currently the most effective technology for detecting and tracking quiet diesel-electric submarines. As such, it is imperative that the Navy train using this technology.
Kate Alexander - 1		While military readiness is vital to our national security, there are many things that worry me about the proposed changes to activities in the Gulf of Alaska. I believe that the explanation about the release of hazardous materials is insufficient. While total pounds under each alternative is listed, it does not spell out the specific content and amount of each hazardous material in each alternative, nor does it address any potential interaction between these substances	The total amounts of expended and hazardous materials for each alternative are summarized in Tables 3.2-10, 3.2-14, and 3.2-19. The hazardous constituents of each type of ordnance are listed in Section 3.2.1.1. The amount of each hazardous constituent is an approximation based on the best information available. The exact amount of each hazardous constituent in each piece of ordnance varies. For example (pg. 3.2-6 of the

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		with each other or other materials in the area already there as a result of current activity.	DEIS), "Based on standards established by American Society for Testing and Materials International, each steel bomb body or fin also may contain small percentages of carbon, manganese, phosphorus, sulfur, copper, nickel, chromium, molybdenum, vanadium, columbium, or titanium, although typically present at less than 1 percent by weight." Section 3.2 identifies the total amount of hazardous materials for each ordnance type, and lists the possible hazardous constituents. It would be inappropriate to list the exact amounts hazardous constituents for all ordnance because the amounts in expended ordnance varies. The effect for all expended materials would be equivalent to the sum of individual effects because of the large area in GOA, the low areal density of expended materials, and the low percentage of hazardous materials (about 3 percent of expended materials would be considered hazardous). Cumulative effects of expended materials are addressed in Section 4.2.2.2. A cumulative impact is the sum of the Proposed Action's effects and the effects of other projects. Thus, while the combined ocean discharges of wastewater treatment plants, urban runoff, marine vessels, and other sources may result in unhealthful concentrations of marine pollutants, the Navy's expended training materials would not contribute to that impact because expended training materials contain hazardous constituents, such as residual explosives, not found in pollutants from other sources. Therefore, no significant cumulative effects would be expected for expended materials in the GOA.
Kate Alexander - 2		In fact, there appears to be no current studies that document the water or sediment quality in the area to even know what the proposed activities will be adding too.	Water and sediment quality are addressed under Water Resources in Section 3.3.1.1. Current information on pertinent water and sediment quality parameters in the TMAA are not known to be available. Some information on existing nearshore conditions drawn from nearshore samples, however, is available. This information is presented in the EIS/OEIS, and does provide some indication of the overall state of water and sediment quality in the GOA. A reasonable assumption would be that - because most pollutants are transported into the GOA from adjacent lands - sediment and water quality are higher in the central GOA than in nearshore areas, as stated in Section 3.3.1.1 of the FEIS/OEIS.
Kate Alexander - 3		While release of toxic substances may be quickly diluted in the immediate area, some toxic substances have the potential to bioaccumulate in the food chain, which in our	The bioaccumulation process is discussed in this EIS/OEIS in Section 3.8 and Section 4.2.8.2. A detailed species by species analysis of bioaccumulation potential for all possible

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		region includes humans.	contaminants is not possible with the best available scientific data at this time. Impacts from bioaccumulation present a large and complex set of variables, including marine mammal and fish occurrence in the TMAA, population size, toxicity to each individual species, and habitat types and characteristics of the TMAA. An analysis of this magnitude would overwhelm the reader with details and scientific data, without adding substantial value to the overall analysis conclusions. Due to the short-term duration and impacts of Navy training activities in the GOA, bioaccumulation impacts are not significant.
Kate Alexander - 4		Furthermore, this is the northernmost testing site, and there is no indication that there is an understanding for potential effects colder temperatures and turbulent weather (mixing) could have on these substances.	Cold water would reduce the rate of corrosion and breakdown of expended materials (Bayliss et al. 1988), resulting in lower concentrations of hazardous materials in surrounding water quality. Water currents would disperse leaching materials, and would not result in toxicity around expended materials, as discussed in Sections 3.2.1.1 and 3.2.2. Text on the effects of temperature on the rate of corrosion has been added to Section 3.2.1.1 of the Final EIS/OEIS.
Kate Alexander - 5		I do not believe there is adequate measures explained for ensuring marine mammals are protected from these increased activities. Visual observations are limited to the surface, while the ocean is obviously deep and many fish, mammals and other marine organism are dispersed throughout the entire water column. Studies show that visual monitoring only spots about 5% of marine mammals, and I do not think this success rate is enough to adequately protect endangered species.	The Navy shares your concern for marine life. As described in the EIS/OEIS, the Navy implements protective measures during its training exercises. The Navy is a leader in funding marine mammal research to better understand them and to operate with the least possible impacts. Please note that the comment referencing studies indicating "a 5% success rate" was with regard to survey protocols, were not done using Naval personnel or vessels (which have a higher height of eye for observation), and did not take into account the circumstances present during a training event such as having multiple vessels over a very wide area, communicated sharing of observations, and operating in a coordinated manner in combination with aircraft that are also observing the water space. Navy lookouts undergo extensive training to include on-the job instruction under supervision of an experienced lookout followed by completion of Personnel Qualification Standard Program. NMFS-approved Marine Species Awareness Training is required before every sonar exercise. The Navy does not expect 100% of the animals present in the vicinity of training events will be detected and the acoustic impact modeling quantification is not reduced as a result of mitigation effectiveness, however, mitigation measures based on detection of marine mammals by exercise participants anywhere in the exercise area will result in the mitigation of some potential impacts. Monitoring reports from

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			exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. (Please see the recent results supporting this as presented in training ranges monitoring reports "Marine Mammal Monitoring for the U.S. Navy's Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)" available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). An integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the EIS/OEIS. As part of the Integrated Comprehensive Monitoring Program, research to measure the ability of Navy observers to detect marine mammals is also underway. Chapter 5 of the EIS/OEIS, Mitigation Measures, presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events. While the Navy is very confident in its well-trained lookouts, it does not expect that 100% of the animals present in the vicinity of training events will be detected. The acoustic impact modeling estimates provided in the EIS/OEIS are not reduced as a result of mitigation effectiveness, even though many marine mammals will be detected and sonar exposures will be avoided. The Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals. Based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy feels its protective measures are adequate.
Kate Alexander - 6		Furthermore, it is listed that passive sonar will be used, however this does not indicate where the organisms might be, and it does not appear that the Navy will stop activity if they detect something on the sonar, only on visual observation.	Although true, as part of the Navy's standard mitigation measures, the use of passive listening devices help to detect vocalizing marine mammals so that operators of vessels and other participants can take appropriate actions in the known presence of detected marine mammals. Please note that the Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals. Additionally, based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of

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			significant biological impact to marine mammals at those locations, the Navy feels its protective measures are adequate.
Kate Alexander - 7		With endangered animals such as the gray whale, humpback whale, blue whales, and stellar sea lions living, feeding, or migrating through these areas, greater efforts should be included to ensure these activities have minimal impact on these species.	As described in the EIS/OEIS, the Navy implements protective measures during its training exercises. These protective measures are effective at mitigating, not eliminating, risk to marine mammals. Based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy feels its protective measures are adequate. Furthermore, it should be noted that the acoustic impact modeling estimates provided in the EIS/OEIS are not reduced as a result of mitigation effectiveness, even though many marine mammals will be detected and sonar exposures will be avoided. Please see Chapter 5 of the EIS/OEIS, Mitigation Measures, for the Navy's protective measures, which outline steps that would be implemented to protect marine mammals and Federally listed species during training events. The U.S. Navy is in full compliance with the Marine Mammal Protection Act and the Endangered Species Act. For information about the Navy's compliance with these and other regulatory requirements, see Chapter 6 of the EIS/OEIS.
Kate Alexander - 8		While the Navy may outline the range of their activities and the range of critical habitats surrounding the activity, mammals are not known to stop once they reach the edge of their critical habitat, and appropriate buffers should be included to ensure there is no overlap.	Yes, the Navy recognized these areas as important in establishing the boundary of the TMAA to avoid the Critical Habitat boundary established for the Stellar sea lions and the TMAA is many miles from the protective areas established for right whale, sea otter, and beluga whale; there is no designated marine mammal habitat in the TMAA by design. Additionally, please note that, at present, there is no established means for an "assessment of value" for marine mammal habitat, even if it was possible to define the value boundaries of marine mammal habitats, with any reasonable degree of certainty. The Navy acknowledges that marine mammals do not remain within critical habitats which is why they implement protective and mitigation measures and will continue to be a leader in funding marine mammal research to better understand marine species and to be able to operate with the least possible impacts.
Kate Alexander - 9		Another migrating species that is not directly addressed in the DEIS are Pacific salmon. They are fish with swim	As described in the EIS/OEIS, analysis of impacts to fish, including those with swim bladders, are found in Section 3.6 of

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		bladders, and it states that such fish have more potential to be effected by explosions.	the EIS/OEIS. As described in Section 3.6.1.4, studies have shown salmon to have poor hearing, likely due to the lack of a link between their swim bladders and their inner ear. Currently, there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of fish populations. As such, the Navy is confident, and the analysis indicates, that its training activities will not impact the Pacific salmon populations off the Gulf of Alaska.
Kate Alexander - 10		The migration patterns of these fish should be better understood to ensure they will not be effected by these activities,	The Navy has analyzed effects to salmon and understand that salmon use the entire TMAA, not just specific patterns of migration. Nonetheless, the Navy is confident that its training activities will not impact salmon fisheries off the Gulf of Alaska. Analysis of impacts to salmonids is found in Section 3.6.2.3 of the EIS/OEIS.
Kate Alexander - 11		and a consideration of the economic impacts damage to salmon populations will have on the communities of the region should also be considered.	The Navy is very aware of concerns from fishing fleets and fisheries in the Gulf of Alaska. As described in the EIS/OEIS, the Navy is confident that its training activities will not impact salmon fisheries off the Gulf of Alaska. The EIS/OEIS describes potential economic impacts to fishing in Section 3.12.2.5. In this section, the analysis concluded that impacts would not be significant due to advanced public notification and primarily short-term duration of military activities. Additionally, no new closure or restricted areas are proposed.
Kate Alexander - 12		With the Navy sharing fishing grounds with commercial fishermen, there is a safety issue associated with undetonated weapons.	The EIS/OEIS addresses the use of live ordnance and the potential for ordnance items to not function as designed (i.e., dud) in Section 3.2 of the EIS/OEIS. Undetonated ordnance could pose a risk to fisherman, particularly those fishing by bottom trawling. If a trawl were to contact undetonated ordnance, this contact could cause the ordnance to detonate. Most likely, however, the ordnance would not detonate for the same reason it initially failed to detonate upon impact with a training target or the water surface. Based on the number of live explosive ordnance items used under Alternative 2 and the estimated failure rate, there would be approximately 0.007 undetonated explosive items per square nautical mile, or one undetonated explosive item per 140 square nautical miles. While fisherman could contact undetonated ordnance, it would be unlikely given the large area of the TMAA. Text describing potential effects on public safety from undetonated ordnance and a discussion of the potential for fishing gear to come in contact with unexploded

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			ordnance on the ocean floor has been added to the Public Health and Safety section (Section 3.14.2.3 of the FEIS/OEIS.
Kate Alexander - 13		This area is also on the edge of the ferry and tanker route, which undetonated materials would also pose a threat too.	Undetonated explosives would not pose a risk to ferries and tankers. Undetonated ordnance would sink to the sea floor, and would not come into contact with ferries or tankers traversing the ocean surface.
Kate Alexander - 14		The DEIS also underestimates the number of marine mammals and fish that will be harassed, injured and killed because it simple does not have the density estimates needed in order to make this determination. NEPA requires such information. It should be included. Citing studies on the region from 1993 is not sufficient. The world around us, including the ocean, have been changing drastically since the early 90s, and it is not sufficient to count on yesterday's science for today's decisions.	Section 3.8.2 in the DEIS discusses the density estimates: In April 2009, the Navy funded and NMFS conducted the Gulf of Alaska Line-Transect Survey (GOALS) to address the data needs for density analysis. Line-transect survey visual data to support distance sampling statistics and acoustic data were collected over a 10-day period both within and outside the TMAA. Please see Section 3.8.2.1 for full discussion on the survey.
Kate Alexander - 15		Furthermore, there should be efforts expended to better understand the cumulative effect navy training for the past 10 years has had on the region before determining whether or not it's safe and possible to expand these efforts without significant impact to the regions resources or lifestyles.	The cumulative impacts analysis addresses the environmental impacts that result from the incremental impact of Navy activities when added to the past, present, or reasonably foreseeable future actions that affect the same resources. Table 4-1 succinctly depicts the categories of past, present, and reasonably foreseeable future actions that affect marine populations, including past Navy training in the GOA. The EIS/OEIS analyzes in detail the effects of Navy actions on specific resources, and places those in the context of other sources of impacts.
Kate Alexander - 16		Past military activity in our region has not left a promising legacy to make me feel comfortable with future activities. Nonprofit and tribal organizations in our region are working hard to apply for money to clean up contaminated sites left over from past military activity. Until the communities of the region can feel that the Navy will be a good neighbor and respect the clean water and air that is essential to all life, I will not be in support of any increased activity in the Gulf of Alaska.	The Navy of today is very different from the military of days gone by. Your concern about “past” military activities is understood. Environmental practices as far back as 30 years ago were much different than those of today. The ocean is the Navy’s second home as well as a workplace. The Navy is sensitive to the need to protect the environment and the Navy is proud of its record of environmental stewardship, because this is the Navy’s environment too, and the Navy wants to take care of it. The Navy demonstrates that commitment by investing millions of dollars annually in programs to research impacts and the effects of its training exercises on the environment while carrying out its ongoing national defense mission.
Ellen Americus - 1		I am for the no action alternative. I do not want the Navy even in the Gulf of Alaska. I want the Navy to REDUCE their present activity in the Gulf of Alaska. Active sonar has been known to be harmful to whales. The whale population of this	As explained in Section 2.3.2 of the EIS/OEIS, a reduction in levels of training within the GOA ATAs would not support the Navy’s Purpose and Need and was therefore eliminated from further consideration. As stated in Section 1.4 of the Draft and

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		area is already endangered, suffered reduction in numbers due to the Exxon Valdez oil spill. The Gulf of Alaska is an extremely important whale migration area, and a very important marine mammal and fish habitat, especially in the months of June when the Navy is proposing their exercises. To cause the least harmful environmental effects, the Navy should consider the winter instead.	Final EIS/OEIS, the decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process. Given the natural variation of marine mammal location over time within the GOA TMAA, operational variability of Navy mid-frequency and high-frequency active sonar operations, and the fact that the Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Furthermore, Section 3.8 (Marine Mammals) and Section 3.6 (Fish) of the EIS/OEIS thoroughly analyze impacts to both marine mammals and fish from proposed Navy training activities. The EIS/OEIS concludes that there is no significant impact to population levels for either marine mammals or fish. In Section 2.3.2.3 of the EIS/OEIS, the alternative of training during winter in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further.
Ellen Americus - 2		I am against active sonar as well as missiles, torpedoes and underwater explosives. Explosives contain heavy metals, lead, uranium and other highly toxic chemicals that are known to be harmful to man and marine life. It is like bombing a national park.	Please see response to Alaska Glacial Mud Co. – 1. Additionally, please note that Depleted Uranium (DU) is not part of the proposed action for this EIS/OEIS. In February 2009, Commander Pacific Fleet directed that all Pacific Fleet ships offload all depleted uranium rounds at the earliest opportunity. This change is reflected in the Draft EIS/OEIS in Section 3.2.1.1.
Ellen Americus - 3		I am concerned about the bioaccumulation factor of these toxic chemicals in our food chain. I do not feel that war exercises are worth the cost of toxic chemicals entering in the food chain. This place is a last wild place on earth, the Navy SHOULD NOT BE ALLOWED to kill or disrupt 20 different species of marine mammals, including 7 endangered species in the Gulf of Alaska exercises. I heard one of the officers say we don't anticipate any environmental consequences, well not anticipate is not good enough. You guys better know for sure before you going messing with endangered species, in one of the last wild places and	Regarding bioaccumulation, please see response to Kate Alexander – 3. NEPA requires that Federal agencies take a hard look at potential environmental impacts based on the best available science. As such, the best available science is considered in preparation of this EIS/OEIS. As a general matter, the Navy shows consideration of the best available science when we ensure the scientific integrity of the discussions and analyses in the GOA TMAA. Specifically, this EIS/OEIS identifies methods used, references reliable scientific sources, discusses responsible opposing views, and discloses

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		leaving toxic chemicals in the food chain. Haven't we learned from mercury in the tuna. No more!!! Halibut are old fish. It takes 25 years to weigh 100 pounds. Stop the harmful bombing and missile deployment and save this vital habitat and help keep Gulf of Alaska PRISTINE.	incomplete or unavailable information, scientific uncertainty, and risk (See 40 CFR,1502.9 (b),1502.22,1502.24). Based on this standard, the U.S. Navy does not anticipate any environmental consequences; however, due to the fact that the Navy realizes that science is continuously evolving it is impossible to say definitively that there will be no consequences.
Ashore Water Taxi - 1		To Whom It May Concern, We're writing to express our strong opposition to the Navy's preferred alternative (alternative 2) for Gulf of Alaska training exercises. Thousands of endangered Humpback whales feed in this area during the summer, and the use of active sonar, not to mention all of the other exceedingly loud and potentially toxic activities proposed, will undoubtedly have a negative impact on these and many other marine mammals.	Your opposition to Alternative 2 is noted. Please see Section 3.8 regarding the recognized presence of humpback whales and other marine mammals including the analysis of affects to marine mammals from the proposed Navy training activities. As presented in Section 3.8, Navy does not anticipate any population level affect on humpback whale in the Gulf of Alaska from Navy training activities.
Ashore Water Taxi - 2		The abundance of fish in this region during the summer months supports our local fisheries, and a host of other wildlife. This area is vital to our economy and home to an abundance of other creatures, some of which (Stellar's Sea Lion) are in decline. This unique place deserves extra consideration and protection, not an increase in activities that will negatively affect it. Expanding Naval activities should not be considered. Thank you for your time, Louise Seguela, Ashore Water Taxi and Freight	Please see Section 3.7 of the EIS/OEIS for the description and analysis and potential effects on fish. The EIS/OEIS fully analyzes potential impacts to fish. The Navy is confident and the EIS/OEIS concludes that there is no significant impact to population levels for fish from Navy activities. Effects to the economy are found in Section 3.12. Navy training would not result in adverse effects to commercial shipping, commercial fishing, recreation, or tourism. Please see Sections 3.5 through 3.9 for analysis of impacts to other marine species. The Navy has concluded within each biological section that there would not be significant impacts to species populations levels as a result of Navy training.
Claudia Bain - 1		NO - I read your Fact Sheet and the SURTASS LFA High Frequency Marine Mammal Monitoring Sonar: System Description and Test & Evaluation (26 November 1999). Your fact sheet states " The results of the analysis indicate that there is the possibility for physiological effects (PTS and TTS) on marine mammals" You state in your FACT SHEET that these effects include short term or permanent loss of hearing, masking calls of mates, predators, and/or prey. You also state there will "minimal effects on the fish population". The SURTASS report states on the first page of the report that " It was the consensus of the assembled experts at these workshops that RLs of 180 dB re 1uPa(rms) marked the boundary at which higher levels cause physical harm".	LFA and MFAS should not be compared. The thresholds used to determine PTS and TTS levels were developed by NMFS, as the regulatory agency in charge of implementing MMPA, specifically for mid-frequency sound sources.
Claudia Bain - 2		The "Sonar and Marine Mammal Fact Sheet" put out by NOAA states" Most, if not all, marine mammals rely on	The science of sound in the water and its effects on marine life is evolving. The Navy conducted a thorough analysis of sonar

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		some extent of sound for a wide range of biological function...In certain conditions, mid-frequency military sonar may play a role in marine mammal strandings". Marine mammals hearing and biosonar system is their life support. The marine mammals in the PWS area have been impacted ENOUGH.	and at sea explosions in the EIS/OEIS, using the most current and best available science, and with cooperation from the National Marine Fisheries Service, our cooperating agency on this EIS/OEIS. Please note that given the natural variation of marine mammal location over time within the GOA TMAA, operational variability of Navy mid-frequency and high-frequency active sonar operations, and the fact that the Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Please see the full analysis of marine mammal strandings in Appendix F of the EIS/OEIS – Cetacean Stranding Report. The report discusses the various stranding situations across the world.
Claudia Bain - 3		Alaskans have NO confidence in the integrity of your procedures or their consequences. If you MUST research your techniques go somewhere already grossly impacted by humans, like Florida.	Your concern is noted; however, please know that the Navy is not researching techniques; it is conducting training operations using established methods and equipment. Furthermore, the Navy is a leader in funding marine mammal research to better understand them and to operate with the least possible impacts. Additionally, the EIS/OEIS has been developed using the best available science, and with cooperation from the National Marine Fisheries Service (NMFS), which is responsible for the protection of marine species. Both the Navy and NMFS agree that no significant harm to marine mammal species will result from the Navy's proposed activities. As described in Section 2.3.2.1, the Navy considered, but rejected, other alternatives such as conducting this joint training at other ranges because those alternatives failed to meet the purpose of and need for the proposed action.
Claudia Bain - 4		Are you banking on there being a smaller response due to a smaller population in Alaska? Thank you for staying OUT of Alaskan waters.	This EIS/OEIS is a part of the Navy's worldwide evaluation of training activities. The Navy is conducting NEPA analyses for all areas where they are currently conducting training, including the GOA. The Navy has been conducting annual joint training exercises in the GOA for over ten years. This EIS/OEIS was announced in the Federal Register, and the Navy hopes that anyone with an interest had an opportunity to

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			provide a comment. Public involvement and/or comments are an important part of the NEPA process, regardless of the population size. Without public participation, the Navy cannot meet the spirit and intent of the NEPA process. Public comments may provide an idea, data or suggestion that may further assist the Navy's EIS process. The Navy fully supports and values public participation and involvement. All applicable comments received before developing the Final EIS/OEIS were considered and the Navy has responded to each comment in this Final EIS/OEIS. The Navy tried very hard to reach as many communities as possible by sending information to newspapers, TV stations, radio stations and libraries. As you can tell by reading this document, many comments were received.
Gail Boerwinkle		Decision on timing of training needs to be re-evaluated. Don't do the training during summer months when whales are present, fishing fleet trying to earn a living. Do training in late fall/early winter to provide minimum impact. Please re-evaluate decision. Gail Boerwinkle	In Section 2.3.2.3 of the EIS/OEIS, the alternative of training during winter in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further.
Kristen Bomengen - 1		Do not increase activities in this sensitive environment. I encourage you to stick to Option One and NOT use mid-frequency active sonar.	Please see response to Ellen Americus – 1.
Kristen Bomengen - 2		It is reckless to undertake the use of active sonar that has the potential to adversely affect marine wildlife in this environment.	Based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy feels its protective measures, which were developed jointly with the National Marine Fisheries Service, are adequate.
Judith Brakel - 1	Alaska Marine Conservation Council, board member	I favor the No Action Alternative. The Navy's plans to use high frequency sonar will without doubt damage and kill a large number of marine mammals, one indicator being the estimated 450,000 "takes" per year that it will have to report under the Marine Mammals Protection Act.	Please see response to Ellen Americus – 1. This EIS/OEIS uses a method for calculating exposures to underwater sound that was developed jointly by the Navy and the National Marine Fisheries Service. This method for evaluating "takes" of marine mammals is a term used to indicate the level of harassment, either A or B, under the Marine Mammal Protection Act; the term does not reflect a marine mammal death. Of the approximately 425,000 exposures, which are estimated without consideration of the Navy's protective measures, only **one** is expected to potentially result in a marine mammal death (Level A harassment). The remainder are non-injurious Level B

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			exposures. No marine mammal deaths are expected as a result of the proposed training activities.
Judith Brakel - 2	Alaska Marine Conservation Council, board member	The Navy's proposed mitigation for sonar use is hopelessly inadequate. This includes a threshold frequency of 215 dB and depending on visually sighting marine mammals from shipboard (in daylight and dark), with the action to be taken after sighting a 1,000 yard power-down and a 200 yard shut down. Those of us who have spent time on the water know that the probability of sighting marine mammals that are present is low. Also the distances for shutting down sonar are laughably short compared to how well sound carries through the water. Elsewhere a federal court has declared these measures "woefully inadequate and ineffectual."	The thresholds used for modeling were developed in consultation with NMFS as a cooperating agency and made use of the best available science. Additionally, Navy vessels have dedicated and trained marine mammal watchstanders to look for the presence of marine mammals. Finally, last year, the U.S. Supreme Court upheld the Navy's sonar activities and mitigation measures off the coast of California. Please note that Navy lookouts undergo extensive training to include on-the job instruction under supervision of an experienced lookout followed by completion of Personnel Qualification Standard Program. NMFS-approved Marine Species Awareness Training is required before every sonar exercise. The Navy does not expect 100% of the animals present in the vicinity of training events will be detected and the acoustic impact modeling quantification is not reduced as a result of mitigation effectiveness, however, mitigation measures based on detection of marine mammals by exercise participants anywhere in the exercise area will result in the mitigation of some potential impacts. Monitoring reports from exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. (Please see the recent results supporting this as presented in training ranges monitoring reports "Marine Mammal Monitoring for the U.S. Navy's Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)" available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). An integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the EIS/OEIS. As part of the Integrated Comprehensive Monitoring Program, research to measure the ability of Navy observers to detect marine mammals is also underway Naval vessels (which have a higher height of eye for observation), and did not take into account the circumstances present during a training event such as having multiple vessels over a very wide area, communicated sharing of observations, and operating in a coordinated manner in combination with aircraft that are also observing the water space.
Judith Brakel -	Alaska Marine Conservation	Ocean acidification is increasing the transmission of sound through the water, making high frequency sonar even more	As detailed beginning in Section 4.2.1.2 and specifically beginning on page 4-11, it has been generally accepted that

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3	Council, board member	dangerous to marine mammals and likely to many fishes. Acidification as a result of the ocean absorbing more carbon dioxide from the atmosphere is a problem that is increasing rapidly in northern North Pacific waters. For reference, please see "Ocean Acidification at High Latitudes; The Bellwether" in Oceanography, vol. 22, No. 4, 2009 by Victoria Fabry et al. This paper describes the increasing acidification of the northern North Pacific, including studies by Jeremy T. Mathis of a transect from Resurrection Bay (near Seward, Alaska) out into your planned training area. Other scientific articles describe the "noisier ocean" under acidification.	the earth's temperature is warming as a result of increasing greenhouse gas emissions from human activities. Indirect secondary impacts from this global warming include sea level rise with the potential for severe impacts to coastal regions. In addition, it has been recently proposed that the continued emission of CO^2 could result in seawater is becoming more acidic as carbon dioxide from the atmosphere dissolves in the oceans, resulting in increased sound propagation in the ocean. In this regard, evaluation of the potential for CO^2 emissions to result in future increased ocean acidity further resulting in the increased propagation of underwater anthropogenic sound, remains indeterminate due to incomplete and unknown factors affecting the proposed global phenomena hypothesized. In any event, the proposed Navy actions for the Gulf of Alaska should have no net effect on the emission of greenhouse gases given the Navy is required to maintain trained forces and must undertake the necessary training activities at some location on earth, if not in the proposed TMAA. The proposed action will, therefore, have no significant additive or cumulative impact on greenhouse gas emissions, global warming, or the chemistry of the ocean as a result of any of the proposed action alternatives.
Judith Brakel - 4	Alaska Marine Conservation Council, board member	The proposed Naval use of sonar is in an area frequented by the endangered Right and Blue whales, and many other marine mammals.	The Navy fully analyzed potential impacts to marine life, including the North Pacific right whale, in section 3.8 (Marine Mammals) of the EIS/OEIS. The analysis concludes that there is no significant impact to population levels of marine mammals. Furthermore, as stated previously, the Navy is in full compliance with the Marine Mammal Protection Act and the Endangered Species Act. For more information about the Navy's compliance with these and other regulatory requirements, see Chapter 6 of the EIS/OEIS.

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Judith Brakel - 5	Alaska Marine Conservation Council, board member	It is also likely that many fish depend on sound and pressure signals.	The science of sound in the water and its effects on marine life is evolving. The Navy conducted a thorough analysis of sonar and at sea explosions in the EIS/OEIS, using the most current and best available science, and with cooperation from the National Marine Fisheries Service, which is responsible for the protection of marine species. The EIS/OEIS fully analyzes potential impacts to fish. As was described in Sections 3.6.1.4, fish have very limited hearing in the frequency range of Navy sonar, and the body of research indicates they are not negatively impacted by Navy sonar. As such, the Navy is confident and the EIS/OEIS concludes that there is no significant impact to population levels for fish from Navy activities.
Judith Brakel - 6	Alaska Marine Conservation Council, board member	The toxics and explosives to be used in the training will inevitably cause harm to marine creatures, from marine mammals and fish to bottom-dwelling organisms.	Please see response to Alaska Glacial Mud Co. – 1. Additionally, please note that initial releases and peak concentrations of hazardous materials from expended materials would not result in water or sediment toxicity. Hazardous materials would be quickly dispersed by ocean currents to non-toxic concentrations, and would not be expected to adversely affect marine organisms.
Judith Brakel - 7	Alaska Marine Conservation Council, board member	This is one of the richest marine areas in the world. As such, it is highly important to the economy of Alaska coastal residents, and to the whole state.	The Navy is aware that this is one of the richest marine areas in the world and has conducted a thorough analysis of potential effects in Chapter 3 of the EIS/OEIS. Specifically, socioeconomic impacts in regard to the fishing industry, tourism, and recreation have been analyzed in the EIS/OEIS in Section 3.12 - Socioeconomics. To help manage competing demands and maintain public access in the GOA, the Navy conducts its offshore activities in a manner that minimizes impacts to recreation and commercial activities. Furthermore, no new closure or restricted areas are proposed.
Josh Brann - 1		Please do not allow an expansion of military training in the Gulf of Alaska. The proposed activities are known to have harmful impacts on marine wildlife, particularly the effects of sonar on marine mammals.	Please see response to Ellen Americus - 1. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process. The Navy has conducted a thorough analysis of potential effects from its proposed activities in Chapter 3 of the EIS/OEIS. The Navy does, however, recognize that the science of sound in the water and its effects on marine life is evolving. As such, sonar and at sea explosions were part of the Navy's analysis. To conduct the analysis, the Navy used the most current and best available science, with cooperation

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			from the National Marine Fisheries Service, which is responsible for the protection of marine species. Because there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of the marine environment, the Navy is confident that there is little relative risk to marine mammal populations from active sonar training or any other exercises.
Josh Brann - 2		When the country is facing a poor economic climate, we should not undertake activities that are likely to have further negative consequences.	As discussed in Section 3.12, Navy training would not result in adverse effects to commercial shipping, commercial fishing, recreation, or tourism.
Josh Brann - 3		It is highly likely that the proposed activities would have a negative influence on the marine ecosystem of the Gulf of Alaska, thereby affecting the thousands of fishermen and other individuals who rely on and make their living from the bounty of the Gulf of Alaska.	The U.S. Navy has been training in the Gulf of Alaska for many years and will continue to act as a good steward of the environment as we have in the past. Similar to all other areas that the Navy trains, there is no indication that training activities have a negative impact on the health of the marine environment. In addition and as presented in Chapter 5, the Navy will implement mitigation measures to minimize potential impacts. As such, the Navy is confident, and the analysis indicates, that its training activities will not detrimentally impact the marine environment of the Gulf of Alaska.
Autumn Bryson - 1		While I believe national security is important and I support the Navy in providing good training for our armed forces, I don't believe this training should come at the expense of the health of our oceans. The EIS for the proposed increase in Navy training activities should include extensive and exhaustive studies, research and analysis on the effects of increasing training activities on marine resources before concluding that there will be no significant impacts.	The EIS/OEIS is an extensive and exhaustive study based on research and analysis of the effects of increasing training activities on marine resources. While additional research or further scientific advances may provide a more definitive analysis, a NEPA document is necessarily based on information available at the time the document is prepared, and the current state of the science.
Autumn Bryson - 2		The marine ecosystem in the Gulf of Alaska has already felt the impacts from the Exxon Valdez Oil Spill (EVOS) and those species are still recovering. I did not see mention of the impact of the training activities on the marine species whose populations have already been compromised because of that spill.	Regarding the Exxon Valdez oil spill, it is not a specific project to be analyzed in this EIS/OEIS, as its effects are reflected in the description of baseline conditions described in the affected environment section. This is reflected in population estimates of fish, marine mammals, water quality, and expended materials. Additionally, regarding the impact of Navy training activities on marine species whose populations have already been compromised, in an study of herring (one of the few fish that can hear mid-frequency sonar) *Doksæter et al*. determined that "Military sonars of such frequencies and source levels may thus be operated in areas of overwintering herring without substantially affecting herring behavior or herring fishery" (2009:554).

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Autumn Bryson - 3		The EIS states that there will be no significant impacts from individual expended materials, but the EIS does not mention the cumulative effect of all the contaminants in the expended materials.	The hazardous constituents of each type of ordnance are listed in Section 3.2.1.1. The estimated amounts of hazardous constituents in each type of ordnance are approximations based on the best information available. The exact amounts of each hazardous constituent in each ordnance vary. Tables summarizing the total amounts of hazardous materials and the estimated densities of hazardous materials deposited in the TMAA are provided in Section 3.2, Expended Materials. The aggregate effects of all expended materials would be roughly equivalent to the sum of individual effects because of the large area in GOA, the low areal density of expended materials, and the low percentage content of hazardous constituents within the expended materials (about 3 percent of expended materials would be considered hazardous). There are no indications that, at the anticipated ambient concentrations identified in Section 3.2.1.1, these hazardous constituents of expended materials would have any synergistic or antagonistic effects. Text on the expected concentration of copper thiocyanate has been added to Section 3.2.1.1 of the Final EIS/OEIS. Cumulative effects of expended materials are addressed in Chapter 4, Section 4.2.2.2. A cumulative impact is the sum of the Proposed Action's effects and the effects of other projects. Thus, while the combined ocean discharges of wastewater treatment plants, urban runoff, marine vessels, and other sources may result in unhealthful concentrations of marine pollutants, the Navy's expended training materials would not contribute to that impact because expended training materials contain hazardous constituents, such as residual explosives, not found in pollutants from other sources. Therefore, no cumulative effects would be expected for expended materials in the GOA.
Autumn Bryson - 4		The EIS needs to spell out exactly what contaminants are in the expended materials and the total amount of each contaminant that will be released in the marine environment for each alternative.	As stated above, the exact amount of each hazardous constituent in each piece of ordnance varies. For example (pg. 3.2-6 of the Draft EIS/OEIS), "Based on standards established by American Society for Testing and Materials International, each steel bomb body or fin also may contain small percentages of carbon, manganese, phosphorus, sulfur, copper, nickel, chromium, molybdenum, vanadium, columbium, or titanium, although typically present at less than 1 percent by weight." Section 3.2 identifies the total amount of hazardous materials for each ordnance type, and lists the possible hazardous constituents. It would be inappropriate to

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			list the exact amounts hazardous constituents for all ordnance because the amounts in expended ordnance vary. The effect for all expended materials would be equivalent to the sum of individual effects because of the large area in GOA, the low areal density of expended materials, and the low percentage of hazardous materials (about three percent of expended materials would be considered hazardous).
Autumn Bryson - 5		These contaminants may disperse once released into the water, but many toxins have the potential to bioaccumulate in the environment. Without knowing how much of each type of toxin, it is difficult to conclude that there will be no significant impact.	Regarding bioaccumulation, please see response to Kate Alexander – 3. Regarding your question about the quantities of toxins, please see response to Bryson – 4.
Autumn Bryson - 6		The people of Alaska rely on fish and marine mammals for their survival. Releasing harmful pollutants into the environment that can eventually end up in our subsistence foods may cause a multitude of detrimental health effects. This issue needs to be examined more closely in the EIS with extensive research on whether our subsistence foods will still be safe to consume at the current level of consumption taking into account that it is much higher than the rest of the country.	As stated previously, while additional research or further scientific advances may provide a more definitive analysis, a NEPA document is necessarily based on information available at the time the document is prepared, and the current state of the science. The estimation of the hazardous constituents of expended training materials is based on the best available data.
Autumn Bryson - 7		The mitigation measures used to protect marine mammals will not be able to avoid injuries and while the EIS states that the effects of the training activities may not be significant to the population as a whole they will be significant to that individual. The Navy uses passive sonar and visual inspections to detect marine life. However, after speaking with Navy representatives I learned that training activities will not cease just because a large marine mammal is in the vicinity. Passive sonar cannot pinpoint the mammal's location, thus activities will continue until the mammal is visually identified. By this time the mammal might have already entered the critical threshold where it will be behaviorally or physiologically affected.	Chapter 5 of the EIS/OEIS, Mitigation Measures, presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events. While the Navy is very confident in its mitigation measures, it does not expect that 100% of the animals present in the vicinity of training events will be detected. As such, the Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals. It should be noted that the acoustic impact modeling estimates provided in the EIS/OEIS are not reduced as a result of mitigation effectiveness, even though many marine mammals will be detected and sonar exposures will be avoided.
Autumn Bryson - 8		The training area selected is important habitat for a multitude of species critical to the health of our oceans. This area is at the junction of the Cook Inlet, Prince William Sound and Copper River Delta.	The Navy is aware of the diverse biological presence in the area and has conducted a thorough analysis of potential effects in Chapter 3 of the EIS/OEIS. There is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of the marine environment.
Autumn Bryson - 9		This area has the potential to include multiple migration routes for important species. The migration patterns of these species need to be determined and the training	While several studies have indicated that the area is part of the migratory route for some salmon species and marine mammals, the details are still lacking. Given the short duration

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		activities should not occur in these areas.	of Navy activities, over a small area, there is a low probability of Navy activities coinciding with migration of salmon (or other fish) or marine mammal species. As noted in other comments, the Navy is aware of the diverse biological presence in the area and has conducted a thorough analysis of potential effects given the best available data in Chapter 3 of the EIS/OEIS. Please note that there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of fish, marine mammal, sea bird, or marine invertebrate populations. In addition, Chapter 5 presents details of the U.S. Navy's protective measures, outlining steps that would be implemented to protect all marine mammals and Federally listed species during training events. These protective measures would afford the maximum protection to all marine animals, regardless of the species.
Autumn Bryson - 10		The marine mammal and fish populations in the Gulf are already at critical levels. Impacts to their habitats and life cycles might disrupt this delicate balance.	Section 3.8 (Marine Mammals) and Section 3.6 (Fish) of the EIS/OEIS thoroughly analyze impacts to both marine mammals and fish from proposed Navy training activities. The EIS/OEIS concludes that there is no significant impact to population levels for either marine mammals or fish, analyzed in relation to their existing status/populations.
Autumn Bryson - 11		I was appalled to learn that there have been no long-term population studies on fish or marine mammals following Navy activities in other areas. How can one determine that there will be no effect to the populations when there have been no studies to determine that information?	The Navy has been conducting these same training events including the use of sonar for decades in the Hawaiian Islands including within the Humpback Whale National Marine Sanctuary with no apparent affects on the recovery of humpback whales. (see “Marine Mammal Monitoring for the U.S. Navy’s Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)” available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). In addition, an integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the EIS/OEIS. As presented in Section 3.8, Navy does not anticipate any population level affect on humpback whale in the Gulf of Alaska from Navy training activities.
Autumn Bryson - 12		In conclusion, I don't believe the draft EIS contains enough information to determine that increasing training activities will not have a significant impact on the marine environment. Further research is needed to draw this conclusion. Therefore until adequate research is presented, the logical alternative to choose is the No Action Alternative.	The Navy feels that the EIS/OEIS contained a thorough analysis of the effects of its proposed action using the most current and best available science, as required by NEPA. This analysis was completed in cooperation with the National Marine Fisheries Service, which is responsible for the protection of marine species. The science of sound in the water and its effects on marine life is evolving. The Navy

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			conducted a thorough analysis of sonar and underwater detonations in the EIS/OEIS. Please note that the decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
Autumn Bryson - 13		I was very disappointed in the public hearing the way we were not allowed to ask questions as a group and were funneled back and forth from room to room creating confusion.	From past experience, the Navy has concluded that the public hearing format used during the public hearings is the most conducive to effective dialogue. Additionally, all five public hearings held in Alaska exceeded NEPA requirements. Adequate time was given during each meeting to ask questions of a number of subject matter experts, on a one-on-one basis. The confusion at the Cordova hearing was caused by a misunderstanding by attendees about the hearing format. The Navy apologizes for the inconvenience.
Autumn Bryson - 14		Because this request for comments came out over the holidays I don't believe there was adequate time to review it as a lot of individuals were out of town and on vacation so I am requesting a 30 day extension.	The Navy has complied with all NEPA notification requirements under 40 C.F.R. § 1506. NEPA regulations require that agencies not allow less than 45 days for comments on a DEIS. The public review period for the Gulf of Alaska (GOA) Draft EIS/OEIS began with publication of a Notice of Availability on December 11, 2009. This notice specifically listed library repositories where the hard copy document could be viewed, and stated specifically that the document could be viewed online at the project website. In addition, specific mention of the locations where a copy of the GOA Draft EIS/OEIS could be viewed or downloaded were made in the following: - Postcards sent to potentially affected Tribes and Nations, State and Federal regulatory and government agencies, non-governmental organizations, fishing groups, and individuals - Newspaper advertisements in newspapers in Alaska - Press releases to numerous print, TV, and online media - Meeting flyers sent to community locations in Alaska. - Stakeholder letters sent to previously identified stakeholders including Tribes and Nations, Federal and State elected officials, State and Federal regulatory and government agencies, and individuals. Please note that public comments are very important to the NEPA process. The Draft EIS/OEIS was released to the public for a 45-day comment period. During this 45-day period, the Navy made extensive efforts to conduct outreach based on

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			what was learned during the scoping period and public feedback. There were ample opportunities, as well as a wide variety of options, to comment on the Gulf of Alaska Draft EIS/OEIS. The public provided comments via mail, online comments via the Gulf of Alaska EIS/OEIS website; or attendance at one of five public hearings in the state of Alaska in January 2010. At the public meetings, the public had an opportunity to publicly or privately comment in front of a court reporter or fill out a comment form, and turn it in. The Navy considered your request for an extension of the 45-day comment period. After further evaluation of the request, and the outreach efforts conducted by the Navy for the Draft EIS/OEIS, the Navy felt it was not necessary to extend the public comment period for review of the Draft EIS/OEIS.
Autumn Bryson - 15		Thank you for allowing me to comment. I hope the Final EIS contains more information and you make the right decision for what is best not only for our national security but also for the health and future health of our marine ecosystem.	This comment is duly noted. The Navy feels that the EIS/OEIS contained a thorough analysis of the effects of its proposed action. The Navy also realizes that a NEPA document is necessarily based on information available at the time the document is prepared, and the current state of the science. As such, new information received via comments has been thoroughly analyzed and incorporated as necessary. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
Dick Callahan - 1		From Juneau Alaska January 25, 2010 23:10 local time. Stop Killing the Gulf of Alaska with Sonar 1) You know this technology will be obsolete in a few decades as all World War II technology is obsolete today.	Sonar is currently the most effective technology for detecting and tracking quiet diesel-electric submarines. As such, it is imperative that the Navy train using this technology.
Dick Callahan - 2		2) You know every other maritime nation will try to copy it if you deploy it as all admirals are jealous children, they will want their own big sounds. They will want bigger sounds.	This comment is duly noted.
Dick Callahan - 3		3) You know other countries won't care if they kill whales just as pilots of maritime countries in World War II used large whales for target practice pretending they were submarines.	This comment is duly noted.
Dick Callahan - 4		4) You know you won't be able to avoid killing whales with this sonar. You lied about doing it for decades as grad students wrote their thesis' speculating about what could be causing these mass strandings.	The Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Given the natural variation of marine mammal location over time within the GOA TMAA, operational variability of Navy mid-frequency and high-frequency active sonar operations, and the fact that the Navy

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			has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations.
Dick Callahan - 5		5) You know your sonar will kill not only whales and marine mammals but also sea turtles, fish and everything else with internal air pockets.	The Navy's analysis demonstrates there is little relative risk to marine mammal populations, fish, sea turtles, or other marine life from sonar training exercises as proposed in the EIS/OEIS. The EIS/OEIS fully analyzed potential impacts to fish, sea turtles, and other marine life and habitat. As was described in Sections 3.6.1.4 and 3.7.1.1, fish and sea turtles have very limited hearing in the frequency range of Navy sonar, and the body of research indicates they are not negatively impacted by Navy sonar.
Dick Callahan - 6		In addition, you know you could displace bait fish over large areas.	The EIS/OEIS fully analyzed potential impacts to fish. As was described in Sections 3.6.1.4, fish, to include bait fish, have very limited hearing in the frequency range of Navy sonar, and the body of research indicates they are not negatively impacted by Navy sonar.
Dick Callahan - 7		6) You know you have not been honest or open with the public about secret testing you have already done here in Alaska.	This FEIS/OEIS represents the Navy's full and complete analysis of the proposed action. Should there be other activities outside the scope of the proposed action, the Navy would conduct separate NEPA analyses. Navy NEPA regulations do not preclude classified actions from NEPA review and when feasible unclassified portions are made available to the public. (32 C.F.R. §775.5).
Dick Callahan - 8		7) You know the sonar 'training' will move outside the designated area if it's deemed necessary due to weather or other factors.	The GOA TMAA was chosen because it allows the size and flexibility to move within it to ensure completion of required Navy training. The Navy is fully aware of the more sensitive areas that surround the TMAA, especially near land. The Navy is not proposing in this EIS/OEIS to train outside of the TMAA and is used to operating within specified parameters and locations.
Dick Callahan - 9		8) You know humpback whales and gray whales will be migrating through this area while you are 'training.'	As provided in Chapter 5, mitigation measures will be implemented as appropriate whenever marine mammals are detected and regardless of their location. In this manner, Navy mitigation measures will afford the maximum protection to all marine animals, regardless of the species or area. In addition, gray whales will generally be found near the coastal areas whereas the closest point of the TMAA is over 12 nautical miles from the nearest coast line, as such it is unlikely that Navy training activities would occur when these

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			whales are present.
Dick Callahan - 10		You know beaked whales live there. You know you will deafen them or kill them as you have done in the past. 9) You know how sensitive they are to sound. Your deadly sonar program is fundamentally a grotesque application of what you've learned about whale sonar, and finally:	Please see response to Callahan - 4.
Dick Callahan - 11		10) You know the United States spends more on the machines of war than the next dozen countries combined. Other countries are not the threat, you are. The future of our oceans is the future of our people. You are not saving anything. You are not protecting anything. As each generation of Americans hands the next a poorer, more degraded world they say to themselves, "Well, it was only a few animals." Now though, the oceans are so compromised by warming, acidity and overharvest that the great fisheries are gone, even our Alaska salmon fisheries would be finished in five years if we stopped dumping a billion and a half hatchery smolts into the Gulf of Alaska every year, and so therefore this deadly sonar is not operating alone but rather, is part of a synergy our people, our world, can no longer afford-for the sake of our future generations-Americans cannot continue to let you pursue Destruction To Justify Your Budget. Stop. Dick Callahan, Juneau	This comment is duly noted.
Sue Christiansen - 1		Dear President Obama, Assistant Secretary of the Navy, and others concerned: The hundreds of beached whales with ruptured ear drums off the coast of New Zealand after the US Navy completed sonar research in nearby waters is not ok. Similar incidents in California, North Carolina, Japan and Russia have all been caused by lethal soundings of sonar.	Given the natural variation of marine mammal location over time within the GOA TMAA, operational variability of Navy mid-frequency and high-frequency active sonar operations, and the fact that the Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. The U.S. Navy is in full compliance with the Marine Mammal Protection Act and the Endangered Species Act. For information about the Navy's compliance with these and other regulatory requirements, see Chapter 6 of the EIS/OEIS. Also, please see the full analysis of marine mammal strandings in Appendix F of the EIS/OEIS – Cetacean Stranding Report. The report discusses the various stranding situations across the world.

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Sue Christiansen - 2		The only other cause of bleeding around sea mammals brains with ruptured ear drums might be the explosives you propose to use again in the Gulf of Alaska training exercises.	Please see Appendix F regarding a review of marine mammal strandings. It has become evident that the "bleeding" noted in the investigations done following the Bahamas stranding event in 2000 was most likely the result of those beaked whales being on shore in distress in the tropics rather than having occurred as a direct result of any sound or pressure wave exposure.
Sue Christiansen - 3		Your environmental impact statement conveniently does not mention either of the above.	Please see the full analysis of marine mammal strandings in Appendix F of the EIS/OEIS – Cetacean Stranding Report and Section 3.8 dealing with specific data on beaked whale species likely to be found in the TMAA.
Sue Christiansen - 4		What you are proposing is illegal. These marine mammals are protected by law. Though you are the Navy, you are not above the law.	The U.S. Navy is in full compliance with the Marine Mammal Protection Act and the Endangered Species Act. In addition, the National Marine Fisheries Service is a cooperating agency on this EIS/OEIS. For information about the Navy's compliance with these and other regulatory requirements, see Chapter 6 of the EIS/OEIS.
Sue Christiansen - 5		The Navy's Proposed Action for training in the Gulf of Alaska would also be lethal for other marine resources; fish, invertebrates, multitudes of species yet unnamed. The east coast of the United States no longer have most of the fisheries once plentiful. Please do not allow this to happen on the opposite coast. Now is the time to protect these resources. Please, DO NOT ALLOW THESE EXERCISES TO OCCUR. Sincerely, Sue Christiansen	As presented in Chapter 1, the U.S. Navy has been conducting these same activities in the Gulf of Alaska for many years, has a excellent record as a steward of the oceans, and is unaware of any potential affects that may occur to "invertebrates" or to "multitudes of species yet unnamed". As described in Section 3.6.4, the Navy's activities may result in injury or mortality to individual fish but would not result in impacts to fish populations. Effects of underwater noise on invertebrates are described in Marine Plants and Invertebrates; Sections 3.5.2.3, 3.5.2.4, and 3.5.2.5. Please see Chapter 4 with regard to cumulative impacts regarding the relative scope of Navy training activities in comparison to other more numerous activities and their known impacts.
Claddagh Enterprises and University of Alaska - 1		This testing is an absolute travesty and harmful not only to the marine creatures that travel and live in these Alaska waters, but also harmful to the human beings that depend upon marine creatures for a livelihood. Why, oh Why must our military continue to disregard the natural creatures and "practice" using live ammo, sonar, and other harmful activities. Who are we fearful of having some sort of attack on this nation that requires "practice"??	This comment is duly noted. Please note that the proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. As stated previously, there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of the marine environment.

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Claddagh Enterprises and University of Alaska - 2		And research indicates that the earthquake in Haiti may have been caused by large sonar impulses that disturbed the ocean floor, resulting in the death of over 200,000 people and displacement of millions. Stop this madness, MADNESS, MADNESS.	This comment has been duly noted.
James Clare - 1		I am both surprised to learn about existing US Navy training in the Gulf of Alaska and seriously concerned about proposed alternatives to damage the marine environment in our area with additional training that includes strong sonar sound pollution and sinking vessels that will cause pollution of our fragile marine waters. Please do not engage in these activities.	The Navy has conducted a thorough analysis of potential effects in Chapter 3 of the EIS/OEIS. Existing Navy training has been occurring annually and analyzed individually. Similar to all other areas that the Navy trains, there is no indication that training activities have a negative impact on the health of the marine environment. As such, the Navy is confident, and the analysis indicates, that its training activities will not impact the marine environment off the Gulf of Alaska.
James Clare - 2		Alternatively, use other alternatives that will not cause pollution or kill marine life. Thank you.	The Navy's alternatives analysis for water quality, expended materials, and affected marine resources has been analyzed within Sections 3.2-3.9. All analysis within these sections concludes that there will not be significant harm to any marine life within the GOA. In addition, Chapter 5, Mitigation, provides a detailed analysis of mitigation measures that have been implemented for each resource. Regarding alternative selection, please see response to Ellen Americus – 1.
Richard Collins - 1		Our livelihood and many of the people in communities in Prince William Sound depends on the fish that live, grow and move through the Gulf of Alaska. I am very concerned about the possible effects the Navy Training Activities could have on these resources. ... This could be too late for the rich marine life in the Gulf of Alaska, the fishermen and families depend on the resource, destruction of a food source. The Gulf of Alaska is a healthy habitat for many marine animals and should remain so.	The Navy is very aware of concerns from fishing fleets and fisheries in the Gulf of Alaska. As described in the EIS/OEIS, analysis of impacts to fish are found in Section 3.6 of the EIS/OEIS. There is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of fish populations. Socioeconomic impacts in regard to the fishing industry, tourism, and recreation have been analyzed in the EIS/OEIS in Section 3.12 - Socioeconomics.
Richard Collins - 2		With testing, effects are often not known until after it is completed.	The proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. .In addition, the Navy believes that the proposed training will not pose a significant risk to whales, fish, and other wildlife given that these same activities have been conducted for many years in other Range Complexes with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals, fish, or wildlife at those locations. Please see the recent results supporting this as presented in training ranges monitoring

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			reports available at available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]. A integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the Draft EIS/OEIS. In addition, the Navy implements protective measures during its training events as developed with NMFS as a cooperating agency. Please see Appendix F regarding a review of sonar related stranding events. The Navy will continue to implement the monitoring and research programs where training has been occurring to determine if there are determinable impacts as a result of those activities and will do so in the TMAA associated with future training occurring there.
Jai Crapella		To whom it may concern, I understand that the Navy believes testing mid-range high frequency sonar is integral to our Nation's security but I believe there are grave concerns and consequences to using it. It's hard to even imagine how excruciating it must be to marine wildlife. The Gulf of Alaska test site is critical habitat to endangered and sensitive marine life, and the effects are not understood well enough to take such risks with the life in Gulf. Please consider Alternative 1. Thank you, Jai	Please note that the proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. The Navy fully analyzed potential impacts to marine life. Additionally, given the natural variation of marine mammal location over time within the GOA TMAA, operational variability of Navy mid-frequency and high-frequency active sonar operations, and the fact that the Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS.
Bridgette Cuffe - 1		I strongly oppose the dumping of hazardous materials and the use of sonar training in the Gulf of Alaska.	This comment is duly noted.
Bridgette Cuffe - 2		The gulf of Alaska is a critical habitat for thousands of species of fish, marine invertebrates, and marine mammals such as the endangered gray, humpback and blue whales. Sonar training activities would adversely affect these endangered species as well as the hundreds of non-endangered species that inhabit or migrate through this area.	Please see response to Jai Crapella above.

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Bridgette Cuffe - 3		Also, the oceans are not a garbage dump. The navy needs to find an alternative to dumping over 300,000 pounds of spent materials in the Gulf of Alaska. I support the no action alternative, which allows existing activities to continue without increasing toxic dumping or sonar activities.	Dumping is not practiced by Navy ships. Training materials are expended during the execution of authorized training activities, as such, this activity does not fall within the statutory definition of “dumping” under MPRSA. Regarding spent materials, please see response to Alaska Glacial Mud Co. - 1. Regarding alternative selection, please see response to James Clare – 2.
Laura DAmico		I urge the Navy to stop needlessly inflicting harm on Whales and other ocean life with its use of high intensity mid frequency sonar in its training exercises. Marine animals depend on the use of sound, their own "Sonar" to navigate. Blasting them with sound threatens their survival. Sonar also affects Whales directly, believed to causing strandings across the globe. Whales should not have to die for military training. The Navy can no longer ignore the unnecessary harm inflicted by this technology...I urge the Navy to immediately adopt common sense measures to keep whales safe.	Given the natural variation of marine mammal location over time within the GOA TMAA, operational variability of Navy mid-frequency and high-frequency active sonar operations, and the fact that the Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy’s analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Additionally, the science of sound in the water and its effects on marine life is evolving. The Navy conducted a thorough analysis of sonar and at sea explosions in the EIS/OEIS, using the most current and best available science, and with cooperation from the National Marine Fisheries Service, which is responsible for the protection of marine species. Also, please see the full analysis of marine mammal strandings in Appendix F of the EIS/OEIS – Cetacean Stranding Report. The report discusses the various stranding situations across the world.
Joleen Decker - 1		To Whom it may concern regarding the Navy's GOA DEIS, This news of the training expansion has not had the time it deserves to be processed by the public, and I first off request a 30-day extension.	Regarding your request for an extension, please see response to Bryson – 14.
Joleen Decker - 2		Upon the FEIS, I would also request 90-days for a proper comment period to network with all the communities that this will affect.	The Navy will comply with NEPA requirements for release of the FEIS.
Joleen Decker - 3		Our Gulf of Alaska's still-in-tact ecosystem is worth as much as homeland security. I do not oppose the Navy as a whole, and I agree that their training is important. I am however FOR the No Action plan! I do not agree with the expanded training activities in the DEIS because of the use of bombs, active sonar, ship sinkings, & hazardous waste loads	The Navy fully analyzed potential impacts from the use of expended materials, sonar, ship sinkings, and hazardous materials to marine life. The findings are in several sections of Chapter 3 of the EIS/OEIS. Regarding alternative selection, please see response to James Clare – 2.

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Joleen Decker - 4		how can the bio-accumulative affects of all these things not be real and not add up?	With regard to bioaccumulation, please see response to Kate Alexander - 3.
Joleen Decker - 5		And why do you need a permit from NOAA to "take" (which does not mean "kill") SO MANY marine mammals if there won't be such affects?	The U.S. Navy has an obligation to request an incidental take permit from NOAA in compliance with the Marine Mammal Protection Act. NOAA would grant this permit only if; "the taking will have a negligible impact on the species or stock and will not have an unmitigable adverse impact on the availability of such species or stock for taking for subsistence uses." Regarding "takes" please see response to Judith Brakel – 1.
Joleen Decker - 6		The GOA should not be a testing ground amidst your trainings. I would request extensive research and that data work be done before you need permission for such "takings." The 'just in case' scenario of 11.7 many marine mammals passing through the ATA in 5 years, if that's how it was essentially determined while assuming that minimal behavioral affects take place, seems irresponsible. This aspect regarding the marine mammals in the midst of the training activities must be embellished	The proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. The EIS/OEIS is an extensive and exhaustive study based on research and analysis of the effects of increasing training activities on marine resources. While additional research or further scientific advances may provide a more definitive analysis, a NEPA document is necessarily based on information available at the time the document is prepared, and the current state of the science. As such, the Navy believes it has fully analyzed the potential impacts to marine life. The findings are in several sections of Chapter 3 of the EIS/OEIS.
Joleen Decker - 7		and I don't think the passive sonar that doesn't accurately detect the whale or sea turtle and the look out on deck, is enough.	This comment is duly noted. Please note that as part of the Navy's standard mitigation measures, the use of passive listening devices help to detect vocalizing marine mammals so that operators of vessels and other participants can take appropriate actions in the known presence of detected marine mammals. In addition, Navy lookouts undergo extensive training to include on-the-job instruction under supervision of an experienced lookout followed by completion of a Personnel Qualification Standard Program. NMFS-approved Marine Species Awareness Training is required before every sonar exercise. Furthermore, as noted in the EIS/OEIS in Section 5.2.1.2, all Navy surface ships participating in anti-submarine warfare exercises will have two additional personnel on watch as marine mammal lookouts. It should also be noted that the Navy routinely stands watches of 8 hrs. So, in any 24 hour period, as many as 15 fully qualified watchstanders would be on the watch. Additionally, night devices and other visual aiding devices are used.

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Joleen Decker - 8		Thank you for allowing comment, I would further input this about the DEIS: 1) it is based on research that is outdated by 10 or more years	The science of sound in the water and its effects on marine life is evolving. The Navy conducted a thorough analysis of sonar and at sea explosions in the EIS/OEIS, using the most current and best available science, and with cooperation from the National Marine Fisheries Service, which is responsible for the protection of marine species. While additional research or further scientific advances may provide a more definitive analysis, a NEPA document is necessarily based on information available at the time the document is prepared, and the current state of the science. As such, the Navy believes it has fully analyzed the potential impacts to marine life.
Joleen Decker - 9		and 2) it does not give us the answers we are wanting to be reassured that our livelihood and passion for the pristine environment we live in is left un-impacted by adverse affects, as they are virtually unknown,	The Navy believes it has fully analyzed the potential impacts to marine life. The findings are in several sections of Chapter 3 of the EIS/OEIS.
Joleen Decker - 10		3) the GOA DEIS is not specified to our region. It does not acknowledge the fact that many species, humans included (fisherman), are still in recovery from the Exxon Valdez Oil Spill (EVOS), and some are not making recovery at all, such as the Herring.	The EIS/OEIS is specifically focused on the GOA TMAA and is specific to the area as required by NEPA. Additionally, socioeconomic impacts in regard to the fishing industry, tourism, and recreation have been analyzed in the EIS/OEIS in Section 3.12 - Socioeconomics. Please note that the Exxon Valdez Oil Spill is not a specific project to be analyzed, as its effects are reflected in the description of baseline conditions described in the affected environment section. Furthermore, the Navy acknowledges that Pacific Herring are an ecologically and commercially significant species in the Gulf of Alaska. However, regarding the potential impact from Navy activities on the Herring, specifically sonar, the EIS/OEIS fully analyzed potential impacts. As was described in Sections 3.6.1.4, fish have very limited hearing in the frequency range of Navy sonar, and the body of research indicates they are not negatively impacted by Navy sonar. Specifically, a study of herring (one of the few fish that can hear mid-frequency sonar) *Doksæter et al*. determined that “Military sonars of such frequencies and source levels may thus be operated in areas of overwintering herring without substantially affecting herring behavior or herring fishery” (2009:554). As such, the Navy is confident and the EIS/OEIS concludes that there is no significant impact to population levels for fish, including Pacific Herring, from Navy activities.

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Joleen Decker - 11		I believe more point-source research needs to be done and the facts need to be validated.	As stated above, while additional research or further scientific advances may provide a more definitive analysis, a NEPA document is necessarily based on information available at the time the document is prepared, and the current state of the science. Additionally, the purpose of releasing the Draft EIS/OEIS to the public is to have its analysis and subsequent findings reviewed and critiqued by the public and scientific community.
Joleen Decker - 12		Our inter-connected ways of life in Alaska depend entirely on the optimally functioning ecosystem of the marine and coastal environments so that fishing, tourism, marine highway and oil transportation, and world-dependent first class research studies, to name a few, can continue while further promoting the healthy state of our ocean altogether.	This comment is duly noted.
Joleen Decker - 13		You do realize we have the last of the wild salmon runs up here. Don't you?	The Navy is very aware of concerns from fishing fleets and fisheries in the Gulf of Alaska. Section 3.6 (Fish) of the EIS/OEIS thoroughly analyzed impacts to Fish from proposed Navy training activities. From the analysis, the Navy is confident that its training activities will not impact salmon fisheries off the Gulf of Alaska. Furthermore, the EIS/OEIS concludes that there is no significant impact to populations of fish. Additionally, it should be noted that Threatened and Endangered salmon will be evaluated by NMFS under separate Biological Opinions as part of this process.
Zigrida Eberhardt	Centennial Library	Even though you proclaim to have regards for natural resources and the environment, I find that in the case of these training activities you are scheduling them without regard to the Breeding Season of Whales and Dolphins in the area. I am quite positive that these exercises can be rescheduled. I urge you to DO just that. It is inconceivable that wildlife is to be destroyed and killed for these exercises!	An alternative of training outside of summer in the GOA TMAA was considered in Section 2.3.2.3 of the EIS/OEIS. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further. Also, please note that the Gulf of Alaska is not a substantial breeding ground for marine mammal species.
Erika Empey - 1		Of course having the Navy train in the Gulf of Alaska is going to impact our resources! Are you kidding me????	The Navy fully analyzed potential impacts to identified resources in Chapter 3 of the EIS/OEIS. In all cases, the findings from the analysis are that no significant impacts will occur from Navy training activities.
Erika Empey - 2		Can't you guys go somewhere else where the resources and environment are already ruined???	In Section 2.3.2.3 of the EIS/OEIS, the alternative of training outside of summer in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further.
Erika Empey - 3		My husband and I fish for a living. Having a big Naval force in the area is going to have a negative impact.	Please note that under the Proposed Action, the number of Navy vessels operating in the TMAA would be eight (to include

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			a submarine) over a maximum of 3 weeks, up to two times a year. In Section 3.6, the EIS/OEIS examined potential impacts to fish and fish habitat due to vessel movement, aircraft overflight, weapons use, expended training materials, at sea explosions, and sonar. In each case, proposed Navy training is expected to result in minimal to no harm to fish. Additionally, the EIS/OEIS described potential economic impacts to fishing in Section 3.12.2.5. In this section, the analysis concluded that impacts would not be significant due to advanced public notification and the primarily short-term duration of military activities. No new closure or restricted areas are proposed.
Erika Empey - 4		To think that the Navy is going to come in and train, and use Sonar, which is known to REALLY screw with animals and fish is pure CRAP! I do not want you in my backyard, ruining our resources! GO SOMEWHERE ELSE!	While the U.S. Navy understands your concern; however, the scientific analysis conducted in support of this EIS/OEIS that was based on the current, best available science found that the effects of Navy training, including sonar, are not significantly adverse. The Navy conducted a thorough analysis of sonar and at sea explosions in the EIS/OEIS, using the most current and best available science, and with cooperation from the National Marine Fisheries Service, which is responsible for the protection of marine species. The Navy's analysis indicates there is little relative risk to populations of marine mammals from sonar training exercises. The Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals. Therefore, mitigation and monitoring are implemented to further reduce impacts. Also, note that the U.S. Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that cause adverse biological impact to marine mammal population stocks at those locations. Because there is no indication from areas where the Navy routinely trains that training activities have a negative impact on the health of the marine environment, the Navy is confident that there is little relative risk to marine mammal populations from active sonar training or any other training events. Finally, as described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included moving this exercise to other locations. Such alternatives fail to meet the purpose of and need for the proposed action.

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Erika Empey - 5		Almost all of Alaska besides Anchorage relies on fishing, why would you ruin it for us???	In Section 3.6, the EIS/OEIS examined potential impacts to fish and fish habitat due to vessel movement, aircraft overflight, weapons use, expended training materials, at sea explosions, and sonar. In each case, proposed Navy training is expected to result in minimal to no harm to fish. Additionally, the EIS/OEIS described potential economic impacts to fishing in Section 3.12.2.5. In this section, the analysis concluded that impacts would not be significant due to advanced public notification and primarily short-term duration of military activities. No new closure or restricted areas are proposed. Furthermore, to help manage competing demands and maintain public access in the GOA, the Navy conducts its offshore activities in a manner that minimizes impacts to commercial fishing.
Erika Empey - 6		I support the no action alternative. Please don't destroy the resources Alaskans depend on! It's not like we can just switch to buying everything like the lower 48. It's too expensive. This is our livelihood!	The Navy shares your concern for marine life and appreciates the resources that are so important to the Alaskan way of life. Regarding alternative selection, please see response to James Clare – 2.
Lucretia Fairchild		I support the "no action" alternative, so that existing training activities may continue, but toxic dumping will not increase; nor will the use of sonar harmful to whales and fish be allowed.	Dumping is not practiced by Navy ships. Given the natural variation of marine mammal location over time within the GOA TMAA, operational variability of Navy mid-frequency and high-frequency active sonar operations, and the fact that the Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Analysis of impacts to fish are found in Section 3.6 of the EIS/OEIS. In summary, the EIS/OEIS examined potential impacts to fish and fish habitat due to vessel movement, aircraft overflight, weapons use, expended training materials, in-water detonations, and sonar. In each case, proposed Navy training is expected to result in minimal to no harm to fish or fish populations.
Maka Fairman - 1		As a citizen of the U.S., and of Alaska for 35 years, I am appalled at the idea the U.S. Navy has proposed. Have we no desire to save ourselves from destruction? My deceased husband was Navy, served in Vietnam, and he would agree that you are killing the sea life with this plan. Do you think you are protecting us from the terrorists? It is a terrorist	This comment is duly noted.

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		action where pure ignorance is allowed to rule a ship of fools. Do not allow this to happen. ... All military branches are surviving off the American taxpayer's back, of which I am one, and personally, I don't want my money spent on the lethal extermination of a source we all depend on to live. What is making us so mean? If you are not sure what beached whales and dolphins look like, check this out: http://www.youtube.com/watch?v=YSubC55Kl2c	
Maka Fairman - 2		Research to learn how many whales, dolphins and other valuable sea and plant life have been destroyed by these military tests, and also, the extremely toxic waste dumping that have been allowed.	The proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. Additionally, dumping is not practiced by Navy ships. The hazardous constituents of each type of ordnance are listed in Section 3.2.1.1. The estimated amounts of hazardous constituents in each type of ordnance are approximations based on the best information available. The exact amounts of each hazardous constituent in each ordnance vary. Tables summarizing the total amounts of hazardous materials and the estimated densities of hazardous materials deposited in the TMAA are provided in Section 3.2, Expended Materials. The aggregate effects of all expended materials would be roughly equivalent to the sum of individual effects because of the large area in GOA, the low areal density of expended materials, and the low percentage content of hazardous constituents within the expended materials (about 3 percent of expended materials would be considered hazardous). The cumulative effects of expended and hazardous materials from the Proposed Action and other sources are addressed in Section 4.2.2.2.
Linda Feiler, Geneva Craig, and Don Miller		WE three have looked in to your actions in the past and are highly disturbed. WE are against hurting the planet, wildlife, sea life and humans in any way. It might be hard for military personnel to believe that we feel this way but we are shocked that in a time of peace you would cause such harm to our seas (us) and those of us around it and in it. Spend more hours on negotiating and instilling peaceful methods and let us try a new approach to killing everything we disagree with to see if we can make good changes on the planet. We are for the NO PLAN and wish it meant what it says. DO ABSOLUTELY NOTHING to our sea or our lives. Very Sincerely, Geneva Craig, Don Miller and Linda Feiler	The Navy shares your concern for the environment and recognizes that it has a responsibility to serve as a good steward of the natural environment. We demonstrate that commitment by investing millions of dollars annually in programs that enable us to minimize, and in some cases eliminate, the effects of our operations on the environment while carrying out our ongoing national defense mission. The fact that the Navy is a seagoing force, and that two-thirds of the world's surface is covered by water, means that many of our environmental initiatives focus on ocean stewardship and seek opportunities to control our "ecological footprint" in relation to marine life, coastal impacts, and water quality. We

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			have installed technology aboard our ships to keep plastics out of the ocean and safely manage our biodegradable waste stream. We are a world leader in marine mammal research, and are funding approximately $26 million annually in marine mammal-related research projects from fiscal years 2007-2009. We serve as the executive agent for the Department of Defense Coral Reef Task Force. Major ocean stewardship efforts can be seen in our comprehensive approach to managing effects on marine life for all of our training ranges and operating areas. These environmental planning documents are being coordinated with the National Marine Fisheries Service. In addition, the U.S. Navy has programs in place to manage threatened and endangered species on and around our installations; safely clean up past hazardous waste sites for future reuse; explore and develop new, greener technologies for equipment design and maintenance; and recycle metal, wood, and glass. Navy installations and ship's crews frequently partner with local communities on volunteer shoreline and neighborhood cleanup projects.
Laurie Ferguson - 1		Dear Mrs. Burt, Thank you for the opportunity to comment on the Navy's training exercise proposal for the Gulf of Alaska. I attended the hearing in Juneau on January 11, 2010. I strongly oppose two elements of the proposal: active sonar and ordnance. My primary concern is adverse impacts to marine mammals, particularly whales. In summer several species of whales migrate to the north Pacific after months of fasting. Whales feed only in summer in northern waters.	This comment is duly noted.
Laurie Ferguson - 2		Whales and other marine mammals have extremely sensitive hearing that is likely to be damaged by active sonar and underwater explosives. The Navy's exercises may drive whales away from their feeding areas, disrupt prey species' movements, and disturb traditional feeding and migrating patterns. They might also cause torturous sounds from which the animals may not be able to escape and which may kill the whales. I urge you to eliminate active sonar from your exercises.	The Navy shares your concern for marine life. The Navy disagrees that the proposed training and use of sonar will pose a significant risk to whales given that these same activities have been conducted for many years in other Range Complexes with no indications of any adverse impact to marine mammals, fish, or other wildlife. In addition, the Navy implements protective measures during its training events as developed with NMFS as a cooperating agency. In authorizations under the Marine Mammal Protection Act and Biological Opinions under the Endangered Species Act, NMFS has found these same training events will not pose a significant threat to marine life under their purview. The Navy will continue to implement the monitoring and research programs where training has been occurring to determine if

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			there are determinable impacts as a result of those activities. The same programs will be implemented in the TMAA during future training activities. The Navy will continue to be a leader in funding of research to better understand the potential impacts of Navy training activities and to operate with the least possible impacts while meeting training requirements.
Laurie Ferguson - 3		You have chosen an area of high marine productivity for destructive exercises. Recent studies reveal important details about the Gulf of Alaska that correlate the amount and distribution of freshwater flowing into the ocean from terrestrial sources in Alaska's temperate coastal rainforests. Rather than dissolving into salt water, freshwater eddies circulate in tight formations in several mobile locations in the Gulf. These deep anticyclonic mesoscale vortices are sources of chlorophyll and high phytoplankton production. Radio- and GPS tagged marine mammals have been tracked far into the proposed training exercise zones, likely to seek the abundance of food concentrated in the eddies. One similar study is titled "Impact of Haida Eddies on chlorophyll distribution in the Eastern Gulf of Alaska," by Crawford, Brickley, Peterson and Thomas, 2005. It explains the value of freshwater eddies in the eastern gulf but other studies show similar dense high-value feeding zones on the western side of the Gulf. I encourage you to search for more information on these eddies within the proposed training areas.	As detailed in Chapter 3 and specifically Section 3.8 with regard to marine mammals, science is still developing regarding the indicators for predicted presence of marine mammals. The use of tracking data (for example as detailed in Section 3.8.3.3 for humpback whales or Section 3.8.5.4 for fur seal) was used in determining the likely presence of marine mammals in the TMAA. The Navy's mitigation measures, as presented in Chapter 5, are implemented as applicable whenever a marine mammal is detected. Density estimates used in the marine mammal modeling and impact analysis of this EIS/OEIS factor in natural occurrences in the area. While recent studies may reveal additional details about freshwater eddies, this would not change the density estimates for the area.
Laurie Ferguson - 4		The Navy needs to reconsider its culture of continually bringing new naive staff into areas of such important natural resources. Instead, Navy experts should be encouraged to remain and increase their expertise.	This comment is duly noted.
Laurie Ferguson - 5		These exercises are destructive, expensive and wasteful.	This comment is duly noted.
Laurie Ferguson - 6		The Navy has incorrectly labeled the NO ACTION alternative. NEPA regularly uses that important phrase to mean that NO activity would occur. In the Navy's Gulf of Alaska EIS, you have determined that NO ACTION means all activities previously undertaken, minus the new plans. I object to this practice.	NEPA regulations both require analysis of a no-action alternative and provide that in situations involving ongoing activities, as with Navy actions in the GOA ATAs, that it is appropriate for the no-action alternative to reflect a baseline of ongoing actions. For EISs that study management levels of Federal assets, the no-action alternative is seen as the current management level of asset usage-in this case, status-quo as the current level of range usage. The no-action alternative can be thought of in terms of continuing with the present course of action until that action is changed. (46 Fed Reg 18026, at

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			18027). Alternatives 1 and 2 discuss the increase from these levels. This is the approach properly taken in developing alternatives for this EIS/OEIS. (See #3 of CEQ's Forty Most Asked Questions). Given this guidance, the Navy considered all activities it has currently conducted within the GOA ATAs as its current managed level or no action. Previously, those activities have been evaluated in individually focused NEPA or E.O. 12114 documents such as the EA and/or OEAs for the Northern Edge exercise in previous years. The Navy has discussed all alternatives that were considered but eliminated in Section 2.3.2 and the consideration of the no-action alternative, alternative 1, and alternative 2 within Chapters 3 and 4 ensures the Navy's compliance under NEPA. As explained in Section 2.3.2.1 of the EIS/OEIS, relocating training activities to another location or rescheduling during a different season would not support the Navy's Purpose and Need and was therefore eliminated from further consideration. Because of the need to support the ALCOM mission, the location must be within reach of ALCOM forces. The extreme weather conditions during the non-summer season would either needlessly jeopardize participants' safety, or would be very inefficient due to likely rescheduling of numerous events not completed during bad weather.
Laurie Ferguson - 7		Three posted lookouts are inadequate for locating whales in the Gulf.	The training exercises that are part of the proposed action include multiple ships. This is notable because every single Navy ship underway has posted lookouts. All of these lookouts work in conjunction with one another to identify surface disturbances. Furthermore, Navy lookouts undergo extensive training to include on-the job instruction under supervision of an experienced lookout followed by completion of Personnel Qualification Standard Program. Navy lookouts are specifically trained to identify any surface disturbance, including marine mammals or debris, for ship safety. In addition, NMFS-approved Marine Species Awareness Training is required before every sonar exercise. In addition, as noted in the EIS/OEIS in Section 5.2.1.2, all Navy surface ships participating in anti-submarine warfare exercises will have two additional personnel on watch as marine mammal lookouts. While the Navy is very confident in its well-trained lookouts, it does not expect that 100% of the animals present in the vicinity of training events will be detected. The acoustic impact modeling estimates provided in the EIS/OEIS are not reduced

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			as a result of mitigation effectiveness, even though many marine mammals will be detected and sonar exposures will be avoided.
Laurie Ferguson - 8		I urge you to creatively develop a better method of ascertaining submarine threats to national security than by destroying the fish, food, and marine mammals Americans treasure. Laurie Ferguson Craig Juneau, Alaska	Sonar is currently the most effective technology for detecting and tracking quiet diesel-electric submarines. As such, it is imperative that the Navy train using this technology. Section 3.8 (Marine Mammals) and Section 3.6 (Fish) thoroughly analyze impacts to both marine mammals and fish from proposed Navy training activities. The EIS/OEIS concludes that there are no significant impacts to populations of either marine mammals or fish.
Will Files		The science on our oceans is still in its infancy, but indications are that bombing and high levels of sonar are detrimental to the critters in the water. Therefore I am opposed to any use of bomb and their pollution as well as sonar use in the Gulf of Alaska.	The science of sound in the water and its effects on marine life is indeed evolving and the Navy has made use of the best available science in the analysis of potential impacts presented in the EIS/OEIS. In addition, the Navy has a requirement to train its sailors to defend this nation if called upon and there is no alternative to training in the Alaska area, as detailed in Chapters 1 and 2 of EIS/OEIS. On top of that, the Navy realizes it has an obligation to serve as a good steward of the natural environment. To meet these sometimes conflicting obligations, the Navy conducted a thorough analysis of sonar and all its activities in the EIS/OEIS, using the best available science, and with cooperation from the National Marine Fisheries Service, which is responsible for the protection of marine species. Also see Chapter 5, which presents the mitigation measures that will be implemented to minimize impacts while maintaining the ability to conduct this vital training.

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Chris Fredell - 1		Please find another method for testing military sonar, a method that does not endanger North Pacific sea life. ... I would like to see alternatives to this proposed testing, either a different area or different testing methods that would avoid impacting the North Pacific area and its inhabitants. Thanks for your consideration. Chris Fredell	Please note that the proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. Furthermore, the Navy believes that all of the Navy's proposed activities were thoroughly analyzed in Chapter 3 of the EIS/OEIS. Because there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of the marine environment, the Navy is confident, and the analysis indicates, that its training activities will not impact the marine environment off the Gulf of Alaska. As described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included moving this exercise to other locations. Such alternatives fail to meet the purpose of and need for the proposed action.
Chris Fredell - 2		After studying the Navy's materials and attending one of the public comment session held in Alaska recently, I have concluded that the proposed test activities are too dangerous to the North Pacific's marine life systems.	This comment is duly noted.
James Gadomski		Dear Navy, Go for it and God Bless you all. My wife and I support any and all military training. Sincerely, Jim & Rose Gadomski	This comment is duly noted.
Jeanette Gann - 1		I am writing to express my opposition to the sonar testing slated for the Gulf of Alaska waters by the Navy. There is much evidence that sonar testing negatively effects whales and other marine mammals, and some effects could be fatal. One of the proposed areas for testing is adjacent to what has been determined critical habitat for right whales, an extremely endangered species.	The proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. A discussion of potential impacts to North Pacific right whales from sound sources proposed for use in the TMAA is presented in Section 3.8 of the EIS/OEIS. In addition, it should be pointed out that the Navy has conducted mid-frequency and high-frequency active sonar activities for decades with no indications of injuries to resident beaked whales at training ranges in Hawaii and Southern California or to right whales on the East Coast. There are no indications for broad-scale impacts that are either injurious or of significant biological impact to marine mammals, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Additionally, as presented in Section 3.8 and depicted on Figure 3.8-1, the North Pacific right whale Critical Habitat is approximately 16 nautical miles from the nearest corner of the TMAA and not directly adjacent to it as stated in the comment.

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			Finally, it should be noted that the Navy is in full compliance with the Marine Mammal Protection Act and the Endangered Species Act. For more information about the Navy's compliance with these and other regulatory requirements, see Chapter 6 of the EIS/OEIS.
Jeanette Gann - 2		Many people come to Alaska for the diverse wildlife, including whale watching, and the summer-time is when the majority of whales are actively feeding in Alaska waters.	Socioeconomic impacts in regard to tourism and recreation have been analyzed in the EIS/OEIS in Section 3.12 - Socioeconomics. To help manage competing demands and maintain public access in the GOA, the Navy conducts its offshore activities in a manner that minimizes impacts to recreation and commercial activities.
Jeanette Gann - 3		Please reconsider your plan to test in these waters and work with the public and marine scientists to determine a more suitable area for testing that will lessen the impact on the marine environment. Thank you for your time, Jeanette Gann Juneau, Alaska	As stated previously, the proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. In addition, there are mitigation and protective measures in place to lessen the impact to the marine environment. Additionally, as described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included moving this exercise to other locations. Such alternatives fail to meet the purpose of and need for the proposed action.
Adrienne Gelfand-Perine - 1		It is astounding to me to learn about the activities that are planned beginning in April that jeopardize the aquatic life as well as the water and air in the Alaskan waterways. We have too much work to do to improve our oceans and air quality without adding more devastation. ... Too many species including man will be endangered by them.	The activities will not begin until the after the Record of Decision is signed by the Secretary of the Navy, which is currently proposed no later than Winter 2010. All of the activities proposed by the Navy have been thoroughly analyzed for their potential to impact the human environment, which includes marine life, air quality, and water quality. The findings are explained in Chapter 3 of the EIS/OEIS. In summary, the proposed activities are not expected to cause any significant impacts to the environment.
Adrienne Gelfand-Perine - 2		Do NOT test sonic booms in the area.	Sonic boom testing is not part of the proposed action for this EIS/OEIS. However, throughout the course of the exercise, individual planes may attain supersonic speeds within the TMAA. This would create a sonic boom, the effects of which have been analyzed in Section 3.4 (Acoustics) and as they relate to marine mammals in Section 3.8.
Phil Gordon		No bombing, no sonar, no ordnance expended, and no hazardous materials introduced in the North Pacific by the Navy please. This area is not a human population center, but it is a rich habitat for resources and endangered species. This level of activity ignores accepted science for both endangered animals, and for other marine mammals regarding both sound, hazardous materials and sonar.	This comment is duly noted. The Navy shares your concern for marine life. As described in the EIS/OEIS, the Navy implements protective measures during its training exercises. The Navy is a leader in funding marine mammal research to better understand them and to operate with the least possible impacts. Please note that the Navy conducted a thorough analysis of sonar and at sea explosions in the EIS/OEIS, using

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		Seven endangered animals are directly effected by these proposed activities. Our Navy is lavishly funded by taxpayer monies to defend our oceans and our resources, not to endanger and destroy them.	the most current and best available science, and with cooperation from the National Marine Fisheries Service, our cooperating agency on this EIS/OEIS. Regarding impacts to endangered animals, please see response to Alexander – 5.
Willow Griffin - 1		My comment is regarding the hearing on Monday, January 11th in Juneau. I am unable to attend the hearing but I do wish to weigh in on the public process. The proposed sonic booms in the Gulf of Alaska from April through October, 2010 is absolutely unacceptable.	Sonic boom testing is not part of the proposed action for this EIS/OEIS. However, throughout the course of the exercise, individual planes may attain supersonic speeds within the TMAA. This would create a sonic boom, the effects of which have been analyzed in Section 3.4 (Acoustics) and as they relate to marine mammals in Section 3.8.
Willow Griffin - 2		While it is undeniable that we need an active and capable Naval Service, there is no reason to endanger over 425,000 marine mammals, affect the migration patterns of many species for the course of five years. In five years over 10 million animals would be killed, maimed or negatively affected by this practice.	Regarding “takes” of 425,000 marine mammals, please see response to Judith Brakel – 1.
Willow Griffin - 3		Not to mention the military exercises will ultimately dump tons of toxic chemicals into an already fragile ocean.	Please see response to Judith Brakel – 6.
Willow Griffin - 4		The United States Navy must use their considerable resources to come up with other viable options for practice and research that do not have such extensive effects on a fragile ecosystem and endangered species.	It should be noted that Navy training exercises already use, to a large extent, computer-simulated training and conduct command and control exercises without operational forces (constructive training) whenever possible. However, as described in Section 2.3.2.4 of the EIS/OEIS, “Unlike live training, simulated training does not provide the requisite level of realism necessary to attain combat readiness, and cannot replicate the high-stress environment encountered during combat operations.” This section and Section 1.2.1 - "Why The Navy Trains," goes further to explain the importance of live training and the current limitations of simulated training.
Robert Harrison		This proposed action is an outrage. Please do not take this action. Thank you.	This comment is duly noted.
Amy Hayes		Please do not use sonar in the Gulf of Alaska, especially during peak whale migratory periods. It is our responsibility to act with care and discrimination when endangered marine mammals may be affected by our actions.	This comment is duly noted.
James Hemming - 1		This document does not comply with the requirements of NEPA. There are no well defined mitigation measures	The Navy complies with all applicable environmental laws, including NEPA and its requirements. Furthermore, it should be noted that the U.S. Navy is in full compliance with the Marine Mammal Protection Act and the Endangered Species Act. For information about the Navy's compliance with these and other regulatory requirements, see Chapter 6 of the EIS/OEIS. Chapter 5 of the EIS/OEIS, Mitigation Measures,

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			presents the U.S. Navy's protective measures to reduce impacts while conducting realistic Navy training.
James Hemming - 2		and the US Navy has not utilized the best available scientific data to assess potential impacts	Please note that the science of sound in the water and its effects on marine life is evolving. With that said, the Navy conducted a thorough analysis of sonar and underwater detonations in the EIS/OEIS, using the most current and best available science, as required by NEPA. This analysis was completed in cooperation with the National Marine Fisheries Service, which is responsible for the protection of marine species. Additionally, there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of the marine environment.
James Hemming - 3		the proposed alternatives to the project do not offer a clear and significant approach to minimize environmental impacts to living organisms in an area that is very rich in wildlife and fish resources, including threatened and endangered species. The proposed EIS for a Gulf of Alaska Navy Training Exercise should be rejected and re-written so that it complies with the National Environmental Policy Act. Sincerely, James E. Hemming	This comment is duly noted. However, please note that the purpose of an alternative is not to "offer a clear and significant approach to minimize environmental Impacts to living organisms ...." Rather, proposed alternatives are alternative actions that would meet the purpose of and need for the proposed action. Additionally, the Navy would like to point out that the broad objectives set forth in this document are both reasonable and necessary. In regard to studied alternatives, the Navy is in full compliance with NEPA. Additionally, mitigation measures are designed to minimize environmental impacts. Please see Chapter 5 of the EIS/OEIS, Mitigation Measures, presents the U.S. Navy's protective measures.
Steven Henry		Alaska and it's surrounding seas is one of the most pristine areas in the western world. PLEASE help keep it that way and refrain from military exercises in this area. Alaska is renowned and envied the world over for it's beauty, it's wildlife and it's sense of wilderness and I very much hope that it will be encouraged and nutured in such a way as to protect it's greatest asset. A military presence such as this is only going to be detrimental to Alaska's water, it's wildlife and it's reputation. Thank you. Steven Henry.	As presented in Chapter 3 of the EIS/OEIS, the Navy is aware of the diverse biological presence in the area and has conducted a thorough analysis of potential effects and, as presented in Chapter 4, the cumulative effects of Navy training activities added to the numerous other activities taking place in the Gulf of Alaska. Based on having conducted most of the proposed training activities over the last 10 years in Gulf of Alaska with no indications of there having been consequences for any wildlife, and with the mitigation measures presented in Chapter 5 of the EIS/OEIS, the Navy believes this history and the analysis presented in the EIS/OEIS accurately present the likely risks.
Mary Hicks - 1		I have lived on Puget Sound and witnessed the Navy's testing, dumping, and nearby spent fuel spills. In fact, one of my writing student's essays at Olympic College was published in TIME magazine about the pollution in Puget	Please note that dumping is not practiced by Navy ships. Additionally, past military practices and historical contamination sites are beyond the scope of the EIS/OEIS; they are not associated with the Proposed Action. With regard

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		Sound (PCBs were 2nd highest in the nation) off Port Orchard, next to the Naval shipyard in Bremerton. I have lived in the Arctic and was instrumental in stopping the pillaging by major oil corporations of Lake Teshukpuk, the major breeding grounds for Alaska's caribou and also breeding area for six flyways of the world. As long as I can remember since my teaching at Bremerton shipyard (communications while insulating subs) and working with engineers at Bangor (communications systems while designing one-man subs and precursors to today's drones), the Navy has been conducting tests underwater. Amid SPILLS, Alaska's marine and landed mammals' largest die-offs, stock die-offs, endangered seabirds, and a need for clean water for our nation's fisheries...not to mention the need for undisturbed sea shelf communities which are our last great breeding beds for sea life during ocean warming (and ocean acidity)....your tests continue...following protocols and directives for preparedness for war with far away nations.	to the cumulative impacts addressed in Chapter 4 of the EIS/OEIS, any contamination of bottom sediments or the water column in the GOA from these sites is reflected in the current condition of the marine environment and marine resources that inhabit the GOA.
Mary Hicks - 2		...PLEASE STOP these tests before our island nation and surrounding nations do not have a chance to survive without their meager fish diet and surviving ocean. WHEN WILL YOU STOP? USE YOUR COMPUTER MODELS AND CLean TECHNOLOGY INSTEAD OF THESE outdated, outmoded TESTS. I still have hope that you will stop (change your tests) before our ocean life dies. BE RESPONSIBLE FOR OUR ISLAND NATION THAT YOU ARE TRYING TO PROTECT AND USE YOUR NEW MODELS AND VIRTUAL TESTING.	This comment is duly noted. However, please note that the proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. Please not that the EIS/OEIS discussed the value and use of synthetic training, and specifically the limits of simulation as it applies to ASW in Section 2.3.2.4. It should be noted that Navy and Marine Corps training already uses of computer-simulated training and conducts command and control exercises without operational forces (constructive training) whenever possible. However, increased simulation of ASW warfare does not meet the necessary requirements to maintain proficiency. Subsequently, simulation training as an Alternative was considered, but eliminated in Section 2.3.2.4. Additionally, Navy's training activities already incorporate substantial "mitigation" for the expenditure of training materials. Since World War II, the use of simulation technology, non-explosive training rounds, green training rounds, and retrievable targets, along with the evolution of more-efficient training programs and the overall reduction in quantities of potentially hazardous materials in expendable training materials have substantially decreased both the quantities of expended materials and their effects on the

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			environment. In keeping with its emphasis on environmental stewardship, the Navy will continue to seek appropriate opportunities to further refine its training activities and further reduce the environmental effects of expended training materials.
Mary Hicks - 3		HEAR THIS plea from someone who has witnessed polluted waterways, beaches (oil spill is still here under compact sediment..it isn't going away). WE NEED YOU TO TAKE STOCK OF OUR STOCKS and sea mammals NOW.	This comment is duly noted.
Mary Hicks - 4		PLEASE HELP shape our future and change your testing now. This is a tipping point for our ocean...protect us by being smart and modern....and compassionate about the country you want to protect. It starts with acts like these....and I believe if you cancelled these tests, recruitment would rise. TAKE STOCK OUR STOCKS NOW! Stopping these types of tests is long overdue....please stop now and show responsible leadership in protecting our island nation.	This comment is duly noted. However, please note that as stated above, the proposed action includes no testing of new weapons.
Duane Howe - 1		I was dismayed to learn that the US Navy has selected some of the most important ocean fisheries and sea mammal areas in the North Pacific to carry out training exercises. Its use of sonar in whale habitat has been an issue for many years, but despite indisputable scientific evidence of its capability to seriously traumatize whales the Navy refused to acknowledge those facts and took their case all the way to the US Supreme Court. The Court ruled narrowly in favor of the navy, but failed to acknowledge any solution other than either holding or not holding training exercises. If those were truly the only choices we would have to allow the exercises, but those are not the only choices. The navy does not adequately explain why the training has to be held in the Gulf of Alaska.	The science of sound in the water and its effects on marine life is evolving. The Navy conducted a thorough analysis of sonar effects in the EIS/OEIS, using the most current and best available science, as required by NEPA. This analysis was completed in cooperation with the National Marine Fisheries Service, which is responsible for the protection of marine species. The results indicate that no significant harm would come to any marine mammal population. The purpose and need of the proposed action can be found in Chapter 1 of the EIS/OEIS. In summary, in order to implement its Congressional mandates, the Navy needs to support and conduct current and emerging training activities in the GOA ATA's, including supporting joint training and ALCOM's mission, and upgrade or modernize training capabilities to enhance and sustain Navy training. These objectives are required to provide combat capable forces ready to deploy worldwide in accordance with U.S.C. Title 10, Section 5062.
Duane Howe - 2		Even if it does, the navy does not adequately explain how it will prevent damage to whales as it promised to do when the Court ruled in their favor in 2008. The Gulf of Alaska is home to or near to the habitat of several important and endangered whale species. Damage to those whales could be serious but could be avoided if adequate precautions were taken. The DEIS explanations as to how it plans to do	Please refer to Chapter 5 of the EIS/OEIS which describes the protective measures the Navy employs while conducting training. It should be noted that the Navy's protective measures, which were developed in coordination with the National Marine Fisheries Service are effective at mitigating, not eliminating, risk to marine mammals. Based on the analysis included in this EIS/OEIS, including the Navy's history

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		that, other than to stop or reduce the use of sonar when whales are known to be in the area, are not supported scientifically. How whales will be detected from fast-moving ships is also not explained.	of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy feels its protective measures are adequate. Navy lookouts undergo extensive training to include on-the job instruction under supervision of an experienced lookout followed by completion of Personnel Qualification Standard Program. NMFS-approved Marine Species Awareness Training is required before every sonar exercise. In addition, as noted in the EIS/OEIS in Section 5.2.1.2, all Navy surface ships participating in anti-submarine warfare exercises will have two additional personnel on watch as marine mammal lookouts.
Duane Howe - 3		The issue of toxic contamination of the fisheries and marine mammal habitat is not adequately addressed either. Merely stating that the toxic residues of explosives will be rapidly disbursed does not seem to be a good scientific explanation of what can be expected. What concentration of explosive material will result, and how lethal will that concentration be to fish and sea mammals and how long will it be in that concentration? These questions need answers.	Please see response to Alaska Glacial Mud Co. – 1. Additionally, please note that the hazardous constituents of each type of ordnance are listed in Section 3.2.1.1. The amount of each hazardous constituent is an approximation based on the best information available. The exact amount of each hazardous constituent in each piece of ordnance varies. For example (pg. 3.2-6 of the EIS/OEIS), "Based on standards established by American Society for Testing and Materials International, each steel bomb body or fin also may contain small percentages of carbon, manganese, phosphorus, sulfur, copper, nickel, chromium, molybdenum, vanadium, columbium, or titanium, although typically present at less than 1 percent by weight." Section 3.2 identifies the total amount of hazardous materials for each ordnance type, and lists the possible hazardous constituents. It would be inappropriate to list the exact amounts hazardous constituents for all ordnance because the amounts in expended ordnance varies. The effect for all expended materials would be equivalent to the sum of individual effects because of the large area in GOA, the low areal density of expended materials, and the low percentage of hazardous materials (about 3 percent of expended materials would be considered hazardous).
Duane Howe - 4		We all understand the necessity for a well-trained navy, and are willing to make certain sacrifices to obtain that objective, but there has to be some reasonable balance to it. Also, the effects of all the disturbances including noise, toxic materials and physical interferences must be scientifically supported, not just guessed at from anecdotal evidence. Defending the country is one thing, but we can't keep destroying bits and	The Navy feels that the Final EIS contains a thorough analysis of its effects of its proposed action using the most current and best available science, as required by NEPA. This analysis was completed in cooperation with the National Marine Fisheries Service, which is responsible for the protection of marine species. Furthermore, the Navy recognizes that the science of sound in the water and its effects on marine life is

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		pieces of it in the process. We have been nickel and dimeing our environment away for the last 150 years. We can hardly be proud of our country if it comes with a crippled environment. The military does not have a stellar record of preserving the environment in its training areas. I hope that can be changed.	evolving and that while additional research or further scientific advances may provide a more definitive analysis, a NEPA document is necessarily based on information available at the time the document is prepared, and the current state of the science. As such, the Navy believes the EIS/OEIS contains a thorough analysis of it proposed activities. The Navy will continue to fund basic research and to conduct monitoring during training events to better understand the dynamics of the ocean's species and environment.
C. Johnson	self	I think that any chance we Alaskans have to host our navy for training in our vast oceans is a great way to show our support and maybe get a little boost in our economy.	This comment is duly noted.
Juneau Charter Boat Operator's Association - 1		Dear Mrs. Burt, I represent the Juneau Charter Boat Operator's Association based out of Juneau, Alaska. We are a group of fishing and marine mammal viewing charter boat captains that operate charters in Northern S.E. Alaska from Elfin Cove to Juneau. We are concerned about the Navy's plans to do sonar (LFAS) testing in the Gulf of Alaska.	Please see specific responses to your questions below and note that the proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. Additionally, please note that only mid and high frequency sonars are proposed for use in GOA.
Juneau Charter Boat Operator's Association - 2		Following are our concerns: Since all of us provide charters that view marine mammals in their natural environment, we are concerned with your plans to exterminate 2,000,000 marine mammals during the 5 year testing phase of the sonar. Our livelihoods depend on these marine mammals for sightseeing tours. We can't even approach most marine mammals within 100 yards or we face fines and you plan on killing them. The possible effects of your testing on marine mammals include, but are not limited to: death from trauma, hearing loss, disrupting of feeding, nursing, and communication, stress, changes in distribution of marine mammals, and a decrease in marine mammal survival and productivity. All of these effects of your sonar on marine mammals have been witnessed in the past.	The Navy shares your concern for marine life. All of the possible effects described, including effects to tourism, were analyzed in the EIS/OEIS. Also, as described in the EIS/OEIS, the Navy implements protective measures during its training exercises. Regarding marine mammal "takes" please see response to Judith Brakel – 1. Additionally, please see the full analysis of marine mammal strandings in Appendix F of the EIS/OEIS – Cetacean Stranding Report. This report discusses the various stranding situations across the world. Based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy feels its protective measures are adequate and the proposed action would not cause a significant impact.
Juneau Charter Boat Operator's Association - 3		We are concerned with your use of the sonar in the Gulf of Alaska also because we depend on salmon and halibut and other marine fish to support our businesses by taking people sport fishing aboard our boats. Both salmon and halibut migrate through the Gulf of Alaska in the area you plan on	See Section 3.6 in the EIS/OEIS regarding the evaluating the consequences to fish from the proposed training activities; please note there are no "testing" activities proposed. Also see Chapter 4 regarding cumulative impacts. Specific analysis of impacts to fish from sonar, including those with swim bladders,

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		testing the sonar. Studies have shown that intense sounds can and do damage a fish's ears, reduce the viability of eggs, harm larvae, and retard fish growth. It is also known that intense sounds can cause a fish to change its behavior and disrupt its navigation. All of our salmon pass through the Gulf of Alaska while returning to their spawning streams. We cannot afford to disrupt this valuable resource for all Alaskans. Since you have not evaluated the consequences to marine fish it is our opinion that the sonar not be used.	are found in Section 3.6 of the EIS/OEIS. As described in Section 3.6.1.4, studies have shown salmon to have poor hearing, likely due to the lack of a link between their swim bladders and their inner ear. Salmon and halibut are not likely to be able to hear the mid and high frequency sonar and sound sources proposed for use by Navy.
Juneau Charter Boat Operator's Association - 4		In closing, marine mammals and fish such as salmon and halibut are the main stay of our businesses here in S.E. Alaska. If there is even the slightest possibility that your sonar testing will disrupt marine mammals and fish behaviors or kill them even, then this sonar should not be used and another alternative should be found for your objective. Please do not use this debilitating sonar in our waters off Alaska. Sincerely, Capt. Todd Wicks President, Juneau Charter Boat Operator's Association P.O. Box 34522 Juneau, Alaska 99803 Cc: Governor Sean Parnell, Senator Dennis Egan, Representative Beth Kerttula, Representative Cathy Munoz	As explained in Sections 3.6 and 3.12 of the EIS/OEIS, the analysis supports a conclusion of no significant impacts to fisheries in Alaska. Note that sonar use by both Navy and fishing vessels have the potential to disrupt the behavior of marine mammals, but there should be no mortalities to fish or marine mammals from the use of sonar. A provided in Chapters 1 and 2 of the EIS/OEIS, there are no alternative locations supporting the Navy's purpose and need of supporting joint training and ALCOM, and so moving the proposed training was therefore eliminated from further consideration.
Kirsti Jurica - 1		The Gulf of Alaska (GoA) is high value habitat for many species essential to the Prince William Sound (PWS) ecosystem. To compromise this habitat could result in major environmental and socioeconomic impacts. Many PWS community members rely on commercial and subsistence fisheries for their economic prosperity and livelihoods. Ecological impacts from expended materials and use of sonar the Navy proposes, may have drastic effects on the communities.	The Navy conducted a thorough analysis of sonar (Section 3.8) and expended materials (Section 3.2) in the EIS/OEIS, using the best available science, and with cooperation from the National Marine Fisheries Service, which is responsible for the protection of marine species. From the scientific analysis, the Navy believes that its training activities will not impact the ecology of the Gulf or the surrounding communities.
Kirsti Jurica - 2		The Navy expects to "take" more than 20 different species of marine mammals, including 7 endangered species in the GoA. I would say that is unacceptable. The use of sonar is of particular concern. There is no longer any scientific debate that high frequency active sonar can induce a range of adverse effects in whales and other species from significant behavioral changes to injury and death. The most widely reported and dramatic of these events are the mass strandings of beaked whales and other marine mammals that have been associated with military sonar use.	Regarding "takes" please see response to Judith Brakel – 1. Additionally, please note that the U.S. Navy has been using mid-frequency and high-frequency active sonar for decades in the Fleet concentration areas of the East Coast, Southern California, and Hawaii for decades with no known impacts to marine mammals. Given the natural variation of marine mammal locations over time within the GOA TMAA, operational variability of Navy mid-frequency active sonar operations, and the fact that there is little scientific information demonstrating broad-scale impacts that are either injurious or of significant biological impact to marine mammals, there is little relative risk to marine mammal populations from mid-

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			frequency active sonar training exercises. Also, please see the full analysis of marine mammal strandings in Appendix F of the EIS/OEIS – Cetacean Stranding Report. The report discusses the various stranding situations across the world.
Kirsti Jurica - 3		Adverse effects are not limited to stranding and death. Sonar may compromise the ability of marine mammals to navigate, find food, locate mates, avoid predators and communicate.	Navy agrees and as presented in Section 3.8.7.2, the biological framework for analysis used in the EIS/OEIS does not limit adverse effects to stranding and death.
Kirsti Jurica - 4		In the Navy's draft EIS, they attempt to mitigate sonar's harmful impacts on marine mammals by relying on a lookout visually spotting whales from the deck of its ships. The Navy would power-down sonar if a marine mammal is detected 1,000 m and shut it down if it is detected within 200 m. This scheme disregards the best available science on the significant limits of visual monitoring. Visual detection rates for marine mammals are generally low, less than 5%, even in good conditions. It also ignores the fact that sonar's impact radius can extend greater distances well beyond the horizon line. The Navy must do more to protect marine mammals from harmful impacts of sonar including protecting areas of high marine mammal abundance and essential habitat. Of course these are unknowns in the Temporary Marine Activity Area (TMAA).	Chapter 5 presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events at sea in the TMAA. As detailed in that section, the mitigation measures involve much more than a sonar "safety zone", make use of all available observers such as those in aircraft in addition to observers on vessels, and use all available sensors such as passive acoustic hydrophones. The mitigation measures presented were developed in coordination with NMFS biologists and scientists to determine which mitigation measures would be both effective and still allow the Navy to meet its operational needs for realistic training. Please note that the comment referencing studies indicating "a 5% success rate" was with regard to survey protocols, were not done using Naval personnel or vessels (which have a higher height of eye for observation), and did not take into account the circumstances present during a training event such as having multiple vessels over a very wide area, communicated sharing of observations, and operating in a coordinated manner in combination with aircraft that are also observing the water space. The Navy does not expect 100% of the animals present in the vicinity of training events will be detected and the acoustic impact modeling quantification is not reduced as a result of mitigation effectiveness, however, mitigation measures based on detection of marine mammals by exercise participants anywhere in the exercise area will result in the mitigation of some potential impacts. Monitoring reports from exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. (Please see the recent results supporting this as presented in training ranges monitoring reports “Marine Mammal Monitoring for the U.S. Navy’s Hawaii Range Complex (HRC) and Southern

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			California Range Complex (SOCAL)" available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). An integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the EIS/OEIS. As part of the Integrated Comprehensive Monitoring Program, research to measure the ability of Navy observers to detect marine mammals is also underway.
Kirsti Jurica - 5		As for expended materials from training activities, the Final EIS should include a table listing the specific content and amounts of hazardous materials contained in the total amount of expended materials under each alternative. The EIS states that releasing individual expended materials would not have any significant effects on the environment, but does not mention whether the cumulative effect of adding all those contaminants into the marine environment was analyzed. Elevated concentrations of certain chemical compounds can cause adverse effects on aquatic biota including reduced survival, impaired reproduction, and reduced growth.	The hazardous constituents of each type of ordnance are listed in Section 3.2.1.1. The amount of each hazardous constituent is an approximation based on the best information available. The exact amount of each hazardous constituent in each piece of ordnance varies. For example (pg. 3.2-6 of the EIS/OEIS), "Based on standards established by American Society for Testing and Materials International, each steel bomb body or fin also may contain small percentages of carbon, manganese, phosphorus, sulfur, copper, nickel, chromium, molybdenum, vanadium, columbium, or titanium, although typically present at less than 1 percent by weight." Section 3.2 identifies the total amount of hazardous materials for each ordnance type, and lists the possible hazardous constituents. It would be inappropriate to list the exact amounts hazardous constituents for all ordnance because the amounts in expended ordnance varies. The effect of all expended materials would be equivalent to the sum of individual effects because of the large area in GOA, the low areal density of expended materials, and the low percentage of hazardous materials (about three percent of expended materials would be considered hazardous). Cumulative effects of expended materials are addressed in Section 4.2.2.2. Fishing gear would be the most likely source of expended materials, and the majority of that expended material would not be considered hazardous. Therefore, no cumulative effects would be expected for expended materials in the GOA.
Kirsti Jurica - 6		Certain toxic substances can bio-accumulate in the food chain thus affecting all organisms.	With regard to bioaccumulation, please see response to Kate Alexander - 3.
Kirsti Jurica - 7		Before this project can even be considered, marine mammal and fish (returning salmon as well as resident bottom fish) migration patterns through the TMAA need to be studied to determine any potential effects and impacts.	The ocean migrations of salmonids was defined by Pearcy (1992) as 1) the coastal phase of juveniles, 2) the oceanic feeding phase, 3) the return of maturing fish from oceanic to coastal waters, and 4) coastal migrations of adults that terminate in freshwater. The distance traveled and the time spent in each of these phases vary greatly within and among

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			species. Pacific salmon smolts from the Pacific Northwest and California generally move up and around the West Coast of North America following the continental shelf. Juvenile salmon, including those originating from Alaska (such as the Copper River), were found to remain over the continental shelf until the start of the Aleutians before moving offshore into the Gulf of Alaska. Please see response to Ellen Americus – 3.
Kirsti Jurica - 8		Baseline water and sediment quality in the TMAA needs to be determined and evaluated in order to assess if any short term or long term effects are a result from expended materials in the TMAA. The Navy assumes ocean currents will rapidly disperse the expended materials, no mention of bio-accumulation. The Navy has no substantial evidence that this is an accurate assumption. I feel there are too many unknowns for this proposed project to risk comprising the GoA ecosystem and those livelihoods that depend on it.	Water and sediment quality are addressed under Water Resources, Section 3.3.1.1, and are based on the best information available. Information on water and sediment quality in the TMAA is limited because of its distance offshore. Existing conditions described in Section 3.3 include nearshore samples, which give a indication of the overall state of the GOA system. The estimation of the hazardous constituents of expended training materials is based on the best available data. Section 3.2, Expended Materials, lists the hazardous constituents and the estimated amount of total hazardous material for each type of expended material for all the alternatives. Ocean currents will disperse leaching materials from expended materials, and will not result in concentrations that exceed EPA water quality standards. With regard to bioaccumulation, please see response to Kate Alexander - 3.
Frances Levi		Please continue current training activities without increasing the toxins dumped or the sonar used in the area. Fish and whales are both important to the economy as food and tourism and we need to consider their wellbeing.	The Navy conducted a thorough analysis of expended materials (Section 3.2) and sonar (Section 3.8) in the EIS/OEIS, using the best available science, and with cooperation from the National Marine Fisheries Service, which is responsible for the protection of marine species. From the scientific analysis, the Navy believes that its training activities will not impact the ecology of the Gulf or the surrounding communities.
Joy Levine - 1		This evening I attended the U.S. Navy Public Hearing for the Draft EIS regarding Gulf of Alaska Navy Training Activities that are proposed for an area the size of Iowa, in the Gulf of Alaska. Although I realize the importance of training, it is disturbing to me that the Proposed Alternative that the government is wanting, would explode approximately 144 High Explosive Bombs in an approximate period of 42 days in this area during the summer. The summer is the most plentiful time for the fish, mammals, and other sealife to migrate to Alaska with their young, when there is obviously	Please note that the proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. The Navy has conducted a thorough analysis of potential harm to marine mammals from all activities, including bombing. The results indicate that no marine mammals would be injured from bombing. In addition, the Navy applies mitigation measures during bombing activities that reduce any potential effects to marine life. Mitigation measures include surveying the

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		more life in the waters of Alaska than at any other time of year. I do not want the Navy to test high explosives off the coast of Alaska in the summer. I ask that the US Navy test in the winters so that there is the least possible affect of the testing on Alaska Marine Life that would be present during the summer. Instead of 144 High Explosive Bombs, I ask that the testing NOT be done with High Explosive Bombs that have an affect on the mammals in the area.	intended target area to ensure no marine mammals are within 1,000 yards. In Section 2.3.2.3 of the EIS/OEIS, the alternative of training outside of summer in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further.
Joy Levine - 2		The US Navy Staff informed me this evening that they will be on the lookout for whales, and when there are whales in the testing area, they will not test. Alaska, in the summer, has a great amount of migrating sea life of all kinds. I am not only concerned about the whales; I have concerns for the whales, the seals, the dolphins, the sealions, the porpoises, and other life in the waters. Big bodies like the whales are easier to see than a small seal in the water. I did not see the study by the USN of the effects that the bombs would have on the plankton and other sea life in the area, it seems to focus on whales.	The Navy apologizes, as apparently there was a miscommunication, because the Navy will not be conducting tests in the area. However, during Navy training activities and as discussed in Chapter 5, mitigation measures will be implemented as appropriate whenever marine mammals, including seals and sea lions, are detected. In this manner, the Navy's mitigation measures will afford species in all areas a reduction in impacts. The potential effects to marine plants from bombing, as well as other military expended materials, was discussed throughout Section 3.5 of the Draft EIS/OEIS.
Joy Levine - 3		I would like the US Navy to use non-explosive bombs when carrying out practices that close to the coast of Alaska, as the sea life follows the coast in their migration and travels. If there are going to be bombs exploded, I ask that there be a great degree less of the amount of bombs. It seems the Navy is proposing approximately 3 high explosions every day during the testing period of approximately 42 days. This is unacceptable to me. I ask that the USN use half the amount of non exploding bombs to lessen the impact.	This comment and subsequent requests are duly noted.
Joy Levine - 4		I realize that the US Government takes precautions to be the least harmful and have the least negative impacts on the whales, mammals, and other sea life when using and operating sonar. Unfortunately, the sonar does have a negative effect and death impact on whales and other mammals causing them to "beach" themselves. The sonar causes confusion, disorientation, and disturbs the migration of whales and other sea life, as deafening to their senses. I ask that the US Government begin using other systems besides sonar to find other submarines and ships in the ocean waters. It seems if science can see a million miles away on another planet, we have the brains to discover a new substitute for sonar. I know importance that the government places on protecting our waters and our	Sonar is currently the most effective technology for detecting and tracking quiet diesel-electric submarines. As such, it is imperative that the Navy train using this technology at this time; however, new technologies are continuously researched to improve Navy efficiency and reduce impact on the environment. Given the natural variation of marine mammal location over time within the GOA TMAA, operational variability of Navy mid-frequency and high-frequency active sonar operations, and the fact that the Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy's analysis demonstrates

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		citizens, but I think we can come up with ways of doing so without endangering the lives of so many other mammals in our oceans. I ask that you move the testing area further south, further away from the coast of Alaska, and definitely, absolutely, do not test in the summers.	there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Also, please see the full analysis of marine mammal strandings in Appendix F of the EIS/OEIS – Cetacean Stranding Report. The report discusses the various stranding situations across the world. As stated above in response to your first comment, the alternative of training outside of summer in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further.
William Lindow - 1		Hi - I attended the public meeting in Cordova 1-12-10. I have a couple of concerns. 1) Force Structure was not defined or explained. I cannot support something I am not informed about.	Force Structure was explained in Section 2.4.2 of the EIS/OEIS. Changes to the ‘force structure’, also known as the Navy’s assets, are included in Alternative 1 and explained in Section 2.5 as referring to the new ships, submarines, aircraft, weapons, and training instrumentation that will be a part of the Fleet comprising the Navy’s assets. New ships, submarines, and aircraft include the EA-18G (to replace the EA-6B aircraft), the Guided Missile Submarines, the P-8 Poseidon Multimission Maritime Aircraft (to replace the P-3 Orion Aircraft), the DDG-1000 Zumwalt Class Destroyer, and unmanned aerial systems. New weapon systems include Advanced Extended Echo Ranging Sonobuoy, and new training instrumentation includes a Portable Undersea Tracking Range.
William Lindow - 2		2) My primary concern is that as far as I know, there is no independent agency that will be present to observe the effects of the training on the ecosystem in the Gulf. I think it is essential to have qualified, independent observers to monitor effects of the training, given that active sonar and explosive ordnance will be used under Alternatives 1 and 2. I have not read the EIS. Perhaps my concerns are addressed there, but I felt they were not addressed at the Cordova meeting. Thank you, William Lindow	Many of the Navy's actions require regulatory permits from other governmental agencies. As part of the permitting process, these agencies conduct independent reviews of the Navy's actions. Also as part of the process, the Navy will have to do reporting and monitoring of its activities to these agencies. Additionally, in Chapter 5 of the EIS/OEIS, pages 5-30 and 5-31 provide a detailed explanation for why independent observers have been eliminated from further consideration as a mitigation measure. Please note that the suite of mitigation measures proposed by the Navy, developed in coordination with NMFS, and presented Chapter 5 provides the best balance between the need to be precautionary in the protection of marine mammals and the needs to realistically train at sea.
Nancy Lord - 1		I support the "no action" alternative. I understand that the military needs to train, but the expanded training proposed seems excessively harmful to our fish and wildlife (and the	The Navy recognizes your concern about the environment, and that is why the Navy worked closely and coordinated with the Alaska regional office of U.S. Fish and Wildlife Service and

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		economy of the affected part of Alaska, where I live) and has not been adequately assessed in the DEIS/OEIS. Just because Alaskan waters have few people living nearby and are out of sight of most Americans is no reason to allow them to be abused. The Gulf of Alaska is incredibly rich in marine life; it is also already under assault from pollution, climate change, ocean acidification, and some overfishing. It deserves a high level of protection from additional sources of stress.	the National Marine Fisheries Service, to analyze and seek permits for our activities in the ocean environment in the Gulf of Alaska. The Gulf of Alaska provides a unique and realistic training environment needed to refine and maintain skills to prepare our U.S. service members to be able to respond to a variety of scenarios including natural disasters, global conflicts and homeland defense. This EIS/OEIS is a part of the Navy's worldwide evaluation of training activities. The Navy is conducting NEPA analyses for all areas where they are currently conducting training, including Southern California, Hawaii, the Pacific Northwest, the Mariana Islands, the entire Atlantic coast, and the Gulf of Alaska. The Navy has been conducting annual joint training exercises in the GOA for over ten years. For additional information, please see response to Bain-4.
Nancy Lord - 2		I'm particularly concerned about the introduction of increased levels of hazardous materials into these waters and the use of mid-frequency sonar, which is known to harm marine mammals. The Navy has done an inadequate job of assessing cumulative impacts, available mitigation measures, and a wider range of alternatives. The "no action" alternative is the only responsible choice. Thank you for the opportunity to comment. Nancy Lord	Please note that given the natural variation of marine mammal location over time within the GOA TMAA, operational variability of Navy mid-frequency and high-frequency active sonar operations, and the fact that the Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. The cumulative impacts analysis addresses the environmental impacts that result from the incremental impact of Navy activities when added to the past, present, or reasonably foreseeable future actions that affect the same resources. Table 4-1 succinctly depicts the categories of past, present, and reasonably foreseeable future actions that affect marine populations. Please also see response to Laurie Ferguson – 6.
Rob Lund		Please limit the Navy's training activities in the Gulf of Alaska by prohibiting the dumping of toxic materials and the use of harmful sonar.	Dumping is not practiced by Navy ships. Additionally, please note that given the natural variation of marine mammal location over time within the GOA TMAA, operational variability of Navy mid-frequency and high-frequency active sonar operations, and the fact that the Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological

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			impact to marine mammals at those locations, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS.
Joe Macinko		Please conduct the training out past the continental shelf in thousands of fathoms of water. This particularly applies to the sinking of the derelict ships. 50 miles offshore is not sufficient distance in the gulf of Alaska. This training could be done offshore with little negative impact.	The location of the planned training area includes deep water areas. Per the Navy's general EPA permit, and as described in Section 2.6.1.1 of the EIS/OEIS, the sinking exercise training event would occur in an area that is at least 50 nautical miles from shore and in water depths greater than 6,000 feet (1,000 fathoms).
Matanuska-Susitna Borough		Thank you for the opportunity to comment on the draft EIS/OEIS. The Matanuska-Susitna Borough recently completed a Joint Land Use Study in partnership with the U.S. Army and U.S. Air Force. The high level of communication between the local military installations and the local governments has been a benefit to both the military personnel and local citizens. After reviewing the draft EIS, there do not appear to be any potential conflicts between the on-going or proposed military training activities, including the proposed force structure changes and new weapon systems with civilian land use activities within the Matanuska-Susitna Borough.	This comment is duly noted.
Molly McCoy		I support the NO action alternative, which will allow existing training activities to continue, yet it will NOT increase toxic dumping or entail the use of sonar to whales and fish. Military training for national security preparedness is vital; however, NOT at the expense of degrading water quality for our fishing industry and our marine wildlife! Molly McCoy	This comment is duly noted. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
Lawrence McPhee		I am in total support of this training as a retired Senior Chief and an Alaskan. We have to train to maintain the skills needed to be successful on the modern battlefield. Freedom is not free and as a proud Navyman and Alaskan I support this training activity 100%. Go Navy!	This comment is duly noted.
Maureen Moore		I do not ever want to see the US Navy conducting sonar or explosive weapons testing anywhere within the waters of Alaska. It has been proven that sonar testing in other areas has been the precursor/ cause of the beaching of marine mammals. Autopsy reports have documented damage to the echolocation organs. Any testing that is necessary should be done hundreds of miles from shore and only after thorough searching to ensure that large pods of marine mammals are not in the area.	The Navy conducted a thorough analysis of sonar and at sea explosions in the EIS/OEIS, using the most current and best available science, and with cooperation from the National Marine Fisheries Service, which is responsible for the protection of marine species. Additionally, the U.S. Navy has conducted active sonar activities for decades with no documented proof of injuries to marine mammals. Given the natural variation of marine mammal locations over time within the GOA TMAA, operational variability of Navy active sonar

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			operations, and the fact that there is little documented scientific information demonstrating broad-scale impacts that are either injurious or of significant biological impact to marine mammals, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Appendix F provides a comprehensive discussion regarding the marine mammal stranding issue. Additionally, please see response to Ellen Americus – 3.
Lorraine Murray		January 24, 2010 Dear Sirs: The Gulf of Alaska Navy Training Activities should not be held in the Gulf of Alaska. These activities should be held in a place where the sonar impact will be on less marine life. The Gulf is a prime fishing and breeding ground, and the fisheries and marine life here are already stressed. There are also endangered marine mammals in the area, and we are contending with oil and gas spills here. We have an accelerating ocean acidification problem here, a declining fisheries problem here, and climate change related problems here and our state does not have a handle on any one of these problems. And so, I do not believe for one second that we should add one more thing to this list of problems. I respectfully request that the Navy not hold its Sonar Training Activities in the Gulf of Alaska or anywhere near our state. Sincerely, Lorraine Murray	As described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included moving this exercise to other locations. Such alternatives fail to meet the purpose of and need for the proposed action. Additionally, the Navy has conducted mid-frequency and high-frequency active sonar activities for decades at training ranges on the East Coast, in Hawaii, and Southern California, where for example, populations of resident beaked whales and other marine mammals appear to thriving and fisheries remain very productive. There have been no indications for broad-scale impacts that are either injurious or of significant biological impact to marine mammals or other sea life at these training ranges where the majority of at sea Navy training has been taking place for many years. As presented in Chapter 3 of the EIS/OEIS, the Navy's analysis for the Gulf of Alaska demonstrates there is little relative risk to marine species in the Gulf of Alaska. Furthermore, it should be noted that the U.S. Navy is in full compliance with the Marine Mammal Protection Act and the Endangered Species Act. For information about the Navy's compliance with these and other regulatory requirements, see Chapter 6 of the EIS/OEIS.
Maria Nasif - 1		The GOA (Gulf of Alaska) Temporary Maritime Activity Area (TMAA) in which the Navy plans to train extends across 42,146 square nautical miles (nm). 1) The Navy estimates an extraordinary amount of spent material will result from its Preferred Alternative (Alternative 2) in the GOA, including (1) a large increase in the weight of expended materials (352,000 lbs) and (2) 10,300 pounds of expended hazardous material. The Navy uses a quirky calculation to estimate that hazardous materials would account for approximately 1.2 lb per square nautical mile (assuming the materials are spread over 20% of the TMAA,	Please see response to Alaska Glacial Mud Co. – 1. Additionally, please note that the Navy's use of the TMAA would not be uniform. Based on Navy personnel experience, Navy training activities typically only use 20 percent of the available training area. This is a conservative assumption. Training locations in the TMAA may vary based on training requirements. Therefore, the Navy cannot predict the exact locations where training exercises would occur. It is a reasonable assumption, however, that the Navy would not conduct the same training activity in exactly the same location from year to year, and expended materials from one

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		and that ocean currents will rapidly disperse the expended materials, neither of which is a valid assumption).	training activity would not be deposited near those from a previous training activity, so that expended materials eventually would be spread over virtually the entire TMAA.
Maria Nasif - 2		2) The Navy estimates that its sonar training exercises in the GOA from its Preferred Alternative (Alternative 2) will result in more than 425,000 marine mammal "takes" (behavioral impacts, harassment, injury, death) every year - that's over 2.125 million takes during the course of the Marine Mammal Protection Act permit it must seek from NOAA. 3) In all, the Navy expects to "take" more than 20 different species of marine mammals, including 7 endangered species, in the GOA.	This EIS/OEIS uses a method for calculating exposures to underwater sound that was developed jointly by the Navy and the National Marine Fisheries Service. This method for evaluating "takes" of marine mammals is a term used to indicate the level of harassment, either A or B, under the Marine Mammal Protection Act, and appears to more accurately depict the probability of a response to mid-frequency active sonar. The Navy's marine mammal density estimates take into account all of the factors that lead to biological abundance. These density estimates then informed the acoustic modeling analysis, the results of which can be found in Section 3.8.7.9 of the EIS/OEIS. The results in this section consider all of the marine mammal species present in the Gulf of Alaska and indicate that although as many as 425,000 animals could be exposed to sound from Navy sonar and explosives, only **one** is estimated to receive sound at levels that could cause some degree of permanent hearing loss.
Maria Nasif - 3		4) Nearly all of the mitigation measures that the Navy has proposed for the GOA concern the operation of a small "safety zone" around the sonar ship. Yet it is widely agreed in the scientific community that this measure is inadequate given the far-reaching effects of Navy sonar and the difficulty of spotting marine mammals from fast-moving vessels.	Chapter 5 in the Final EIS/OEIS presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events at sea in the TMAA. As detailed in that section of the DEIS, the mitigation measures involve much more than a sonar "safety zone", make use of all available observers such as those in aircraft in addition to observers on vessels, and use all available sensors such as passive acoustic hydrophones. The mitigation measures presented in the DEIS were developed in coordination with the National Marine Fisheries Service (NMFS) biologists and scientists to determine which mitigation measures would be both effective and still allows for the Navy to meet the operational needs for realistic training. The Navy's mitigation measures are designed to minimize impacts. It is recognized that not all marine mammals will be present at the surface and/or detected visually and not all marine mammals will be vocalizing and thus detectable by passive acoustics. The mitigation measures are effective at limiting some marine mammals exposures to high levels of sound, just as they were designed to do.

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Maria Nasif - 4		5) The Navy has not proposed to establish any protection areas in the GOA, despite the broad recognition that geographic protection zones are the most effective available means to mitigate sonar's impacts on marine wildlife.	The boundaries of the TMAA were adjusted to avoid the designated Critical Habitat for Steller sea lions. As presented in Section 3.8 and depicted on Figure 3.8-1, the North Pacific right whale Critical Habitat is approximately 16 nautical miles from the nearest corner of the TMAA and not directly adjacent to it as stated in the comment. In addition, gray whales and harbor porpoise will generally be found near the coastal areas whereas the closest point of the TMAA is over 12 nautical miles from the nearest coast line. While blue whales could be present in the TMAA, the best available science indicates their presence will be rare in the area and it is therefore unlikely that Navy training activities would occur when they are present.
Maria Nasif - 5		6) For example, no protection areas are proposed for harbor porpoises, which are acutely sensitive to sound; for endangered gray whales, which migrate directly through the TMAA; for endangered humpback whales and blue whales, which gather to feed in the TMAA; for the critically endangered North Pacific right whale, who's critical habitat is directly adjacent to the TMAA; or for any other species or habitat.	As provided in Section 5, mitigation measures will be implemented as appropriate whenever marine mammals are detected and regardless of their location. In this manner, Navy mitigation measures will afford the maximum protection to all marine animals, regardless of the species or area. In addition, the concept of geographical limitations is inconsistent with the requirements for training in the TMAA. Seamounts or areas of bathymetric relief are often used by submarines to hide or mask their presence, requiring the need to train in that complex ocean environment. If the Navy were restricted from training near sea mounts or areas of bathymetric relief, they may be unable to do so when faced with an actual threat. It would be impractical to train while attempting to avoid all areas of "high bathymetric relief", however that would be defined, and would certainly remove the realism needed for accomplishing this critical training.
Maria Nasif - 6		7) The Navy does not properly analyze environmental impacts. For instance, it completely disregards the serious impacts its sonar training will have on the critically endangered North Pacific right whales, whose critical habitat is only 12 nautical miles from the TMAA or the endangered gray whales, which migrate through the TMAA.	As presented in Section 3.8 and depicted on Figure 3.8-1, the North Pacific right whale Critical Habitat is approximately 16 nautical miles from the nearest corner of the TMAA. In addition, gray whales have largely recovered, are no longer considered endangered, and will generally be found near the coastal areas whereas the closest point of the TMAA is over 12 nautical miles from the nearest coast line.
Maria Nasif - 7		8) The Navy underestimates the number of marine mammals (and fish) that will be harassed, injured and killed because it simply does not have the density estimates needed in order to accurately make this determination. The National Environmental Policy Act (NEPA) specifically requires federal agencies to obtain the data necessary to their analysis. The simple assertion that "no information	Section 3.8.2 in the EIS/OEIS discusses the density estimates: In April 2009, the Navy funded and NMFS conducted the Gulf of Alaska Line-Transect Survey (GOALS) to address the data needs for density analysis. Line-transect survey visual data to support distance sampling statistics and acoustic data were collected over a 10-day period both within and outside the TMAA. Please see Section 3.8.2.1 for full discussion on the

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		exists" will not suffice; unless the costs of obtaining the information are exorbitant, NEPA requires that it be obtained. See 40 C.F.R. § 1502.22(a). Here, the Navy failed to obtain data that is essential to its analysis. The Navy itself admits that it has no density estimates for endangered blue whales, North Pacific right whales, and sei whales. In addition, there are simply no reliable estimates for current or historical abundance numbers for many of the affected marine mammals in the GOA . Despite the lack of survey/density data, the Navy simply estimates that only 1 blue whale, 1 North Pacific right whale and 4 sei whales may be harmed by its use of sonar because of the "rareness" of those whales. NEPA requires more. It requires these surveys to be completed and included in the impacts analysis.	survey. CEQ regulation at 40 CFR §1502.24 requires the Navy to ensure the "professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements" and to "identify any methodologies used and make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement." Navy has met this requirement. The EIS represents the best available science and most applicable science on species and distribution. The Navy has taken a hard look through its analysis and has considered competing and contradictory scientific research. Under 40 CFR §1502.22, NEPA allows for recognizing incomplete and unavailable information. Information on species density found in Tables 3.8-1 and 3.8-2 of the EIS was compiled from NMFS Stock Assessments as well as the 2009 GOALs survey and two other vessel surveys in the GOA. Therefore, density data has been generated based on available data in coordination with technical staff from NMFS. Regarding density estimates, please see response to Maria Nasif – 2.
Maria Nasif - 8		In addition, the Navy's acoustics impact analysis ignores scientific studies contrary to its interests and uses methodologies not supported by the scientific community. Thus, the thresholds it sets for permanent injury, temporary injury (hearing loss) and behavioral change (which we would argue are too high and thus completely underestimate the actual number of wildlife that will be impacted) are invalid as a matter of science. For instance, in setting its thresholds at 195 dB for harassment and temporary injury and 215 dB for permanent injury and death, the Navy ignores a 2004 study by Nowachek et al which found that right whales respond to mid-frequency sound below 140 dB (the sound caused them to stop eating and ascend rapidly to just below the surface, making them extremely vulnerable to ship strikes).	The study referenced (by Nowacek et al. 2004) on right whales in the Atlantic exposed those whales to an sound designed to be an "alert stimuli" and was nothing like Navy sonar or any other Navy sound source. The "alert stimuli" signal was an 18 min exposure consisting of three 2-minute signals played sequentially three times over. The three signals had a 60 percent duty cycle and consisted of: (1) alternating 1-sec pure tones at 500 Hz and 850 Hz; (2) a 2-sec logarithmic down-sweep from 4,500 Hz to 500 Hz; and (3) a pair of low (1,500 Hz)-high (2,000 Hz) sine wave tones amplitude modulated at 120 Hz and each 1-sec long. The purposes of the alert signal were (a) to provoke an action from the whales via the auditory system with disharmonic signals that cover the whales estimated hearing range; (b) to maximize the signal to noise ratio (obtain the largest difference between background noise) and c) to provide localization cues for the whale. Five out of six whales reacted to the signal designed to elicit such behavior.
Maria Nasif - 9		9) The Navy's cumulative impacts analysis is inadequate. Chapter 4 of the DEIS simply lists projects that could have potential cumulative impacts on the Northwest Range without actually analyzing what those impacts will be.	The cumulative impacts analysis addresses the environmental impacts that result from the incremental impact of Navy activities when added to the past, present, or reasonably foreseeable future actions that affect the same resources. Table 4-1 succinctly depicts the categories of past, present,

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			and reasonably foreseeable future actions that affect cetacean and fish populations. Identifying such activities and in fact comparing them for relative impacts is an appropriate approach to cumulative impacts analysis, which is what was done in Chapter 4. The EIS/OEIS does more than simply compare activities; it analyzes in detail the effects of Navy actions on specific resources and places those in the context of other sources of impacts. With regard to marine mammals and fish, the cumulative impacts analysis accurately concludes that Navy activities, while they may affect species, will not present significant impacts, or population level impacts to any species.
Maria Nasif - 10		10) The Navy's alternative analysis is also inadequate. The Navy only presents three options - maintain the status quo, add more training, or add even more training. It does not consider - or blithely dismisses - any other alternatives, some employed by the Navy itself in other training exercises and ranges.	The no-action alternative can be thought of in terms of continuing with the present course of action until that action is changed. (46 Fed Reg 18026, at 18027). Alternatives 1 and 2 discuss the increase from these levels. This is the approach properly taken in developing alternatives for this DEIS. (See #3 of CEQ's Forty Most Asked Questions). The Navy has discussed all alternatives that were considered but eliminated in Section 2.3.2 and the consideration of the no-action alternative, alternative 1, and alternative 2 within Chapters 3 and 4 ensures the Navy's compliance under NEPA.
Maria Nasif - 11		11) Finally - and most critically - the Navy does not set forth adequate measures to mitigate the harmful effects of sonar. Its proposed mitigation measures basically boil down to "safety zones" (1,000 yard power-down and 200 yard shut down) around the sonar maintained primarily by on-board visual monitors. These are the same measures that federal courts have found to be "woefully inadequate and ineffectual." (For instance, studies show that visual monitoring only spots about 5% of marine mammals. Statistically, a 5% "success" rate clearly does not cut it.) The Navy's refusal to employ better mitigation measures is astounding, because it has used more protective measures during previous training. As NRDC discovered during previous litigation against the Navy (and as our recent settlement agreement has allowed us to make public), the Navy has adopted, during previous exercises, some of the same mitigation measures we have repeatedly beseeched it to employ and which it now claims it cannot employ. These measures include siting exercises beyond the continental shelf and Gulf Stream, relocating exercises out of important habitat and to avoid certain species, and using a technique	Chapter 5 presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events at sea in the TMAA. As detailed in that section, the mitigation measures involve much more than a sonar "safety zone", make use of all available observers such as those in aircraft in addition to observers on vessels, and use all available sensors such as passive acoustic hydrophones. The mitigation measures presented were developed in coordination with NMFS biologists and scientists to determine which mitigation measures would be both effective and still allow the Navy to meet its operational needs for realistic training. Please note that the comment referencing studies indicating "a 5% success rate" was with regard to survey protocols, were not done using Naval personnel or vessels (which have a higher height of eye for observation), and did not take into account the circumstances present during a training event such as having multiple vessels over a very wide area, communicated sharing of observations, and operating in a coordinated manner in combination with aircraft that are also observing the water space. The Navy does not expect 100%

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		called "simulated geography" to avoid canyons and near-shore areas on at least three of its major ranges. It also restricted sonar use at night when marine mammals are harder to detect, as well as minimized the use of sonar from multiple sources at the same time. Although in Chapter 5 of the DEIS the Navy goes to some pain to describe "alternative mitigation measures considered but eliminated" - primarily for "training effectiveness" reasons - its previous adoption of the exact same measures belies its argument. The Navy's claim that it cannot implement more protective mitigation measures is therefore completely disingenuous. NO! TO NAVY TRAINING ACTIVITIES IN THE GOA!	of the animals present in the vicinity of training events will be detected and the acoustic impact modeling quantification is not reduced as a result of mitigation effectiveness, however, mitigation measures based on detection of marine mammals by exercise participants anywhere in the exercise area will result in the mitigation of some potential impacts. Monitoring reports from exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. (Please see the recent results supporting this as presented in training ranges monitoring reports “Marine Mammal Monitoring for the U.S. Navy’s Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)” available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). An integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the EIS/OEIS. Section 5.2.1.6 from pages 5-28 through 5-41 provides detailed explanations for why some previously used or suggested measures have been eliminated from further consideration. In the first training events authorized under the Marine Mammal Protection Act, some measures were attempted in previous training events at other locations in the past (since 2006) but were subsequently shown to be clearly ineffective or having resulted in an impact to training realism. The suite of mitigation measures proposed by Navy, developed in coordination with NMFS, and presented in Chapter 5 provides the best balance between the need to be precautionary in the protection of marine mammals and the needs to realistically train at sea.
Marcelo Nasif - 1		Military readiness is vital to our national security, but it need not come at the expense of degraded water quality, fisheries and marine mammal populations. The Navy estimates that its sonar training exercises in the GOA from its Preferred Alternative (Alternative 2) will result in more than 425,000 marine mammal "takes" (behavioral impacts, harassment, injury, death) every year - that's over 2.125 million takes during the course of the Marine Mammal Protection Act permit it must seek from NOAA.	Please see response to Maria Nasif - 2.
Marcelo Nasif - 2		In all, the Navy expects to "take" more than 20 different species of marine mammals, including 7 endangered species, in the GOA.	Please see response to Maria Nasif - 2.

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Marcelo Nasif - 3		Nearly all of the mitigation measures that the Navy has proposed for the GOA concern the operation of a small "safety zone" around the sonar ship. Yet it is widely agreed in the scientific community that this measure is inadequate given the far-reaching effects of Navy sonar and the difficulty of spotting marine mammals from fast-moving vessels.	Please see response to Maria Nasif - 3.
Marcelo Nasif - 4		The Navy has not proposed to establish any protection areas in the GOA, despite the broad recognition that geographic protection zones are the most effective available means to mitigate sonar's impacts on marine wildlife.	Please see response to Maria Nasif - 4.
Marcelo Nasif - 5		For example, no protection areas are proposed for harbor porpoises, which are acutely sensitive to sound; for endangered gray whales, which migrate directly through the TMAA; for endangered humpback whales and blue whales, which gather to feed in the TMAA; for the critically endangered North Pacific right whale, who's critical habitat is directly adjacent to the TMAA; or for any other species or habitat.	Please see response to Maria Nasif - 5.
Marcelo Nasif - 6		The Navy does not properly analyze environmental impacts. For instance, it completely disregards the serious impacts its sonar training will have on the critically endangered North Pacific right whales, whose critical habitat is only 12 nautical miles from the training area or the endangered gray whales, which migrate through the training area.	Please see response to Maria Nasif - 6.
Marcelo Nasif - 7		Furthermore, it fails to discuss and analyze the cumulative effects its activities may have in conjunction with other projects and activities in the area.	Please see response to Maria Nasif – 9.
Marcelo Nasif - 8		The Navy underestimates the number of marine mammals (and fish) that will be harassed, injured and killed because it simply does not have the density estimates needed in order to accurately make this determination. The National Environmental Policy Act (NEPA) specifically requires federal agencies to obtain the data necessary to their analysis. The simple assertion that "no information exists" will not suffice; unless the costs of obtaining the information are exorbitant, NEPA requires that it be obtained. See 40 C.F.R. § 1502.22(a).	Please see response to Maria Nasif - 7.
Marcelo Nasif - 9		The Navy's acoustics impact analysis ignores scientific studies contrary to its interests and uses methodologies not supported by the scientific community. Thus, the thresholds it sets for permanent injury, temporary injury (hearing loss)	Please see response to Maria Nasif - 8.

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		and behavioral change (which we would argue are too high and thus completely underestimate the actual number of wildlife that will be impacted) are invalid as a matter of science.	
Marcelo Nasif - 10		The Navy's alternative analysis is inadequate. The Navy only presents three options - maintain the status quo, add more training, or add even more training. It does not consider - or blithely dismisses - any other alternatives, some employed by the Navy itself in other training exercises and ranges.	Please see response to Maria Nasif - 10.
Marcelo Nasif - 11		Most critically, the Navy does not set forth adequate measures to mitigate the harmful effects of sonar. Its proposed mitigation measures basically boil down to "safety zones" (1,000 yard power-down and 200 yard shut down) around the sonar maintained primarily by on-board visual monitors. These are the same measures that federal courts have found to be "woefully inadequate and ineffectual." (For instance, studies show that visual monitoring only spots about 5% of marine mammals. Statistically, a 5% "success" rate clearly does not cut it.) The Navy's refusal to employ better mitigation measures is astounding, because it has used more protective measures during previous training.	Please see response to Maria Nasif - 11.
Elizabeth Neumann		I have been an Alaskan resident since 1988. My income has been dependant on the waters of Alaska for many years, in many different aspects.:Commercial Fishing as well as Tourism being the main ones. The proposal for the Gulf of Alaska {TMMA) in which the Navy plans to train is very risky and threatens the lives of the marine mammals in the area.. The amount of spent waste and hazardous materials projected to be released into the waters is too high. The 425, 000 marine mammal takes each year is outrageous and the small safety zone around the sonar ship is inadequate. I do not support this proposal and hope to see that is does not come into fruition. Thank you for your time Elizabeth Neumann	As presented in Section 3.12, with regard to the continuation of Navy training as has been occurring for over 10 years or the proposed addition of increased training activities - neither should impact commercial fishing or tourism (also see Chapter 4 regarding cumulative impacts). Please see Section 3.8 with regard to the estimated impacts on marine mammals noting the number of exposures cited for Alternative 2 does not take into consideration a likely reduction in those numbers as a result of implementing Navy's standard mitigation measures. In addition, the Navy feels the estimated “takes” are overestimates for numerous reasons, including: 1) Where a range of density estimates existed, or where densities were seasonal, the modeling considered only the greatest density. This assumption leads to more animals within a sonar’s range, and therefore more takes, 2) The modeling estimates do not consider the positive impacts of the Navy’s mitigation measures. In reality, many of the estimated takes (primarily TTS) would be eliminated due to power down procedures in place as a marine mammal approaches a sonar source, and 3) All surface ship sonars are modeled as the more powerful SQS-53C, when in reality, 60% of all surface ship sonar hours

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			proposed are significantly less powerful (225 dB compared to 235 dB of the SQS-53C). Regarding spent waste and hazardous materials, please see response to Alaska Glacial Mud Co. - 1.
Cherie Northon, Ph.D.		Right whales and sonar disruption!!! What are you thinking? No one is arguing that National Defense is important, but it should not be at the expense of this valuable resource. Surely we can figure out another way, place, and time to deal with this. I support the "no action" option. Cherie Northon, Ph.D.	The Navy fully analyzed potential impacts to marine life, including the North Pacific right whale. As presented in Section 3.8 and shown on Figure 3.8-1, the North Pacific right whale Critical Habitat is approximately 16 nautical miles from the nearest corner of the TMAA. Most of the activities proposed will take place far from this corner of the TMAA since the boundaries defined by that corner would otherwise constrain training realism, especially in terms of ASW training. Additionally, the Navy has conducted mid-frequency and high-frequency active sonar activities for decades with no indications of injuries to resident beaked whales at training ranges in Hawaii and Southern California or to right whales on the East Coast. There are no indications for broad-scale impacts that are either injurious or of significant biological impact to marine mammals and the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Please note that the decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
John O'Brien Jr.		National security is # 1 in my book. Sonar testing is necessary in order to maintain a top of the line naval defense. The gulf of Alaska is a perfect place to test any and all Sonar equipment. Full speed ahead!	This comment is duly noted.
Jeanne Parker		I am strongly opposed to any increase in sonar, radar sinking of ships or munitions, or any other changes to what the navy is already doing in this sensitive and productive area of the Gulf of Alaska. I support the "no action" alternative, which will allow the navy to continue training as they have previously in this area, but does not increase toxic dumping or entails the use of sonar, which has been documented to be harmful to marine mammals and fish.	This comment is duly noted. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process. Please note that the Navy does not conduct toxic dumping and that the Navy has conducted active sonar activities for decades in oceans all around the world with no documented proof of injuries to marine mammals. Given the natural variation of marine mammal locations over time within the GOA TMAA, operational variability of Navy active sonar operations, and the fact that there is little documented scientific information demonstrating broad-scale impacts that

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			are either injurious or of significant biological impact to marine mammals, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS.
Jeremiah Parsons		I believe the naval training exercises proposed would damage the ecology of the Gulf of Alaska. I do not believe that the mitigation proposed is adequate to protect this vital resource.	The Navy's protective measures are effective at mitigating, not eliminating, risk to the ecosystem and ecology of the GOA. Based on the analysis included in this EIS/OEIS, including the Navy's interests in environmental stewardship, the Navy feels its established protective measures are adequate. These measures have been developed in conjunction with NMFS.
Nancy Pease - 1		Regarding: Gulf of Alaska Navy Training EIS/OEIS The Preferred Alternative poses unacceptable risks of irreversible or long-term damage to the natural environment, and particularly to marine mammals and the fisheries in the Gulf of Alaska. The projected 2.125 "takes" of marine mammals over the span of the permit is a horrific toll toll, especially considering that there are 7 endangered marine mammals in the Gulf waters.	The EIS/OEIS used the most current, relevant scientific information, in coordination with the National Marine Fisheries Service, to develop the analysis on sonar training and potential impacts to marine mammals. Regarding "takes" please see response to Judith Brakel – 1.
Nancy Pease - 2		It is a dereliction of due process that the Navy doesn't even have the density data on marine mammals to know if this projected take is accurate.	Section 3.8.2 in the EIS/OEIS discusses the density estimates: In April 2009, the Navy funded and NMFS conducted the Gulf of Alaska Line-Transect Survey (GOALS) to address the data needs for density analysis. Line-transect survey visual data to support distance sampling statistics and acoustic data were collected over a 10-day period both within and outside the TMAA. Please see Section 3.8.2.1 and Appendix E – Marine Mammal Density and Depth Distribution, for full discussion on the survey and the marine mammal densities.
Nancy Pease - 3		The proposed 1000 yard/200 yard safety zones are a travesty, since the federal courts have already found that these distances are "woefully inadequate".	Chapter 5 presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events at sea in the TMAA. As detailed in that section, the mitigation measures involve much more than a sonar "safety zone", make use of all available observers such as those in aircraft in addition to observers on vessels, and use all available sensors such as passive acoustic hydrophones. The mitigation measures presented were developed in coordination with NMFS biologists and scientists to determine which mitigation measures would be both effective and still allow the Navy to meet its operational needs for realistic training. Please note that the Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals. Based on the analysis included in this EIS/OEIS, including the Navy's history

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			of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy feels its protective measures are adequate.
Nancy Pease - 4		The proposed visual look-outs for marine mammals is also woefully inadequate, given that only 5 percent of marine mammals are typically spotted.	Please note that the text referencing studies indicating "a 5% success rate" was with regard to survey protocols, were not done using Naval personnel or vessels (which have a higher height of eye for observation), and did not take into account the circumstances present during a training event, such as having multiple vessels over a very wide area, communicated sharing of observations, and operating in a coordinated manner in combination with aircraft that are also observing the water space. The Navy does not expect 100% of the animals present in the vicinity of training events will be detected and the acoustic impact modeling quantification is not reduced as a result of mitigation effectiveness. However, mitigation measures based on detection of marine mammals by exercise participants anywhere in the exercise area will result in the mitigation of some potential impacts. Monitoring reports from exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. (Please see the recent results supporting this as presented in training ranges monitoring reports “Marine Mammal Monitoring for the U.S. Navy’s Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)” available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). An integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the EIS/OEIS. As part of the Integrated Comprehensive Monitoring Program, research to measure the ability of Navy observers to detect marine mammals is also underway.
Nancy Pease - 5		The trashing of the waters with 352,000 pounds of debris annually is totally unacceptable. As a family that commercially fishes these waters, we object to the fouling of the food chain and the dangers of objects and substances left in the water column or on the sea floor. Civilian vessels follow strict regulations about debris, and mostly pack it back to shore. The Navy also needs to haul its trash ashore especially any hazardous or chemical debris. Even if chemicals are dispersed, the suspicion of tainted waters and	The Navy is not proposing to dump wastes in the Gulf of Alaska. Regarding you comment on debris, please see response to Alaska Glacial Mud Co. – 1. Additionally, please note that the analysis presented in the EIS/OEIS indicates that expended materials remaining in the TMAA would not affect the food chain and would not pose a reasonable risk to the public. Additionally, please note that the Navy is a seagoing force, and that two-thirds of the world's surface is covered by water, means that many of our environmental initiatives focus

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		tainted fish can be a blow to the fishing industry. Healthy oceans are critical to our state and world future.	on ocean stewardship and seek opportunities to control our "ecological footprint" in relation to marine life, coastal impacts, and water quality. We have installed technology aboard our ships to keep plastics out of the ocean and safely manage our biodegradable waste stream.
Nancy Pease - 6		The only of the alternatives that balances environmental protection and military training is the No Action alternative. Let the Navy continue existing training, but do not allow sonic impacts or the waste dumping in the Gulf of Alaska.	Please see response to Ellen Americus – 1. Sonic impacts have been discussed in Section 3.4 (Acoustics) and as they relate to marine mammals in Section 3.8. The Navy is not proposing to dump wastes in the Gulf of Alaska and dumping is not practiced by Navy ships.
David Peterson	Dorobo Safaris	I am distressed to learn about the Sonic boom and military exercises planned by the Navy in the Gulf of Alaska. Having visited Ak for the first time in 08, I was impressed with the rich diversity and abundance of marine life and the relatively intact nature of the ecosystems. It is simply unacceptable in this day and age with natural and particularly marine systems under so much pressure for the Navy to be contemplating such exercises.	Sonic boom testing is not part of the proposed action for this EIS/OEIS. However, throughout the course of the exercise, individual planes may attain supersonic speeds within the TMAA. This would create a sonic boom. The effects of which have been analyzed in Section 3.4 (Acoustics) and as they relate to marine mammals in Section 3.8. Please refer to Chapter 1 for the purpose and need of the Proposed Action.
Donna Pierce		I am very concerned about the potential, even likely harm to marine mammals from the proposed sonar training. I do not question the need for training, but I urge the Navy to find a site and a time that avoids critical habitat. Thank you.	The Navy shares your concern for marine life. As such, it Navy conducted a thorough analysis of sonar effects in the EIS/OEIS, using the most current and best available science, as required by NEPA. This analysis was completed in cooperation with the National Marine Fisheries Service, which is responsible for the protection of marine species. The results indicate that no significant harm would come to any marine mammal population. With regard to protecting marine mammal habitat, the Navy altered the boundary of the TMAA to avoid the Critical Habitat boundary established for the Stellar sea lions and the TMAA is many miles from the protective areas established for right whale, sea otter, and beluga whale; there is no designated marine mammal habitat in the TMAA by design.
Pioneer Alaskan Fisheries Inc. - 1		The Gulf of Alaska is our fishing grounds. The coastal currents flow through the gulf and into Cook Inlet and down through Kodiak and out the chain. We saw very vividly how these currents flow during the Exxon Valdez Oil Spill.	This comment is duly noted.
Pioneer Alaskan Fisheries Inc.- 2		Multiple species of migratory birds and in particular twelve species of declining and endangered Waterfowl, Tribe Mergini, winter in the Gulf of Alaska. King Eider, Common Eider, the endangered Stellers Eider, the endangered Spectacled Eider, Surf Scoter, White-winged Scoter, Black Scoter, Long-Tailed duck, Harlequin, Barrows Goldeneye,	Section 3.9 of the EIS/OEIS provides a thorough analysis of potential impacts to seabirds, including those mentioned in your comment. This analysis concluded that the Navy's proposed summer time activities would have no significant impacts to birds. The USFWS has concurred with the Navy's determination of "may affect, not likely to adversely affect"

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		Common goldeneye, Bufflehead These birds are in endangered or declining status and cannot withstand another cumulative effect weakening their numbers further from war games, disturbance, spilled toxins, noise, explosives etc.	short-tailed Albatross, the only threatened and endangered seabird potentially present within the TMAA. Please see Appendix C, Regulatory Consultations.
Pioneer Alaskan Fisheries Inc. - 3		Please do not perform your games in areas of pristine water quality. These areas need to remain clean, undisturbed quiet and in their natural state. We need to have some places on earth that are sacred. The Gulf of Alaska is one of these places. With Kind Regards Nancy Hillstrand Pioneer Alaskan Fisheries	Please see response to Judith Brakel – 6.
Elaine Polinsky		My opinion is that the lives of these mammals need to be cherished and protected ... please do so ... Scientists estimate that only 300 to 400 of these whales remain .... listed as endangered in 1973 ... the population of right whales has made little progress toward recovery. In 2004, the National Marine Fisheries Service wrote that the "loss of even a single individual right whale may contribute to the extinction of the species." http://www.nmfs.noaa.gov/pr/pdfs/statusreviews/rightwhale2006.pdf north pacific right whale population has been "depleted by commercial whaling..... In the last several decades there have been markedly fewer sightings .... right whale sightings in the eastern and central North Pacific have been so rare that single sightings ... resulted in scientific publications .. paucity of sightings of right whales in the eastern North Pacific is apparent despite high levels of survey effort in the region, notably from Japanese sighting surveys ... Recent summer sightings of right whales in the eastern Bering Sea .. represent the first reliable observations of associated groups in the eastern North Pacific since the 1960s."	The Navy fully analyzed potential impacts to marine life, including the North Pacific right whale. As presented in Section 3.8 and show on Figure 3.8-1, the North Pacific right whale Critical Habitat is approximately 16 nautical miles from the nearest corner of the TMAA. Most of the activities proposed will take place far from this corner of the TMAA since the boundaries defined by that corner would otherwise constrain training realism, especially in terms of ASW training. Additionally, the Navy has conducted mid-frequency and high-frequency active sonar activities for decades with no indications of injuries to resident beaked whales at training ranges in Hawaii and Southern California or to right whales on the East Coast. There are no indications for broad-scale impacts that are either injurious or of significant biological impact to marine mammals and the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS.
Dean Rand - 1		January 12, 2010 Comment: I am a 32 year veteran Captain of the commercial fishing, scientific research, and tourism industries here in the North Pacific Gulf of Alaska. I oppose the Navy's plan to conduct training exercises in the Gulf of Alaska. I firmly believe that the Navy's plan would further damage the area's already damaged habitat and its wildlife populations. This area's habitat and wildlife populations have historically been subjected to stresses from many sources most of which have been and continue	The Navy has been conducting much of the proposed training in the Gulf of Alaska for over 10 years. Effects of past, present and planned Navy activities have been discussed in Chapter 4; Cumulative Impacts and constitute a very small portion of the overall commercial and recreational activities that take place in those waters.

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		to be various forms of modern commercial use and development. Most of these activities are commercial enterprises such as but not limited to: Industrial whaling, which removed upwards of a half million great whales between 1949 and the mid 1970's. It's well documented that most species of great whales have not recovered from this.	
Dean Rand - 2		It's also been well documented over the years that military sonar are extremely harmful to whales' physiology.	Please note that the U.S. Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations. The Navy's analysis indicates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Additionally, please see response to Ellen Americus – 3.
Dean Rand - 3		It's also a well documented fact that underwater explosions will produce immense shock waves killing or injuring fish, mammals, and seabirds.	As described in Section 3.6, the use of explosive devices may result in injury or mortality to individual fish but would not result in impacts to fish populations. It is less likely that marine mammals and birds as a result of implemented mitigation measures as detailed in Section 5.2.1.2.
Dean Rand - 4		The 1971 underground explosive testing at Amchitka Island, although detonated a full mile under land, still produced enough shock wave in the surrounding waters to kill virtually every fish, marine mammal and sea bird within three miles of the Island's shore. This is all well documented in Govt. research papers.	No such similar activities are proposed in this document and the size of the devices that are proposed for use are too small to result in a shock wave that would result in mortalities at that great a distance.
Dean Rand - 5		The Navy's plan to have a watch persons stationed on the decks of their ships so that they can look for and warn the ship away from any mammals is ... well ... besides being grossly flawed, is just about the dumbest thing I've heard in a long time. Like ... some watch person can see as far as the sonar or underwater explosions will reach is ridiculous! I do mammal and sea bird surveys for the Govt. and we can't effectively see our target animals with the best binoculars in conditions where there are waves of any more than six inches of height. Marine mammals and sea birds live either under dark water or very close to the surface. This is not Sea World! When the wind is blowing over 10 knots, it's near to impossible to spot the whales as they surface and blow unless they surface directly in front of one's eye's and at a close enough range (within a hundred meters). The wind immediately knocks the tell-tale blow mist away and	As detailed in Chapter 5 of the EIS/OEIS, the mitigation measures involve much more than visual observers on ships, make use of those in aircraft, in addition to use of all available sensors such as passive acoustic hydrophones. The mitigation measures presented in the EIS were developed in coordination with the National Marine Fisheries Service (NMFS) biologists and scientists to determine which mitigation measures would be both effective and still allow for Navy to meet operational needs for realistic training. Please note that Naval vessels have a higher height of eye than most vessels (putting them above much of the mist and spray) as well as having multiple vessels over a very wide area, communicated sharing of observations, and operating in a coordinated manner in combination with aircraft that are also observing the water space. The Navy does not expect 100% of the animals present in the

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		the waves camouflage the whales' body making observations extremely difficult if not impossible. Most wild animals do not want to be discovered. That is how they try to survive in the Wild. They will not let the Navy or anyone else find them if they can help it.	vicinity of training events will be detected and the acoustic impact modeling quantification is not reduced as a result of mitigation effectiveness, however, mitigation measures based on detection of marine mammals by exercise participants anywhere in the exercise area will result in the mitigation of some potential impacts. Monitoring reports from exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. As part of the Integrated Comprehensive Monitoring Program, research to measure the ability of Navy observers to detect marine mammals is also underway.
Dean Rand - 6		Again, this is not Sea World. Industrial fishing, before the advent of conservation based on science and not on politics, over harvested most of the region's commercially valuable fishes and shell fish such as salmon, herring, halibut, black cod, crab, and shrimp. All of these species live In or are dependent on the habitat within which the Navy proposes to conduct its training.	Please see Chapter 3 of the EIS/OEIS for the description and analysis and potential effects. Specifically, those effects to the economy are found in Section 3.12; to marine life in Sections 3.5 through 3.9. Because the Navy has no exclusive “right of way” when conducting training activities on the ocean, Navy ships and aircraft intentionally seek areas clear of all other vessel traffic, thereby reducing the likelihood of negatively affecting fishing and tourism industries. In addition, impacts to habitat and fish have been thoroughly assessed utilizing the best available science and data, and while localized impacts may occur, given the temporal and spatial nature of the activities, the impacts would not result in a population-level or a significant impact to habitat and/or fish resources/fisheries.
Dean Rand - 7		Many of these species populations have not recovered from their historic over harvest. To further stress these stocks with this proposed Naval training exercise and its associated shock waves, and toxins from spent explosives would be irresponsible.	Table 4-1 succinctly depicts the categories of past, present, and reasonably foreseeable future actions that affect cetacean and fish populations. The EIS/OEIS analyzes in detail the effects of Navy actions on specific resources of Fish (see Sections 3.6.2) and places those in the context of other sources of impacts. Section 4.2.6 (Fish) discusses the cumulative effects of Navy activities and commercial fishing in the GOA. Section 4.2.8 (Marine Mammals) addresses the threats to marine mammals in past decades, the most damaging being; direct catch, bycatch, and pollution (Figure 4-1). Regarding toxins and spent explosives, only a small portion of the expended training materials, by weight, would be explosives, and all but trace quantities of explosives byproducts would be consumed during their use (detonation); high-order detonations are approximately 99.997% efficient in

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			converting explosives to non-hazardous inorganic compounds (see Page 3.2-2 of the EIS/OEIS). These trace quantities of byproducts would be quickly dispersed. Byproducts of live ordnance are addressed in Section 3.2 of the EIS/OEIS. The majority of expended materials used in the Proposed Action are heavy objects that will sink to the bottom of the water column. In items that fail to detonate (duds), the explosives and propellants usually are contained within a metal casing. Encrustation and burial in the substrate prevent leaching from expended materials. Any leaching that occurs will be diluted by ocean currents in this very large and dynamic open ocean environment. Thus, high concentrations of TNT or other explosives in marine waters surrounding expended training items are not expected.
Dean Rand - 9		Oil & gas development, which began over 50 years ago in the Gulf of AK and Cook Inlet, continues to pollute the waters of this region thus hampering the recovery of the region's habitat, wildlife and fish stocks. Alaska's largest urban population center (the Anchorage bowl With some 300,000 residents) dumps virtually all of its waste water, untreated, into Cook Inlet which in turn runs Into the same area planned for this Naval exercise in the Gulf of Alaska.	Effects of past, present and planned Navy activities have been discussed in Chapter 4; Cumulative Impacts. For the purposes of determining cumulative effects in this chapter, the Navy reviewed environmental documentation regarding known current and past Federal and non-Federal actions associated with the resources analyzed in Chapter 3. Additionally, projects in the planning phase were considered, including reasonably foreseeable (rather than speculative) actions that have the potential to interact with the proposed Navy action.
Dean Rand - 10		Indeed, just recently the Federal Govt has listed Cook Inlet's Beluga Whale population as threatened, due to its rapid demise, more than likely from habitat degradation. To implement this planned Naval training exercise with its associated environmental harms, in the area immediately adjacent to the beluga critical habitat would be grossly negligent.	As per Chapters 1 and 2 of the FEIS/OEIS, the TMAA is located over 12 nm (22 km) from the northern point of the TMAA, the nearest shoreline (Kenai Peninsula) is located approximately 24 nm (44 km) north of the TMAA's northern boundary. The approximate middle of the TMAA is located 140 nm (259 km) offshore; far from the Cook Inlet and will have no impact on the Cook Inlet beluga whale.
Dean Rand - 11		In 1989 the oil tanker Exxon Valdez spilled 11.8 million gallons of toxic crude oil into the same region as the Navy plans this exercise. Much of the habitat and many wildlife species studied have not recovered from this one event. For the US military to add more harm to this area's habitat, and it's wildlife in light of all the man made damage that's already been done, would also be grossly negligent. Thank you for the opportunity to comment on this proposed activity. Captain Dean Rand	The near edge of the TMAA is beyond 50 nautical miles from the edge of Prince William Sound. There are no activities proposed for that area or that will impact wildlife or habitat in that area. Thank you for taking part in providing public input to this process.
Bruce Rein	GCI	Just read through the posted EIS documents and they again	This comment is duly noted.

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		fail to note that several vital telecommunication cables are located in the area. In light of recent federal US vessel operational incidents causing damage to submarine cables it is very important that the location and protection of these very important communication links for the State of Alaska as well as DOD communications is addressed. There is discussion of Submarine activities and the deployment of PUTR's on the seafloor - these activities have the potential to damage submarine cables in the area. The location of these cable are clearly plotted on NOAA charts or I can provide you data on the cable locations. Bottom operations must be avoided in this area. I will be traveling during the comment sessions in January and will not be able to attend.	
C.A. Ryan - 1		Military readiness is vital to our national security, but it need not come at the expense of degraded water quality, fisheries and marine mammal populations. The Navy estimates that its sonar training exercises in the GOA from its Preferred Alternative (Alternative 2) will result in more than 425,000 marine mammal "takes" (behavioral impacts, harassment, injury, death) every year - that's over 2.125 million takes during the course of the Marine Mammal Protection Act permit it must seek from NOAA. In all, the Navy expects to "take" more than 20 different species of marine mammals, including 7 endangered species, in the GOA.	Please see response to Maria Nasif - 2.
C.A. Ryan - 2		Nearly all of the mitigation measures that the Navy has proposed for the GOA concern the operation of a small "safety zone" around the sonar ship. Yet it is widely agreed in the scientific community that this measure is inadequate given the far-reaching effects of Navy sonar and the difficulty of spotting marine mammals from fast-moving vessels.	Please see response to Maria Nasif - 3.
C.A. Ryan - 3		The Navy has not proposed to establish any protection areas in the GOA, despite the broad recognition that geographic protection zones are the most effective available means to mitigate sonar's impacts on marine wildlife.	Please see response to Maria Nasif - 4.
C.A. Ryan - 4		For example, no protection areas are proposed for harbor porpoises, which are acutely sensitive to sound; for endangered gray whales, which migrate directly through the TMAA; for endangered humpback whales and blue whales, which gather to feed in the TMAA; for the critically endangered North Pacific right whale, who's critical habitat	Please see response to Maria Nasif - 5.

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		is directly adjacent to the TMAA; or for any other species or habitat.	
C.A. Ryan - 5		The Navy does not properly analyze environmental impacts. For instance, it completely disregards the serious impacts its sonar training will have on the critically endangered North Pacific right whales, whose critical habitat is only 12 nautical miles from the training area or the endangered gray whales, which migrate through the training area.	Please see response to Maria Nasif - 6.
C.A. Ryan - 6		Furthermore, it fails to discuss and analyze the cumulative effects its activities may have in conjunction with other projects and activities in the area.	Please see response to Maria Nasif - 9.
C.A. Ryan - 7		The Navy underestimates the number of marine mammals (and fish) that will be harassed, injured and killed because it simply does not have the density estimates needed in order to accurately make this determination. The National Environmental Policy Act (NEPA) specifically requires federal agencies to obtain the data necessary to their analysis. The simple assertion that "no information exists" will not suffice; unless the costs of obtaining the information are exorbitant, NEPA requires that it be obtained. See 40 C.F.R. § 1502.22(a).	Please see response to Maria Nasif - 7.
C.A. Ryan - 8		The Navy's acoustics impact analysis ignores scientific studies contrary to its interests and uses methodologies not supported by the scientific community. Thus, the thresholds it sets for permanent injury, temporary injury (hearing loss) and behavioral change (which we would argue are too high and thus completely underestimate the actual number of wildlife that will be impacted) are invalid as a matter of science.	Please see response to Maria Nasif - 8.
C.A. Ryan - 9		The Navy's alternative analysis is inadequate. The Navy only presents three options - maintain the status quo, add more training, or add even more training. It does not consider - or blithely dismisses - any other alternatives, some employed by the Navy itself in other training exercises and ranges.	Please see response to Maria Nasif - 10.
C.A. Ryan - 10		Most critically, the Navy does not set forth adequate measures to mitigate the harmful effects of sonar. Its proposed mitigation measures basically boil down to "safety zones" (1,000 yard power-down and 200 yard shut down) around the sonar maintained primarily by on-board visual monitors. These are the same measures that federal courts have found to be "woefully inadequate and ineffectual." (For	Please see response to Maria Nasif - 11.

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		instance, studies show that visual monitoring only spots about 5% of marine mammals. Statistically, a 5% "success" rate clearly does not cut it.) The Navy's refusal to employ better mitigation measures is astounding, because it has used more protective measures during previous training.	
Frani Scheffel	DESIGNS for LIFE	Please consider the past results of such trainings on marine life and stop this plan...when are you going to learn...the beluga is all but extinct in Cook Inlet...other endangered whales are at risk and the salmon runs are suffering...you want to add to these problems by continuing with your war games...spend the monies nation building instead of testing your already over done arsenals of waste and destruction...you have done enough degradation to our oceans and marine life...STOP THIS PLAN...thank you... F.Scheffel Homer AK	Please note that there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of the marine environment. Additionally, the cumulative impacts analysis section addresses the environmental impacts that result from the incremental impact of Navy activities when added to the past, present, or reasonably foreseeable future actions that affect the same resources. Table 4-1 succinctly discusses all development, including oil and gas development, of past, present, and reasonably foreseeable future actions that affect marine populations.
Marianne & William Schlegelmilch		We proudly support our military services and understand the need to conduct live exercises. In this instance, however, we disagree with the proposal to conduct live exercises with ammunition and sonar in the Gulf of Alaska, one of the few remaining pristine oceans on the earth. We believe that the impact on our fisheries and on the ecosystem in general would disrupt the balance of nature and fear lasting ramifications to the Gulf and the ecosystem there. We urge the US Navy to re-think this plan and conduct the exercises in another location that will not impact our food supply, and one of the last pristine areas on earth. Although we support the Navy and thank them for protecting us, we are opposed to this operation for the reasons described above--especially if another area can be found for the exercises that will feel less impact than ours would.	As presented in Chapter 4, the cumulative effects of Navy training activities have been considered in addition to the numerous other activities taking place in the Gulf of Alaska including, commercial fishing. Based on having conducted most of the proposed training activities over the last 10 years in Gulf of Alaska with no indications of there having been consequences on marine resources there it, is unlikely that the proposed activities would have wide ranging impacts. As detailed in Sections 3.6 and 3.12, there should be no significant impacts to fisheries or the food supply (as represented by the fisheries) as a result of the proposed actions. As explained in Section 2.3.2.1 of the EIS/OEIS, relocating training activities to another location would not support the Navy’s Purpose and Need and was therefore eliminated from further consideration.
Evelyn Seguela		Please do not do sonar stuff in Cook Inlet! Far too damaging to the animals living in cook inlet waters!! No Need to do this, really...come on! Bad Bad No No	Please note that no Navy training activities are proposed to take place in Cook Inlet. As per Chapters 1 and 2 of the EIS/OEIS, with the exception of Cape Cleare on Montague Island, the TMAA is located over 12 nm (22 km) from the northern point of the TMAA, the nearest shoreline (Kenai Peninsula) is located approximately 24 nm (44 km) north of the TMAA’s northern boundary. The approximate middle of the TMAA is located 140 nm (259 km) offshore, far from the Cook Inlet.
Erin Shew - 1		Dear Mrs. Amy Burt: I am writing to express my concern over the proposed	As presented in Chapter 4, the cumulative effects of Navy training activities added to the numerous other activities taking

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		training exercises that the Navy has outlined in its Gulf of Alaska EIS analysis. I understand the need for readiness for our troops and appreciate all that is already done by the Navy to protect our people and lands. However, I worry about the economic and ecological damages that could occur in one of the United States' most important fisheries if the proposed training proceeds without a better understanding of the baseline conditions in the Gulf of Alaska, in addition to the individual and cumulative long-term effects of materials used in the training on marine ecosystems. I urge the US Navy to adopt the "No Action" alternative at this point in time until further baseline studies of marine ecosystems and the trainings' impact on fisheries in the Gulf of Alaska can be conducted.	place in the Gulf of Alaska including commercial fishing. As detailed in Sections 3.6 and 3.12, there should be no impacts to fisheries or the food supply (as represented by the fisheries) as a result of the proposed actions. The Navy considered the best available science in preparation of this EIS/OEIS and is in consultation with NMFS as the regulator and a cooperating agency with regard to the proposed action and any resultant mitigation measures as conditions of anticipated authorizations under the MMPA or reasonable and prudent measures resulting from issuance of a Biological Opinion under ESA.
Erin Shew - 2		After reviewing the EIS, my primary concerns regard the potential short and long-term impacts of introducing so many foreign, and in some cases hazardous, materials into our fisheries ecosystem without really understanding that ecosystem. The draft EIS does not give a breakdown of how much of each material is going to be introduced under each alternative. Nor does it contain information regarding the possibility of long-term effects on our fisheries resources from separate hazardous materials or the combinations of those hazardous materials.	Please see response to Bryson – 4.
Erin Shew - 3		Bioaccumulation of hazardous materials could potentially raise the level of contamination above what is considered a safe level over numerous years of training exercises.	With regard to bioaccumulation, please see response to Kate Alexander - 3.
Erin Shew - 4		In addition, ocean currents could potentially "trap" certain materials in specific areas, leading to high concentrations of those materials in one place. More information about what materials will be released and further study as to how those materials will affect the marine ecosystem should be a part of the final EIS.	As discussed in Shew-2, constituents of expended materials are not be expected to be present at harmful concentrations in water or sediments due to the size of the TMAA, the widely dispersed training throughout the area, and the strong ocean currents of the GOA. There are no known gyres or other large-scale natural mechanisms that would tend to concentrate floatable or suspended residues from expended materials. The known GOA bathymetry and ocean currents are described in Section 3.3.1.1. of the Final EIS/OEIS.
Erin Shew - 5		In addition to the unknowns surrounding the release of hazardous materials, there is a lot that yet needs to be understood regarding the physical and behavioral effects of using explosives in the region. For example, the draft EIS says that it has been proven that explosions can cause physiological damage to fish with swim bladders. How will	The Navy is very aware of concerns from fishing fleets and fisheries in the Gulf of Alaska. As described in the EIS/OEIS, analysis of impacts to fish, including those with swim bladders, are found in Section 3.6 of the EIS/OEIS. Currently, there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of fish

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		these explosions affect our salmon and herring, in addition to other economically and culturally important fish?	populations. As such, the Navy believes, and the analysis indicates, that its training activities will not impact the fisheries off the Gulf of Alaska, although possible impacts to individual fish may occur.
Erin Shew - 6		The proposed method of "spotting" marine mammals before training exercises also creates uncertainties as to the actual number of marine mammals that will be unintentionally affected. The concussive effects of explosions can be felt beyond the distances where the Navy halts training due to the proximity of a marine mammal detected on sonar. Aerial spotting only provides a cursory understanding of the location of marine mammals, and seems an inadequate measure of how many are in an area. Again, further measures to protect marine mammals and further studies as to their at-sea behavior should be included in a final EIS.	The US Navy in conjunction with NMFS and USFWS is best suited to determine what mitigation it can effectively use during its training and testing activities to mitigate harm to marine mammals while still being able to meet its operational needs to train for real-world conditions it may face. The Navy's mitigation scheme is more than just visual monitoring. Aerial monitoring and sonar power-down protocols are used as well. Chapter 5 presents the US Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events. Navy does not expect all animals present in the vicinity of training events will be detected, and the acoustic impact modeling quantification is not reduced as a result of mitigation effectiveness. With that said, the Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals. Based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy feels its protective measures are adequate.
Erin Shew - 7		I believe that a question the public must ask in this matter is: why here? Why does the Navy need to conduct potentially harmful training drills in one of the richest and most intact marine ecosystems within the U.S.? And how can the U.S. government justify such potentially intrusive training without a better understanding of its effects on marine mammals and without an established baseline for this ecosystem? I am not opposed to training our troops to be better able to respond to domestic threats. However, I worry that we harm ourselves, and threaten our environmental, physical, and economic health, with these exercises in this specific location. There are many established training zones in less productive waters. The Navy should consider all these locations before deciding on the Gulf of Alaska for mid-range sonar and SINKEX training.	As explained in Section 2.3.2.1 of the EIS/OEIS, a relocation of activities outside of the GOA would not support the Navy's Purpose and Need and was therefore eliminated from further consideration. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
Erin Shew - 8		The Navy should also work with various agencies such as NOAA to establish an understanding of the ecosystem and	As detailed in Section 3.8, this EIS/OEIS was developed in partnership with National Marine Fisheries Service (a part of

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		baseline conditions before deciding that Alternative 2 is the preferred alternative.	NOAA) as a cooperating agency. The ecosystem and baseline conditions are described in detail in the affected environment discussion of each of the resource areas of the EIS/OEIS.
Erin Shew - 9		Finally, if the training exercises do proceed, the Navy and partners should continue to conduct scientific investigations on the effects of the training on the ecosystem and be willing to consider alternatives if training exercises appear to have a negative impact. Thank you for considering my comments before the issuance of the final EIS. Sincerely, Erin Shew P.O. Box 1482 Cordova, AK 99574 erin_shew@hotmail.com mailing address after 09/01/2010: P.O. Box 1862 Kenai, AK 99611	As presented in Chapter 5, an Integrated Comprehensive Monitoring Plan and research specific for the TMAA are planned for implementation before, during and after Navy training activities as part of mitigation and monitoring of Navy training exercises. These two components were developed in cooperation with NMFS, who regulates ESA and MMPA compliance.
Martha Siebe		I am alarmed at the impact indicated by the Navy's training proposal. Marine mammals have been impacted repeatedly in areas where similar exercises have taken place. I understand that the Navy has even used more protective measures in other places than they are proposing here. The oceans are vast and seem limitless, but they are not. There are many changes impacting the life in our oceans which we do not fully understand. Visual monitoring of an area only tracks 5% of marine mammals. These animals are very sensitive to sonar assaults on their systems. The animals depend on these for survival. Please establish large safety zones and times. Please listen to independent scientists about what measures will lead to less impact on marine mammals and other life forms in the oceans. We are not the only species of value on this earth!	Chapter 5 presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events at sea in the TMAA. As detailed in that section, the mitigation measures involve much more than a sonar "safety zone", make use of all available observers such as those in aircraft in addition to observers on vessels, and use all available sensors such as passive acoustic hydrophones. The mitigation measures presented were developed in coordination with NMFS biologists and scientists to determine which mitigation measures would be both effective and still allow the Navy to meet its operational needs for realistic training in the GOA. Please note that the comment referencing studies indicating "a 5% success rate" was with regard to survey protocols, were not done using Naval personnel or vessels (which have a higher height of eye for observation), and did not take into account the circumstances present during a training event such as having multiple vessels over a very wide area, communicated sharing of observations, and operating in a coordinated manner in combination with aircraft that are also observing the waterspace. The Navy does not expect 100% of the animals present in the vicinity of training events will be detected and the acoustic impact modeling quantification is not reduced as a result of mitigation effectiveness, however, mitigation measures based on detection of marine mammals by exercise participants anywhere in the exercise area will result in the mitigation of some potential impacts. Monitoring reports from exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. (Please

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			see the recent results supporting this as presented in training ranges monitoring reports "Marine Mammal Monitoring for the U.S. Navy's Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)" available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). An integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the EIS/OEIS. As part of the Integrated Comprehensive Monitoring Program, research to measure the ability of Navy observers to detect marine mammals is also underway. Section 5.2.1.6 from pages 5-28 through 5-41 provides detailed explanations for why some previously used or suggested measures have been eliminated from further consideration. In the first training events authorized under the Marine Mammal Protection Act, some measures were attempted in previous training events at other locations in the past (since 2006) but were subsequently shown to be clearly ineffective or resulted in an impact to training realism. The suite of mitigation measures proposed by Navy, developed in coordination with NMFS, and presented in Chapter 5 provides the best balance between the need to be precautionary in the protection of marine mammals and the needs to realistically train at sea.
Sierra Club Alaska Chapter - 1		Dear Ms Burt: The Sierra Club Alaska Chapter (Alaska Chapter) appreciates and supports our armed services' commitment to protecting the nation and its citizens. Our members applaud the hard work of maintaining combat readiness and want to see training activities test troops, equipment, and systems under the most difficult environmental conditions likely to be encountered during actual military confrontations.	This comment is duly noted.
Sierra Club Alaska Chapter - 2		Unfortunately, after examining the document, we conclude that the alternatives offered in the Gulf of Alaska Navy Training Activities Draft Environmental Impact Statement (DEIS) cannot do so.	This comment is duly noted.
Sierra Club Alaska Chapter - 3		At the same time, we remind you that the nation's priceless natural resources and the public health are significant parts of what our great military is charged with defending. Under scenarios outlined in the DEIS, our navy would be given a mandate to significantly degrade Gulf of Alaska ecosystems and destroy an astonishing amount of fish and wildlife. Tons of expended munitions and other discarded, hazardous	The Navy is aware of the diverse biological presence in the area and has conducted a thorough analysis of potential effects in Chapter 3 of the EIS/OEIS. Specifically, the EIS/OEIS thoroughly analyzes the impacts of expended materials used during Navy training activities. Only a small portion of the expended training materials, by weight, would be explosives, and all but trace quantities of

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		materials would be left to pollute the waters with potential to cause ongoing harm to the biota and the health of people who consume seafood taken in this region.	explosives byproducts would be consumed during their use (detonation); high-order detonations are approximately 99.997% efficient in converting explosives to non-hazardous inorganic compounds (see Page 3.2-2 of the EIS/OEIS). These trace quantities of byproducts would be quickly dispersed. Byproducts of live ordnance are addressed in Section 3.2 of the EIS/OEIS. Furthermore, of the estimated 352,000 lb of material that would be expended, in less than 3 percent of it the material is considered hazardous. Section 3.2 of the EIS/OEIS describes the impacts of potentially hazardous materials such as explosives constituents. Section 3.3 describes the impacts of expended materials in terms of water and sediment quality. The analysis presented in the EIS/OEIS indicates that expended materials remaining in the TMAA would not affect the food chain and would not pose a reasonable risk to the public. Chapter 4 includes cumulative analysis of all past, present, and reasonably foreseen future projects by the Navy and non-Navy activities. Regarding bioaccumulation, please see response to Kate Alexander - 3.
Sierra Club Alaska Chapter - 4		The Alaska Chapter and our Juneau Group are signatories to the Natural Resources Defense Council (NRDC) comments submitted January 25, 2010 by Staff Attorney Taryn Kiekow. We concur with its assessment that the DEIS is deficient. Please refer to that document for detailed analysis and recommendations. We provide a brief supplement to that testimony below.	This comment is duly noted, and responses to those written comments can be found in the written comment response table under NRDC.
Sierra Club Alaska Chapter - 5		1) First to the matter of the failure of the DEIS to provide alternatives sufficient to assure realistic training opportunities. Appendix A of the NRDC testimony appropriately points out that: "The DEIS does not include any discussion of alternative sites, instead proposing a No Action alternative (maintaining the current level of activities), Alternative 1 (increasing training activities, including sonar training), and the preferred Alternative 2 (increasing training activities, sonar training, additional strike exercises and range enhancements). The Navy's analysis is devoid of geographic alternatives..." Providing only two action alternatives completely ignores the likelihood there could be better real time training outside of the proposed training areas and during different seasons -- options that could better fit the Navy's need to deal with both current and future threats.	Please see response to Laurie Ferguson – 6.

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Sierra Club Alaska Chapter - 6		The DEIS lists North Korea and Iran among present security threats. Both lack submarines able to travel underwater all the way from Asia or the middle east to our waters. It is our understanding that we have assets in place to extensively monitor their coast lines, observing all vessel traffic in or out of their ports. The likelihood is that submarine or other threatening activity would be spotted well in advance of approaching our waters. Why train in the Gulf of Alaska or other areas so far from the international waters in which such threats would likely be engaged? The Navy's stated purpose is to train to engage the enemy in the worst case scenario and they want to have joint training with the Air Force. This is a prudent objective. It seems. however, that the worst case scenario would be having to fight in the middle of the pacific during winter. Our planes and ships would need to travel far at speed under the harshest sea and weather conditions to engage the enemy. Training in the gulf of Alaska during less demanding seasons cannot duplicate those difficult circumstances. Clearly, the DEIS needs to consider additional training alternatives in order to meet the Navy's desire to be prepared for worst case threats to our security.	As described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included alternate locations. Such alternatives fail to meet the purpose of and need for the proposed action. The proposed area for Navy training in the TMAA is based on the mission of Alaska Command to support the needs of military forces within Alaska, forces deploying through Alaska, and joint training needs. Although U.S. Military forces are all-weather capable, training requires prudent safety precautions, such as avoiding extreme weather that adds little to the training value, but significantly increases risk to the participants. Even though windows of reasonably fair weather would be available in winter, rapidly changing conditions would certainly result in numerous event cancellations, resulting in very inefficient training.
Sierra Club Alaska Chapter - 7		2) Then there is the issue of better protecting Gulf of Alaska resources and the public health. Appendix A of the NRDC comments also points out that: "The DEIS fails to consider any alternatives beyond increasing the level of training. Therefore, many reasonable alternatives are missing from the Navy's analysis that might fulfill that purpose while reducing harm to marine life and coastal resources." Fortuitously, training during winter months, outside of presently proposed areas would not only prepare the Navy and Air force to better engage current and future threats but would be less environmentally harmful, especially to marine mammals. The Navy's justification for having deleted alternatives outside the proposed training area and train only during the summer is based on convenience. Convenience is not what is needed to prepare for meeting threats to our nation. Convenience can only lead to weakness.	Please see responses to Sierra Club Alaska chapter – 5 and 6. In addition, section 2.3.2 of the EIS/OEIS, Alternatives Eliminated from Further Consideration, addresses the fact that additional alternatives were considered but did not meet the purpose and need for training discussed within Chapter 1.
Sierra Club Alaska Chapter - 8		Appendix A of the NRDC comments summarizes Alaska Chapter conclusions with respect to these things very well: "In sum, the DEIS shortchanges or omits from its analysis reasonable alternatives that might achieve the Navy's core	This comment is duly noted. However, please note that the purpose of an alternative is not to "achieve the Navy's core aim to testing and training while minimizing environmental harm." Rather, proposed alternatives are alternative actions that

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		aim to testing and training while minimizing environmental harm. For these reasons, we urge the Navy to revise its DEIS to adequately inform the public of all reasonable alternatives that would reduce adverse impacts to whales, fish, and other resources." Sincerely, Mike O'Meara Sierra Club Alaska Chapter Conservation Committee	would meet the purpose of and need for the proposed action. Additionally, the Navy would like to point out that the broad objectives set forth in this document are both reasonable and necessary. In regard to studied alternatives, the Navy is in full compliance with NEPA. Please refer to Section 2.3 of the EIS/OEIS for further explanation of the alternatives selection process.
Bill Smith		The mammal density data I see presented in the draft EIS projects a density distributed over the entire exercise area. I am informed by Navy personnel that the observed whale activity is concentrated along the shallow side of the Aleutian trench. It would be more appropriate to depict, in a fine grained way, the observed mammal densities and then designate these areas for reduced or limited training activities. The same principle applies to the shallow areas where valuable commercial fisheries take place. There are many sea mounts in the training exercise area. Sea mounts are areas of special ecological significance and require extra levels of protection and wide protection zones. Although sea mounts are mapped in the draft EIS, no special consideration, protection or mitigation measures are designated in the draft EIS. I am aware of the PMAP system used by the Navy to avoid training in these areas, but I think the EIS should specifically define these areas as protected and that mitigation measures should expressly define such areas as off limits to training. Simply mentioning PMAP in the EIS does not incorporate such protections into the EIS.	Activities proposed within the TMAA have the potential to occur over the Aleutian Trench and sound energy from sonar may be present within the trench on occasion and the potential effects on marine species is detailed in Section 3.8 of the EIS/OEIS However, the probability of effect is uniform across the entire TMAA. The potential effects to resources are analyzed as a whole and effects to the trench are reflected in potential effects to the entire TMAA. Additionally, as provided in Chapter 5, mitigation measures will be implemented as appropriate whenever marine mammals are detected. In this manner, the Navy mitigation measures will afford the maximum protection to all marine animals, regardless of the species or area. Furthermore, the concept of geographical limitations is inconsistent with the requirements for training in the TMAA. Seamounts or areas of bathymetric relief are often used by submarines to hide or mask their presence, requiring the need to train in that complex ocean environment. If the Navy were restricted from training near sea mounts or areas of bathymetric relief, they may be unable to do so when faced with an actual threat.
Johanna Spicuzza		Alaskan waters needs protection. We cannot allow the waters to be polluted and the wildlife harassed or killed. Tell them go to an area they've already screwed up. The habitat is critical for whales and other wildlife.	The Navy shares your concern for marine life. Possible effects resulting from the proposed action were analyzed in the EIS/OEIS. Also, as described in the EIS/OEIS, the Navy implements protective measures during its training exercises. For additional information on alternate locations, please see response to Sierra Club Alaska Chapter – 6.
Phil St. John	Alaska Center for Appropriate Technology	Stay out of the Gulf of Alaska.	This comment is duly noted.
Todd Stafford		I support the Navy and other branches of the military conducting training exercises and other activities in the Gulf of Alaska. A strong military is vital to national defense and ongoing training is required. The men and women serving in our military deserve our gratitude and whatever support we may give them.	This comment is duly noted.

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Doug Stephens		Ok folks, Please pull your heads out of the dark hole it's buried in. You want to deafen the ocean with sonar and pollute it with toxic ordnance so that you can get ever more proficient at killing other people? We need protection from our own military more than we need military protection from any force getting ready to invade us from the pacific. What God do you believe in? What will you tell to your grandchildren when there are no marine mammals left? No fish left in the sea? Who is profiting from this venture? Certainly not our marine environment nor anyone who appreciates it or depends on it for their livelihood or well being, never mind the concept that these beings (marine mammals) have the right to peacefully exist by their own right. If this is ok with you, then, can I blast metal music out of enormous loudspeakers in the backyards of the military commanders and corporate CEO's who get off on sonar and ordnance? Can I do it until their ears bleed and they run screaming into the streets because they can't stand it any more? Can I dump toxic waste in their back yard too? Did your mother's not teach you to an iota of compassion when you were a little kid? Or, did mom say "Atta boy! Punch him again! Kick him in the nuts next time!" as you bullied the other kids on the playground. If you follow through with this you will be proclaiming to the world "I am a remorseless violent greedy bastard and proud of it!" My inquiring mind needs to know.	This comment is duly noted.
Bernadette Stewart - 1		As a former active duty Marine Officer, I understand the need for training to effect the ultimate security measures necessary to protect the nation. As a transplanted Alaskan and person who studies both sides of the issue, I have to say in this case the Navy's studies are flawed, and manipulated to justify these tests under very narrow circumstances. There is no scientific justification or rational presented that deals with the negative effects of these tests.	The Navy feels that the EIS/OEIS contained a thorough analysis of the effects of its proposed action using the most current and best available science, as required by NEPA. This analysis was completed in cooperation with the National Marine Fisheries Service, which is responsible for the protection of marine species. The Navy recognizes that the science of sound in the water and its effects on marine life is evolving. However, while additional research or further scientific advances may provide a more definitive analysis, a NEPA document is necessarily based on information available at the time the document is prepared, and the current state of the science. As such, any new information received via comments has been thoroughly analyzed and incorporated as necessary into the Final EIS/OEIS.
Bernadette Stewart - 2	Self	The protection boundaries are too narrow, and will not protect marine mammals, especially whales, other sea	As described in the EIS/OEIS, the Navy implements protective measures, that have been developed in conjunction with

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		wildlife and Alaska fisheries. I am opposed to the tests as presented by the Navy, and consider the Navy's science and research self-serving and totally inconsistent with valid scientific data, not to mention total ignorance of the Gulf of Alaska aquatic life, and the economy dependent on it.	NMFS, during its training exercises. It should be pointed out that the Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals, turtles, and sea birds. Please refer to Chapter 5 of the EIS/OEIS, Mitigation Measures, which presents the U.S. Navy's protective measures, and outlines steps that would be implemented to protect marine mammals and Federally listed species during training events. While the Navy is very confident in its well-trained lookouts, it does not expect that all animals present in the vicinity of training events will be detected. Based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy feels its protective measures are adequate. Please see response to Stewart-1 above regarding scientific data.
Libby Stortz - 1		The US Navy's plan to perform sonic booms in the Gulf of Alaska from 4/10-10/10 will kill or maim 425,000 marine mammals, by you own estimation, every 5 years for a total of 925,000 animals. Migrating right whales and beaked whales, both endangered, will be among them. In addition your plans will kill or maim or otherwise negatively affect 2 million marine mammals worldwide every 5 years-a total of 10 million animals.	Sonic impacts have been discussed in Section 3.4; Acoustics and as they relate to marine mammals in Section 3.8. Additionally, the 425,000 number that you refer to has to do with "sonar exposures" and not sonic booms. Regarding the 425,000 sonar exposures, please see response to Judith Brakel – 1.
Libby Stortz - 2		Your military exercises at the same time-will increase air pollution 123 times and dump tons of toxic chemicals into our already stressed oceans.	The potential air pollution impacts of the Proposed Action were thoroughly evaluated in Section 3.1 of the EIS/OEIS. That analysis concluded that air pollution impacts of the Proposed Action would not substantially affect human health or the environment. Regarding expended materials, please see response to Alaska Glacial Mud Co. – 1. Additionally, please note that dumping is not practiced by Navy ships.
Libby Stortz - 3		The Navy's own mandate states that they are to mitigate and be stewards of the environment. There cannot be ANY security issue that necessitates a naval strategy that could cause such widespread destruction of the very oceans that our own very lives depend upon. What will be left to secure? Why bother? This is at the level of foolhardiness of Doctor Stranglove and his atom bomb. This is NOT how you protect a nation from terrorists or rogue states or anyone. This is	This comment is duly noted. Please note that as required by NEPA, the Navy used the best available scientific information to develop the analysis on sonar training and potential impacts to marine mammals for this EIS/OEIS. The Navy is a leader in funding marine mammal research to better understand them and to operate with the least possible impacts and it will continue to invest in marine mammal research.

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		how you create massive death for everyone. Please wake up! Get a clue!	
Ginger Strong - 1		I have worked on Alaskan waters for 12 years and these waters are essential to marine wildlife survival. I have researched marine wildlife for many of these years and there is no way to determine if marine life is within any vicinity of military research. Does not mean you don't see them that they are not there.	This comment is duly noted.
Ginger Strong - 2		Many species of marine mammals thrive on our rich waters and their lives depend upon this rich diverse ecosystem. Military trainings and sonar have proven to harm humans who's hearing is inferior compared to marine mammals. What right does the NAVY have in thinking that they can harass, harm or kill marine life for our benefit. I urge you to reconsider and to protect our valuable resources. We are already losing the Cook Inlet Beluga Whale and the Polar bears. Do we really need to add more species to the list. I will be at the hearings to also voice my opinion. Ginger Strong	Potential impacts of sonar on humans were discussed in Section 3.14.2.4 and determined to only be possible when humans are underwater and close to the sonar source. Due to the infrequency of diving activities in the TMAA and the location of training activities (over 12 nautical miles from the closest land mass), impacts on humans are not likely. As described in the EIS/OEIS in Section 3.8, the Navy is aware of the presence of marine mammals in the GOA TMAA area. The EIS/OEIS has detailed what is known regarding their hearing abilities. This section focuses on species likely to be present in the TMAA and Section 3.8.1.1 presents those species not likely to be present, such as Cook Inlet beluga whale; polar bear will not be present at sea in the TMAA. Please note that the U.S. Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations. The Navy's analysis indicates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS.
James Sutton - 1		Training in the sensitive waters of Alaska fails to balance the environment with the always omnipotent priority given to "national Security". Figure out other ways too maintain the level of readiness the Navy needs to use munitions and sonar without doing both proven and unknown harm to the rest of the world. National Security and the Navy are simply not the most important things there are.	This comment is duly noted. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
James Sutton - 2		One of the things that sports taught us at Annapolis was that "For practice, You use the practice fields or the fields that you had already messed up so bad that it didn't matter." You save the really good and important field for when it mattered; for when it was the real thing. When you watch "Avitar", the most popular movie in history, seen by more	This comment is duly noted.

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		Americans and tax payers that any other film, ever, do you recognize the US Navy and Marines in it? Will those that know that bombs and munitions and sonar are harmful recognize you? This is not a good idea for the Navy.	
David Swarthout		Please do not allow any further action on this initiative. I support minimizing the impact of Navy training on the fish and wildlife of the Gulf of Alaska(GOA), an environmentally sensitive area, and one that is critically important to all Alaskans. I especially oppose the use of sonar at potentially much higher levels than have been previously employed in the GOA; an area that is critical to the breeding of certain species of whales. Respectfully submitted, Dave Swarthout Homer, Alaska	The Navy shares your concern for wildlife in the Gulf of Alaska. The Navy disagrees that the proposed training and use of sonar will pose a significant risk to whales given that these same activities have been conducted for many years in other Range Complexes with no indications of any adverse impact to marine mammals, fish, or other wildlife. In addition, the Navy implements protective measures during its training events as developed with NMFS as a cooperating agency. In authorizations under the Marine Mammal Protection Act and Biological Opinions under the Endangered Species Act, NMFS has found these same training events will not pose a significant threat to marine life under their purview. The Navy will continue to implement the monitoring and research programs where training has been occurring to determine if there are determinable impacts as a result of those activities and will do so in the TMAA associated with future training occurring there. The Navy will continue to be a leader in funding of research to better understand the potential impacts of Navy training activities and to operate with the least possible impacts while meeting training requirements.
Karen Swartzbart - 1		What concern me most is the cumulative impact of extremely toxic missile and bomb residue polluting the ocean floor. The GOA is a biologically sensitive marine environment providing breeding, rearing, and migration habitat for all our commercial and non-commercial species.	The cumulative impacts analysis addresses the environmental impacts that result from the incremental impact of Navy activities when added to the past, present, or reasonably foreseeable future actions that affect the same resources. The EIS/OEIS does more than simply compare activities; it analyzes in detail the effects of Navy actions on specific resources, and places those in the context of other sources of impacts. Regarding expended materials, please see response to Alaska Glacial Mud Co. - 1. Cumulative effects are addressed in Chapter 4 of the EIS/OEIS. The portion of Chapter 4 that addresses Expended Materials (Section 4.2.2) has been reviewed and revised, as necessary, to address the cumulative impact of expended materials constituents on the ocean floor.

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Karen Swartzbart - 2		These explosive contain depleted uranium and many other highly toxic chemicals that are known to be harmful to man and marine life. It would be like bombing a National Park.	With regard to depleted uranium, please see response to Ellen Americus – 2. With regard to "other highly toxic chemicals", please see response to Judith Brakel – 6.
Karen Swartzbart - 3		Please consider using your current training location. It seems unlikely that we can stand against the Navy and really make a difference. That being said, please consider a scaled down training exercise in the GOA that has less impact on the environment. Thank you for your time Karen Swartzbart	As explained in Section 2.3.2.1 of the EIS/OEIS, a relocation of training activities would not support the Navy's Purpose and Need and was therefore eliminated from further consideration. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
Steven Swartzbart		I am a student of Cordova Jr/Sr High School. Half the kids in my class have parents that fish or have fishing related jobs. In some oceans the water has changed 2 degrees and the whole Marine ecosystem was thrown off. What do you think would happen if you put waste from bombs in Ocean that many people live off of. Please reconsider other options for Navy training activities in the GOA. Thank you Steven Swartzbart	Socioeconomic impacts in regard to the fishing industry, tourism and recreation have been analyzed in the EIS/OEIS in Section 3.12 - Socioeconomics. Regarding expended materials, please see response to Alaska Glacial Mud Co. - 1.. Please note that the analysis presented in the EIS/OEIS indicates that expended materials remaining in the TMAA would not affect the food chain and would not pose a reasonable risk to the public.
Robert Sylvester		I support the no action alternative. Protection of the marine mammals which the Navy acknowledges is more important than giving the Navy carte blanche to operate whenever and where ever it wants. The Cold War is over. The Navy can (with a bit of inconvenience) test all its capabilities satisfactorily without damaging the environment that we are all stewards of. Others have spoken to the scientific reasons why this alternative is the only one acceptable. The damage to very rare and important marine mammals that will result from the action alternatives is unacceptable. Thank you.	This comment is duly noted, however, the proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. Please note that the science of sound in the water and its effects on marine life is evolving. With that said, the Navy has used the best available science in preparing this EIS/OEIS. Additionally, there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of the marine environment. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
Forest Taipale - 1		The Navy doesn't analyze environmental impacts. It disregards the serious impacts that sonar training will have on endangered Pacific whales whose critical habitat is only 12 nautical miles away.	The Navy complies with all applicable environmental laws, including NEPA and its requirements. Additionally, with regard to protecting marine mammal habitat, the boundaries of the TMAA were adjusted to avoid the designated Critical Habitat for Steller sea lions and the North Pacific Right Whale. As presented in Section 3.8 and depicted on Figure 3.8-1, the North Pacific right whale Critical Habitat is approximately 16 nautical miles from the nearest corner of the TMAA. In

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			addition, please see Chapter 5 detailing the Navy's standard protective measures developed in cooperation with NMFS which will provide additional protection to marine mammals detected in the vicinity of sonar training events.
Forest Taipale - 2		It fails to discuss cumulative effects it activities may have.	The cumulative impacts analysis (Chapter 4) addresses the environmental impacts that result from the incremental impact of Navy activities when added to the past, present, or reasonably foreseeable future actions that affect the same resources. The EIS/OEIS does more than simply compare activities; it analyzes in detail the effects of Navy actions on specific resources, and places those in the context of other sources of impacts.
Forest Taipale - 3		I'm sure all the technology the USA has is fine for underwater war, I don't think we need to develop more sophisticated weapons that kill everything in their path. Thank you for your time.	This comment is duly noted.
The Observatory, ABAA - 1		The proposed use of sonar in an area where endangered whales, known to use their own sort of sonar for identifying prey, is downplayed to a laughable extent in your EIS. Much is made of the effects of airplanes, rockets, etc., all of which will be fired in the air, but almost nothing on the effect in the water.	The Navy acknowledges that sonar impacts are an issue of concern to the public. Therefore, this EIS/OEIS gives a serious and thorough analysis of potential effects of sonar on marine mammals. Much of Section 3.8 is devoted to the science of sonar and impacts to marine species, and App. D, E, and F give further information on the Navy's analysis and marine mammals.
The Observatory, ABAA - 2		I will not go into the necessity for having these training exercises at all, although it is hard to think of any country willing now or in the future to take on the U.S. Navy, since I am not a military person. How expensive will all of this be? Since our economy is in trouble, why should we spend money so the navy can play at war? But I am a person who is deeply concerned with the effects on endangered species. Please re-think your program. Sincerely, Dee Longenbaugh	This comment is duly noted.
DeWaine Tollefsrud - 1		As a professional whale watching guide and educator making a living in the Gulf of Alaska and lower Cook Inlet, I am writing this letter of great concern over the current proposal by the Navy to use this delicate ocean eco-system, some of the most productive waters in the world, to do massive military testing.	This comment is duly noted. Please note that the proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. As stated above, there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of the marine environment. Please note that the total duration for Navy training activities, under the Preferred Alternative, would be up to six weeks a year out of 52 weeks.

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DeWaine Tollefsrud - 2		The Gulf of Alaska, one of the richest fisheries in the world, is the summer feeding grounds for literally thousands of marine mammals including Gray Whales, Humpback, Blue, Sei and Fin whales. These whales, including the smaller species, like killer whales and harbor porpoises, are extremely sensitive to sound, and communicate, navigate and hunt using sonar. The use of high powered Navy sonar could seriously harm these species!	The Navy shares your concern for marine life. As detailed in Section 3.6 for fish and 3.8 for marine mammals, Navy is aware of the species likely to be present in the TMAA. The Navy disagrees that the proposed training and use of sonar will pose a significant risk to whales given that the U.S. Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations. The Navy's analysis indicates and this history indicates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. In addition, the Navy implements protective measures during its training events as developed with NMFS as a cooperating agency. In authorizations under the Marine Mammal Protection Act and Biological Opinions under the Endangered Species Act, NMFS has found that these same training events will not pose a significant threat to marine life under their purview. The Navy will continue to implement the monitoring and research programs where training occurs to determine if there are impacts as a result of those activities and will do so in the TMAA associated with future training occurring there. The Navy will continue to be a leader in funding of research to better understand the potential impacts of Navy training activities and to operate with the least possible impacts while meeting training requirements.
DeWaine Tollefsrud - 3		Navy representatives have stated that "mitigation techniques" (lookouts and other sight-based techniques) would be sufficient to "reduce" the number of animals severely impacted by these exercises. As a professional whale spotter I can tell you that spotting even a Fin Whale, second largest animal in the world after the Blue, with it's 30+ foot spout, can be nearly impossible in the weather conditions present in the Gulf during the summer months, let alone from the deck of a fast moving vessel.	Navy lookouts undergo extensive training to include on-the job instruction under supervision of an experienced lookout followed by completion of Personnel Qualification Standard Program. NMFS-approved Marine Species Awareness Training is required before every sonar exercise. In addition, as noted in the EIS/OEIS in Section 5.2.1.2, all Navy surface ships participating in anti-submarine warfare exercises will have two additional personnel on watch as marine mammal lookouts. While the Navy is very confident in its well-trained lookouts, it does not expect that 100% of the animals present in the vicinity of training events will be detected. The acoustic impact modeling estimates provided in the EIS/OEIS are not reduced as a result of mitigation effectiveness, even though many marine mammals will be detected and sonar exposures will be avoided. Please note that Naval vessels have a higher height of eye than most fishing vessels as well as having multiple vessels

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			over a very wide area, communicated sharing of observations, and operating in a coordinated manner in combination with aircraft that are also observing the water space. The Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals. Based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy feels its protective measures are adequate.
DeWaine Tollefsrud - 4		In addition to sonar, this is not the appropriate place to be dumping hundreds of thousands of pounds of expended material, especially the expected 10,300 pounds of hazardous waste!	Dumping is not practiced by Navy ships. With regard to expended materials, please see response to Alaska Glacial Mud Co. - 1.
DeWaine Tollefsrud - 5		It has been documented that there has not been satisfactory research done to determine that testing will not be harmful to marine wildlife, their feeding areas, migratory routes, and fragile habitats. Instead of ignoring scientific studies and public outrage, the American government needs to protect this great treasure.	Please note that the proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. Additionally, the science of sound in the water and its effects on marine life is evolving. With that said, the Navy conducted a thorough analysis of sonar and underwater detonations in the EIS/OEIS, using the most current and best available science, as required by NEPA. This analysis was completed in cooperation with the National Marine Fisheries Service, which is responsible for the protection of marine species.
DeWaine Tollefsrud - 6		If the only options are "business as usual," or increased testing, or even more increased testing, then the action needs to be "business as usual." Please, do not increase Naval exercises with its attendant toxic dumping or use of sonar! And, if we want to protect our nations' future marine-based prosperity, we need to reduce such activities.	Please see response to Laurie Ferguson – 6. Additionally, the decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
Jane Tollefsrud - 1		Being an educator who has lived at the edge of the Gulf of Alaska for over 30 years, I am writing this letter of great concern over the current proposal by the Navy to use this delicate ocean eco-system, abundantly full of marine life, to do massive military testing. THIS CANNOT HAPPEN!	Please see response to DeWaine Tollefsrud - 1 above.
Jane Tollefsrud - 2		The Gulf of Alaska, one of the richest fisheries in the world, is no place to be dumping hundreds of thousands of pounds of expended material, especially the expected 10,300 pounds of hazardous waste!	Please see response to DeWaine Tollefsrud - 4 above.

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Jane Tollefsrud - 3		The Gulf of Alaska is home to a wide variety of whales, including, but not limited to, endangered species such as the gray whales, humpback, blue, and North Pacific right whales. Whales, including the smaller species, like orcas and harbor porpoises, are extremely sensitive to sound, and communicate, navigate and hunt using sonar. The use of Navy sonar could threaten and endanger some species!	Please see response to DeWaine Tollefsrud - 2 above.
Jane Tollefsrud - 4		There has not been satisfactory research done to determine that testing will not be harmful to marine wildlife, feeding areas, migratory routes, and fragile habitats. Instead of ignoring scientific studies and public outrage, the American government needs to protect this great treasure- the Gulf of Alaska is one of the last pristine and productive bodies of water in the world!	Please see response to DeWaine Tollefsrud - 5 above.
Jane Tollefsrud - 5		If the only options are "business as usual," or increased testing, or even more increased testing, then the action needs to be "NO action." PLEASE DO NOT INCREASE Naval exercises with its attendant toxic dumping or use of sonar! And, if we want to protect our nations' future marine-based prosperity, we need to reduce such activities. Thank you for your time and consideration.	Please see response to DeWaine Tollefsrud - 6 above.
Turning the Tides - 1		The ocean is in fragile health. Ocean scientists often refer to their work as "documenting the decline". If we are to survive, we must stop contributing to the demise of the ocean. We have dumped millions of tons of poisons into the ocean. Sea mammals can now be legally classified as "toxic dumps". There are thousands of "dead zones" where nothing grows, the largest, thousands of square miles. We are finding fish with cancer. The ocean provides food and according to Dr. Sylvia Earle, up to 85% of the world's oxygen. What are we thinking?	The Navy shares your concerns about the fragility and health of the ocean. The Navy does not dump toxic pollutants into sensitive marine protection areas. In fact, dumping is not practiced by Navy ships.
Turning the Tides - 2		Sonar testing will harm thousands of already stressed ocean mammals. We must stop using the seas and the life within them as toxic dumps - to do with as we please. The greatest threat to the United States - and to the planet - is an irretrievably damaged ocean. Please consider if further dumping and sonar testing are furthering the demise of the ocean. At the least, please use the no action alternative.	The Navy shares your concern for marine life and the health of the ocean. Dumping is not practiced by Navy ships. With regard to sonar, the Navy conducted a thorough analysis of sonar and at sea explosions in the EIS/OEIS, using the most current and best available science, and with cooperation from the National Marine Fisheries Service, which is responsible for the protection of marine species. The Navy's analysis indicates there is little relative risk to populations of marine mammals from sonar training exercises. The Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals. Therefore, mitigation and monitoring

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			are implemented to further reduce impacts. Also, note that the U.S. Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that cause adverse biological impact to marine mammal population stocks at those locations. Because there is no indication from areas where the Navy routinely trains that training activities have a negative impact on the health of the marine environment, the Navy is confident that there is little relative risk to marine mammal populations from active sonar training or any other training events. Regarding alternative selection, please see response to James Clare – 2.
Taylor Waters		Please do not open water blast or use sonar anywhere that marine mammals will be affect, Go offshore, far far offshore during the winter. Extra training, cold weather, extreme weather, and safer. I know the rest of the government is irresponsible, but that doesn't mean you guys have to be.	As explained in Section 2.3.2.1 of the EIS/OEIS, rescheduling training activities to a different season would not support the Navy's Purpose and Need and was therefore eliminated from further consideration. The extreme weather conditions during the non-summer season would either needlessly jeopardize participants' safety, or would be very inefficient due to likely rescheduling of numerous events not completed during bad weather. Although U.S. Military forces are all-weather capable, training requires prudent safety precautions, such as avoiding extreme weather that adds little to the training value, but significantly increases risk to the participants. Even though windows of reasonably fair weather would be available in winter, rapidly changing conditions would certainly result in numerous event cancellations, resulting in very inefficient training. Additionally, please note that that Navy training exercises already use, to a large extent, computer-simulated training and conduct command and control exercises without operational forces (constructive training) whenever possible. However, as described in Section 2.3.2.4 of the EIS/OEIS, "Unlike live training, simulated training does not provide the requisite level of realism necessary to attain combat readiness, and cannot replicate the high-stress environment encountered during combat operations." This section and Section 1.2.1 - "Why The Navy Trains," goes further to explain the importance of live training and the current limitations of simulated training.

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Jane Wiebe		In the interest of protecting our fish and marine mammals, I support the "No action" alternative. I am an Alaska resident, and believe in the importance of protecting these natural resources. Thank you.	Regarding alternative selection, please see response to James Clare – 2.
Name Withheld – 1		While military readiness is vital to the security of our country, bombing exercises planned in the Gulf of Alaska will harm an extraordinary number of marine mammals, fish and other wildlife including 7 endangered species. Environmental impacts have not been properly analyzed, particularly in regard to the impacts of sonar on marine mammals and the density estimates needed to understand these impacts.	Section 3.8.2 in the EIS/OEIS discusses the density estimates used in the EIS/OEIS analysis with more detail provided in Appendix E. These estimates and the method for analysis were coordinated with National Marine Fisheries Service (NMFS) as a cooperating agency. In addition, in April 2009 the Navy funded and NMFS conducted the Gulf of Alaska Line-Transect survey (GOALS) to address the data needs for additional information. Line-transect survey visual data to support distance sampling statistics and acoustic data were collected over a 10-day period both within and outside the TMAA. Please see Section 3.8.2.1 for full discussion on the survey. Please note that the Final EIS/OEIS is an extensive and exhaustive study based on research and analysis of the effects of increasing training activities on marine resources. While additional research or further scientific advances may provide a more definitive analysis, a NEPA document is necessarily based on information available at the time the document is prepared, and the current state of the science. Given the natural variation of marine mammal locations over time within the Gulf of Alaska, operational variability of Navy mid-frequency and high-frequency active sonar operations, and the fact that there is little documented scientific information demonstrating broad-scale impacts that are either injurious or of significant biological impact to marine mammals, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Furthermore, Section 3.8 (Marine Mammals) and Section 3.6 (Fish) of the EIS/OEIS thoroughly analyze impacts to both marine mammals and fish from proposed Navy training activities. The EIS/OEIS concludes that there is no significant impact to population levels for either marine mammals or fish.
Name Withheld – 1-1		Protection measures are inadequate in terms of considerations given to the harbor porpoise, the grey, humpback, and blue whales migrating through the area.	As described in the EIS/OEIS, the Navy implements protective measures during its training exercises. The Navy's protective measures, which were developed in coordination with the National Marine Fisheries Service, are effective at mitigating, not eliminating, risk to marine mammals. Based on the

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			analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy feels its protective measures are adequate. Please see Chapter 5 of the EIS/OEIS, Mitigation Measures, for the Navy's protective measures, which outlines steps that would be implemented to protect marine mammals and Federally listed species during training events.
Name Withheld – 1-2		Alternatives do not include investigation of other places to go bomb that may have considerably fewer impacts.	As described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included moving this exercise to other locations. Such alternatives fail to meet the purpose of and need for the proposed action.
Name Withheld – 1-3		The destruction of marine wildlife, the hazardous waste left by expended ordnance, and the sheer magnitude of the unknown impacts added to the impacts already known, lead me to personally request that the Navy explore alternatives where the impacts to wildlife are known, the impacts are far less and the exercises will be still be effective for military readiness. In short - not in the Gulf of Alaska.	The Navy shares your concern for marine life and all of the concerns you identify were analyzed in the EIS/OEIS. Also, as described in the EIS/OEIS, the Navy implements protective measures during its training exercises. As described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included moving this exercise to other locations. Such alternatives fail to meet the purpose of and need for the proposed action.
Name Withheld – 2		We cannot eat bombs. Our national security and foreign relations policies are seriously flawed. What we need is food and energy security -- NOT achieved by damaging ecosystems and invading other countries to get their oil. If we would conserve our resources, use organic methods of food production, develop renewable energy, become more energy efficient, and play fairly with other nations, our future will not only be more secure, but a heck of a lot healthier and happier. It's time the military stopped being the tool of those who seek domination and control. Please! I'm praying for you.	This comment is duly noted.
Name Withheld – 2-1		In my last comment I forgot to say directly that I am against increasing military training activities in the Gulf of Alaska. The environmental damage will be too great. You need to rethink your priorities. Focus on peacekeeping and conflict resolution and respect for human rights everywhere--not just U.S. citizens. All life is sacred. All humans made in the image of the Creator. Be life respecters, not destroyers. Thank you for the opportunity to comment.	Please see responses to James Clare – 2 and Ellen Americus - 1.

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Name Withheld – 3		This is a great opportunity for Alaska. The modern sonar and radar devices, can determine were marine life is so it could avoid any problems. Doing this exercise in the winter is crazy. Any Alaskan knows the conditions out there during that period and it would be more of a survival type of training and not beneficial to the Navy. I've spent 40 years with the Navy, Coast Guard, and Army, most in Alaska and winter training never really produced good results, we did learn how to survive in Arctic Conditions, but the training we really need as to how to fight sometimes suffered.	This comment is duly noted.
Name Withheld – 4		the overall environmental safety record of military activity here in Alaska is a dismal one. at last count there were already over 1200 FUDS sites still waiting for cleanup. these were leftover from the first days of military presence here in Alaska in the 40's.	Past military practices and historical contamination sites are beyond the scope of the EIS; they are not associated with the Proposed Action. With regard to the cumulative impacts addressed in Chapter 4 of the EIS/OEIS, any contamination of bottom sediments or the water column in the GOA from these sites is reflected in the description of the current condition of the marine environment and marine resources that inhabit the GOA.
Name Withheld – 4-1		I am certain there are other optional training sites where these exercises could take place and just as certain that wherever it is the cleanup will be minimal. in light of this fact alone and the pertinent fact that the gulf of Alaska is just one of many Alaskan traditional fishing grounds which is newly certified sustainable by the marine mammals council, I strongly urge the navy to look elsewhere in planning military exercises for this and future years.	As described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included moving this exercise to other locations. Such alternatives fail to meet the purpose of and need for the proposed action. Certifying fisheries as sustainable relates to appropriate fisheries management. The Navy is not involved in fishery management; however, this EIS/OEIS does address potential socioeconomic impacts of the proposed action on fisheries in Section 3.12 and the biological impacts to fish in Section 3.6.
Name Withheld – 4-2		Fishing will go on forever as long as there is something to fish for. dumping over 500,000 tons of toxic waste, derelict vehicles, and petroleum byproducts per year into one of the world's most pristine fisheries hardly seems like sustainable behavior.	Under the Proposed Action, the Navy would not dump over 500,000 tons as indicated by the commenter. Regarding expended materials, please see response to Alaska Glacial Mud Co. - 1. Please note that the analysis in the EIS/OEIS indicates that hazardous materials would be quickly dispersed by ocean currents to non-toxic concentrations, and would not be expected to adversely affect marine organisms.
Name Withheld – 4-3		when considering the addition of sonar testing to the mix, one must consider the consequences to fisheries habitat and migratory patterns.	As was described in Sections 3.6.1.4, fish have very limited hearing in the frequency range of Navy sonar, and the body of research indicates they are not negatively impacted by Navy sonar. Additionally, as presented in Section 3.6, there will be no impacts to fish populations or to fish in migratory routes, such as noted on page 3.6-14 for example. Please note that there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of fish

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			populations. As such, the Navy is confident, and the analysis indicates, that its training activities will not impact the fisheries off the Gulf of Alaska.
Name Withheld – 4-4		I have a strong military history in my family and i do appreciate the need for training. without the necessary protections for our fishing environment, and indeed protection and preservation of the future of fishing off the entire coast of Alaska, I am not going to condone the types of military exercises you are proposing for the gulf. please seek alternatives.	As described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included moving this exercise to other locations. Such alternatives fail to meet the purpose of and need for the proposed action. Additionally, as mentioned above, there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of fish populations.
Name Withheld – 4-5		I appreciate the facility of commenting, however, a character count and a copy of the comment sent to the commenter would be a nice addition to the comment feature.	The Navy appreciates your feedback. We continue to look for ways to improve the public's ability to be heard on these matters, and will consider your suggestion as a way to improve the website's functionality.
Name Withheld – 5		I am 91 years old and I believe in Life!! I do not believe in killing any living creature. The oceans are full of life and my reason for being a long time vegetarian to aviod having any creature being killed on my behalf. The oceans are full of life! How could you practice bombing and not killing? I am against -strongly-any practice which kills living creatures, especially in the ocean and its surroundings. I once supported the military because I believed that we were preventing death but now I have seen that we need to mend our ways and negotiate and learn new ways toward peace.	This comment is duly noted.
Name Withheld – 6		I'm all for the training of the sonar to detect submarines. We must protect and keep our country safe. If this is the most reliable way to do it, then I'm for it! Thanks	This comment is duly noted.
Name Withheld – 7		I have lived in Alaska for over 45 years and am a retired commercial fisher. I have seen many things happen in Alaska that harm the environment and the people and animals living here. This proposed training in the Gulf of Alaska will be yet another of these harmful, unnecessary undertakings that will harm whales and marine mammals. It is a proven fact that sonar disrupts and harms the lives of marine mammals and should not be done in Alaska. Many people enjoy the whales and marine mammals and subsist on the same.	This comment is duly noted. Please also note that Given the natural variation of marine mammal location over time within the GOA TMAA, operational variability of Navy mid-frequency and high-frequency active sonar operations, and the fact that the Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. The Navy recognizes the multitude of value placed on the GOA resources, and has established mitigation measures to protect these resources. Please see Chapter 5 of the EIS/OEIS.

ID	Organization	Public Comment (Website)	Navy Response
Name Withheld – 7-1		Right whales are on the brink of becoming extinct and doing any sonar testing in the Gulf of Alaska would certainly harm any chance they have or making any kind of recovery. The Navy should not take the chance that whales and marine mammals could be killed.	A discussion of potential impacts to North Pacific right whales from sound sources proposed for use in the TMAA is presented in Section 3.8 of the EIS/OEIS. In addition, it should be pointed out that the Navy has conducted mid-frequency and high-frequency active sonar activities for decades with no indications of injuries to resident beaked whales at training ranges in Hawaii and Southern California or to right whales on the East Coast. There are no indications for broad-scale impacts that are either injurious or of significant biological impact to marine mammals and the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS.
Name Withheld – 7-2		The exercises could be done elsewhere where no whales frequent. I encourage you to adopt Option one.....take no action. Please be responsible and conduct your training elsewhere. Listen to the people of Alaska and do not train here. Thank you for the opportunity to comment. Sincerely,	As described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included moving this exercise to other locations. Such alternatives fail to meet the purpose of and need for the proposed action.
Name Withheld – 8		I personally do not approve the use of Sonar for testing. I just moved here from Seattle, and the media has covered a few instances where marine life has washed up on shore dead immediately following USN sonar testing. On every occasion, the Navy has declined to comment on the situation. Alaska's marine fisheries are already stressed to the point that economic disasters have been declared.	The proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. Given the natural variation of marine mammal location over time within the GOA TMAA, operational variability of Navy mid-frequency and high-frequency active sonar operations, and the fact that the Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Also, please see the full analysis of marine mammal strandings in Appendix F of the EIS/OEIS – Cetacean Stranding Report. The report discusses the various stranding situations across the world, and includes the Navy's input on each situation.

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Name Withheld – 8-1		Further, Alaska proves to be a rich and vibrant habitat for whales and other large marine mammals. It is my understanding that their hearing is far better than ours, and subsequently far more sensitive.	As presented in Section 3.8 of the EIS/OEIS, information has been presented regarding the project area as a habitat for the various species of marine mammals likely to be present there and also provides the details regarding what is known about the hearing capabilities for each of those species.
Name Withheld – 8-2		Thank you for telling us there are safeguards, but share with us what they are specifically.	Please see Chapter 5 of the EIS/OEIS, Mitigation Measures, which presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events.
Name Withheld – 8-3		I appreciate how the Navy protects and defends the American constitution and our way of life. But I think testing can be done somewhere else on this planet. After all, the world is 3/4 ocean.	The proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. As described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included moving this exercise to other locations. Such alternatives fail to meet the purpose of and need for the proposed action.
Name Withheld – 9		US Navy: I support the use of sonar and the live-fire exercises scheduled for the Gulf of Alaska. The use of drills and live-fire exercises are necessary for the Navy to be prepared to protect America and her interests in the world. Sterling, Alaska	This comment is duly noted.
Name Withheld – 10		To think there is an acceptable number of "takes" from sonar exercises so we can be "safe" is so far from human goodness.	This EIS/OEIS uses a method for calculating exposures to underwater sound that was developed jointly by the Navy and the National Marine Fisheries Service. This method for evaluating "takes" of marine mammals is a term used to indicate the level of harassment, either A or B, under the Marine Mammal Protection Act; the term does not reflect a marine mammal death.
Name Withheld – 10-1		And what is being protected? The same thing that is provoking. Corporate greed in other countries, US and corporate backed political takeovers, abuse of humanity and the earth for profit. If the US government said absolutely not to corporate, banking and military industrial pressures, it might be smiled upon by those in the world and there would be not "need" to commit sonar exercises.	This comment is duly noted.
Name Withheld – 11		PLEASE find another place to do your training and developing. Alaska's marine life already has enough challenges. Does the term "endangered species" mean anything to you?	As described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included moving training to other locations. Such alternatives fail to meet the purpose of and need for the proposed action. Additionally, the U.S. Navy is in full compliance with the Marine Mammal Protection Act, the Endangered Species Act, NEPA

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			and all other federal requirements. For information about the Navy's compliance with these and other regulatory requirements, see Chapter 6 of the EIS/OEIS.
Name Withheld – 12		The proposed training in the Gulf of Alaska should not proceed. The most vulnerable species in the area, the Northern Right Whale, is on the Federal endangered species list. The danger posed to these animals from active sonar used/being tested by the Navy is well known and is still dangerous and disrupting to marine mammals from well over the 200 yard limit rule.	A discussion of potential impacts to North Pacific right whales from sound sources proposed for use in the TMAA is presented in Section 3.8 of the EIS/OEIS. In addition, it should be pointed out that the Navy has conducted mid-frequency and high-frequency active sonar activities for decades with no indications of injuries to resident beaked whales at training ranges in Hawaii and Southern California or to right whales on the East Coast. There are no indications for broad-scale impacts that are either injurious or of significant biological impact to marine mammals and the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Finally, it should be noted that the Navy is in full compliance with the Marine Mammal Protection Act and the Endangered Species Act. For more information about the Navy's compliance with these and other regulatory requirements, see Chapter 6 of the EIS/OEIS.
Name Withheld – 12-1		I don't believe that we need to add this kind of certain destruction to the long list of environmental catastrophes in the region. Fisheries are declining, oil spills are frequent and we are at risk of losing valuable economic and tourism resources. Please find an alternative.	The Navy is very aware of concerns from fishing fleets and fisheries in the Gulf of Alaska. As described in the EIS/OEIS, the Navy is confident that its training activities will not impact commercial and recreational fisheries off the Gulf of Alaska. Analysis of impacts to fish are found in Section 3.6 of the EIS/OEIS. Socioeconomic impacts in regard to the fishing industry, tourism, and recreation have been analyzed in the EIS/OEIS in Section 3.12 - Socioeconomics. To help manage competing demands and maintain public access in the GOA, the Navy conducts its offshore activities in a manner that minimizes impacts to recreation and commercial activities.
Name Withheld – 13		It is a proven fact (information distributed by the US Gov.) that noise will disturb the cycle of life for all species. If we are to ruin our fisheries so that our soldiers can better kill, what good could come of it? If our food supplies are diminished the military will not be able to repair the damage. And it is not their job, so the people they are fighting for will be further destroyed due to food shortages. We have been destroying habitat for as long as I am alive(62 yrs) and there is no end to the amount of damage our military has done to the planet. We have no way of bettering our oceans or any	This comment is duly noted.

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		other waterways and for this reason I feel it imperative that we DO NOT allow anyone to cause harm to our food sources or our water.	
Name Withheld – 14	Alaska Charter Association	I am totally against the Navy doing any bombing or training in the Gulf of Alaska, Cook Inlet or Bays and Passages of Alaska. Our waters are pristine and we would like to keep them that way. Setting off any type of detonations will affect all life in the ocean, not only on the bottom, but all levels. The noise alone would hurt certain species of mammals and fish. Please, keep the Navy away from Alaska!!	There are no activities proposed in Cook Inlet or waters that could be considered "bays or passages of Alaska". As per Chapters 1 and 2 of the EIS/OEIS, with the exception of Cape Cleare on Montague Island located over 12 nm (22 km) from the northern point of the TMAA, the nearest shoreline (Kenai Peninsula) is located approximately 24 nm (44 km) north of the TMAA's northern boundary. The approximate middle of the TMAA is located 140 nm (259 km) offshore; the location of the TMAA has been chosen as a location adequate for training and for the least possible effects to designated habitats. The Navy fully analyzed potential impacts to marine life, including impacts from bombing and in-water detonations as presented in Chapter 3 of the EIS/OEIS.
Name Withheld – 15		Aren't our natural resources endangered enough without purposely bombing them? I strongly urge you to reconsider this plan. I realize training is essential, but so are our natural resources.	The Navy fully analyzed potential impacts to the marine environment, including impacts from bombing and at sea explosions. The findings are in Chapter 3 of the EIS/OEIS.
Name Withheld – 16		I have been a commercial Fisher in Cook Inlet Alaska for 33 years. In the 70's and 80's I would see hundreds of Beluga whales swim and dive past 400+ salmon drift gillnets AND NEVER TOUCH A NET. Now the EPA allows "exceptions" for toxic drilling mud dumping from the oil platforms in Cook Inlet and the city and State offer no resistance to unfettered development in the Anchorage bowl: untreated storm water dumping into Upper Cook Inlet. So now the Cook Inlet Beluga whale is listed as endangered, and I haven't seen a whale in many years. Does the Navy believe that it is already so messed up in Cook Inlet that further destruction doesn't matter? I am going to be significantly restricted in my ability to make a living in Cook Inlet due to restrictions on my commercial fishing activity. I cannot understand why the Navy can ignore the responsibility to restrict THEIR activity in the interest of accommodating the recovery of not only Beluga whales, but the previously-healthy ecosystem of Cook Inlet.	No proposed Navy training would occur in the Cook Inlet. Cook Inlet does not fall within the action area of the Proposed Action. As stated in Chapters 1 and 2 of the EIS/OEIS, with the exception of Cape Cleare on Montague Island located over 12 nm (22 km) from the northern point of the TMAA, the nearest shoreline (Kenai Peninsula) is located approximately 24 nm (44 km) north of the TMAA's northern boundary. The approximate middle of the TMAA is located 140 nm (259 km) offshore; far from the Cook Inlet.
Name Withheld – 17	Prime Select Seafoods, Inc	I disagree with any increase in the military discharging more ammunition or other contaminants into the Gulf of Alaska. Training is fine but, please do not pollute the Gulf any MORE. Our whole town of Cordova, our community, our	Regarding expended materials, please see response to Alaska Glacial Mud Co. – 1. Additionally, please note that the Navy has installed technology aboard ships to keep plastics out of the ocean and safely manage our biodegradable waste

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		businesses and our homes and lives rely on the fact that we have an intact healthy ecosystem still able to produce natural wild fish runs. With world pollution already impacting the Gulf and with continued oil spills etc., we need to be very careful about what we intentionally discard into those waters. Isn't there any way to train without increasing the discharge into the Gulf? I really think the military could come up with something cleaner to use for training purposes. Thank you for taking public comment on this matter.	stream. The Navy takes its responsibility seriously to serve as a good steward of the natural environment. The Navy demonstrates that commitment by investing millions of dollars annually in programs that minimize, and in some cases eliminate, the effects of activities on the environment while carrying out the ongoing national defense mission.
Name Withheld – 18	Fishermen's Wharf	Hello; Thank you for your postcard. I had a concern about training off the coast of Oregon during the summer due to our Tuna season. Your card said you will train in Alaska and I thank you for that. I hope all is a success. I myself am ex-military. Again keep up the good work and God Bless you.	This comment is duly noted.
Name Withheld – 19		I realize that live training is thought to be necessary. However, when you compare the value of live training to the value of the natural resources and marine life in the Gulf of Alaska, I firmly believe that the integrity of the environment takes precedence over live training exercises. There, I do oppose the practice and ask you to find ways to simulate training without discharge of toxic ammunition and without disturbing wildlife. Thank you for your consideration.	As described in Section 2.3.2.4 of the EIS/OEIS, "Unlike live training, simulated training does not provide the requisite level of realism necessary to attain combat readiness, and cannot replicate the high-stress environment encountered during combat operations." This section and Section 1.2.1 - "Why The Navy Trains," goes further to explain the importance of live training and the current limitations of simulation. Regarding expended materials, please see response to Alaska Glacial Mud Co. - 1.
Name Withheld – 20		I support the no action alternative. I am concerned with the impact the sonar testing will have on marine mammals in the Gulf of Alaska. I am concerned that sonar will disrupt endangered species like humpback, gray, blue, and northern pacific right whales that are already having difficulties supporting healthy populations. I have concerns that safe areas have not been created to offer protection from sonar and bombing to give these animals a place of refuge from testing.	The proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. Please note that the U.S. Navy has conducted active sonar activities for decades with no documented proof of injuries to marine mammals. Given the natural variation of marine mammal locations over time within the GOA TMAA, operational variability of Navy active sonar operations, and the fact that there is little documented scientific information demonstrating broad-scale impacts that are either injurious or of significant biological impact to marine mammals, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Additionally, the boundaries of the TMAA were adjusted to avoid the designated Critical Habitats. As presented in Section 3.8 and depicted on Figure 3.8-1, the North Pacific right whale

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			Critical Habitat is approximately 16 nautical miles from the nearest corner of the TMAA. In addition, gray whales will generally be found near the coastal areas whereas the closest point of the TMAA is over 12 nautical miles from the nearest coast line. While blue whales could be present in the TMAA, the best available science indicates their presence will be rare in the area and it is therefore unlikely that Navy training activities would occur when they are present.
Name Withheld – 20-1		Furthermore my community depends on fishing for the lion's share of it's economy. It's our lifeblood. The testing of munitions has no place in the rearing grounds of our food and livelihood. I am deeply concerns with the dumping of hazardous waste associated with the testing of munitions. The Gulf of Alaska is too important as a rich fisheries breeding ground to be used as a bombing range. In Cordova, our lives depend on the fisheries that come directly from the sea. Disruptions in our ecosystems send ripples throughout the food chain and can have no positive effect on the health of our fisheries populations. Please do not risk the health of endangered marine mammals and fish for the testing of military equipment.	As stated in previous responses, dumping is not practiced by Navy ships. The Navy is very aware of concerns from fishing fleets and fisheries in the Gulf of Alaska. As described in the EIS/OEIS, the Navy believes that its training activities will not significantly impact fisheries off the Gulf of Alaska. Analysis of impacts to fish are found in Section 3.6 of the EIS/OEIS. In summary, the EIS/OEIS examined potential impacts to fish and fish habitat due to vessel movement, aircraft overflight, weapons use, expended training materials, in-water detonations, and sonar. In each case, proposed Navy training is expected to result in possible minimal impacts to individual fish, but no population level impacts.
Name Withheld – 21		It is about time we start caring about the marine life that thrives around my home. The salmon that swims in these waters is what feeds me through the winter. Without food a human cannot survive. I can survive however without bombs in my water, excess fuel, and many other pollutants that you somehow don't care about dropping into the our waters. Perhaps you don't live in Alaska. If you did I would hope you would want to save what lives in these beautiful waters. We cannot continue to act ignorant about what the navy's actions are doing to our waters. The dangers are real and even if you killed one whale, that is too many. Do not take these unforgivable actions. When all the water is polluted not only will all our marine animals die, but so will we. Think of your children and grandchildren and imagine them never seeing a clean ocean and know you destroyed it. It's time for the navy to use their so called intelligence and make a change we can all live with. Thank You	The Navy takes environmental stewardship very seriously and has been and will continue to be a leading sponsor of marine mammal research. The Navy provides a significant amount of funding and support to marine research. In the past five years the agency funded over $100 million ($26 million in FY08 alone) to universities, research institutions, federal laboratories, private companies, and independent researchers around the world to study marine mammals. For additional information on Navy research efforts, refer to page 5-20 of the Draft EIS/OEIS. Additionally, the Navy's protective measures are effective at mitigating, not eliminating, all risk to marine mammals. Based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals and other species at those locations, it is not likely that any additional risk posed by the proposed activities will have any significant impact on species in the TMAA.

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Name Withheld – 22		I have fished commercially in the North Gulf of Alaska, since 1974. I do not see the need for the US Navy to conduct sonar operations in this area. I have also heard that they plan to dispose of hazardous waste in this area. Now that is uncalled for. I strongly oppose any type of Navy operations that have the potential to negatively impact the marine mammals and fish in this area.	The Navy's need to conduct training in the Gulf of Alaska is outlined in Chapter 1 of the EIS/OEIS, primarily in Sections 1.2.2, and 1.4. The potential impacts of the proposed training are analyzed and explained in Chapter 3. The Navy has no plans to dispose of hazardous wastes in the Gulf of Alaska.
Name Withheld – 22-1		In fact it is time that the military stops wasting vital energy, money and man hours on operations that no longer make sense. Attacks will come by single people not by large military foreign operations. Also close down the Bangor sub base in the State of Washington. We no longer need to hunt for the "Red October".	The Bangor sub base in Washington State is not within the scope of this EIS/OEIS. Each nation has its own training needs based on that nation's forces, capabilities and missions. Anti-Submarine Warfare (ASW) training remains one of the Pacific Fleet's (and the Navy's) highest priority requirements. As such, the ability to conduct ASW around varying underwater topography is critically necessary in order to fight the growing submarine threat.
Name Withheld – 23		I support the no action alternative which will allow existing training activities in the Gulf of Alaska to continue but which will not increase toxic dumping or entail the use of sonar harmful to whales and fish. Military readiness should not come at the expense of degraded water any harm to marine life. I am against the use of sonar in any case!	This comment is duly noted. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process. Please note that the Navy does not conduct toxic dumping and that the Navy has conducted active sonar activities for decades in oceans all around the world with no documented proof of injuries to marine mammals. Given the natural variation of marine mammal locations over time within the GOA TMAA, operational variability of Navy active sonar operations, and the fact that there is little documented scientific information demonstrating broad-scale impacts that are either injurious or of significant biological impact to marine mammals, the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS.
Name Withheld – 24		there is very much a significant adverse effect on birds, fish and all wildlife when the us navy moves into an area.the us navy owns numerous other sites which can and are used for training. they do not need to be in every site polluting the place. every single site the us navy uses is a pollution pit. that means keep them out. they have no right to kill fellow Americans with their pollution.	The Navy disagrees with this comment. In fact, there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of the marine environment. Furthermore, many of the Navy's environmental initiatives focus on ocean stewardship and seek opportunities to control our "ecological footprint" in relation to marine life, coastal impacts, and water quality. We have installed technology aboard our ships to keep plastics out of the ocean and safely manage our biodegradable waste stream. We are a world leader in marine mammal research, and are funding

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			approximately $26 million annually in marine mammal-related research projects from fiscal years 2007-2009. We serve as the executive agent for the Department of Defense Coral Reef Task Force. Major ocean stewardship efforts can be seen in our comprehensive approach to managing effects on marine life for all of our training ranges and operating areas. This environmental planning documentation is being coordinated with the National Marine Fisheries Service. In addition, the U.S. Navy has programs in place to manage threatened and endangered species on and around our installations; safely clean up past hazardous waste sites for future reuse; explore and develop new, greener technologies for equipment design and maintenance; and recycle metal, wood and glass. Navy installations and ship's crews frequently partner with local communities on volunteer shoreline and neighborhood cleanup projects.
Name Withheld – 24-1		i notice that your reference to go to a site shows misspelling so that the public cannot get to the site you reference. you had better repost this entire federal register notice so your spelling is correct. you have left an a off Alaska in your website reference. please correct immediately and extend time to comment since you placed the wrong site for comment. attention amy burt and a. m vasllandingham. it is interesting that nowhere on your site on in your register notice do you give any fax numbers, any e mail addresses. one has to wonder why you remain so anonymous and fail to help the public contact you. are you afraid of the comments you will get from American citizens who are tired of your killing the birds, animals and fish in the sea in massive amounts?	A correction to the Federal Register notice was published on 21 December 2009, to correct the error and a notice was put in red and bold font on the front of the Navy's GOA webpage. The Navy provided numerous avenues to contact the project manager and submit comments; via mail, fax, in person, and via the website.
Name Withheld – 25		What is lost by your actions may never be regained. Take a lesson from the doctor's oath. FIRST do no harm. Please reconsider the magnitude of you actions. Thank you,	This comment is duly noted.
Name Withheld – 26		I attended the public meeting in Cordova earlier this month, and after listening to both the talks and the testimony, I have come to the conclusion that I do not want to see either Alternative's 2 or 3 employed but want the Navy to stay at the current testing level of 14 days with no live ammo. I do not believe that the affects on marine mammals will be as innocuous as described in the EIS.	Please see response to Ellen Americus – 1.

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Name Withheld – 26-1		I do not believe that posted look-outs for whales will be able to see all whales in the area that might be impacted. I think that there are times of year when there would be less chance of affecting whales, but the general period the Navy wants to use includes times of high whale migration.	The Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals. Based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy feels its protective measures are adequate.
Name Withheld – 26-2		In addition we were told that in the May-September window over which the exercises might occur the actual dates will be determined not by any biological concerns that might differ during the time period, but by when navy ships happened to be conveniently located.	Navy exercises are joint training exercises with the Air Force and the Army, and are scheduled many months in advance, for planning purposes, and to determine which Navy assts can participate. The schedule of training within the April – October timeframe is based on other training and deployment schedules, and numerous other variables.
Name Withheld – 26-3		I also am not totally convinced that trace chemicals introduced into the water column will have no affect. I don't want to see any chances taken in an area that has never completely recovered from the Exxon Valdez oil spill. For the above reasons I am against the increased exercise levels.	Please see response to Brakel – 6. Additionally, please note that as depicted in Figure 1-1, Prince William Sound (PWS) is over 50 miles from the nearest corner of the TMAA where the proposed training activities will occur.
Name Withheld – 27		Please eliminate sonar use in the Gulf of Alaska. Thank you.	This comment is duly noted.
Name Withheld – 28		Go Navy!!!! Love the troops and practice protecting us all you want.	This comment is duly noted.
Name Withheld – 29		I am writing to express my opinion in regards to the proposed mid-frequency active sonar testing in the Gulf of Alaska, near Kodiak Island. I strongly urge the Navy to NOT change the training exercises to include sonar testing in this critical marine habitat area. With approximately 100 remaining Northern Right Whales near this proposed testing area, it would be an extreme risk on the part of the Navy to do any type of sonar testing there. It would be tragic to see the loss of any of these very rare marine mammals. Again, please do not include sonar testing in the Gulf of Alaska. I am not an environmentalist and do not belong to any organization. I am simply a concerned Alaskan resident. Thank you.	Please note that the proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. This training is critical to the safety and security of our military personnel. Additionally, please note that a discussion of potential impacts to North Pacific right whales from sound sources proposed for use in the TMAA is presented in Section 3.8 of the EIS/OEIS. In addition, it should be pointed out that the Navy has conducted mid-frequency and high-frequency active sonar activities for decades with no indications of injuries to resident beaked whales at training ranges in Hawaii and Southern California or to right whales on the East Coast. There are no indications for broad-scale impacts that are either injurious or of significant biological impact to marine mammals and the Navy's analysis demonstrates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Finally, it should be noted that the Navy is in full compliance with the Marine Mammal Protection

ID	Organization	Public Comment (Website)	Navy Response
			Act and the Endangered Species Act. For more information about the Navy's compliance with these and other regulatory requirements, see Chapter 6 of the EIS/OEIS.
Name Withheld – 30		I am concerned over the impact on marine mammals in the Gulf as well as the impact on migratory populations. I am concerned over the far ranging impacts both for marine ecology and for the traditional ways of life in the area that involve subsistence harvest of marine mammals for food and cultural purposes.	This comment is duly noted. The Navy shares your concerns. As such, the Navy has conducted a thorough analysis of potential effects of it proposed activities in Chapter 3 of the EIS/OEIS using the most current and best available science, with cooperation from the National Marine Fisheries Service, which is responsible for the protection of marine species.
Name Withheld – 30-1		I am also concerned about the air and water pollution caused by military exercises in the area.	The EIS/OEIS thoroughly analyzes the impacts of air and water quality. Please refer to Sections 3.1, Air Quality, and 3.3, Water Resources, of the EIS/OEIS. In addition, you may be interested in Section 3.2, Expended Materials, which describes the impacts of potentially hazardous materials such as explosives constituents.
Name Withheld – 31		I am VERY much against this happening!! Our marine mammals do NOT deserve this!! Our military defense is important, but so is our wildlife!! Let's do something that doesn’t affect creatures! It's been a problem in California, so why would you implement it in Alaska?? Why would you continue to do something that you KNOW is bad for the environment or it's inhabitants??	This comment is duly noted. Please note that last year, the U.S. Supreme Court upheld the Navy's sonar activities off the coast of California. Please note that the U.S. Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations. The Navy’s analysis indicates and this history indicates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS. Additionally, Monitoring reports from exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. (Please see the recent results supporting this as presented in training ranges monitoring reports “Marine Mammal Monitoring for the U.S. Navy’s Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)” available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). An integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the EIS/OEIS. As part of the Integrated Comprehensive Monitoring Program, research to measure the ability of Navy observers to detect marine mammals is also underway.

ID	Organization	Public Comment (Website)	Navy Response
Name Withheld – 31-1		There has to be another way, I don't see why the world has to be this way, man is going to ruin himself being greedy...why can't we all just get along?? WAR sucks. Life is good, live it...and let the whales and other sea life live thier lives, how would YOU like to have your ears hemmorage?? Or be disoriented?? That is what they ADMIT it oes...what else aren't they telling us?? I VOTE NO! NO! NO! Scrap this TERRIBLE idea!!! Don't hurt God's creatures!!	This comment has been duly noted.
Name Withheld – 31-2		Thanks for letting the public comment, now please LISTEN!!	The decision on which alternative the Navy will pursue will be made in light of the Purpose and Need by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
Name Withheld – 32		It is a negligent proposal to do sonar testing in cook inlet. there are far too many sensitive species of sea animal in this region. Valuable not just economically. Research shows a detrimental effect from this activity. Please reconsider!	Please note that the proposed action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. Additionally, Cook Inlet does not fall within the action area of the Proposed Action, as such, no Navy training activities would occur in the Cook Inlet. Please note that as per Chapters 1 and 2 of the EIS/OEIS, with the exception of Cape Cleare on Montague Island located over 12 nm (22 km) from the northern point of the TMAA, the nearest shoreline (Kenai Peninsula) is located approximately 24 nm (44 km) north of the TMAA's northern boundary. The approximate middle of the TMAA is located 140 nm (259 km) offshore, far from the Cook Inlet.
Name Withheld – 33		I vote for the option to not do any training in the Gulf of Alaska or anywhere near critical habitat. This is unnecessary and a waste of taxpayer dollars. It's long past time the military needs to be more accountable to the environment and good stewards of this planet we all share. Sonar is very detrimental to marine animals, not to mention the explosions you are planning.	The Navy shares your concern for marine life. As detailed in Section 3.8 for marine mammals, the Navy believes that the proposed training and use of sonar will not pose a significant risk to whales given that these same activities have been conducted for many years in other Range Complexes with no indications of any adverse impact to marine mammals, fish, or other wildlife. In addition, the Navy implements protective measures during its training events as developed with NMFS as a cooperating agency. In authorizations under the Marine Mammal Protection Act and Biological Opinions under the Endangered Species Act, NMFS has found these same training events will not pose a significant threat to marine life under their purview.

ID	Organization	Public Comment (Website)	Navy Response
Name Withheld – 33-1		How about simulated training - cheaper and less cost to the environment. We have the most powerful military in the world, you don't need to go around proving it all the time.	As explained in Section 2.3.2.4 of the EIS/OEIS, exclusively training with simulations would not support the Navy's Purpose and Need and was therefore eliminated from further consideration.
Name Withheld – 34		I have reviewed informational summaries concerning the draft EIS and I have some concerns. Although I believe that military training exercises are vital for the protection of our nation, at this stage I support the "no action" alternative. At this juncture I am concerned with the current plan for the Navy's planned sonar training activities.	This comment is duly noted.
Name Withheld – 34-1		I believe that these activities should be held in areas where there are much less dense populations of marine animals, and that they should be held in geographical areas in which the sonar can be better contained. I am also concerned with what I view as inadequate mitigation measures which appear to primarily consist on on-board visual monitors. Thank you for considering these comments.	As explained in Section 2.3.2.1 of the EIS/OEIS, a relocation of training activities would not support the Navy's purpose and need and was therefore eliminated from further consideration. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process. The Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals. Based on the analysis included in this EIS/OEIS, including the Navy's history of conducting active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations, the Navy feels its protective measures are adequate. Navy lookouts undergo extensive training to include on-the job instruction under supervision of an experienced lookout followed by completion of Personnel Qualification Standard Program. NMFS-approved Marine Species Awareness Training is required before every sonar exercise. Chapter 5 of the EIS/OEIS, Mitigation Measures, presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events. While the Navy is very confident in its well-trained lookouts, it does not expect that all animals present in the vicinity of training events will be detected. The acoustic impact modeling estimates provided in the EIS/OEIS are not reduced as a result of mitigation effectiveness, even though many marine mammals will be detected and sonar exposures will be avoided.
Name Withheld – 35		To Whom It May Concern: I am writing to support the no action alternative in regards to the Navy's continuing use of	Regarding the 425,000 marine mammal takes, please see response to Wicks – 2 above.

ID	Organization	Public Comment (Website)	Navy Response
		the Gulf of Alaska for training activities. I am particularly concerned about the proposed use of extensive sonar training which is predicted to result in more than 425,000 marine mammal "takes" per year. This is an unacceptable and unreasonable burden to put on these marine mammals including at least 7 endangered species that depend on this habitat.	The Navy fully analyzed potential impacts to marine life in Section 3.8 (Marine Mammals) of the EIS/OEIS and is in full compliance with the Marine Mammal Protection Act, the Endangered Species Act, and NEPA. The analysis concludes that there is no significant impact to population levels of marine mammals. For more information about the Navy's compliance with these and other regulatory requirements, see Chapter 6 of the EIS/OEIS.
Name Withheld – 35-1		As the understanding of the effects of this underwater noise on marine mammals is not well understood it would be imprudent to allow this level of harassment to these populations of marine mammals. Please do not allow the expansion of training activities in the Gulf of Alaska including active sonar to take place. Thank you for your time and consideration in this matter.	This comment is duly noted. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
Name Withheld – 36	The Cove Lodge, Incorporated	I am most concerned regarding the proposed sonar testing by the US Navy in the Gulf of Alaska. In addition to the concerns that have already been expressed regarding the lack of knowledge of the potential impact on marine mammals and fish populations I have concerns over that safety of mariners. If there is a substantial risk to marine mammals I can but believe that there is the potential for some unintended impact upon humans in the region. I don't feel that adequate precautions have been undertaken to assure that humans working on the Gulf of Alaska or living in the coastal communities will be unaffected. If I am on the water or below deck during a test I believe there is real potential for unintended human impact.	As described in Chapters 1 and 2 of the DEIS/OEIS, with the exception of Cape Cleare on Montague Island which is located over 12 nm (22 km) from the northern point of the TMAA, the nearest shoreline (Kenai Peninsula) is located approximately 24 nm (44 km) north of the TMAA's northern boundary. The majority of the TMAA is a much greater distance from shore and Navy training activities in the TMAA should have no direct affect on coastal communities. There are no activities proposed that will have a direct impact on humans at sea in the Gulf of Alaska, as indicated in Section 3.12. In addition, Chapter 5 of the EIS/OEIS provides a description of mitigation measures and safety procedures to prevent potentially dangerous interactions with other users of the Gulf of Alaska, including humans.
Name Withheld – 37		First, thank you for your service. From the logistics desk worker to the SEAL member to the person reading this, you are all appreciated. I strongly support our armed forces being adequately prepared to defend our country and our way life through practice. However, among the many things that make our country great are the amazing amount of wild lands and creatures within and along our borders. A hike through a National Park or seeing a whale breach on a day cruise have provided simple pleasures to millions of people in otherwise hectic times.	This comment is duly noted.
Name Withheld – 37-1		If we are going to unnecessarily use weapons and tools like SONAR in the course of practice that would kill the very creatures that contribute to the magnificence of our being,	As described in Chapter 3, there are no proposed activities that are likely to kill wildlife in the Gulf of Alaska. As detailed in Section 2.2.2, there is a need for integrated training including

ID	Organization	Public Comment (Website)	Navy Response
		then what way of life are we left fighting for? Please do all possible to come up with other alternatives to practicing with SONAR and other tools that harm wildlife. Certainly there are high-tech replacements available as have been developed for other branches that provide realism without the use of actual weaponry and ammo. Thank you	the use of sonar by Navy in Alaska waters. In addition as presented in Section 2.2.1.6, the use of alternative means of training and detection of submarines has been investigated and rejected as discussed. As described in Section 2.3.2.4 of the EIS/OEIS, alternatives such as simulation, have great value during different phases of training, but ultimately, the training value generated by the actual firing of live weapons cannot be recreated by other means currently available.
Jared Woody		I believe that the US Navy has taken the appropriate steps in planning this exercise, and have minimized their scope of impact to wildlife in the effected area. I agree with State of Alaska biologists that the exercise may be best done in the winter to avoid migratory animals, such as some whales, but I do not believe that a summer exercise would be overly detrimental, provided the safety parameters outlined by the Navy are followed. I fully support having the Navy conduct exercises in Alaska and I believe that these exercises are a vital aspect of maintaining an alert and ready national defense.	This comment is duly noted.
Stephen Wright - 1		To the U.S. Department of the Navy: I am appalled that the U.S. Navy is proposing to conduct mid-frequency active sonar exercises in the Gulf of Alaska. This type of sonar testing has been demonstrated by a multitude of scientific evidence to have extreme adverse impacts to marine mammal populations. The U.S. is not at war with foreign submarines in the North Pacific and these exercises are completely unjustified under present circumstances.	The Navy does acknowledge that the science of sound in the water and its effects on marine life continues to evolve and has conducted the analysis of sonar use in the EIS/OEIS using the best available science. As detailed in Section 3.8 for marine mammals, the proposed training and use of sonar should not pose a significant risk to whales given that these same activities have been conducted for many years in other Range Complexes with no indications of any adverse impact to marine mammals in those locations. In addition, the Navy implements protective measures during its training events as developed with NMFS as a cooperating agency. In authorizations under the Marine Mammal Protection Act and Biological Opinions under the Endangered Species Act, NMFS has found these same training events will not pose a significant threat to marine life under their purview. Please see Section 2.2.2 regarding the strategic need for anti-submarine warfare training by the U.S. Navy. Please see Appendix F regarding strandings associated with the use of sonar and the degree to which these impacts have been widespread.
Stephen Wright - 2		Of particular importance is that these proposed exercises are immediately adjacent to endangered Northern Right	As presented in Section 3.8 and depicted on Figure 3.8-1, the North Pacific right whale Critical Habitat is approximately 16

ID	Organization	Public Comment (Website)	Navy Response
		whale migration routes. Some scientists estimate literally millions of other marine mammals could be adversely impacted by these tests. I urge the U.S. navy to implement NO ACTION on this poorly considered proposal. Respectfully, Stephen E. Wright P.O. Box 20021 Juneau, Alaska 99801	nautical miles from the nearest corner of the TMAA and the generally postulated route for right whales "migrating" would be areas to the west in the Gulf of Alaska using passages between the Aleutian Islands in movements between the Bering Sea and the designated Critical Habitat areas. Please note there are no "tests" proposed as part of the Navy training activities. Also note that Section 3.8 provides the estimated numbers of "takes" (under the Marine Mammal Protection Act) for each species of marine mammal for each of the proposed alternatives, which is not necessarily equivalent to an "adverse impact".

I.7 ORAL COMMENTS

I.7.1 PUBLIC HEARING TRANSCRIPTS

I.7.1.1 KODIAK

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PUBLIC HEARING ON
GULF OF ALASKA NAVY TRAINING ACTIVITIES
DRAFT ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT
January 7, 2010
5:00 p.m. - 8:30 p.m.
Kodiak High School Cafeteria
722 Mill Bay Road
Kodiak, Alaska 99615

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P R O C E E D I N G

MR. MICHAELSON: Good evening and thank you for coming tonight. My name is Lewis Michaelson and I will be the moderator for tonight's hearing on the Gulf of Alaska Navy Training Activities Draft Environmental Impact Statement/Overseas Environmental Impact Statement, which you will hear tonight referred to as the draft EIS.

Hear to receive your comments are Commander Vic Weber, U.S. Third Fleet Joint and Air Training Officer, MR. Alex Stone, who's the Project Manager from the Navy's Pacific Fleet and Lieutenant Amy Cox, from the National Marine Fisheries Service.

Let's look at the agenda for tonight. Hopefully you all had the opportunity to talk to the many subject matter experts who were staffing the poster stations during the open house. The primary purpose for this portion of the hearing is for the panel members to listen to your comments firsthand. They will not be answering questions during this phase of the proceedings. Comments and questions will be addressed in the final EIS.

After I finish this introduction, Commander Weber will give a brief overview of the Navy's training activities in the Alaska Training Areas. Next, MR. Alex Stone will brief you on the environmental impact analysis process and summerize the results reported in the draft EIS.

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The last item on the agenda, however, is really the most important. The public comment session is your opportunity to provide information and make statements on the record. Your input insures that the decision makers can benefit from your knowledge of the local area and any environmental effects you think may result from the proposed action or alternatives.

Keep in mind the EIS process is intended to ensure that decision makers will be fully informed about the potential environmental impacts associated with the various alternatives before they decide on a course of action. Remember that comments on issues unrelated to this EIS are beyond the scope of this hearing.

To request an opportunity to make a verbal comment during tonight's hearing, please fill out a verbal comment card. They're available at the registration table and if you'd like speak and you haven't filled one out, just raise your hand and Allison will bring you one. I have three speaker comment cards so far. Every speaker, including public officials, and spokespersons for organizations will have three minutes each to provide your comments. If you don't feel comfortable standing up here tonight to make a statement, the majority of the public, we know. You have until January 25th, 2010, to submit a written statement for consideration in the final EIS, or you can wait until

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tonight's public comment session is over and you can provide your comments privately to the court reporter, who's seated to my right. He's here to make a verbatim transcript of all comments made during the public comment session. Keep in mind that written comments are given the same weight and consideration as oral comments offered here tonight.

Now it's my pleasure to introduce Commander Weber.

COMMANDER WEBER: Thank you Lewis. Welcome to the public hearings for the Gulf Alaska Navy Training Environmental Impact Statement. I'm Commander Vic Weber and I'm the Joint and Air Training Officer for the Commander, United States Third Fleet. I have served as the lead air planner for the previous two fleet exercises, Northern Edge the past couple years. So very knowledgeable on that subject.

I want to thank you all on behalf of the United States Navy for attending this evening. This is one of five public hearings that the Navy is holding in Alaska for the Navy Training Activities EIS.

As Lewis mentioned, we hope you've had a chance to visit all the poster stations and meet with the Navy project team members. At the conclusion of this presentation you'll have the opportunity to make those comments as we've discussed.

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Navy air and sea training activities occur in the Alaska originate from Navy ships located within the Temporary Maritime Activities Area. That's going to be that yellow area shown in the Gulf of Alaska.

The Navy also conducts air activities in established Air Force and Army inland training areas. Inland training that we've established military operating areas, those are those purple regions on the chart. And the four restricted areas or targeted live fire range are showing up on the chart in red.

The Temporary Maritime Activities Area and the inland training areas together make up the Alaska Training Areas. The Navy participates in training exercises in Alaska Training Areas that are crucial in helping the Navy meet its missions. These ranges have attributes which contribute greatly to the success of Navy training there.

The first attribute is location. The Temporary Maritime Activities Area is located within flight range of several Air Force and Army bases and their associated air and land training areas. The proximity of personnel, resources, and equipment within a few hundred miles of the Gulf of Alaska allows for joint training opportunities for Navy forces.

The second attribute is area of the training area space. The vast area of the Alaska Training Areas provides

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ample space to support necessary forces and allows for the conduct of the full range of training activities.

Oceanographic conditions is the third attribute. The sea state of the Gulf of Alaska creates a challenging environment for training in the search and detection of submarines in anti-submarine warfare. Furthermore, the Alaska Training Areas serve as the principal training venue for annual joint training exercises, which can involve forces from the U.S. Navy, Marine Corps, Air Force, Army, Coast Guard, and local, state, and non-governmental agencies.

Training activities are organized by primary mission areas. The Navy currently trains in these five primary mission areas in the Alaska Training Areas. The training activities consist of operating aircraft and ships, conducting training against ships and aircraft, and practicing aerial surveillance.

The Navy trains in Alaska Training Areas to prepare the Navy -- Navy personnel and other military forces for global conflicts and homeland defense and homeland security activities. To meet our mission, the Navy must conduct their training activities in a realistic, live training environment. Realistic training insures Navy personnel maintain the highest level of readiness and capability and is the single greatest asset the military has in preparing

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to protect the American service men and women that defend the nation.

There's no such thing as a routine training when it comes to practicing combat skills. Diverse training opportunities insure that Navy personnel are able to react swiftly and decisively in a wide range of potential situations. Insuring Navy forces are prepared for deployment requires training where military personnel can learn through practical hands on experience the skills necessary to effectively plan and conduct operations. Additionally, advancing technologies also require more complex and varied training scenarios.

Alaska Training Area's provide training opportunities essential for the success of the military mission. While fulfilling our mission to train sailors, protecting the environment is a priority for the Navy. The Navy is committed to protecting the physical and natural environment and has established a successful track record of environment stewardship while meeting our missions. To accomplish our environmental stewardship goals the Navy implements protective measures on land and at sea to reduce potential affects on the terrestrial marine environment, and to insure public safety and accessability.

I will now turn the presentation over to Alex Stone, United States Pacific Fleet and will tell you about the

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Navy's proposed action and give you an overview of the draft EIS and the environmental analysis process.

MR. STONE: Thank you Commander Weber. Again, my name is Alex Stone and I am the Project Manager for the Gulf of Alaska EIS. I'm here tonight to give you an overview of the findings contained in the draft EIS.

The draft EIS was prepared by the Navy to comply with the National Environmental Policy Act or NEPA and Executive Order 12114. The draft EIS represents compliance with these environmental statutes and is an important part of the Navy's overall commitment to environmental stewardship as it trains.

The Navy is the lead agency for this EIS. In addition to their role as a regulator, the National Marine Fisheries Services, is a cooperating agency pursuant to Federal Regulations. Present with us here tonight is Lieutenant Amy Cox of the National Marine Fisheries Service, Alaska Region Office. She's here with us tonight to record your comments and issues. As a regulator, the National Marine Fisheries Service helps to insure the EIS and the proposed action are in full compliance with appropriate environmental laws and regulations. As a cooperating agency they provide early review of the proposed action, alternative, and analysis methods.

To keep up with advances in global defense

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of Defense current and near term training requirements. In addition to training activities currently conducted, Alternative 1 proposes to increase levels of training activities for one annual Carrier Strike Group training exercise, to include first, increasing the duration of the exercise from current 14 to 21 days in the summer, and second, conducting anti-submarine warfare training exercises, which include the use of active SONAR.

Additionally, Alternative 1 proposes to implement training activities associated with force structure changes, including new ships, submarines, aircraft, new weapons systems, new training instrumentation, including a Portable Undersea Tracking Range.

Alternative 2 is also designed to meet current and near term training requirements. This alternative includes all elements of Alternative 1, and further increases the number of training activities, including conducting a second annual Carrier Strike Group training exercise of up to 21 days during the summer, and also a sinking exercise during each summer exercise, for a maximum of two.

Alternative 2 is the Navy's preferred alternative because it would fully support required Navy and joint training activities. It also allows the Navy the greatest flexibility to carry out its training mission in the Alaska Training Areas.

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In preparing the draft EIS, the Navy evaluated the potential effects of the alternatives on the marine, natural, and human environment. The Navy took a comprehensive approach in assessing the potential effects on 14 different resource areas. I will present some of these findings here.

We encourage you, if you have not already done so, to review the draft EIS, which presents the findings of the Navy's environmental analysis for each of these resource areas. We welcome your comments on the findings and the methods used in the analysis.

The Navy's use of active SONAR and explosives puts sound into the marine environment. While preparing the EIS, Navy scientists analyzed the potential effects of sound in the water on marine life, including marine mammals, sea turtles, fish, birds, and marine invertebrates. The method for determining potential sound exposures to a marine animal was jointly developed by the Navy and the National Marine Fisheries Service, and represents the best science currently available.

The results of the analysis indicate that there is the possibility for physiological effects on marine mammals. Behavioral effects are also predicted. However, these results do not consider the use of protective measures, which would reduce the likelihood of these predicted

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exposures. There would be no significant impacts on sea turtles given that SONAR frequencies used by the Navy fall outside the hearing range of sea turtles hearing range and the low occurrence of sea turtles in this training area.

Effects on marine invertebrates are predicted to be localized and minimal given the size of the training area and frequency of explosions. No significant impacts of fish and birds are anticipated from the use of active SONAR. The use of explosives in Navy activities may result in injury or mortality of individual fish or birds in the immediate area, however, these activities would not result in significant impacts to the overall fish population or bird population, or habitat.

The Navy does not expect any impacts on marine mammal populations, but we recognize that there may be potential effects on individual marine mammals. To minimize environmental impacts while training at sea, the Navy has developed and implements protective measures, including posting a minimum of three well trained lookouts at all times, and an additional two dedicated marine mammal lookouts during training activities with active SONAR. Establishing a safety zone during training exercises using mid-frequency active SONAR. Coordinating with the National Marine Fisheries Service and reporting marine mammals sighted during major exercises. And during certain

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exercises, surveying the area for marine mammals including conducting aerial sweeps by Navy aircraft.

Additionally, during the past five years, the Navy has funded more than $100 million dollars in marine mammal research. Through this research, the Navy is continually improving the ability to use SONAR in an environmentally sensitive manner.

The Navy also analyzed effects from other sources or stressors on physical and biological resources including, air quality, expended materials, water resources, marine plants and invertebrates, fish, sea turtles, marine mammals, and birds.

For most of the resources analyzed in the draft EIS, we found no significant impacts. There is a potential for effects on marine mammals from the proposed action as I've discussed.

The Navy is in consultation with the National Marine Fisheries Service and the U.S. Fish and Wildlife to ensure the effects on species protected by the Marine Mammal Protection Act and the Endangered Species Act are minimized.

The Navy analyzed the effects on the human environment, including cultural resources, traffic, socioeconomics, environmental justice and the protection of children, and public safety. The findings in the EIS show

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that no significant impacts on the human environment are likely from the implementation of the proposed action.

There would be no significant impacts on civilian access or tourism, and there would be no risk to public safety. In addition, the Navy is communicating with 12 Alaska native tribes in the area.

The Navy has completed the first three steps of the NEPA process and we are now in the phase providing for public review of the draft EIS. To review the progress so far, the EIS was initiated back in March 2008, and the Navy held public scoping meetings here in Kodiak, Anchorage, and in Cordova.

Government agencies, organizations, and the public were encouraged to submit comments at the scoping meetings or to provide written comments throughout the public comment period. The comments received were considered in the preparation of the draft EIS that we've discussed tonight.

We are now in the phase -- in the public hearing and document review step of the NEPA process. This phase is an essential part of the process because it allows the public to review the document and comment on the Navy's analysis of environmental effects. We encourage you to provide your input by January 25th so that it can be considered for incorporation during the development of the final EIS. All

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comments received will be considered.

The Navy is committed to keeping the community informed throughout the development of the EIS. These public hearings are just one of many opportunities to share information about the EIS and, more importantly, to encourage your feedback and comments.

Now I will turn it back over to Lewis to describe how to obtain more information and how to comment on the draft EIS.

MR. MICHAELSON: Thank you Alex. In addition to holding these public hearings, as I think many of you know, the Navy has established a website to make it easy for you to find and comment on the environmental documents. The draft EIS is posted on the website. Also there's additional background information and links to the fact sheets and posters that you saw here tonight.

You may also review the draft EIS and other publicly available documents by visiting one of the designated information repositories. The addresses of these repositories are provided in the fact sheet packet that you received when you came in. There are eight of them currently established in various cities in Alaska. Both the information repositories and the project website contain project documents, fact sheets, and background information for you to review.

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The Navy, as you've already heard from both of our panelists here, welcomes your input and review on the analysis contained in the draft EIS and there are several ways for you to submit comments.

In just a moment here we'll be accepting oral comments. You can also provide written comments in several different ways. With a comment form that you can turn in tonight if you'd like. You can give it to a staff member at the registration table, you can mail it in. That address is posted here right and on the fact sheets. You can also submit comments electronically via the project website.

All comments must be postmarked or received by January 25, again, 2010, to be considered in the final EIS.

We're now begin the oral comment period of the portion of the public hearing. If there is anyone again, who wishes to speak please fill out a card. I know we've collected a few more, again if you would like to please raise your hand. I want to make sure that anyone and everyone who wants to speak gets that opportunity to do that tonight. Please help me get through this in a way that we can capture all of your comments. Again, the court reporter -- it's very important that we get this on the record. So, I ask first that you please speak clearly and slowly into this microphone here. I'm going ask you to

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come up to the lectern. Each person will be allotted three minutes to speak. If you have prepared a written statement, you may turn that in at the registration table and/or you can read it out loud as long as you can do so within the three minute time limit. Finally, please honor any request that I make for you to stop speaking when you reach the three minute time limit. In order to make that easy for you to do that, I have a card that I will hold up when you have 30 seconds left. That will make it easy for you to wrap up your comments on time and should you go the whole three minutes I have this handy little red one that says, end. I think the meaning is probably pretty clear on that one too.

We are scheduled to be here until 8:30. I only have five cards here. It's quite common that as we go through those comments others of you will be inspired to speak. Nonetheless, my guess is we will not exhaust the time between now and 8:30. And in cases of that nature we're usually more than happy to take what I call, second helpings, which would be an opportunity to come up a second time for another three minutes. So, anyway I think that's going to work out quite well for us tonight.

So, we're ready to begin. Let me go head, because it is a little bit of a walk up here and so that you can be ready to come up, and know when your time is I'm going to

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read all of the names out to begin with so that you will know where you are coming up in the rotation. My first speaker is Carolyn Heitman, followed by David Kubiak, Katherine Ellanak, Theresa Peterson, and Amanda Barnette. So, if you would just do the favor of coming up, the first speaker Carolyn Heitman. And you don't have to provide your address or anything like that. If you just give us your name and if there's any organizational affiliation that you want reference. Yeah, if you -- why don't you actually pull the whole gooseneck down.

MS. HEITMAN: Oh, okay.

MR. MICHAELSON: So it doesn't fall out of the hole there. And there we go, that should work. All right. You all right?

MS. HEITMAN: Is that good enough?

MR. MICHAELSON: I think we can hear you. You're close enough.

CAROLYN HEITMAN

Commented as follows:

My name is Carolyn Heitman. Is that good?

MR. MICHAELSON: Yeah.

Okay. One of the things that was confusing to me and one of the gentlemen cleared up for me earlier was on -- let me find the page here. On page 2-4 of the draft it showed the whole Island of Kodiak in red, which was

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enclosed within the restricted area, and that was a little bit confusing to me. Because I do know a couple years ago the FAA did enforce restricted air space over parts of Kodiak Island which included our airport. And -- so anyway he cleared up and we looked in the book and he it -- on your map over there it's not on the map, but he said it was a misprint and then at final he was going to make sure that it was in black. So, if I understand Kodiak is not included in restricted area as Fort Richardson. Okay.

And, let's see here -- and one of the things I had requested in my comments is a boundary line in the training area covers the Aleutian Trench and I had requested that the Navy list what types of exercises would take place in the trench, what type of SONAR and the effects that it -- the impacts it would have to the sea life that lives within the trench, and I didn't see that addressed.

And it states here that the Gulf -- the Gulf of Alaska draft states that the Navy does not know what the environmental damage or harm would be to birds from mid-frequency at long range, and I'd like to see that addressed. No detailed information on how the Navy exercises will impact fisherman. Whether or not, you know they'll be restricted. I understand if you go by -- one of the choices was that there would be two 21 day training periods rather than just one, if that one was chosen. So,

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I'd like to see more emphasis on how it would affect the livelihood of fisherman.

Also, it's -- okay, let me find it here. On section 3.14, on public safety you say there would be no public safety issues. In that section though under public safety it says, activities that could affect public safety include electromagnetic energy, but no details were given concerning that. And I would also like to know -- when you did the EIS for Hawaii uranium and red and white phosphorus was used in the training exercises. I would like to know if that will be used in the Gulf of Alaska.

And, let's see, and although you mentioned new proposed weapons systems, you didn't identify them. I'd also requested that the Navy fund our electromagnetic radar system here and -- through the University of Alaska and it's classified as an electromagnetic warfare systems radar that the Navy could use. So, I would like to see that addressed if it will be used.

MR. MICHAELSON: Okay. Our next speaker is David Kubiak.

MR. KUBIAK: Is this counting?

MS. TURNER: No. Of course not.

DAVID KUBIAK

Commented as follows:

Yeah, thank you ladies and gentlemen for the

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opportunity to address this EIS -- the draft EIS. And I appreciate you coming to Kodiak. I -- with 18 days left, I'm the Chairman of the Alaska Marine Conservation Council. So, I'm here sort of on duty, like you are.

With only 18 days left to comment, if the January 25th deadline is to be kept, I've got slow upload for my computer. I guess might be able to leave it on all night and download your EIS on the computer. But 25 megabytes at 56K takes a long time. And I think I have a obligation since I don't have the information really here to review, I think it would be a mis-step and be irresponsible for me to make a pointed comments about that impact statement. I did though here Carol say that -- and it reminded me that if we have 21 days -- two periods of 21 days, basically six weeks of training exercises, and they're up on the edge of the Gulf there, that's prime fishing bottom. And that's a huge chunk of time out of a commercial fisherman's opportunity especially -- I'm a halibut fisherman and that would be a huge chunk of time out of the halibut season. I don't myself go there, I've got a small boat. But I know the more nautical fellows are out there all the time and that's prime halibut bottom. So that's a huge -- a huge divot in their -- in their season, 21 days times two.

But other than that I just want to say, I appreciate you coming here and I'll look forward to reading the EIS

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completely. But that really -- that 18 days left to comment, wow, that's going to be very difficult. Thank you.

MR. MICHAELSON: Two things. Can you just state your name for me, I didn't hear it.

MR. KUBIAK: Yeah, I sorry. David Kubiak.

MR. MICHAELSON: And before you leave I'm pretty sure we can get you a CD.....

MR. KUBIAK: Okay.

MR. MICHAELSON: .....so you don't have to deal with the download.

MR. KUBIAK: Yeah, well either that or I have to wait for the mailing time for this thing to get to me.....

MR. MICHAELSON: I'm sure we've got a CD around here we can get you.

MR. KUBIAK: All right, thank you.

MR. MICHAELSON: All right. Thank you MR. Kubiak. The next speaker is Katherine Ellanak.

MS. ELLANAK: I'm sorry, I'm eating an orange.

MR. MICHAELSON: I haven't started yet.

KATHERINE ELLANAK

Commented as follows:

Good evening, my name is Katherine Ellanak. I'm with the Sun'aq Tribe Environmental and Natural Resource Director here in Kodiak.

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And although your EIS came in -- sent out dated December 2, we only received the EIS last week. And this January 25 deadline is not fair. There are other deadlines that we need to work with here in Kodiak. But out of respect for this time, and consideration for the fisherman, and the sea life whatever's happening there -- I saw -- I skimmed through that and there are a lot of fish in that area that you want to be training in.

And that is not only affecting Kodiak fisherman and subsistence and sports. It goes all the way through the coast of Alaska up to my people in the Bearing Sea areas. And the seals -- we don't know how nomadic our animals are from the sea, the (indiscernible) and the fish, and the whales, the seals, the birds -- they have no boundaries. Even if you make a boundary there they're going to be coming in and out of there. And the fish, the sea's abundance, it's crucial right now because fishing is very critical right now. It's starting to be hard to be a fisherman anymore because of the prices. And we know nationwide that Alaska fish is like gold for anywhere in the world.

The other thing is when you guys do that April to October, 21 days, that's crucial time also for anything, fishing and the rearing of the babies from the seas. And the amount of lead, cadmium, and everything else is going

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to be used and exposing to our seas is detrimental. And I just would like to see that you guys can extend this January 25 deadline into something more appropriate for us to really review the EIS document. And we had a meeting yesterday with our tribe and it's -- you know, like I said, we just received that EIS last week and today's Thursday. And then there's no time for me and my Environmental Committee to meet with the Tribal Council and have a good meeting about this. Quyana.

MR. MICHAELSON: Thank you very much. The next speaker is Theresa Peterson.

THERESA PETERSON

Commented as follows:

Good evening and thank you for coming to Kodiak and giving us the opportunity to talk about this proposed action off our island home here.

My name is Theresa Peterson. I'm a member of a long time fishing family and I work with Alaska Marine Conservation Council. The Alaska Marine Conservation Council is a community based organization dedicated to protect the integrity of Alaska's marine ecosystem. And AMCC is concerned about the potential increases in Navy training activities in the Gulf of Alaska. Particularly of concern are the effects of underwater noise on living marine resources, especially noise resulting from the use

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of SONAR in this productive and important marine environment.

We support the no action alternative, which would maintain current training activities and does not involve the use of SONAR. The alternatives listed in the analysis are inadequate to explore a range of options to consider anything else at this juncture.

Overall the proposed action would result in dramatic changes in the acoustic marine environment inside and adjacent to the operating area that could have significant impacts on the marine mammals inhabiting these waters. Critical habitat for the North Pacific right whale, the worlds most endangered whale is located directly adjacent to the training area.

The draft EIS is lacking a robust analysis regarding potential impacts to the halibut and the halibut fishery. It includes no discussion or maps showing the major halibut regulatory area that directly overlaps the training area. Nor does it discuss halibut habitat in the area. This information needs to be added.

The draft EIS does not include an adequate discussion of salmon migratory routes in the Gulf of Alaska, and therefore lacks a robust analysis of impacts to migrating salmon species in the region. There is not a thorough assessment of the overlap with fishing areas, and the

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conclusion that there will be no socioeconomic impacts from the proposed action, including fishing is impossible to predict without comprehensive answers to the above mentioned comments.

It is probable that the Navy under estimates the number of marine mammals and fish that will be harassed, injured, and killed because it simply does not have the density estimates needed in order to accurately make this determination. There is no reliable estimates for current or historical abundance numbers for many of the affected marine mammals in the Gulf of Alaska.

And finally, I know firsthand there are not adequate measures to mitigate the harmful affects of SONAR. The proposed mitigation measures are basically safety zones. And from what I'm understanding, visual sighting of whales. And having fished in that area for over 25 years and having spent sometimes days looking for a buoy in the adverse weather conditions that we have out in the Gulf of Alaska, probably 80 or 90 percent of the time. I do not have confidence that visual sightings is an adequate mitigating measure.

And finally in closing, I would very much suggest that you extend the comment period an additional 45 days in order to allow people adequate time. And again, thank you for coming.

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MR. MICHAELSON: Amanda Barnette.

AMANDA BARNETTE

Commented as follows:

My name is Amanda Barnette. I'd also like to thank you for coming to Kodiak and listening to our comments. I think the Navy should establish minimum visibility requirements while training, especially while training with active SONAR, so that the lookouts may identify marine mammals in the immediate area. Thanks.

MR. MICHAELSON: Thank you very much. Is there anyone else who has been inspired at this point to add their comments to those that have already been offered? I want to make sure everyone has had at least a first chance. If not is there anyone who has already spoken who would like to take advantage of second helpings? Yes ma'am, please do. Just all you need to do is state your name one more time for me, okay?

KATHERINE ELLANAK

Commented as follows:

Katherine Ellanak with the Sun'aq Tribe of Kodiak. The other thing is we already have visual and historical history about what Exxon oil spill did. And it shows what the current is going to be like. And the red tide that happens and years of evolutionary natural disasters that there used to be abundance of fish here of all kinds. But

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after the '64 earthquake, right over there in Yuzhni where there used to be herring and everything else. The fish that used to be there are no longer there and the fish that we have presently here are in danger of other disasters that are going on. And you know, Bligh Reef is hit again and even the Arctic Slope with the BP having their pipeline problems, I mean even if it's far and beyond us, it's helping to come down here from the pipeline. And things of that kind of disaster, we need to consider those before the fish is going to be depleted.

It's -- I cannot name and I'm not a scientist to see when I was scanning through the EIS -- it's unfathomable to me to try to determine what all else is going to be affected by all the chemicals and toxins and hazardous materials that are going to be expended into the sea.

MR. MICHAELSON: Thank you. Anyone else? Yes.

Yes, can I have a.....

MR. MICHAELSON: Yes you bet.

I just want to.....

MR. MICHAELSON: You just come up, okay?

MS. HEITMAN: Okay.

MR. MICHAELSON: What's your name again please?

CAROLYN HEITMAN

Commented as follows:

I'm sorry, it's Carolyn Heitman.

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When the Navy did the Environmental Impact Statement for Hawaii, the west coast, Gulf of Mexico, and the entire east coast of the United States they got a permit from NOAA to -- and this is something that I had mentioned in my comments in a -- the last time. They got a permit from NOAA to incidently take two million marine mammals per year for the next five years. And I would like to have you include in the final if that permit will extend to the Gulf of Alaska. And if not will you be requesting a new permit for incidental takes and for how many marine mammals?

MR. MICHAELSON: Thank you. Anyone else who wants a second chance?

I have another comment.

MR. MICHAELSON: Okay.

THERESA PETERSON

Commented as follows:

Thank you. Theresa Peterson again. I have two brief comments. In reflecting on what Katherine was saying, I feel strongly that we have a lot of unknowns that are approaching our waters in the Gulf of Alaska and this northern climate -- and worldwide, in particular the ocean acidification and the changing ocean environment. But also in reflecting about commercial fishing off of that edge which has been -- like I said, I've spend decades out there doing that. And I've noticed a change in the whales habits

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when you're long lining halibut and primarily black cod. The sperm whales and the killer whales -- we're kind of like dinner bells out there. They recognize a boat out on the edge, they hear you. You turn on the hydraulics, they come charging up to the boat. The whales in the Gulf just -- primarily over these last 10 years are getting habituated to associating the sound of a fishing vessel to a feeding opportunity. And so in thinking about this, when there's Navy operations going on and the other boats have been requested to leave the area, I would think there's going to be a natural tendency for the boat -- the whales to actually approach a vessel and explore to see what they're doing. Because they have been doing that. And I just wanted to share that thought. Thank you.

MR. MICHAELSON: Thank you. We've had someone turn in a card for his first opportunity. I believe it's Richard Courtney. Yes sir.

RICHARD COURTNEY

Commented as follows:

My name is Richard Courtney and I'm here representing myself. I'm also representing myself as a 20 year Navy veteran. I served on two aircraft carriers, a helicopter carrier, and a -- one of those large ones that you see right over there. I've ridden smaller destroyers and LST's.

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I find it absolutely critical for the U.S. Navy to practice in an area such as the Gulf of Alaska. I am an expert on meteorology and oceanography. I'm also an expert on the American sailor running around on a ship. And if you haven't figured it out, I'm still a little nervous here.

One of the things we don't recognize very much is what it is to be out there on a ship doing the good deed, that's defending your nation. You cannot go down to Hawaii in the middle of the summertime, run through a five to an eight foot sea state with a 20 knot trade wind and say, hey I know what it's going to be like to be up here in the Gulf of Alaska. It's a different environment. You walk out through your front door, you put a coat on, you put a hat on. You don't run out there bare chested in Kodiak in January. So it's absolutely necessary for us to understand that we have to work in other environments. That's what this is all about.

Now back when I was in they didn't have these, or they were greatly reduced. And this is a great thing, it's an honest effort to try and make sure we don't screw something up. But bare in mind that the United States Navy has been around 200 -- more than 200 years actually. We still have fish out there, we still have whales. I have not in the time I road on aircraft carriers, looking for submarines --

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yes, I did that. I didn't see any dead whales wash up behind my ship. I never saw the Navy go out of it's way to try and hurt anything in the ocean. They are very, very studious about watching out for things. I was directly involved in that.

I'm not here because I think I owe the Navy something. I'm hear about my own personal interest. I'm not here for every man and woman that is out there on a ship right now that does not know what it's like to get beat up out there. All of you that claim that you've got fishing boats out there, would you take a nice 23 foot skiff and go running through the Bering Sea this time of the year, to go from St. Paul to Dutch Harbor? No, you wouldn't . You'd pick the biggest boat that you can, they one that rides the best and most comfortable. And that's what we're doing with ships. We're training people how to survive an environment. And there's only one way to do that, there's only on way to survive combat. Train like you fight and fight like you train. That comes right out of the Navy. Thank you for putting up with me.

MR. MICHAELSON: Thank you very much. Anyone else? With that, like I said we are here until 8:30. We're going to take a recess. If anyone else comes along and would like to make a comment we will do that. If you'd like to make a comment just one on one with Clyde over here you can

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do that as well. And we're going to ask subject matter experts to go back to the poster stations in case people have thought of any new questions that they wanted to ask. Thank you very much.

(Recess)

GENENEIEA PEARSON

Commented as follows:

My name is Geneneiea Pearson. I've lived in Kodiak since 1941 and have observed the whales since that time. But what I'd like to say is, that I'm disappointed in this meeting in that you did not have an open meeting so that we could hear your answers to questions. I think that would have been helpful and we could hear what -- other peoples concerns are more than just these comments. Because a lot of people are shy about talking, like me.

The other suggestion I would like to make is that you have a civilian observer, maybe on or two on each of these carriers to observe for the public as to what goes on. So that there's an honest assessment of what happens. If you can come up with something out there, I know it's hard because of the ocean, you can't really tell what's going on. But I'm very concerned for the fisherman that are being replace -- displaced during the period that the exercises will be taking place. And I'm very concerned for the marine mammals that will be out there and will be

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attracted to the boats. Because I know the whales now a days come up to the boats. I have fished myself for many, many years. I know that they're trusting us now, which they didn't used to during the years ago. When they were slaughtering them out here, when the Russians were right off shore out here, slaughtering whales. We could see the fleet at night, I looked like a city out there. But I know that at -- after that slaughter was over the whales were very skiddiest. If they saw us they were gone. We only saw then once. Where as now they aren't afraid of boats and they come right up to the boats sometimes. So I'm very concerned about this whole process and I wish the Navy figure out another way of working their ideas out for anti-submarine warfare. I wish they would go somewhere else to do it. Thank you.

RICHARD COURTNEY

Commented as follows:

Hi, this is Richard Courtney. I live in Kodiak, Alaska. I'd also like to add on to my statement that I made earlier. And one of the biggest reasons I feel it's critical to come up here and learn, as a sailor is exposure to the harsh weather conditions that are up here. At one point in my Navy career, I was up off the coast of Norway and I had 70 knots of wind and 35 foot seas. There was millions of dollars of damage done to five amphibious

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warfare ships and a destroyer. We had no exposure up there and very few people ever got a chance to work up there. And by learning to come up here and work in these harsher conditions, you have a better understanding of what it takes to survive. Especially in a combat situation. You don't have to look back any farther than World War II, and look at some of the actions of what ships had gone through and how much better they would have been prepared if they actually practiced in foul weather instead of practicing in the calm waters off of Hawaii.

So that's why I think it's critical to come up here. I don't expect a complete understanding of everything, but I think it's real critical for the military to come to work as a team up in rough weather. And that's about -- basically all I've got to say.

MR. MICHAELSON: It is now 8:30, my name is Lewis Michaelson, hearing moderator and we have no one left in the room and we have gone back on recess [sic] to officially close out and adjourn this meeting. Thank you.

(Hearing adjourned)

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TRANSCRIBER'S CERTIFICATE

I, CLYDE PASTERSKI, hereby certify that the foregoing pages numbered 4 through 37 are a true, accurate, and complete transcript of Hearings held in Kodiak, Alaska on the Gulf of Alaska Navy Training Activities Draft Environmental Impact Statement/Overseas Environmental Impact Statement transcribed by me from a copy of the electronic sound recording to the best of my knowledge and ability.

____

Date Clyde Pasterski, Transcriber

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I.7.1.2 ANCHORAGE

PUBLIC HEARING ON
GULF OF ALASKA NAVY TRAINING ACTIVITIES
DRAFT ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT
January 8, 2010
5:00 p.m. - 8:30 p.m.
Fairview Recreation Center
Main Gymnasium
1121 East 10th Avenue
Anchorage, Alaska 99501

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out the comment sheet that you should have received when you came in here tonight. You can turn it in tonight or mail it to the address provided on the form. You an also log onto the project website that we provided and you can provide your comments electronically if you would like.

Keep in mind that all comments should be postmarked or received by January 25, 2010, in order to insure that they're considered in the final EIS.

So it's now time for the oral comment portion. Again, if there's anyone who wishes to, please just fill out a card, hold up your hand and Allison will come over and do that. I have four simple rules for the comment portion. First, please speak clearly and slowly into this microphone at the lectern over there. That's one of the ways we make sure we get your comments verbatim, recorded, and become part of the transcript and part of the official record of comments made on the EIS. Just give us your name and your organization you represent, you don't need addresses. Second, each person will have three minutes to speak. Third, if you prepared a written statement you can turn it in at the registration table or you can read it out loud if you can fit it into the three minute time limit. Fourth, please honor any request that I make to stop speaking when you've reached you three minute time limit. In order to make that easy for you to do, I have two signs with me

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tonight. One of them lets you know when there are 30 seconds left, that allows you to comfortably wrap up your comments. This is the one that I hold up when you've reached three minutes.

We've used this same format and will use it at all the meetings, however give that we be here until 8:30 for this portion of it and I only have two comment cards at this point. What we do usually and what we did at Kodiak last night, is I'll take everyone's first time for three minutes and then if you want to have a second helping, you can come up again and speak again. But I want to make sure we get through everybody first -- who had a first opportunity. So, with that the names that I have, Tom Lokash had asked to go first.....

MR. LAKOSH: Let him go second, because I'd like to take my additional three at that time.

MR. MICHAELSON: You know, I was going to suggest that actually. I'm totally with you on that, good deal, good deal. So, actually Wade Willis if you would go first. All we need to get is your name and any organization. Thank you very much.

PAUL D. KENDALL

Commented as follows (prior to start of hearing):

My name is Paul, middle initial D, Kendall. I'm an Anchorage, Alaska citizen. And I just came in for the

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first time to see what you had. It's my first time to be at one of these and I found it to be efficient, professional, entertaining, and amenable. And all you people have been very congenial and professional.

Because you're in what they call the Gulf of Alaska up around Cordova, Kodiak and the entry to Cook Inlet, I'd really like to see you bring some type of studies on the tidal. I think it's a high tidal area and there are only so many tidal areas around the world. And I'm of particular interest between Cordova and the Cook Inlet. And when I look at the resources that you're going to bring into the inlet like that, the ships and all of those monitoring devices. I'd like to have you make your data available to the local communities in the event that they move to some type of tidal generation for energy for our residential sectors.

And when you consider the fact that a pound of water weights about 62 [sic] pounds, and you put that into a ten foot by ten foot by ten foot cube, which is equal to something along the lines of a UPS delivery van. That content of that van equals about 31 tons or 62,000 pounds. And if you were to bring that poundage on board a ship, in essence you could use that weight on just one van, which is a ten by ten by ten cube of water. You could use that as a counter weight to move down to push gears. And then if you

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release that water you can actually have crawler or water wheel turn to make electricity as you move the water out. And as you move that water out back into the ocean through a pipe, what will happen is you can displace the air that's in the pipe, and that air will push turbines. And if you close off the back of that pipe as you release the water from the front end of it, you can also as the water runs out it draws the air the other way into a vacuum and those air reversals will turn turbines. So, you in essence have a ship that can generate energy onboard, especially with the tides. And when you begin to look at those ten foot cubic capacities of movement in tide, the numbers are huge and astronomical. So, if you're going to come into an area like that, around Cordova and Kodiak and the Cook Inlet, I would think that there would be some type of a participation. And I think they're getting ready to start the meeting, so I think I'm going to -- no.

So, what I'm saying, when I look at the resources and the competency of your people who come into this area, I think you could bring to the people maybe a ship. And you could bring that in -- into the communities of Kodiak and Cordova and Seward, and maybe bring us a couple of extra ships and we could use those ships as power plants and the community could learn about waves and tidal capacity for generating electricity, which is clearly our next future.

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Other than that I think that's about it. Except well there's one more thing. I do think you should have a video webcam here. And that this gentleman which is -- gosh, I have to get my glasses -- the gentleman who's taking this testimony, Clyde E. Pasterski, I think you should furnish him with the money to have a webcam. And the way that should be done is that an individual should be escorted over here and asked if they'd like to make a video or a video and audio, or if they'd like to have a video from a distance and let them sit down and perhaps make their own little video. Because the writing is just too onerous. And I think that the children would like to do that. You get more involvement from the public and it's much more easy. And even if the communication were to go on at length, I think it could still be monitored and curtailed at appropriate times such as we have coming up now. Because I think they're getting ready to have a presentation. Thank you very much for what you're doing. And I love my America and I want it back the way old American values. Thank you.

WADE WILLIS

Commented as follows:

Thank you very much and I appreciate -- first I want to say I appreciate very much the Navy coming up to Alaska and allowing us to speak. We're a State that is very

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supportive of the military and we are very appreciative of your coming up here to talk.

My name is Wade Willis, I'm a biologist for the State. Been up here for 20 years. I have worked extensively in Prince William Sound and worked as a biologist in the Gulf of Alaska, so I know the country pretty well.

Some of the concerns I have are that the operation area is being conducted in shallow areas and shallow shelf areas. And certainly those are areas that are very critical habitat for our resources -- our fisheries resources in Alaska. And I've very -- also very concerned that the operation area is in the middle of critical for migrating whales. I don't really know if it's an appropriate operation area for the military to be conducting more -- it's more aggressive SONAR operations. I would hope there would be areas of the country where we could identify for SONAR work that would not put such a risk to a lot of unknowns with our migrating whales. Several are endangered that move through this area. And using visual sightings of whales is notoriously quite you know, inaccurate. And a lot of the whales like blue whales can be underwater for very long extended periods of time.

So, I'm very, very concerned that the military is proposing 42 days in the summer. And as a guide I can tell you there's 90 days in the summer up there. And that's

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you know, about half of the summer you're proposing of possibility being out there conducting SONAR operations. That's a real concern of mine. I would hope that possible high use times for migrating whales could be avoided. And that possibility SONAR operations could be minimized as much as possible for the Alaska operation area due to the potential risk.

I'm also very concerned with the amount of toxins, the hazardous waste that's being proposed -- 10,300 pounds. I, particularly am very concerned with persistent organic pollutants which are really going through the roof in Alaska due to multiple sources. Our fisheries, our halibut, and long lived fishes like rockfish and lingcod are being limited in our ability to eat now because of persistent organic pollutants. And our marine mammals are showing extremely high levels of persistent organic pollutants.

So, I wasn't able to figure out how much of the 10,300 pounds would be POP's, but I would encourage the Navy to try to mitigate any POP discharge. Thank you.

MR. MICHAELSON: Thank you very much. Mr. Tom Lakosh. And he's requested that he take his second helping back to back. But since I have no other cards, I'm fine with that request.

TOM LAKOSH

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Commented as follows:

My name is Tom Lakosh, I'm an Anchorage -- Anchorage resident. But I've long been user of Prince William Sound resources and we appreciate your service, but find that some of the responses to my earlier inquires quite distressing.

First of all with respect to mitigation methods, I fell it's wholly inappropriate to use the standard of impairment -- hearing impairment of whales as the necessary triggering standard for abating operations. Clearly the standard should be, and adverse behavioral impacts upon marine mammals and should be the standard to cease operations and for avoidance of those oper -- of those species.

And when I inquired as to why we wouldn't schedule the training sessions for periods outside the migration of whales, towards winter obviously. And outside of the migration paths, I was told that, oh well stuff breaks in Alaska winters. Well, we know that. We're out there, I've been a fisherman in the wintertime. You know, freezing spray, et cetera, et cetera.

And if you guys don't want to build equipment to protect your 49th state, you might as well just take your stuff elsewhere. You know, bring up stuff that will work, do it in the wintertime outside of the migration seasons,

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and outside of their migration path. Establish a standard of avoidance of populations based on impacting behavioral standard of practices of the marine mammals. Set up a preliminary observations both with passive SONAR that is sensitive to the vocalizations of the whales, to find out where they are. Conduct your operations away from them to the greatest extent possible.

We realize you need areas to train -- designated areas to train to keep out other commercial activities and vessels and so forth. But that area should be large enough so that you can avoid populations, take adequate time to you know, preliminary you know, pre-scanning of the areas where you plan to train and make concerted effort to avoid population densities to the greatest extend practicable.

One other method that is -- that Alaskan's have learned is that you can also call some of these species you know, particularly pilot whales and orcas to your presence by just fishing for black cod and halibut. So, you can call those species out of your test area by hiring a licensed commercial fisheries, ones that have had particular problems in the past, given that the marine -- the whales recognize their hydraulic sounds. And bring the whales out of harms way. Pay the fisherman to feed the whales while you happily ping away out in the Gulf. There are a number of methods here that you haven't fairly

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considered, you haven't done your job. You could do a better job, you could bring better equipment to operate outside of our peak summer migration and commercial fishing seasons. And you know, and a much less impact on our resources. You're here to protect us, not only our hides but our resources. When you talk about Alaskan's, our resources are apart of us. We live in subsistence, we live in tourism, we live in commercial fishing. That's our livelihoods, and that's why a lot of us come here to Alaska is to experience the wild, an undisturbed wild. And we don't need you know, disturbances that we clearly know are going to harm our interests. We want you to protect us as whole people, not just part of us. And we want you to bring the proper equipment, make the proper preparations, and accordingly appreciate the resources and particularly marine mammals the way we do. Thank you for this opportunity.

MR. MICHAELSON: Is there anyone else who would like to speak tonight?

UNIDENTIFIED VOICE: (Indiscernible).

MR. MICHAELSON: Yeah. I just want to make sure I've got everybody who had a first -- anybody else who hasn't had a first shot yet and wants to come up here? Yes sir, go head.

PAUL D. KENDALL

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Commented as follows:

My name is Paul, middle initial D, Kendall and I'm an energy activist. And as far as credentials go, I'm neither accomplished, degreed, or published. And I came here primarily out of curiosity and because of my -- I love the Navy, and I love the military, and our services and I think they're one of the few groups in our society that is being taught to represent us all as one society, America.

But I'd like to make some suggestions to you. These will most likely be outside the scope of your EIS, but I'm really not sure what the scope is. In my world anything that contributes to a better society is a good thing and should be considered. So, I came here because I'd like to have you consider having some type of assigned energy -- an energy science technology officer, team, or department that travels with these fleets or groups of vessels. And I'd really like to see an actual vessel itself as designated as an energy science technology with each group of ships or vessels. And I'd like to see you gathering a tremendous amount of data in realtime, ice, tidal, temperature, wave, content, body contents, currents, et cetera.

I just made a brief list of the things that you could do to contribute to our society. I think that you come to. I'd also like to see you, because you're in such a high tidal impact area, and there's so few tides I think around

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the world. I'd like to see you check your mothball fleet to see if you couldn't bring some type of a vessel to Homer, Kodiak, Seward, and Cordova. Something that has been mothballed that the community might be able to use.

I'd like to see you come up in the winter so that we can get some ice data. And I'd like to see you -- let's see, consolidate your -- I forgot what that was about. My premise this, I'm convinced that we're going to be moving very, very quickly into water partnerships. And that there is no such thing as water ladies and gentleman. It's all hydrogen compounds, or contaminates, or particulates, or partnerships. And if I'm not wrong about this, we're about to see a whole new era of energy. And that energy is going to revolve around magnetic fields and the hydrogen atoms. And when I see these bodies, these vessels of tremendous capacity, intellectual and data rich with being able -- technology, with gathering -- data gathering rich devices, it would seem to me that it would be more interactive in those bodies of water for multiple reasons.

I don't see how we could disconnect energy from anything. I have come to conclusion later in my life that most of the things you see are manifestations of energy. And our children within the next decade are about to learn that connectivity and with that comes responsibility for our balance and our in harmony. And that cast is huge, and

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the Navy has, I think has a fundamental fiduciary obligation to those creatures in that ocean and those communities along the way. And in closing, I'm coming to an end here, I'm opposed to the War in Iraq and I'd like to see all of my troop and all of my people come back to America and begin to rebuild our values that we all share in common and quality of lifestyles and family lives. Thank you.

MR. MICHAELSON: Thank you. Anyone else who has been inspired to speak? And Allison will catch you on the way out to fill out a card, okay? If not then you can come up for a second time. Thank you.

WADE WILLIS

Commented as follows:

Thank you again, my name is Wade Willis. And I want to impress upon the Navy the opportunity they have to help the scientific community acquire baseline data. It is a critical, critical component to our long term stability as a nation and as a State that we understand, as best as possible the current populations of animals that we have, the migration routes, things like that. This is an incredibly good opportunity for the Navy to address that and to support the scientific community in ways maybe beyond the EIS evaluation. But to say you know, if we're going to have MOA we're also going to support some science

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research beyond this EIS listing, you know. Just to say that that's an important national strategic point as well. That you know, in exchange for our maybe degradating the environment a bit, we're going to help the State and the scientific community know more for the long term benefit, overall benefit may be far greater from the science we learn than the small amount of environment degradation that occurs due to our operations out there for 16 to 41 days a year.

So I really hope the Navy will look really hard in helping the scientific community which is dramatically under funded, to acquire some of that baseline data. Especially in the areas that you're getting ready to operate. You know, the Gulf of Alaska is some of the most difficult areas for the scientific community to get funding for. So that's mainly what I wanted to say on my second round. Thank a lot you guys.

MR. MICHAELSON: Anyone else ready for a second -- okay.

MR. KENDAL: I think these moments of gathering are very, very special. It's my -- pardon?

MR. MICHAELSON: Sorry, I missed your name.

PAUL D. KENDALL

Commented as follows:

Oh, my name is Paul, middle initial D, Kendall.

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I think these moments are very, very special that we gather. And the reason that they are is it allows us a collective view of diverse opinions and unknown moments of not really going where everyone's at and allows us to reflect on our own values and ideas. And I wanted to thank you for your ability to come around again. In today's world we're seeing a tremendous repression of the ability to collectively communicate in some unhurried fashion. Some contemplated mode, the more complex our problems become in coming back to some greater understanding of balance is going to require a slower thought process due to the complexity to find a resolution.

In having you allow a person to get up and have a fair share of time and then to come back around and circle, I think that's admirable and appreciative thing that deserves recognition. And I just can't stress enough that you should have these moments on camera, on video to share with the rest of the world. So that you can set the bar and show other people. It's very important, I think that all of our data be videoed on the internet. Something that's very magnificent that's happening there.

And the reason I actually came up here was to -- I hope that you'll chose Kodiak, and Homer, and Seward, and Cordova, and those places to come in with a couple of ships. There is something magnificent and inspirational

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about those ships and the men and women that represent some of our more fundamental values that created this great country, that I think are immeasurable in the long term. And naturally you won't forget the energy science technology designated vessel to share with the community.

And if I might -- one more thing real quick. To give you and idea of why I'm here to give you -- there are things moving very, very quickly sweeping across the, I think the entire plant, but especially America. There are over 40 manufactures of electric vehicles that are reaching in the next three years. In addition to that the Chinese have announced they are going all electric bicycles. And when you look at things like that, within three years every seven year old child in India, China, and Asia is going to know more about the lithium ion battery and electron (indiscernible) they ever learned. And when you put that into the internet on such a worldwide scale the bookends of those impacts, then pour tens of the times we have never seen before, like an industrial revolution. This new sense of awareness that is now coming through energy, responsible energy management. It not only brings us a new individual freedom and will which we've never seen before. Because it's heading home and transportation. But they pour tons of new degrees of awareness. So, when I see these fleets that represent large amounts of energy in partnershipping

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and transitioning with the water bodies, the great water bodies. Which are really hydrogen. I think these are moments that I hope that you'll discuss amongst yourself -- maybe more than you are. And thank you again.

MR. MICHAELSON: Anyone else who hasn't had a chance to speak tonight? If not, as I said we're going to go into recess now. We will still be here until 8:30. If anyone else comes forward in that time we will be happy to take their comments, or if someone wants to say something but doesn't like to doing it in front of a crowd people, again Clyde is available to take your comments orally, one on one. Keep in mind again that you do have the January 25th deadline for any written comments. So we're going to go into recess now. Thank you.

(Recess)

PAUL D. KENDALL

Commented as follows:

Well, my name is Paul, middle initial D, Kendall. This is like my fourth time I think here on giving testimony. It's my first time to be at one of these. And I just wanted to note for the record that your people have been very accommodating and professional and amiable. And they've made me feel very comfortable. And sometime those little moments in our everyday events go unnoticed and I just wanted to give notice to that.

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And also your presentation allowing the individuals to come back up after a second comment, I think that really needs to be recognized. These meetings where we gather as a community, as a collective group are very important. They need to be unhurried and plenty of time. But more importantly sometimes when you take testimony from such a diverse gathering, you will actually learn things onsite in multiple orders or reviewing your thoughts. And it's important, I think to allow that person to have a second opportunity to come back up and reflect on a prior position of change or some new insight. And I thought that was really wonderful of being able to have that little nuance.

Other than that you might have a little time clock up there with a large six or ten inch LED that -- where a person can see their time, and that way a person can have the dignity to shut themselves down when they're talking, which gives them more -- it empowers the individual to have more capacity to develop their personality and knowing the responsibility of time limit -- time limitations on talking. Anyway, thank you very much. That's it.

MR. MICHAELSON: This is Lewis Michaelson. It is now 8:30, we have not had anyone else present themselves asking to speak orally on the record here in front of the panel. So we are officially concluding, adjourning this meeting at 8:30 on January 8th. Thank you.

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(Hearing adjourned)

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TRANSCRIBER'S CERTIFICATE

I, CLYDE PASTERSKI, hereby certify that the foregoing pages numbered 4 through 36 are a true, accurate, and complete transcript of Hearings held in Anchorage, Alaska on the Gulf of Alaska Navy Training Activities Draft Environmental Impact Statement/Overseas Environmental Impact Statement transcribed by me from a copy of the electronic sound recording to the best of my knowledge and ability.

____

Date Clyde Pasterski, Transcriber

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I.7.1.3 HOMER

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PUBLIC HEARING ON
GULF OF ALASKA NAVY TRAINING ACTIVITIES
DRAFT ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL
IMPACT STATEMENT
January 9, 2010
5:00 p.m. – 8:30 p.m.
West Homer Elementary School Gymnasium
3719 Soundview Avenue
Homer, Alaska 99603

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previous two we've held in Kodiak an in Anchorage, we've also got them coming up in Cordova and Juneau. Is that after everyone has had their first chance, if you have something else you couldn't fit into the three minutes, I'm going to ask you to come up for second helpings if you want those. But I do want to get through everybody first. Okay, and their first three minutes, that everyone's had that opportunity. So that's how we'll handle it tonight.

So, I believe Allison is about to bring me up a few more. Also, so that you can be ready when it's your turn, I'll try to occasionally read ahead what the names are that are coming up. So that you can be aware of that and be ready to come up to the microphone.

UNIDENTIFIED VOICE: (Indiscernible).

MR. MICHAELSON: Yes, that is correct, thank you. All right. So, the order that I have here is Paul Seaton, followed by Roberta Highland, Robert Archibald, Olga von Ziegesar, and Sue Christiansen will be the first five. So -- please Mr. Seaton -- and I don't need an address or anything like that. If you'd simply state your name and any organization that you representing, I'd appreciate it. Thanks very much.

PAUL SEATON

Commented as follows:

Well thank you. I am Paul Seaton, I'm the State

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Representative for District 35, covering Homer, Seward, and the outer Kenai Peninsula.

I received comments of concern from continuants at the initiation of the last training exercise. These concerns were mainly centered on the potential effects of new -- frequency SONAR on whales.

I thank the Navy for scheduling this meeting here in Homer for the convenience of our local residents and I really appreciate it. Alaskan's are concerned about the effects of copper in fresh water and marine environments, especially on fish. This includes reduction of copper used in bottom paints in our fishing fleets, and also we're currently undergoing a review this month of -- by the Alaska Department of Environmental Conversation on the aquatic life standards for copper. As those have been seen -- the current standards have been seen not be adequate to protect juvenile salmon for their homing and responses to avoiding predation.

So, I'm concerned that on table 3.2-22 on page 3.2-32, that the sonobuoys that are going to be used will increase the amount of copper discharge from the current level of 38.1 pounds to 2520 pounds under -- that's Alternative 2 versus the No Action Alternative. And the increase of copper from eight pounds to 540 pounds. And that first was copper thiocyanate, and so I would like to request that the

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Navy look at analyzing the use of a explosive charge to destroy those sonobuoys that does not incorporate those amounts of copper that would discharge into the Gulf of Alaska.

And so I appreciate that, I appreciate the fact that you are looking at the affect of mid-range SONAR on the whales, as that is a prime concern by my constituents. I don't have -- although I have a degree in biology, whale interaction was not that -- my expertise. So, I would appreciate you continuing to look at that. And thank you again for having this meeting here in Homer.

MR. MICHAELSON: Thank you very much. The next speaker is Roberta Highland.

ROBERTA HIGHLAND

Commented as follows:

Hi, I'm Roberta Highland. And I just found out about this meeting by reading the Homer News on Thursday. And I've always got issues when such a large amount of effort is put into having public meetings, that the people that are putting it together -- probably one idea is to contact any City Clerk office in the area that you're holding and they can give you the times, because really what would have been helpful was to have had this in the Homer News the week before because it's Saturday. And I just saw it on Thursday. It's just one way because of the cost and the

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work that goes into it. So, that would be my suggestion.

I always like to ask people to pretend that you're a whale, or a bird, or a fish, or other mammals when any of these decisions are being made. And just take it from that perspective so we're not doing it from our frequent human ideal and so anyhow that's just one of my ideas. Is really take that -- it sounds silly, but kind of take it seriously. And there are the decisions maybe change because of that.

And active SONAR sounds a little problematic, for sure. Underwater explosives sound problematic, and birds and fish dying sound problematic. I understand that you are doing a really good job on making sure that the least amount of environmental damage is done. But it's one of those consequences that happens no matter what.

I'm also wanting the carbon footprint and pollution considered. And I don't know if that's being given the amount of consideration that it needs to be. Because every time a ship goes, an airplane takes off, any of the things that will occur, there is a carbon footprint and there is pollution that happens with that. And that needs to be something we really strongly take into consideration these days. And I'm always wondering if there's not a way of doing it more frequently in a -- I'm trying to think of the word, where you are pretending you are doing it. And I

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know that -- oh, 30 seconds, okay.

I'm wondering about the time of year. Summer is when the mammals, and fish, and bird activity is highest and that seems to be a poor choice of time for these exercises. And I'll quit because my time is up. Thank you.

MR. MICHAELSON: Thank you. The next speaker is Robert Archibald.

ROBERT ARCHIBALD

Commented as follows:

Good evening and thank you for coming down. Even though it was short notice, we're happy to see you here. And I'd just like to reiterate on what Paul said, that we've had a big battle going here with the androus fish stocks and the effects of copper on them. And it's proving that they are kind of dizzying their navigational systems.

So, the timing of these exercises -- if they're -- you know, if they're going to be at the same time that we're having fish stocks coming back into this Gulf of Alaska and heading up to the Bearing Sea and Bristol Bay. And if this has any significant impact or increases any kind of chemicals in the water, copper be what it is, I don't know what you're using for munitions these days. I would have some problems with that at that particular time of the year.

I would hope that if they doubled the length of these

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exercises they would take into account the time of year for migrations. And I would certainly hope that NMFS and the U.S. Fish and Wildlife Service would have a significant impact on that, as far as giving the Navy adequate information on that.

Because I've sailed in and out of Prince William Sound a lot and it's going to be an area where there is an awful lot of mammal interactions. I so I just hope you sharpened your pencil on that one. And we don't want to see a whole lot of destruction out there with our fish stocks. So, thanks for coming.

MR. MICHAELSON: Thank you. Next speaker is Olga von Ziegesar.

OLGA VON ZIEGESAR

Commented as follows:

Hi, my name is Olga von Ziegesar. I am the Director of Eye of Whale, a nonprofit research group here in Alaska. Our mission is to study and protect the humpback whale and to educate people of the status and the health of the species.

We've been documenting the population of humpback whales in Prince William Sound and the north gulf coast of Alaska for 30 years. In 1966 the humpback whale was put on the endangered species list and protected and protected by the Marine Mammal Protection Act. In the 30 years of my

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study I have seen the population of the North Pacific humpback whale go from 3000 to 20,0000. About 5,000 of these whales migrate up into the north Gulf of Alaska to feed. This area includes the Cook Inlet, Kodiak, the Barren Islands, Kenai Fjords, and Prince William Sound, and the waters in between.

It is known that military SONAR testing is very damaging to the soft tissue in the marine mammal skulls and organs. These effects can cause brain hemorrhages, mass stranding, and even death. Mid-frequency SONAR has been proved to be very destructive to whales diving and feeding behavior. They will avoid the intense sounds by surfacing too quickly and causing conditions similar to the bends.

Now you may think that the military tests would be harmless if they were done in the winter or slightly off season, and not during the summer months when the whales are definitely most abundant in these areas. We are now finding that many whales stay in the northern waters during the winter to continue their feeding. Hydro phone arrays hung from buoys in the Gulf of Alaska have recorded whale songs and calls during every month of the year.

You will say that your plan is to have observers aboard to watch for whales. When they are present the testing will be ceased. Marine mammals can hear for many miles underwater. And from the deck of a ship a whale blow

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can only be seen if it is within a couple of miles. For these reasons it will be impossible to avoid effecting the whales and other marine mammals during any time of the year in the Gulf of Alaska.

Finally, the humpback whale population is recovering to healthy numbers. And now the Navy proposes to endanger them with intensive SONAR and explosives. It seems to me that we must change something if protecting our country means sacrificing the whales. Thank you.

MR. MICHAELSON: Thank you. I'm going to read a head again so that you know where you're coming up. Sue Christiansen will be next, followed by Amy Christiansen, Whitney Lowe, Don Lane, and Elise Wolf.

SUE CHRISTIANSEN

Commented as follows:

I to want to thank you so much for this public process. I thank you for your service to the United States and all of you in your professional roles, your expertise, your commitment to science, and research. I just found out about this today as I was flying in on Era on the same flight as all you guys. So, I'm glad I was able to be here. And what I remember, I think it was about five years ago the Navy was doing research off the coast of New Zealand on SONAR -- on new acoustics. And maybe you guys -- are you familiar with that? I heard about this from NPR

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and I've thought about it after I got off the plane this morning. But there was like a hundred whales that breached [sic], and it -- you know, it started out with about 20 and they tried to figure out what was causing the problem. And it turned out after several years that it was demonstrated or proven that it was the new acoustic SONAR research that was going on that was effecting them.

And I just don't want to see that happen here. And I know that everyone involved with the Navy or no one in the Navy wants any of our marine animals to be injured in any way or you have a good intention as well, and that you are doing the best of your -- to your abilities to protect our nation. And have the highest good in mind for all species. And I would just say, my feeling at this time is I think it's a little early for us to be doing this kind of research -- or you know, the games or the activities that you've presented happen here. And I support no action alternative at this point. And I'm not sure I support the research for SONAR, if it has the effects of breaching [sic] whales or that kind of thing. Okay, that's it.

MR. MICHAELSON: Could you state your name for the record?

MS. CHRISTIANSEN: Sue Christiansen.

MR. MICHAELSON: Thanks.

MS. CHRISTIANSEN: And I also would just underline as

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well as what Senator Seaton said about the chemicals.

MR. MICHAELSON: Okay. Thanks. Next speaker is Amy Christiansen.

MS. CHRISTIANSEN: Beaching, yeah did I say breaching. Beaching, yeah beaching whales. Did I say breaching?

MR. MICHAELSON: You did, thank you.

MS. CHRISTIANSEN: Okay, sorry.

MR. MICHAELSON: Amy Christiansen.

AMY CHRISTIANSEN

Commented as follows:

My name is Amy Christiansen, I've lived in Homer -- in and out of Homer for years. But I have some real questions for you guys that don't seem to be addressed, as in how far does the SONAR blast travel? How loud is it 10 miles away? How loud is it 200 miles away? What happens when it comes in contact with some shelf or something? I mean that kind of information, I don't think we really have.

I heard a couple people state that we don't really know that much about marine mammals. We really don't. And for me, just from my heart SONAR -- just discharging SONAR for -- I mean, I would really want to know better reasons what science you're really trying to determine here. Or what is the whole weaponry involvement? I haven't heard a link there. I mean it's nice -- the posters are nice and I do appreciate the chance to talk about it. But I don't

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feel that it's worth while if you really don't know what we're studying yet to harm any marine mammals.

I also wonder if there's a lot of this training and stuff going on in California -- I know California and Alaska are different, and waters are different. But I always wonder why -- or I feel like, they can't get away with it in California, so they might be coming up to get away with it in Alaska. And I would really like that issue addressed. Because there's more population in California -- I mean, that part is real for me. And it might be ridiculous because it is different ocean you know, waves or whatever. But some part of that is real for me. That I would like that addressed.

And more notice would have been nice. And what else did I think? Oh, like in the book -- science is always a little bit lagging is what I found. If you take sea otters, which are mentioned in your environmental impact study, they are now listed, they are now -- critical habitat has been named. And that's not included in your thick book. And I'm sure that thick book took a long time to put together, but that's something too that is apparent to me. So, okay thanks.

MR. MICHAELSON: Thank you very much. Next speaker is Whitney Lowe.

WHITNEY LOWE

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Commented as follows:

My name is Whitney Lowe, I'm here from Homer, Alaska. And as with everybody else I'd like to thank you very much for giving us the opportunity to be able to comment this evening on this issue.

The Navy has a history of poor environmental stewardship including dumping high volumes of garbage into the ocean as well as toxic materials from explosive ordinance. And consequently it is difficult to believe what they might say about being responsible for the environmental impacts of these actions. And I can understand in these times of international terrorism, it's easy to throw out the fear card and say, that all these training exercises are necessary to keep our country safe. But trumping up peoples fears has routinely led to trading off the health and safety of human and other animal habitats because supposedly it was going to make us safer.

At some point it would be great that we might learn that the answer to making us safer doesn't result from bigger and more powerfully destructive weapons, nor from destroying our surroundings in the pursuit of those weapons.

At the present moment we have a situation of drastic concern with our worldwide fisheries and marine environment. A November 2006 article in the Journal of

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Science suggested that there will be virtually nothing left to fish from the seas by the middle of this century if the current trends of catastrophic fish populations declines continue. The primary culprits in this involve over fishing, pollution, and other environmental factors.

In the face of these issues it's totally irresponsible to increase military training, which involves toxic dumping and tactics known to kill and injure marine life. We should be going to great lengths to do anything we can, not only to mitigate the current practices that are causing precipitous decline, but to reverse this trend. To engage further military exercise in this region that is extremely rich in sensitive marine life is a blunder of epic proportions and represents incredibility poor judgement.

Our children and decedents in who's hands we are going to leave this incredibility injured world will be asking us, what were they thinking? We can afford to participate in this process, as it represents the epitome of irresponsibility and drastically poor judgement. Thank you.

MR. MICHAELSON: I'm going to go a head and read a head again, so those of you know when you're coming up. Don Lane, followed by Elise Wolf, Mako Haggerty, and Todd Hoppe. Don Lane please.

DON LANE

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Commented as follows:

Thank you for this opportunity -- thank you for this opportunity to speak. This nation's security is a big and the Navy has always played a large role in the safety and security of this country. It's a large part of the success that we all enjoy, and the freedoms that we all enjoy.

Having said that, I also understand the taxpayers investment in the tools of that security, it's important to practice. And it's important to understand those tools and it space and it takes time to practice. Having said that, this map -- the western boundary of the practice area or the football field, as it described to me goes up on the shelf in the Gulf of Alaska. When it goes from dark to light is right around 150 fathom break. Now to the west of that break and over to the edge of the yellow line, that is some of the richest bio-diversity in marine fish as you'll find any place in Alaska. I have spent years out there fishing, long lining, pulling pots and from Montague Island down to off of Kodiak. There are sharks, they are skates, there are halibut, there's grey cod, they are fish there that have air bladders, they are fish there that don't have air bladders. There's this huge bio-diverse population that are -- fish that are there year round.

My concern is; is that some of that water that's up on that shelf, it doesn't show on that picture, is 150 to 180

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feet deep. It's not very deep, there are -- Portlock Bank area up there that's 35 fathoms, off of Montague Island, sticking south of that island there's an area -- it's all less than -- some area of it are less than 200 feet deep. And imagine a huge explosion on that wall and you're over here. And you're a fish on the bottom. That's about the distance between the surface and the fish if there was an explosion. So what I would like to see, while I know you need the area to practice.

There was the comment about the sinking of the ship, as the target would be in 1000 fathoms. I think it's important to consider any ordnance or major explosions that were to occur during the practice should be off of that ledge into 1000 fathoms. It's not that far to move off that shelf to deep water. It's an area of maybe five miles to break from 180 fathoms down to over 1000 fathoms.

And the difference between being that wall to this wall in a major explosion and all those fish that are laying on the bottom and 1000 fathoms is a mile. So, that would be my only is; is that western -- that western shelf there is -- when you talk about environmental impact, there's a lot of environment there. And some of it is not very far down. And if it was considered -- you know, you could drop a bomb there in any of that area, that would be a mistake in some of those areas, because it's not that

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deep.

MR. MICHAELSON: Thank you. Next speaker is Elise Wolf.

ELSIE WOLF

Commented as follows:

My name is Elise Wolf. I'm on the Board of Directors for the Kachemak Bay Conservation Society. Thank you for being here. And I'll ditto what everyone else has said. While we appreciate you coming to Homer, I have some issues. And I'm surprised that you're not in Seward because as you can see this map shows -- there's a few tourism operators, whale watching companies that probably would have something to say to you that probably wouldn't be very nice.

And I think you missed them in your environmental impact statement. You also missed Glacier Bay, I mean if we're going to mimic the French like they do bombing Tahiti, why not hit Glacier Bay too? I mean you picked two -- one of the second most important areas for tourism in Alaska other than Glacier Bay for whale tourism. So, I'm just wondering why we're not in Glacier Bay as well?

Now the only reason that you can say that there's no significant impacts on whales is because you deny the impacts from seismic sound on whales. You have been sued over this. The Navy has been sued, and you're going to be

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sued again. Not by our little company or little group down here in Homer. But by the other big environmental groups, which don't bother to come to these because they are already planning suing you. So, we can just expect that. But that's why. And the only reason that you can deny impacts on whales is because you're getting your legal advice from the tobacco industry or some other company that -- lawyers that tell you that if you wait 50 years and say that there's no correlation long enough, then everyone will start to believe it, until the suits finally start coming in, and the death toll is high that you can't deny it.

Now there is one antidotal evidence and antidotal evidence that shows that beaching occurs with whales and all the other things Olga said. There are science professors around the world that testify on this all over the globe. So, this is something that you just simply are choosing to ignore. There's no evidence to the contrary.

The other issue that you have is -- well your timings bad. But as Olga says, maybe there is no good timing. Your mitigation is inadequate. Your cumulative impacts are inadequate. Climate change shows that Ph changes are proving to increase the conduction of sound in our oceans. That's completely absent in your environmental impact statement. So, you are -- your cumulative impacts, which would include climate changes and the impacts thereof, and

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these Ph changes that we now have evidence of are completely absent in your document.

And I'm going to go a head and wait until my time is up. Thank you.

MR. MICHAELSON: Thank you. Were you in here when I talked about second helpings?

MS. WOLF: Yes.

MR. MICHAELSON: Okay, great. So the next speaker is Mako Haggerty.

MAKO HAGGERTY

Commented as follows:

Hi, my name is Mako Haggerty. I run a water taxi here, but I think for this event I'll be an assemblyman, which I was just recently elected to assembly. So, I'll speak from that standpoint. So, I want to thank you for coming here. And the displays here are very informative and I really appreciate that. I learned a lot tonight.

I think this openness that we have here is really important. And what I seen on the -- not this slide here but the one that had the deadline for the comments to the EIS is January 25th, which gives the impression that the communication is going to stop between the coastal communities here and the Navy on the 25th. And I would hope and ask you, to please keep the communication open between the coastal communities beyond that deadline.

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Because there's going to the things that we learn and there's going to be things that you learn, and I would think that a healthy exchange of that information needs to continue beyond that deadline.

And you're all real nice people. And I understand why they sent you here, because you are nice people. And we like to you know, sometimes we can be confrontational and you've -- and there's a reason for that. Is because we get the nice people and then you go on and do what you're going to do anyway. And a lot of times those of us that live in these coastal communities get a little tired of that. And so, I guess the main point is let's please keep the communication open. If there's going to be things that are going to impact the various communities in this area, we would like to be made aware of that in a timely fashion. And also if you learn anything, please let us know what that is. We like to learn things here too. Anything about the whales or the environment and we learn things and maybe you'd listen to us too. Thank you.

MR. MICHAELSON: Thank you. The next speaker is Todd Hoppe.

TODD HOPPE

Commented as follows:

Thank you. My name is Todd Hoppe, commercial fisherman here in Homer and appreciate you gentlemen coming

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and giving me the opportunity of speak. I don't -- actually could you go back to that map please.

I also am concerned about the continental shelf also. I make a large part of my living along there, and I'm concerned that Don explaining of activity along there. And you know, if say there was going to be some impact with whales and it did -- it wasn't learned until later on down the line from your things. The commercial fisherman will be the one's that are targeted first. You'll come up and do your test for 14 or 21 days, and go and what not. And down the line if something does happen it will be the commercial fisherman that are blamed for it first. In my opinion and in my experience in what we seen happen with steller sea lions and what was proven scientifically afterwards.

And I'm also was here to make a comment on a comment -- public comment you had in Kodiak that your staff was maybe aware of, that there was a suggestion that you could hire some boats to do a fair amount of fishing to try to get the sperm whales to congregate in an area outside your boundary area. And that possibility could work. But what wasn't considered in that is who's going to be -- how do I want to word that -- there's not going to be anybody responsible for the quota. That's not going to come off the quota. It will be -- I'm not wording that right, I've

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got a fart in my train there. The fish will not be accounted for. Right now we're in a quota system, every fish -- every pound that's caught is accounted for. If you have boats fishing black cod to try to pull the sperm whales out of your area -- your test area, those fish aren't really going to be eaten and not accounted for out of the quota. And that's a reverse -- negative impact on the quota. So, thank you very much for your time.

MR. MICHAELSON: Thank you. Allison do we have anymore cards?

MS. TURNER: No.

MR. MICHAELSON: Is there anyone who has been inspired by any of the other comments that they've heard to take their first opportunity to speak tonight? And by the way, I should mention we are staying until 8:30, so I did hear a couple people say they hadn't heard their questions answered regarding a couple thing. I think that maybe in a couple cases that may be because you arrived just as we were starting this. So, when we do finish this portion we're going to ask the people to go back to the stations and answer more questions if -- at least until 8:30. So, keep that in mind. I'm sorry, are you going to speak?

MS. DULMA: I'll just speak from my heart.

MR. MICHAELSON: This is your first. Okay.

MS. DULMA: I don't have anything else.

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MR. MICHAELSON: You have three minutes, and just state your name.

MS. DULMA: It will just take me a minute.

BRENDA DULMA

Commented as follows:

I just wanted to share -- I'm Brenda Dulma. And I just wanted to share what my daughter said when I just said that there was potentially going to be testing in the area. And this was her one response, how can we think about this when we have genetically unique species in our area. And that was her concern. So, I just want to share that and that may have been addressed, but -- and since I'm late, I was spending time with my child. So, I just wanted to share that. That we need to consider the bio-diversity that we have in this area, it's very unique. And that needs to be seriously considered before you make any final decisions. Thank you.

MR. MICHAELSON: Okay, thanks. Yes, go ahead. Just -- we'll get you to fill out a card later. Just go a head and step up there.

STEPHANIE ZUNIGA

Commented as follows:

My name is Stephanie Zuniga and I am a teacher, third through sixth grade as well as I used to be sea bird biologist for Fish and Wildlife Service.

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And I also just heard of this last minute through a friend. And I wish I would have heard about it before because our kids right now are studying currents. And involved with that are current events and currents in our oceans. And last quarter we studied communication. So this is a perfect -- I'd love for them to have been here tonight. And if you want to stick around until Monday to come into the schools.

So I would love to share this with my students because it's -- this is their playground, this is their home, this is where they are going to grow up and fish, be fisherman and fisher women, be tour guides, be scientists, biologists. And this matters to them and they need to be involved in this process of public comment as well.

When I was a biologist I worked in the Gulf of Alaska on the Barren Islands. And that area -- it's highlighted, is within breeding grounds of sea lions, within the main feeding grounds of sea birds and humpback whales. I mean I remember standing on -- or sitting on cliffs watching our sea birds and taking down data and looking out you know, for miles away and just seeing humpbacks feed. I mean, 20 humpbacks feeding. And you know, I'm looking just -- just in that area where that yellow is. And I'd be concerned, I'd be really concerned and I'd want to know more before just going in there and doing that. Especially that time

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of year.

It was interesting to hear Olga's comments about that all times of year will effect these whales. But they are feeding, they are getting the bulk of their food in them before they head on south -- some of them. Thank you. Thanks for coming.

MR. MICHAELSON: Thank you. Anyone else? Yes, ma'am.

MS. WOLF: So is this the time to (indiscernible)?

MR. MICHAELSON: I'm just trying to exhaust.....

MS. WOLF: Oh, (indiscernible).

MR. MICHAELSON: .....anyone who hasn't taken their first time. No, I'm not quite there yet. Thanks. Okay, I think we are there. So, anyone who would like to step up and for another three minutes. And again, all I need is your name again. Thanks.

ELISE WOLF

Commented as follows:

My name is Elsie Wolf and I'm on the Board of Directors for Kachemak Bay Conservation Society. This is a continuation of comments previously started.

For the audience, there is significant research done by Natural Resources Defense Council on SONAR and seismic testing. So this is a good website to start going in and looking at links. Don't read the environmental impact statement and expect that to be completely fully disclosed

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information about seismic testing and impact on whales or fish.

This is highly concerning. And so let's talk about mitigation for a minutes. Because your mitigation suggests that you're going to power down and shut off your engines. Well we know from what's going on in the Arctic -- seismic testing right for oil and gas development, that it's highly expensive -- very expensive for a vessel of that -- of these sizes to power down. It's extremely costly. So what happens is in the mitigation plans, note p-l-a-n-s, plan, it says that you'll power down. But in reality, Shell for example has yet to power down, because it's too expensive. So they come back a year later when they do their reports to the National Marine Fisheries Service and have in an armful or basketful of excuses as to why they couldn't power down.

And then let's talk about the people that are standing on your decks. These three people or however many. Are they going to be standing on the decks when you're out in 25 foot seas? How about eight foot seas? How about a cloudy day? How about the dark? How about five hours of daylight in the middle of the -- of you know, December 31st.

These are unrealistic mitigation plans. Now you're talking about this in the middle of summer, and this is

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probably why. Because you have 18 or 19 hours of daylight. Still, we have experts in the Arctic Ocean right now, natives who cannot identify whales, and don't know the difference between a bearded seal and a ring seal. So, if Shell is having these problems and they're doing this all the time in these Arctic waters, then I'm not sure -- I don't -- I not -- I don't have any confidence that this is going to happen.

National Marine Fisheries Service rubber stamps this stuff all the time. The fact that we are coming up with no significant impacts concerns me greatly. There's one final comment that I have to say, in that there is philosophical and spiritual and ethical proof if you want to call it, or cultural standards among most human societies that place some level of inherent of value. And what I mean by inherent value, that is the value of a being outside of the human want and desire. And that is completely absent in your plan. Thank you.

MR. MICHAELSON: Who else would like to -- yes, go a head.

ROBERTA HIGHLAND

Commented as follows:

My name is Roberta Highland and I didn't have time to prepare comments because I did just find out about this meeting. Now that I've heard the comments of people that

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really know what they're talking about in this area. I have become very alarmed. And I going to ask a question later. And what I would really like to see you do is don't go back to your stations, I would prefer that you take questions from the audience so we can all hear the answers. And I would really hope you will do that since you spent all the money and time to get here. That would be -- that's our usual preferred way of being able to communicate with you.

So when we get to that point I am going to ask about ocean acidification. And I'm going to find out what the Navy is doing about ocean acidification. And now that I've heard, and I should have figured that out, that this is really a rich area. It's incredibly rich. And what in heavens name are we thinking of even having allowed these types of activities to go on before? I am now feeling like this is a very poor place -- I don't know where a good place is. But this is not one. So, I'm going to be going on record saying, I don't what this activity going on in this area at all.

And the other thing I'm going to bring is my four E's. And my four E's is something I would like to go national, state, worldwide when anything is brought up to make decisions on. Is economy, environment, energy, and ethics. And I am trying to get this being used as a template for

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every decision that gets made. And when I talk about ethics, I mean is it ethical for the animals, is it ethical for anything? Is it ethical for the worms? Of what we're planning on doing. But when you take into consideration economy, environment, and energy -- what the kind of energy use is being taken to do any of these things. And what the consequences are. I am trying to get that nation, worldwide and you could help. And I hope you think it's a good idea. Thank you.

MR. MICHAELSON: Anyone else who would like to come up? Thank you.

OLGA VON ZIEGESAR

Commented as follows:

I also have not followed -- my name is Olga von Ziegesar. I'm from Eye of the Whale and I study humpback whales in Alaska, in the Gulf, and in Prince William Sound.

And there are huge numbers that migrate along that shelf there. And we actually don't know exactly how they migrate out in the deeper waters, but there definitely been sightings of even Southeast Alaska humpbacks up there. So, they must circle somewhat before they go to their destinations to feed. I know that there have been a lot of studies on this SONAR. It's been going on for years off of Hawaii, off of New Zealand, off of California. The last Marine Mammal Conference there were lots of papers on the

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effects of the SONAR. It's hard for me to believe that we don't know more than you're saying. And I -- I'm afraid I haven't read everything on it. But, I would propose that there be no SONAR and no explosives. I can see -- I was told that it's important that the boats come in that close so that they can fly up into these interior areas. But, I still don't really see why we should take any chances with SONAR or explosives. Thank you.

STEPHANIE ZUNIGA

Commented as follows:

I just -- my name is Stephanie Zuniga. And I just want to -- and somebody made the comment of how ocean acidification or the change in Ph in our oceans is changing the way that sound carries underwater. And I -- this is pretty new for a lot of us. And I just wanted to suggest to those involved in making these decisions with our communities to watch A Sea Change, which is a movie, a documentary that is going to be here in Homer on Tuesday night I believe. I hope everyone here gets a chance to go watch that. It's on ocean acidification and there is website, a sea change.com I think it's called. And I would suggest that that be viewed by our decision makers, as an educator. Thank you.

MR. MICHAELSON: Thank you. Is there anyone else who would like a first or second chance?

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ROBERT ARCHIBALD

Commented as follows:

My name is Robert Archibald again. And I'm looking in this booklet here, and I haven't had much of a chance to look at your EIS. But, one thing that caught my attention is when they would power down. Is that going to be active SONAR at 1000 feet or 1000 yards? And again, shut it off at 500. And I don't know if that -- I do know that at 1000 yards it's still a pretty strong signal. And I don't know the research that's gone on there. But in a high population of mammals it seems a little ridiculous to me to expect to be able to be able to provide a safe environment at 1000 feet when you're going to shut them off.

And also, I'm a little disappointed in our State for not putting up a little more -- if we have industry come in with an operation like this, they would certainly be out there demanding a little bit better information to the public than what you people are providing. And I say that myself because I haven't had a chance to review that. And I don't think it's been out -- put out to the general public. And this operation that you're proposing, be it warranted for our national security, I think you know, I don't have a problem with that. I have a problem with the destruction with the environment. And I think everybody should have a little bit better knowledge of what's going

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here, so. And I think it should be processed through the State also. And I haven't heard anything about the State being involved, so. Thank you.

MR. MICHAELSON: Anyone else? If not a couple things from a process standpoint. Can we go back to the last slide again? My favorite slide, because it tells you how you can get involved.

Again, the close of comment period is going to be the 25th. There is a lot of information there, it's all assessable on the website. Obviously you can go to which ever portion of it, there are a lot of resources to be looked at. You can go to the ones that you are most interested in.

In terms of involvement, this is the public portion of it. It's probably worth mentioning that on a mail list and outreach to all the relevant federal, state agencies that was part of this EIS. That's probably worth mentioning too. And I can see a women raising her hand who made a request. I just -- I don't want to act like I ignored it. We have a format that we're using for the past meetings, this meeting, and future meetings. It does not involve a town hall type meeting. So, I'm going to go into recess and allow the people to go back to their poster stations, unless someone has an additional comment who hasn't had their second helping yet. All right. So, would you like

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to make a comment? All I need is your name.

MS. FEILER: Linda Feiler. Before I came I didn't know about all the.....

MR. MICHAELSON: Can you pull the mike down so we can hear you? We can't hear you.

LINDA FEILER

Commented as follows:

Sorry, Linda Feiler. Before I came I didn't know about the inner bombs that were going to be dropped, the missiles, the gun shells, the small arms, the pyro flares, the dyes, the expended materials, the hazardous materials. I didn't know a lot of it, and most of the community doesn't know a lot about it because like everything else, you come into the community, bang-o we have these meetings. Nobody ever gets their questions answered.

If we have questions and we want them answered, that's why a lot of us come here. You know, because you're the ones who has the answers. I wanted to know how many pounds, how many bombs, how much toxic material is going into the water. You've done this for 40 year for 14 days, 40 years you've done it in various parts all over the United States. And I think most of us want to know where we call to get an answer because it's going to be in the newspaper. And we're going to have a dialog with ourselves through the radio station and we want to know were we call

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and where we get answers. Who's going to answer our questions before the 25th?

MS. HIGHLAND: A phone number, that's what I want is a phone number.

MS. FEILER: Yeah. A phone number, a name -- someone who's actually going to be there. And it probably should be 20 or 30 people there.....

MR. MICHAELSON: So far all of the questions I heard asked, I believe the documentation is in a narrative if you will avail yourself of it.

MS. FIELER: No. Because we already that. We already looked through the IRS [sic] and found out -- sitting with the expert here, that the answers were not in there. It doesn't say. I've asked all -- every single one of you already, how many, how many pounds, what are they made of, what are the bombs made of? I want -- we what, I'm sure because I know there's at least 10 of us here who believe the same thing. We just want answers, that's all. And we want to know how we can get answers. And if we know that we're not going to be given answers, that is going to be highly publicized. So, please let us know who will answer any questions we have before the 25th. Thank you.

MS. HIGHLAND: And a phone number.

MR. MICHAELSON: Would you like to make a second comment?

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MS. DULMA: Yes.

MR. MICHAELSON: Sure.

BRENDA DULMA

Commented as follows:

I'm Brenda Dulma, very concerned citizen. I pick up this beautiful image of a sea anemone on the front cover. And I heard an amazing story at our museum the other day. We had a -- so my question is, what is the impact of this testing on the oceans invertebrates? The story I heard was in our own museum we had a sea anemone that hasn't opened up for four months because one fish is harassing it. So, if this is the response to an invertebrate in a very safe environment, that a fish is harassing it. What are the studies on all invertebrates with this kind of testing? So, my questions is, how are the invertebrates responding and other micro-organisms that we have no impact in this web of life? So, my question is, for my third time, what are the impacts on the invertebrates and micro-organisms in the ocean habitat from the testing? Thank you.

WHITNEY LOWE

Commented as follows:

My name is Whitney Lowe. And just a one other -- couple other things I want to add in addition to my earlier comments. I want to mention you know, it was brought up too that there's been a good bit of research done with

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seismic testing in some of the marine environments around here. And the oil companies have actually found that there's a possibility of residence for seismic testing up to 500 miles in some areas. And I know a lot of the focus has been on what's going on with certain marine mammals, such as the effects on whales. But the other thing I would ask you to really think about is that nobody is also taking about -- the whales aren't the only creatures in the ocean and we don't know how this might effect sharks, fish, other animals that are not coming up and beaching themselves that are likely to be affected by this as well.

So, while there's a lot study on certain marine mammals, like whales the very fact that we know this is killing a number of marine mammals, would ask us to think, maybe this is also having other damaging effects on other marine life that we really don't know about it. Is this really a good idea to engage in it. Thank you.

MR. MICHAELSON: Thank you. Did I see someone else who have something they might want to say?

ROBERTA HIGHLAND

Commented as follows:

I just have to wonder you know, I was talking to everyone presenting and I think that we have come a long way. And that people just don't throw their trash in the ocean anymore they used to, hopefully. I think the Navy's

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probably come a long way, and they've hired scientists and they've hired environmentally conscientious people. But I still say, we are moving to fast at this point to just keep going. At some point the environmental impact has got to be totally important to each of us. And most important. So, I'm glad that there are better things happening all over the place. But I'm also worried -- what is your munition? What are you throwing into the ocean? I think I have a right to know. I mean is that a question of defense? Because if I know then some Arab might find out? To bad, I want to know what you're throwing in the ocean. And I have a right to know.

What the difference between D-U and agent orange? Okay. That's it.

MR. MICHAELSON: Thank you very much for coming tonight. We're only going to have a little bit of time left here at the poster stations. But, let's take advantage of what we have. And I've had -- did you not have your second chance?

UNIDENTIFIED VOICE: How.....

MR. MICHAELSON: We're not going to -- just to be clear. We're not going to do a town hall. If you have a comment I need you to make it there, it will be recorded on the transcript. If you have a question that you want to have answered tonight, I need you to go back to the poster

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stations. All right? So, I think that all you probably have is a question, right? Right. That's what I thought. Okay. So we're going to adjourn this portion of the hearing and go back to the poster stations. Thank you very, very much for your hospitality and asking us into your community, and we appreciate you coming.

(Recess)

GENEVA CRAIG

Ms. Craig was seated next to Ms. Feiler

Comments read by Linda Feiler:

Okay. I'm speaking for Geneva Craig, who is 91 years old. And this is what she has to say:

I believe in life. I do not believe in killing any living creature. The oceans are full of life. My reason for being a long time vegetarian is to avoid having any creature killed on my behalf. How could you practice bombing and not kill? I am strongly against any practice that will harm, stress, or kill in the ocean or on the land.

I once supported the military because I believed it would prevent death. But now I have seen that we need to mend our ways and negociate or learn ways to have peace. That was from Geneva Craig, who lives in Homer.....

LINDA FEILER

Commented as follows:

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.....and my name is Linda Feiler, and I live in Anchor Point. Unfortunately my brother has brain cancer and I told him I was coming to the meeting, and he wished me luck and said, it's pathetic that we even have to comment on issues like this. I believe that we've done enough damage to our food sources and enough damage to our environment, enough damage to our seas and land. And that I don't believe that it's necessary for anyone to practice harming something else, killing our food sources, or killing our wildlife in the name of the military. If you need to kill in order to help us, what good does it do? Thank you very much.

JASPER KIGAR

Commented as follows:

My name is Jasper Kigar, I live and work in Homer, Alaska. I'm very impressed with the U.S. Navy's presentation and importance that they're placing on protecting marine animals. And I'm confident that the U.S. Navy is doing it's best to protect marine animals in the area in any of its activities.

I understand after today that the U.S. Navy uses local fishing fleets and boat fleets in its war games as decoys and targets or for other purposes. And I would encourage the U.S. Navy to continue to use these fleets and to use more local Alaskan vessels in its activities in order to

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stimulate the local economy. Thank you.

MR. MICHAELSON: This is Lewis Michaelson, it is now 8:30 p.m. here in Homer. We have concluded and are adjourning the formal portion of the project -- excuse me the public hearing although we are going keep the poster stations open for a short time because there is a fairly large crowd here still asking questions. Thank you.

(Hearing adjourned)

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TRANSCRIBER'S CERTIFICATE

I, CLYDE PASTERSKI, hereby certify that the foregoing pages numbered 4 through 57 are a true, accurate, and complete transcript of Hearings held in Homer, Alaska on the Gulf of Alaska Navy Training Activities Draft Environmental Impact Statement/Overseas Environmental Impact Statement transcribed by me from a copy of the electronic sound recording to the best of my knowledge and ability.

Date Clyde Pasterski, Transcriber

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I.7.1.4 JUNEAU

PUBLIC HEARING ON
GULF OF ALASKA NAVY TRAINING ACTIVITIES
DRAFT ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL
IMPACT STATEMENT
January 11, 2010
5:00 p.m. - 8:30 p.m.
Juneau Arts and Culture Center
Main Hall
350 Whittier Street
Juneau, Alaska 99801

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written statement, and you may turn it in to the registration table or you may read it out loud if you can do so within the time -- three minute time limit.

Finally, please honor any request that I make for you to stop speaking when you reach the three minute time limit. In order to make that easy for you to do, I have two little signs here. I'll hold this one up when you have 30 seconds left of your three minutes, that makes it easy to find a comfortable place to wrap up. And then when we reach the three minute, I'll hold up this one. I think the meaning is pretty clear with that. Okay?

So we are now ready to begin with the first speakers. What I like to do is read several a head, so that you can get an idea where you're coming up in the rotation, so I don't surprise you when I read your name. So the five that I have -- I apologize in advance for mispronouncing names, it's inevitable. Greg Brown, Lynn Wilbur, Alex Simon, Andrea Doll, and Jan Christian, Cripton [ph], Crichton, who knows, I'm sorry. I'm sure she'll tell me when she gets up here or he does, it could be either. So again, Greg Brown please approach. And just keep in mind all I need is your name. I don't need address, serial number, or any of that good -- just a name so that we know in the transcript who was speaking.

MR. BROWN: Ready?

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MR. MICHAELSON: Yes.

GREG BROWN

Commented as follows:

Okay. My name is Greg Brown. I have no military experience, but I am a licensed commercial pilot. I'm also a licensed boat captain. And I've operated a little bit in Alaska. Live here in Juneau.

And although I'm opposed to this exercise -- I'm not comfortable at all with the analysis regarding the air pollution and the water pollution associated with it. My biggest issues is the Navy SONAR activity. I found it pretty questionable when I asked why this had to be done in one of the richest areas in the world for marine mammals and fish activity. And why it had to be done in May and June. And the response was, well for safety sake we -- that's the most calm weather for us to do that. And anybody -- all of us in Alaska, we go out in weather in November, December, and January. We seem to be able to get through it okay. So, I think that was a pretty -- that's not a very good comment in opinion.

I am very concerned about the whales. I make -- I do whale watching in addition to other activities here in Juneau. And I'm not at all comfortable that we really know what the effect of this -- the SONAR, this high intensity SONAR will do. Thank you very much for your comments and

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thank you very much for letting us make these comments.

MR. MICHAELSON: Okay. Thanks for getting us off to a good start. Lynn Wilbur.

LYNN WILBER

Commented as follows:

I'm Lynn Wilber. I just want it on the record I came from Sitka. There's quite a few concerned folks over in Sitka as well, couldn't make it due to the short notice.

I have quite a few concerns. Air quality is supposed to be 123 fold increase of emissions, including green house gas emissions. There's only going to be a 3000 foot window and then you're not going to consider. You think that these emissions, pollutants will disbursed through precipitation or dealt with. No mitigation plan.

I'm sorry, I support the no action alternative on that one. Expended materials, the pollutants involved in that are heavy metals, tungsten, which is toxic to marine life. Fluoride compounds, which is toxic. One hundred and fifty times the safe level of hydrogen cyanide, these are all from bombs, and sonobuoys and other training materials -- also plastics. I'm hoping people are following the issue we're having in the ocean right now with plastics building up in gyre, and taking pretty much over the Pacific.

That's a problem to me and I don't see that you've got much of a mitigation plan for that. I think you're 360

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percent increase on that one, in your alternative two. So, I support the no action alternative on that as well.

On fish you agree that there's not a lot of studies done with sound. There's a lot of disagreement exactly on how to approach, using controls. You mentioned Grey literature, yet you reference your own documents, and letters, and impact statements invalidating your -- no basically not much of mitigation as far as fish are concerned. And I can go into more detail later, because I'm going to run out of time. But I'm going to support the no action alternative where fish are concerned.

And marine mammals, this is probably where it's going to hit home for a lot of people. I too, am concerned about SONAR. Beaked whales are the most vulnerable because they're deep divers. And in the Bahamas in 2000 there were some expert witnesses that can attest to what happened there. I just don't think that in the Gulf of Alaska your Beaufort 3 conditions are going to be not be really good for spotting whales. Whale experts have made the comments that you really can't spot whales very well in anything over a Beaufort 1 in the Gulf of Alaska.

So, the use of onboard spotters, and you mentioned maybe possibility ariel craft if the conditions are right and if they have time, is how I interrupted your mitigation on that. I just don't think that's suffice. So, again I'm

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supporting the no action alternative. It seems like you've dismissed a lot of recommended mitigation's. You've got a series of them, you've got a lot of them you've dismissed. Including recommendations from NOAA. And I can go into that in a little more detail if we get to a second round. But I'm running out of time. So, again I support the no action alternative. Thank you.

MR. MICHAELSON: Alex Simon.

ALEX SIMON

Commented as follows:

Thanks for the opportunity to speak. So my name is Alex Simon. I did have a chance to speak with some of you before and one of the things that impressed me, you seemed like well intentioned individuals.

I think the reason why I'm supporting the no action alternative. Well there's several reasons. But one of the things, if we look at the history of the military in the United States, there's a long history of very well intentioned people concerned with national defense. Implementing programs that result in long term environmental health.

And so, before I lived in Alaska I lived in Utah. And some of you might be familiar with down winders. These are victims of above ground atomic testing in the 1950's. And so there's still people alive today who -- and I've met

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many of these individuals, who suffer from cancers and other effects. And I think you know, if you look back then we were facing you know, the Soviet Union. An adversary that was using weapons that were pretty much comparable to what we had, as far as technology. And that -- I think that was a case of well intentioned individuals, very concerned about national defense, like yourselves. And I worry about those mistakes being repeated.

Particularly, back then we were dealing with concerns of human life. I assume the bar is set lower for your concerns about marine life.

A second point is I think that geo-politics have changed substantially since then. Military realities that we're facing, really our main adversary at this point at least, I realize there are potential for others to come along. But, is Al-Queda, Al-Queda doesn't have a Navy. That -- none of our adversary's really have advanced Navy's. You know, I mean if we look at you know, Iran, et cetera. That we're spending as much now on the Military as all the nations combined. I really, I know, the case could be made better back in the 1950's that it was critical that such tests be conducted. I don't really think this is critical for national defense.

A third point that I would like to make. If we look at the local fisheries. There's many thing --

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unfortunately whether or not this testing is done, the fisheries, the aquatic life, they're already under a lot of stress. And so locally, of course the lands rising faster than the oceans, is that many of the local salmon runs apparently go extinct due to global warming. That there's already all kinds of problems. I think to step in and exacerbate those problems seems unwise. Okay. That's all I have to say. Thank you for your time and consideration.

MR. MICHAELSON: Then next speaker is Andrea Doll.

ANDREA DOLL

Commented as follows:

Well thank you -- thank you for giving me the opportunity. I am not a member of the military, although I've been a military dependent wife for over 30 years. My husband was a DESERON Commander that did exercises in the Gulf for as long as I can remember. And then I had the opportunity to serve the public as a legislator and was on the Military Affairs Committee.

So, I'm very interested in what's going on here tonight. And my suspicion is that this huge military machine is moving forward and it's going to take an awful lot to stop it. We have been in that no action alternative for some time, not using SONAR up here. But now the Navy wishes to go not only to one, but they want to go to two. And I am not quite sure just what kind of testimony you're

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going to hear tonight that will change this machine that's moving forward, to stop that moving and go back to the no action alternative.

I am very interested in hearing comments on that from the military and to see exactly what kind of effect this will have -- our testimony here tonight, on you. I think that is fairly much what I wanted to say on this. I did want to point out that while I was in the Capital I was mailed those circular things that you turn around and you can see what kind of whale you're looking at. When you tell me that the Navy is going to be trained on these watches, where they stand on the destroyer and they look out and they see some movement, and then twirl that little card around and say, I want to get to -- let me get to the control tower here and talk to you about this -- you know, I mean it's really pretty laughable actually.

So, I am hoping that by this testimony you will be able to show us what areas we will be able to have a real effect on when you start these exercises. I know there are some things the Navy must do, they have to do. And there's no give or take. But there are areas that there are give and take. How can we effect those areas, how can we really have that impact? That is what I would like to know and would like to get some kind of response on. Thank you very much.

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MR. MICHAELSON: I'm going to go a head and read ahead several names. Jan Crichton, Mark Anderson, Victoria, I'm not sure whether it's Dance or Banof [ph] or something else, and James Voelckers. Jan.

MS. CRICHTON: It's Jan Crichton.

MR. MICHAELSON: Say it on the microphone.

MS. CRICHTON: It's Jan Crichton.

MR. MICHAELSON: Okay.

JAN CRICHTON

Commented as follows:

Hi. Alaska already has a long standing problem and history.....

MR. MICHAELSON: Just pull it up to you so we can hear.

MS. CRICHTON: Alaska already has.....

MR. MR. MICHAELSON: Thank you.

MS. CRICHTON: .....a pretty long standing problem with leftovers from the military. All kinds of health and environmental issues where the military has been real eager to go in and do exciting new things. And then left and dumped problems and toxins for future decades to have to deal with. And the cost has been really high to all of us.

Also, Alaska is one of the last places that has a really viable, healthy marine mammal population. But they're stressed our. They're going to start experiencing

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problems, some of them already are. The pinipits and marine mammals are already going down in population, and we don't even know why. I think it's unwise to start shooting off active SONAR in their home waters. Especially during the summer months, which are very critical to them for feeding and everything. We have a short summer, they need that. They need to be uninterrupted. I would have to support the no action alternative simply because it does not include any active SONAR, and that's the thing that concerns me the most.

We know that it has already caused problems off California and I don't think the negative impacts that have been happening there have even been researched. It's not a time for us to turn around and start doing this in Alaska waters. I think the problem of potential impacts on marine mammals is not acceptable or reasonable given the perceived need to these repeated active SONAR exercises when I don't really see any good reason to do it. That's basically it.

MR. MICHAELSON: Thank you. Mark Anderson.

MARK ANDERSON

Commented as follows:

Yeah. My name is Mark Anderson and I am also in support of the no action alternative. I find the analysis has overlooked, and I think made some incorrect conclusions. Cultural resources, native people, and

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actually all people of Alaska consider our wildlife a cultural resource. So, I think if you are having an effect on wildlife you are effecting cultural resources.

Socioeconomics, a large developing industry in Alaska is marine mammal observation. Also, bird observation. I don't think you've done a good enough analysis on effects to birds, of which there are millions and millions of sea birds out there in this area at this time. May and June is a critical time for them. A lot of them have flown from the Southern Hemisphere to get here. We have very large migration routes and if something upsets them along the migration route. We've been having some serious problems. I don't think you've done enough research on what happens to fish. Most fish have an air bladder that is going to be negatively effected by a sound blast. We know that sound does have an effect of fish, and I don't think you've actually studied that enough to know what is going to happen to the fish.

Alaska has a long history of cooperative management between the State and the Federal government. And that's why we still do have marine mammals and fish here. But, they are stressed. We have several endangered species that we're talking about here. And I think that the Endangered Species Act has been really overlooked in your analysis as well. I guess that's really all the comments I have. I

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think -- I'm not sure you're going to hear a lot of people supporting alternative one or two here tonight. I think that the current level of operations in Alaska is acceptable. And I think you may just be moving to Alaska because you think that you can get it done -- you can do it here where you've had quite a bit of public opposition to doing it down south and in other areas where you've tried this before.

So, those are my comments. Thank you.

MR. MICHAELSON: Victoria.

MS. DANCE: Can someone put up the slide of the NEPA process again?

MR. MICHAELSON: All right. We can probably pull that up. Could you make explicit records though, because they won't be able to see that in the transcript.

MS. DANCE: Okay. So, it's actually Dance, like what you do on Saturday nights.

MR. MICHAELSON: Thank you.

VICTORIA DANCE

Commented as follows:

Victoria Dance. And I'm wondering if this process is genuine in it's intent. Because I know that you went through the process in -- or the Navy went through the process in Southern California when you used the SONAR. And there was a protest, and one of the outcomes of that

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protest was a lawsuit that banned the use of the SONAR. But then the courts lifted the ban, and they went a head -- the Navy went a head and used the SONAR that they're wanting to use up here. That was in August. Two weeks later three great blue whales were reported as floating dead in that area, the localized area. And then October 2nd another was found dead off of Big Sir. And then another washed on shore in Fort Bragg. So, when there's talk about protective measures and those protective measures being to localize. What we see in -- and of course we can't prove, that those whales were damaged by the SONAR. But there's a migration pattern you know, how can you localize it? I mean you can really localize it. So, that as a protective measure, I don't think that's realistic.

And then the other protective measure mentioned was about minimal impact. So, I guess I'd want to know what the definition of minimal is, because those are three -- those were instances that became visible. But the unfortunate thing about the ocean is that there's so much that is invisible. And that was referred to very nicely by some previous comments about what we can see that has happened in the Navy's training to birds, and environment, above -- in the air.

And so, I'd have to say I question the genuine intent

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of the Navy stewarding the environment. And I'm really kind of offended that you use it. I'm questioning this process that feels like a charade when we see what happened in Southern California. And I forget the fellows name who mentioned that he felt like it was -- or Jan -- well, I'm sorry that I can refer back to some wonderful comments. But I can refer to Andrea's suspicion that this is a machine that is going to be difficult to stop. And then also, Jan's comment on not enough adequate research. It's only been a year since these events happened in Southern California. And here you're wanting to go again without really understanding what you're doing. Thank you very much.

MR. MICHAELSON: The next speaker is James Voelckers.

JAMES VOELCKERS

Commented as follows:

Hello, my name is James Voelckers. Thank you for the opportunity to speak. I want to express my gratitude first off to the Navy for keeping us well defended, and other military institutions. However, I believe there are a number of points that they have not considered or that are getting overlooked.

You mentioned realistic training a number of times. Yet, as was brought up before we don't really have any enemies with naval capabilities. It seems like the

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terrorists certainly don't. So that leaves China or Russia. With the proliferation of spy satellites it seems very unlikely that they would be able to attack us with any sort of sizable surface craft, which brings me to submarine detection. Which is what I think many of us are here for, with the SONAR, active SONAR. That seems like -- the only use for it if we know that they're there. And if we know that they're there, then I mean, they're not doing what submarines are supposed to do. Which is, I believe initiate a first strike. There are way to few ships to prevent such a first strike, so this seem to me to be a moot point. We can find them if we know they're there.

Secondly, I would wonder why exactly why we are doing this hear. This was just brought up, it happened in California, to much public outcry. Which is why I think perhaps, you'll try here for a lighter population density so, less protest. However, Alaskan waters are some of the most -- most fertile in the entire world. Especially this area which is very pristine. And as you said, that you were only going to be doing this in the summer months, that that's when I believe most marine mammals are feeding in these fertile waters. They go to Hawaii, I believe in the winter.

So, why would our enemies, if we have them, be they China or Russia, not attack us in the winter when you

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haven't trained, or during a storm. It seems like it's a sunny day situation to be running a lot of naval exercises on sunny days and good weather in the Gulf. Whereas, if somebody actually did have harmful intent, it seems like they would want to hit us when a, we could be least likely to respond. So, I would question why you were not using the winter weather to be fully prepared and fully trained.

And so in conclusion, I believe I would ask that some of these activities could not be carried out instead in the deep waters of perhaps the Hawaiian coast or other Pacific where they wouldn't, as adversely effect the ocean. I realize you will probably do whatever you have to do. Which is your job. But here perhaps is not the best location. Thank you.

MR. MICHAELSON: I'm going to read forward again. The next speaker will be Tina Brown, Dixie Belcher, Frank Bergstrom, Henry Larsen, and Murray Walsh. Tina Brown.

TINA BROWN

Commented as follows:

I'm Tina Brown. I support the no action alternative also. The other alternatives pose to many air and sea pollution problems. And the Navy SONAR testing endangers marine wildlife. We've listed birds, fish, turtles, whales of course, all marine mammals.

Not even the Navy knows all of the behavioral and

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physiological effects of SONAR testing on marine life. Clearly the Navy needs to train. But choosing some of the most prolific marine wildlife areas in the United States, if not the world, particularly at a time when migrating marine life is there is irresponsible. This is not the place to practice. And the time you chose is not the time to practice there. Not the place and not the time. Thank you.

MR. MICHAELSON: Dixie Belcher.

DIXIE BELCHER

Commented as follows:

My name is Dixie Belcher, I'm with Turning the Tides in Juneau. Turning the Tides raises awareness about what is happening to the ocean and the effect it has on human health. I want to speak especially to the 360 degree increase in water pollution and the 123 fold increase in air pollution. The ocean is 71 percent of our planet. It provides food, and according to Dr. Sylvia Earle, up to 85 percent of the worlds oxygen. We cannot live without the ocean.

We have dumped millions of tons of poisons, chemicals, radioactive waste, and other garbage into the ocean. Some whales and other sea mammals can now be legally classified as toxic dumps. We have thousands of dead zones where nothing grows. The largest 1000's of square miles. We are

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finding fish with cancer. What are we thinking?

The ocean is in fragile health. Ocean scientists often refer to their work now as, documenting the decline. If we are to survive we must stop contributing to the demise of the ocean. We must stop using the sea's and the life within them as toxic dumps to do with as we please. I believe the greatest threat to the United States and to the planet is irretrievably damaged ocean.

Please consider if SONAR testing and military dumping are contributing to the health of the ocean or furthering its demise. If it's impossible to stop SONAR and additional poisoning of air and water from military exercises, please use the no action alternative. Thank you.

MR. MICHAELSON: Frank Bergstrom.

FRANK BERGSTROM

Commented as follows:

Gentlemen, lady I would -- I've got very brief comments here. Not particularly well prepared for them. But it's surprising to say, I would like to thank the Navy for fulfilling its mission. I would like to thank you for training for that mission. I would like to thank you for training all the young sailors and aviators, daughters and sons that come from our communities to join the Navy to protect this country. You do a great job. And I

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appreciate it very much.

I would like to thank you for a careful analysis of this issue. I can't think of another nations military in the world that would go to such efforts to do their job and to take care of the environment at the same time. I would like to thank you for coming to Alaska to fulfill that mission. I would only ask that when you do, you might stop into Juneau, buy some gas, get a burger or two, and spend some time. Thank you very much.

MR. MICHAELSON: Mr. Bergstrom, I just need to ask you -- if you could just say your name for the record.

MR. BERGSTROM: My name is Frank Bergstrom from Juneau.

MR. MICHAELSON: Thank you very much. Henry Larsen.

HENRY LARSEN

Commented as follows:

Gunalcheesh. Ya'x gu 'oo, my English name is Henry Larsen, L-a-r-s-e-n. I too am opposed to against the -- what was that?

(Mr. Larsen conferred with Ms. Wilbur)

I too support the no action alternative. I think you need to -- the Navy needs to do more studies on the fish and the marine life you know, too. I think they need to do that because, I was talking to somebody earlier, and I too am a captain. I have a 200 ton license. And I've traveled

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from Sitka to Seward and I've seen fur seal -- fur seal and sea otter 22 hours offshore. And that's in that yellow area you guys were thinking about testing. That's all I have to say. Thank you.

MR. MICHAELSON: Murray Walsh.

MURRAY WALSH

Commented as follows:

Murray Walsh. I would extend my compli -- first of all welcome to Juneau. I guess I don't think anybody's said that to you yet. You may not feel all that welcome right now. But I should say that people who do get up and speak in setting like this show a little more courage than those that don't. And I have to admire that even if I disagree with almost everything I heard.

But if you want a test a public speaking, go back to 1974 when the Navy was not doing any of this kind of environment work. I was an employee of the State of Washington, and I had to be the one to tell the Admiral there in Seattle that before they could build the Bangor Submarine Base, they were going to have to talk to the State of Washington first. You talk about public speaking.

I guess I'd offer a little perspective. The actual amount of activity that the Navy is proposing to do in the Gulf is insignificant compared to the other human maritime activity that is already there. You've got a season coming

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where you're going to be operating at the no action alternative. Maybe make some notes about what happened, how many times you did change an exercise because you saw whale or whatever it is. And come back and tell us about that. Then go a head and go to alternative two and keep track of it. And reevaluate -- if you are killing whales right and left, then it's time to go back to something else. But we don't even know. And so -- and this is a decision that you get to make every year. So, it's important to pay attention to the environmental matters. I admire you for doing it. And Al-Queda does have a Navy. It's housed in Iran right now and North Korea. Those countries both use the Kilo submarine, the quietest submersible fighting ship in the world. Yeah, I want you guys to be able to find them. Thanks.

MR. MICHAELSON: Allison, has anyone else turned in a speaking slip since then?

MS. TURNER: No.

MR. MICHAELSON: Okay. Then usually what happens at this point is other people get inspired. Perhaps by people you have already listened to whether they turned in a card or not. Do you have another one for me? So is there anyone else who hasn't taken advantage of the opportunity to speak tonight who would like to do so at this time? Good, Dan Holt.

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DAN HOLT

Commented as follows:

Thanks for coming. My name is Dan Holt. I applaud you guys for coming and actually doing this. Because most of the time, as far as the military is concerned we hear about it afterwards, after it's done. So, this is great that we have this ability to comment. And I guess if -- if it's true that the SONAR is actually killing off whales, such as the one lady said -- gave a good illustration about Southern California. Then I think that's a good idea to do the -- to oppose it. But otherwise, I'm all for alternative one. Getting in there and learning more and keeping our best interest at heart, and keeping on the cutting edge of research and development.

That being said, I'm also with the Civil Air Patrol here in Juneau, Alaska. And I wondering if there's any way our group, as far as the Civil Air Patrol can help out with your exercise, so. And I've actually put that on my card. Thanks.

MR. MICHAELSON: Anyone else that would like to come forward at this time? With that, you may have heard someone make reference earlier to a second chance, a second helping. We're here until 8:30, and we'll go back to the poster stations. But if there was something that you neglected to say the first time around and you would like

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to come take advantage of a second chance, we can do that too. So is there anyone who would like to add to the comments they've already made?

MS. WILBER: I would.

MR. MICHAELSON: Go a head. Give your name again.

LYNN WILBER

Commented as follows:

I'm Lynn Wilber. I've heard some interesting comments. One of the things that I wanted to fit into my comment was the left over materials from the military. Anybody who's hiked around Sitka knows that we step in stuff from World War II all the time. Bins of oil, weird liquids, I have no idea what they are. And its been a tradition of the military to not deal with the mess that they've made.

I appreciate our military, I really do. I appreciate the work you do. And I appreciate that you're training and preparing. But the lack of a mitigation plan is just astounding to me. And the overwhelming opposition you've received in every training range, it doesn't seem that you've taken these public comments to heart. One other thing I want to make clear is the Navy is undergoing or going through the NEPA process because they were court ordered to. They were taken to court and the court ordered you to do this. So they've been training, in fact the

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Atlantic Fleet Training Range is operating on a no action alternative, which is similar. There are other alternatives -- toning down the exercises and not using SONAR. And they did that and they didn't go through the process, from my understanding from reading the news and following the time line.

There's a lot of information, available congressional reports, things on the internet that you can read. I like to enter into these types of debates with an objective mind. And I've heard other people who are -- whether they're experts, whale biologists, scientists, ex-military say that they wanted to go into this objectively. And just couldn't because of the gross negligence, the lack of mitigation. Some of the measures that have been recommended to you for decreasing the chance of harassments or takes on marine mammals have been dismissed. I'd said I was going to try to get back to that. You talk about in the impact statement, you talk about an unusual stranding event. Where NMFS gets involved and tries to recover if there's a dead animal or a mass stranding. They apparently don't have and nor do you have in place yet a stranding response or communication response.

And I'm sorry, I actually thought I had a little more time than the three minutes. But this is just not acceptable. Thanks again.

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UNIDENTIFIED VOICE: I'd like to give my three minutes to the woman who came all the way from Sitka. If she had a few more comments that would be fine.

MR. MICHAELSON: Actually we don't do that. We don't trade times. If you have something more you'd like to say -- yeah, no that's not our procedure. Sorry. Is there anyone who would like to append their comments with something they didn't get a chance to say? Yes sir.

MARK ANDERSON

Commented as follows:

Yeah. This is Mark Anderson. I guess the thing that occurred to me as I was sitting and listening to some other comments is, you have three alternatives here. And I don't think that is a reasonable amount of alternatives to really have. I think there are a number of others. You don't have any alternatives that have increased science, increased -- you don't even mention any alternatives where you would be doing some studies before you actually go do your testing. So, I think that you need to go back to the draft EIS and develop some more alternatives that do take into account more scientific study, a slower approach. You may be able to get to a higher alternative in your mind by actually doing these things first. Otherwise, I think you're probably going to be running into another problem with litigation. Thanks.

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MR. MICHAELSON: Anything we have not had a chance to hear yet tonight? As I mentioned we are here until 8:30, so whenever we're done here we're going to go back to the poster stations in case anybody has any questions. I know a number of people arrived just as this was starting.

TINA BROWN

Commented as follows:

I'm Tina Brown again. And I just want emphasize the obvious. Once an animal is dead, it's dead. And going back to see why it died doesn't bring it back to life.

MR. MICHAELSON: I think we're wrapped up here. I appreciate everyone coming out tonight. Again, we're going to go back to the poster stations. We're hear until 8:30. We very much appreciate you coming out and we look forward to you taking an interest in the final EIS when that done. Remember the deadline is January 25th for comments. We're in recess.

(Recess)

MR. MICHAELSON: This is Lewis Michaelson, it is now 8:30 p.m. in Juneau, Alaska. We've not had anyone else come forward wishing to speak on the microphone, on the record to the assemblage here. So, we are going to officially conclude and adjourn this meeting. Thank you.

(Hearing adjourned)

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TRANSCRIBER'S CERTIFICATE

I, CLYDE PASTERSKI, hereby certify that the foregoing pages numbered 4 through 44 are a true, accurate, and complete transcript of Hearings held in Juneau, Alaska on the Gulf of Alaska Navy Training Activities Draft Environmental Impact Statement/Overseas Environmental Impact Statement transcribed by me from a copy of the electronic sound recording to the best of my knowledge and ability.

____

Date Clyde Pasterski, Transcriber

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I.7.1.5 CORDOVA

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PUBLIC HEARING ON
GULF OF ALASKA NAVY TRAINING ACTIVITIES
DRAFT ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT
January 12, 2010
5:00 p.m. - 8:30 p.m.
Orca Adventure Lodge Café
2500 Orca Road
Cordova, Alaska 99574

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all of the hearings so far. So with that let me read the four names that I have, so you know what order you're coming up in. I apologize in advance if I mispronounce anyone's name. Rosemary McGuire, Charles Weaverling, Ellen Americus, and Kristin Smith. So, Rosemary if you'd come up here. And all I need is your name. You'll note that I the lectern pointed kind of towards us, because the idea is that we're addressing the panel here and also if I don't do that you'd never see the sign when I hold them up. All right?

MS. MCGUIRE: Yeah.

MR. MICHAELSON: Thanks.

MS. MCGUIRE: Is this the microphone?

MR. MICHAELSON: Yes. Please pull it down.

ROSEMARY MCGUIRE

Commented as follows:

Okay. Sorry to call you guys all back like this. I sort of didn't quite understand how this was going to work out. But I do think it was important that we all get a chance to hear some of what, we as a community -- some our concerns might be.

Personally, I listened carefully and looked at the posters and stuff like that. It seems to me that there is a good deal of uncertainty about why, when, and how often marine mammals such as whales are impacted by SONAR. But

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it's very clear that it does sometimes cause mass strandings and it can cause mortalities. And it seems to me that since we don't know why, we ought to be very careful about using it. I would prefer not to have active SONAR used in the Gulf of Alaska. Our livelihoods do depend on having a working ecosystem out there. And I'd really appreciate it if you guys would consider going with the same level of activity that you're doing now, which does not include active SONAR. So, thank you for your time.

MR. MICHAELSON: Thanks very much. Our next commenter is Charles Weaverling.

MR. WEAVERLING: Hello, my name is Charles Weaverling

MR. MICHAELSON: Pull the microphone down just a little bit closer to you.

CHARLES WEAVERLING

Commented as follows:

My name is Charles Weaverling. I'm the former mayor of Cordova. I organized and operated the wildlife rescue fleet during the EXXON VALDEZ oil spill, and I'm a former Navy submariner. Qualified in diesel electric and FBM's.

I'm very concerned about this proposed increase in training activity. And I'm not reassured by the posters and the comments I've seen here tonight. I do not think that it would be a positive impact on wildlife and

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fisheries to increase the training. I don't think it's a positive impact given the training that's used now. But active SONAR, especially the newer SONAR's that are available, are certainly more effective than SONAR's that were used in the past.

I don't think it would be a neutral impact on the wildlife and the fishery. This area has not yet recovered from the EXXON VALDEZ oil spill. I think it would be a negative impact on the fishery, the marine mammals, and the wildlife in the proposed area.

This is a very rich biological area. And we depend on a healthy marine environment for our livelihood here. Activity in the wintertime, though I'm not a biologist, I understand is less productive during -- is less productive for -- is less used by marine mammals and fish during the wintertime. But even given that, basically I would prefer to see the level stay at it's current level or reduced. Thank you very much.

I'd be happy to answer any questions, but I guess this is not a discussion. Thank you.

MR. MICHAELSON: Ellen Americus.

ELLEN AMERICUS

Commented as follows:

Hi, my name is Ellen Americus and I'm just a resident of Cordova. I used to live a Hatcher Pass and there was a

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lot of air activity over Hatcher Pass, in a pristine environment. And socially I think it really upset a lot of people who recreated there. And I see that the Gulf of Alaska is a wild place, and that area in particular. And I think that bombs and missiles in that area and a lot of aircraft would be upsetting to citizens and wildlife. And I'm especially concerned about when the missiles and the bombs breakdown in the water, and so there's like lead, and heavy metals, and when that stuff goes through the food chain and bio-cumulates. And you know, it's going to effect these people. And you know, I don't have -- we've learned a lot about plastics and how harmful plastics are in the food chain. And heavy metals, that's even scarier to me. So, anyway thank you.

MR. MICHAELSON: Thanks very much. I know public speaking is a challenging thing and we appreciate it someone has the courage to do that. Thanks. The fourth speaker I have here, the last one I have a card for is Kristin Smith.

KRISTIN SMITH

Commented as follows:

Hi, I'm Kristin Smith. And I'm here speaking on my own behalf. My day job is working as a nonprofit director for the Copper River Water Shed Project, which is committed to sustainable economic development. And so I have a lot

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of interaction with fisherman and folks in this area, and what I often tell people is that what we have in this region, both down here in Cordova and up river, is a wild salmon economy. We have a commercial salmon economy, we have a subsistence salmon economy, both here and up river. And we have a sport fish salmon economy. And all that's happening because those fish are rearing and growing to adulthood out in the Gulf of Alaska and in the Pacific Ocean. That is where they live. And that is where this town's livelihood comes from. And I'm only repeating what everybody else has already said, but we do not want to see SONAR in this region because of the effect that it could have on fish and wildlife.

And I admittedly took a very quick, cursory look through there on the posters, but I saw words like anticipated. We anticipate this won't have very much effect. That's not good enough for a whole town full of people, both here and up river that depend on fish for their livelihood. And I think it doesn't just Cordova, it effects other towns in the sound and Yakutat, and other areas along the coast. So, I think it's critical that the Navy think very, very hard about the effects that this has on wildlife.

And I think that when the Navy started, and maybe other entities started using SONAR, the effects weren't so

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well know. But we know a lot more now then we did 20 years ago. We know that it has harmful effects on marine mammals. And knowing that -- you know, I understand that you're probably thinking, hey we have a lot to do with -- we have to protect national security. Well, in my mind the national security issues are over in the Middle East today. And this money could be better spent doing other things and not adversely effecting our fish and wildlife. Thank you.

And I just want to say thank you for doing this EIS. I understand that you haven't necessarily been doing them regularly over the past few years. So, I appreciate that you are coming here and asking us for our comments. Thanks.

MR. MICHAELSON: Any one else who heard those comments, has inspired to add their own to those?

MS. ROESBERY: I would like to.

MR. MICHAELSON: Sure, go a head. We'll just have you fill out this card afterwards.

MS. ROESBERY: Thank you.

MR. MICHAELSON: Go a head. All I need is your name.

MS. ROESBERY: I'm taking off my radio hat now and I'm speaking for myself.

MR. MICHAELSON: Okay.

CAROLYN ROESBERY

Commented as follows:

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peoples livelihoods depend on the halibut too.

So, that's just what I think. And it takes 25 years to -- for a halibut to get to 100 pounds, so -- and after that they're growth slows even more. So, if one of the ships hits a 600 pound halibut that would take 100's of years to replace. So, thanks for your time.

MR. MICHAELSON: Thank you. And if you need anyone to sign anything for your merit badge, you let us know, okay? All right, thanks. Thanks for speaking. Anyone else? If not this would be a time that if anyone who already spoke would like to add to their comments, then please feel free to come up here and do that.

No one actually used up their whole three minutes. I didn't feel anybody ran out of time. Let me look at my watch here real quick. It's now 8:20, so I'm going to recess again, and we're going to go next door again. And my guess is unless somebody else comes forward that's how we'll wrap things up tonight. So, thank you very, very much again for coming tonight. We appreciate you taking the time and energy, and the courage for some of you to come up here and do this. We know that's difficult. Thank you very much.

(Recess)

DANIELLE BENNETT

Commented as follows:

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My name is Carolyn Roesbery. Any other information? Okay. I'm not convinced that activities -- Naval activities in the Gulf of Alaska won't contribute to the decimation of our fishery. We have one of the last wild salmon fisheries in the world. We have very rich, diverse environment. It is one of the biggest fresh water influxes in the world, here in Prince William Sound.

We're just now finding out what our fish are doing when they're not in the spawning and where they're going. We just now have the technology and are researching that. And it is out there where you intend to be. And I'm not convinced that -- that you have all the science that you need. You may have acquired all the available science that is assessable to you, but I think you need to go further. I think it's very, very important. Thank you.

MR. MICHAELSON: Anyone else? Sure, go a head.

KRIS RANNEY

Commented as follows:

I'm Kris Ranney, I'm in the Boy Scout Troop 624. And just to add on to what she just said. There's another species of fish that lives out there, the halibut. Most of them move in in the summer to shallow waters, but some of the bigger fish stay out in the deep water. So, when you are bombing those boats and sinking them, and some of the bombs and guns might disrupt their habitat. And a lot of

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Okay. My name is Danielle Bennett and I'm a resident of Cordova. From my perspective Alaska has one of the few functioning fisheries left in the world. From what I've seen of the EIS, the impact has been minimized to individuals, but many individual impacts amount to a cumulative negative effect.

We know for a fact that SONAR does have a negative impact. And that is reason enough to not expand the activities, as far as I'm concerned. What concerns me even more, however is -- are the things that we don't know. There are a number of uncertain statements. Anticipated effects, possible outcomes that are indicated. This ecosystem is important enough that those things should be addressed first before we have negative impacts that we don't even anticipate.

Please find another habitat or an already dead zone in which to operate. Historically speaking, this region has little reason to trust in regulation. When I think of national security, I see protecting whatever is left of functioning ecosystems as of the most vital importance. I recommend proceeding with the no action alternative or reduce activity all together. Thank you.

MR. MICHAELSON: This is Lewis Michaelson, it is now 8:30 p.m. in Cordova. We have no more speakers this evening, so we are going to officially adjourn this

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meeting.

(Meeting adjourned)

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TRANSCRIBER'S CERTIFICATE

I, CLYDE PASTERSKI, hereby certify that the foregoing pages numbered 4 through 31 are a true, accurate, and complete transcript of Hearings held in Cordova, Alaska on the Gulf of Alaska Navy Training Activities Draft Environmental Impact Statement/Overseas Environmental Impact Statement transcribed by me from a copy of the electronic sound recording to the best of my knowledge and ability.

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Date Clyde Pasterski, Transcriber

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I.8 ORAL COMMENTS AND RESPONSE TABLES

I.8.1 KODIAK

ID	Organization	Public Comment (Individual Oral Comment)	Navy Response
Kodiak			
Carolyn Heitman 1-1		My name is Carolyn Heitman. Is that good? [MR. MICHAELSON: Yeah.] Okay. One of the things that was confusing to me and one of the gentlemen cleared up for me earlier was on -- let me find the page here. On page 2-4 of the draft it showed the whole Island of Kodiak in red, which was enclosed within the restricted area, and that was a little bit confusing to me. Because I do know a couple years ago the FAA did enforce restricted air space over parts of Kodiak Island which included our airport. And -- so anyway he cleared up and we looked in the book and he it -- on your map over there it's not on the map, but he said it was a misprint and then at final he was going to make sure that it was in black. So, if I understand Kodiak is not included in restricted area as Fort Richardson.	The red box in question was intended to be a map insert, which is a standard way of identifying a specific geographic region that is being discussed. All "map insets" including the one you specifically referenced (Figure 2-2) has been re-colored to avoid any confusion.
Carolyn Heitman 1-2		Okay. And, let's see here -- and one of the things I had requested in my comments is a boundary line in the training area covers the Aleutian Trench and I had requested that the Navy list what types of exercises would take place in the trench, what type of SONAR and the effects that it -- the impacts it would have to the sea life that lives within the trench, and I didn't see that addressed.	Activities proposed within the TMAA have the potential to occur over the Aleutian Trench. Sound energy from sonar may be present within the trench on occasion. However, the probability of effect is uniform across the entire TMAA. The potential effects to resources are analyzed as a whole and effects to the trench are reflected in potential effects to the entire TMAA. Additionally, as provided in Section 5, mitigation measures will be implemented as appropriate whenever marine mammals are detected. In this manner, the Navy mitigation measures will afford all areas the same least practicable adverse impact.
Carolyn Heitman 1-3		And it states here that the Gulf -- the Gulf of Alaska draft states that the Navy does not know what the environmental damage or harm would be to birds from midfrequency at long range, and I'd like to see that addressed.	As stated in Section 3.9; Birds: "NMFS issued an environmental assessment with regards to the harassment of marine mammals in 2003 in accordance with the Marine Mammal Protection Act of 1972 (MMPA). As part of the environmental documentation, birds were analyzed for potential effects associated with exposure to active sonar. The potential hearing capability of birds was outside the proposed high frequency of the operating system and there is no evidence that birds utilize sound underwater to forage or locate prey. Thus, it was concluded that effects were unlikely. In addition, birds would not be an effective receptor because they are submerged only for short periods and birds at the surface can rapidly fly away from disturbance and annoying sounds."

ID	Organization	Public Comment (Individual Oral Comment)	Navy Response
Kodiak			
			Please see section 3.9.1.1 of the FEIS/OEIS for NMFS 2003 reference regarding effects of sonar on birds.
Carolyn Heitman 1-4		No detailed information on how the Navy exercises will impact fisherman. Whether or not, you know they'll be restricted. I understand if you go by -- one of the choices was that there would be two 21 day training periods rather than just one, if that one was chosen. So, I'd like to see more emphasis on how it would affect the livelihood of fisherman.	The Navy is very aware of concerns from fishing fleets and fisheries in the Gulf of Alaska. The Final EIS/OEIS describes potential economic impacts to fishing in Section 3.12.2.5. In this section, the analysis concluded that impacts would not be significant due to advanced public notification and primarily short-term duration of military activities. Analysis of impacts to fish is found in the Final EIS/OEIS in Section 3.6. It should be noted that the Navy has no exclusive “right of way” when conducting training activities on the ocean. Navy ships and aircraft intentionally seek areas clear of all other vessel traffic, thereby reducing the likelihood of negatively affecting fishing and tourism industries. Additionally, no new closure or restricted areas are proposed. To help manage competing demands and maintain public access in the GOA, the Navy conducts its offshore activities in a manner that minimizes limitations to recreation and commercial activities. Because of the analysis, the Navy is confident that its training activities will not impact fisheries, fish populations, or the livelihood of fisherman off the Gulf of Alaska.
Carolyn Heitman 1-5		Also, it's -- okay, let me find it here. On section 3.14, on public safety you say there would be no public safety issues. In that section though under public safety it says, activities that could affect public safety include electromagnetic energy, but no details were given concerning that.	As stated in Section 3.14; Public Health and Safety, Electronic Warfare (EW) systems emit electromagnetic radiation (EMR) similar to that from cell phones, hand-held radios, commercial radio, and television stations. Navy standard operating procedures are in place to protect Navy personnel and the public and include setting the heights and angles of EMR transmission to avoid direct exposure, posting warning signs, establishing safe operating levels, and activating warning lights when radar systems are operational. To avoid excessive exposures from EMR, military aircraft operate in accordance with standard procedures that establish minimum separation distances between EMR emitters and people, ordnance, and fuels.
Carolyn Heitman 1-6		And I would also like to know -- when you did the EIS for Hawaii uranium and red and white phosphorus was used in the training exercises. I would like to know if that will be used in the Gulf of Alaska.	Depleted Uranium (DU) is not part of the proposed action for this EIS/OEIS. In February 2009, Commander Pacific Fleet directed that all Pacific Fleet ships offload all depleted uranium rounds at the earliest opportunity. This change is reflected in the EIS/OEIS in Section 3.2.1.1. White phosphorous is listed in Section 3.2.1.1 as a possible constituent of general pyrotechnic materials, but is not a

ID	Organization	Public Comment (Individual Oral Comment)	Navy Response
Kodiak			
			constituent in training materials proposed for use in the Gulf of Alaska TMAA. Red phosphorous is a compound contained in the MK-58 marine marker. Please see Section 3.2.4.4 under "Targets and Pyrotechnics" for analysis of environmental fate of red phosphorus.
Carolyn Heitman 1-7		And, let's see, and although you mentioned new proposed weapons systems, you didn't identify them.	In Section 2.5.3 of the Draft and Final EIS/OEIS the Navy has included discussion of new platforms and equipment that have not yet become operational in the Fleet. Several future platforms and weapon systems have been identified that are in development, and are likely to be incorporated into Navy training requirements within the next 10 years. These include new ships, submarines, aircraft and new weapon systems such as the Advanced Extended Echo Ranging Sonobuoy, and new training instrumentation such as a Portable Undersea Tracking Range. Several of these new technologies are in early stages of development, and thus specific concepts of operations, operating parameters, or training requirements are not yet available.
Carolyn Heitman 1-8		I'd also requested that the Navy fund our electromagnetic radar system here and -- through the University of Alaska and it's classified as an electromagnetic warfare systems radar that the Navy could use. So, I would like to see that addressed if it will be used.	The electromagnetic radar system at Kodiak is not part of the Proposed Action.
David Kubiak		Yeah, thank you ladies and gentlemen for the opportunity to address this EIS -- the draft EIS. And I appreciate you coming to Kodiak. I -- with 18 days left, I'm the Chairman of the Alaska Marine Conservation Council. So, I'm here sort of on duty, like you are. With only 18 days left to comment, if the January 25th deadline is to be kept, I've got slow upload for my computer. I guess might be able to leave it on all night and download your EIS on the computer. But 25 megabytes at 56K takes a long time. And I think I have a obligation since I don't have the information really here to review, I think it would be a mis-step and be irresponsible for me to make a pointed comments about that impact statement. I did though hear Carol say that -- and it reminded me that if we have 21 days -- two periods of 21 days, basically six weeks of training exercises, and they're up on the edge of the Gulf there, that's prime fishing bottom. And that's a huge chunk of time out of a commercial	Please note that long-range advance notice of scheduled activities and times will be made available to the public and the commercial fishing industry via the Internet. The local 17th District U.S. Coast Guard Notices to Mariners may be found at: http://www.navcen.uscg.gov/lnm/d17/. This site provides the public notice that the military will be operating in a specific area and will allow you to plan activities accordingly to avoid potential conflicts. The training events will not preclude fishermen from using any portion of the Gulf of Alaska.

ID	Organization	Public Comment (Individual Oral Comment)	Navy Response
Kodiak			
		fisherman's opportunity especially -- I'm a halibut fisherman and that would be a huge chunk of time out of the halibut season. I don't myself go there, I've got a small boat. But I know the more nautical fellows are out there all the time and that's prime halibut bottom. So that's a huge -- a huge divot in their -- in their season, 21 days times two. But other than that I just want to say, I appreciate you coming here and I'll look forward to reading the EIS completely. But that really -- that 18 days left to comment, wow, that's going to be very difficult. Thank you.	
Katherine Ellanak 1-1		Good evening, my name is Katherine Ellanak. I'm with the Sun'aq Tribe Environmental and Natural Resource Director here in Kodiak. And although your EIS came in -- sent out dated December 2, we only received the EIS last week. And this January 25 deadline is not fair. There are other deadlines that we need to work with here in Kodiak.	The Draft EIS/OEIS was sent via Federal Express to the Sun'aq Tribe on Dec 9th 2009, and delivery records from Federal Express indicate that it was delivered on Dec 11th, 2009 at 1:02 pm and was signed for by P. Hester.
Katherine Ellanak 1-2		But out of respect for this time, and consideration for the fisherman, and the sea life whatever's happening there -- I saw -- I skimmed through that and there are a lot of fish in that area that you want to be training in. And that is not only affecting Kodiak fisherman and subsistence and sports. It goes all the way through the coast of Alaska up to my people in the Bering Sea areas.	There are no proposed activities taking place in the Bering Sea. All training activities at sea will take place in the Temporary Maritime Activities Area as depicted on Figure ES-1. The proposed training activities should not have an impact on populations of fish. While individual fish may be harmed if they co-occur with some activities that use explosives, this should not have any impact on the overall population. Please see Section 3.6.2 for potential impact discussion for Fish.
Katherine Ellanak 1-3		And the seals -- we don't know how nomadic our animals are from the sea, the (indiscernible) and the fish, and the whales, the seals, the birds -- they have no boundaries. Even if you make a boundary there they're going to be coming in and out of there.	As presented in Section 3.8, the Navy is aware of the presence and movement of animals in the proposed training area. Specifically regarding seals, Section 3.8.2.1 describes the means by which Navy derived marine mammal (including seal) densities for calculation of potential impacts.
Katherine Ellanak 1-4		And the fish, the sea's abundance, it's crucial right now because fishing is very critical right now. It's starting to be hard to be a fisherman anymore because of the prices. And we know nationwide that Alaska fish is like gold for anywhere in the world.	This comment is duly noted. The proposed training activities should not have an impact on populations of fish. While individual fish may be harmed if they co-occur with some activities that use explosives, this should not have any impact on the overall population. Please see Section 3.6.2 for potential impact discussion for Fish.
Katherine Ellanak 1-5		The other thing is when you guys do that April to October, 21 days, that's crucial time also for anything, fishing and the rearing of the babies from the seas.	In Section 2.3.2.3 of the Draft EIS/OEIS, the alternative of training during alternate time frames in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further.

ID	Organization	Public Comment (Individual Oral Comment)	Navy Response
Kodiak			
Katherine Ellanak 1-6		And the amount of lead, cadmium, and everything else is going to be used and exposing to our seas is detrimental.	The Final EIS/OEIS thoroughly analyzes the impacts of expended materials used during Navy training activities. As shown in Table 3.2-18 and 3.2-19, an estimated 352,000 lb (176 tons) of material would be expended during the training activities proposed under Alternative 2, with less than 3 percent of that material (about 5 tons) considered to be hazardous. Section 3.2 of the EIS/OEIS describes the impacts from the perspective of potentially hazardous materials such as explosives constituents. Section 3.3 describes the impacts of expended materials in terms of water and sediment quality. In addition, the existing discussion on the breakdown of hazardous materials in Environmental Consequences of Section 3.2.2, Expended Materials has been reviewed and, as appropriate, expanded. The analysis in the EIS/OEIS concludes that Expended and hazardous materials under the Proposed Action would not have a substantial effect on the marine environment.
Katherine Ellanak 1-7		And I just would like to see that you guys can extend this January 25 deadline into something more appropriate for us to really review the EIS document. And we had a meeting yesterday with our tribe and it's -- you know, like I said, we just received that EIS last week and today's Thursday. And then there's no time for me and my Environmental Committee to meet with the Tribal Council and have a good meeting about this. Quyana.	Public comments are very important to the NEPA process. The Draft EIS/OEIS was released to the public for a 45-day comment period. During this 45-day period, the Navy made extensive efforts to conduct outreach based on what was learned during the scoping period and public feedback. There were ample opportunities, as well as a wide variety of options, to comment on the Gulf of Alaska Draft EIS/OEIS. The public provided comments via mail, online comments via the Gulf of Alaska EIS/OEIS website; or attendance at one of five public hearings in the state of Alaska in January 2010. At the public meetings, the public had an opportunity to publicly or privately comment in front of a court reporter or fill out a comment form, and turn it in. The Navy considered your request for an extension of the 45-day comment period. After further evaluation of the request, and the outreach efforts conducted by the Navy for the Draft EIS/OEIS, the Navy felt it was not necessary to extend the public comment period for review of the Draft EIS/OEIS.
Theresa Peterson 1-1		Good evening and thank you for coming to Kodiak and giving us the opportunity to talk about this proposed action off our island home here. My name is Theresa Peterson. I'm a member of a long time fishing family and I work with Alaska Marine Conservation Council. The Alaska Marine Conservation Council is a community based organization	Please note that as presented in Section 4.8.3, there are many sources of human generated noise in the Gulf of Alaska for which the proposed Navy training would only be a small and transitory contribution. Also be aware that sonar use outside the Navy is common in the Gulf of Alaska including, for example, fathometers, fish-finders, and NOAA research

ID	Organization	Public Comment (Individual Oral Comment)	Navy Response
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		dedicated to protect the integrity of Alaska's marine ecosystem. And AMCC is concerned about the potential increases in Navy training activities in the Gulf of Alaska. Particularly of concern are the effects of underwater noise on living marine resources, especially noise resulting from the use of SONAR in this productive and important marine environment. We support the no action alternative, which would maintain current training activities and does not involve the use of SONAR. The alternatives listed in the analysis are inadequate to explore a range of options to consider anything else at this juncture. Overall the proposed action would result in dramatic changes in the acoustic marine environment inside and adjacent to the operating area that could have significant impacts on the marine mammals inhabiting these waters. Critical habitat for the North Pacific right whale, the worlds most endangered whale is located directly adjacent to the training area.	involving acoustic trawl surveys for fishery resources. In Navy training ranges in Southern California, Hawaii, and the East Coast where training involving sonar use has been occurring for decades, there are no indications of impacts to the marine environment and these areas support healthy fisheries and abundant marine mammal populations. Please also note that the designated right whale Critical Habitat is not directly adjacent to the training area, but is in fact located 16 nautical miles from the corner of the training area.
Theresa Peterson 1-2		The draft EIS is lacking a robust analysis regarding potential impacts to the halibut and the halibut fishery. It includes no discussion or maps showing the major halibut regulatory area that directly overlaps the training area. Nor does it discuss halibut habitat in the area. This information needs to be added.	As detailed in Section 3.6, the Navy does not believe the proposed activities will have any impact on populations of fish or any fishery in the Gulf of Alaska. Regarding the newly established charter fishing regulatory area for halibut, since the Navy is not engaged in sport charter fishing, the regulatory area does not apply to Navy. The regulatory areas were established because (according to NOAA Fisheries), charter halibut fishing in the Gulf of Alaska has been growing steadily and exceeding harvest levels set to protect halibut. Charter halibut businesses have to obtain a permit from NOAA (planned to begin as of early February 2010) to be able to have clients legally catching halibut in the Gulf of Alaska (see http://www.fakr.noaa.gov/newsreleases/2010/charterhalibut01 0410.htm). A map showing the Sport Charter Halibut Fishing Regulatory Area was reviewed but was not added. The TMAA overlaps with International Pacific Halibut Commission statistical areas 240, 250, 260, 270, and a small portion of 230. Please note that a map showing this overlap, as well as an analysis to halibut and the fishery, has been added to the FEIS/OEIS in Section 3.6.1.1.
Theresa Peterson 1-3		The draft EIS does not include an adequate discussion of salmon migratory routes in the Gulf of Alaska, and therefore lacks a robust analysis of impacts to migrating salmon species in the region.	Life history information, including migratory routes, for salmon are discussed in Section 3.6.1.3. While studies have indicated that the TMAA is part of the migratory route for some salmon species, the details are still lacking. Given the relatively short

ID	Organization	Public Comment (Individual Oral Comment)	Navy Response
Kodiak			
			duration of Navy activities, over a relatively small area, there is a low probability of Navy activities coinciding with migration of salmon species (described in Section 3.6.1 3). The ocean migrations of salmonids was defined by Pearcy (1992) as 1) the coastal phase of juveniles, 2) the oceanic feeding phase, 3) the return of maturing fish from oceanic to coastal waters, and 4) coastal migrations of adults that terminate in freshwater. The distance traveled and the time spent in each of these phases vary greatly within and among species. Pacific salmon smolts generally move up and around the West Coast of North America following the continental shelf. Juveniles were found to remain over the continental shelf until the start of the Aleutians before moving offshore. The Navy is aware of the diverse biological presence in the area and has conducted a thorough analysis of potential effects given the best available scientific data in Chapter 3 of the Final EIS/OEIS.
Theresa Peterson 1-4		There is not a thorough assessment of the overlap with fishing areas, and the conclusion that there will be no socioeconomic impacts from the proposed action, including fishing is impossible to predict without comprehensive answers to the above mentioned comments.	As detailed in Sections 3.6 and 3.12.2.3, the proposed training activities should not have an impact on populations of fish or the health of the fisheries and socioeconomics in Alaska. Also see Section 4.1.2.1 regarding cumulative impacts to fishing.
Theresa Peterson 1-5		It is probable that the Navy under estimates the number of marine mammals and fish that will be harassed, injured, and killed because it simply does not have the density estimates needed in order to accurately make this determination. There is no reliable estimates for current or historical abundance numbers for many of the affected marine mammals in the Gulf of Alaska.	Section 3.8.2 in the FEIS/OEIS discusses the density estimates, as well as Appendix E. In April 2009, the Navy funded and NMFS conducted the Gulf of Alaska Line-Transect Survey (GOALS) to address the data needs for density analysis (Rone et al. 2009). Line-transect survey visual data to support distance sampling statistics and acoustic data were collected over a 10-day period both within and outside the TMAA. Please see Section 3.8.2.1 for full discussion on the survey. Based on the current approved acoustic impact modeling, the density estimation method, not reducing impacts as a result of mitigation, and previous determinations by National Marine Fisheries Service, it is more likely Navy actually overestimates impacts to marine mammals with these estimates.
Theresa Peterson 1-6		And finally, I know firsthand there are not adequate measures to mitigate the harmful affects of SONAR. The proposed mitigation measures are basically safety zones. And from what I'm understanding, visual sighting of whales. And having fished in that area for over 25 years and having	As detailed in Chapter 5 of the FEIS/OEIS, the mitigation measures involve much more than a sonar "safety zone", making use of all available observers such as those in aircraft in addition to observers on vessels, and use all available sensors such as passive acoustic hydrophones. The mitigation

ID	Organization	Public Comment (Individual Oral Comment)	Navy Response
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		spent sometimes days looking for a buoy in the adverse weather conditions that we have out in the Gulf of Alaska, probably 80 or 90 percent of the time. I do not have confidence that visual sightings is an adequate mitigating measure.	measures presented in the EIS/OEIS were developed in coordination with NMFS biologists and scientists to determine which mitigation measures would be both effective and still allow the Navy to meet the operational needs for realistic training. The Navy's mitigation measures are designed to minimize impacts. It is recognized that not all marine mammals will be present at the surface and/or detected visually and not all marine mammals will be vocalizing and thus detectable by passive acoustics. The mitigation measures are effective at limiting some marine mammals exposures to high levels of sound in close proximity to the source, just as they were designed to do. Please note that Naval vessels have a higher height of eye than most fishing vessels as well as having multiple vessels over a very wide area, communicated sharing of observations, and operating in a coordinated manner in combination with aircraft that are also observing the water space. The Navy does not expect 100% of the animals present in the vicinity of training events will be detected and the acoustic impact modeling quantification is not reduced as a result of mitigation effectiveness. However, mitigation measures based on detection of marine mammals by exercise participants anywhere in the exercise area will result in the mitigation of some potential impacts. Monitoring reports from exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. As part of the Integrated Comprehensive Monitoring Program, research to measure the ability of Navy observers to detect marine mammals is also underway.
Theresa Peterson 1-7		And finally in closing, I would very much suggest that you extend the comment period an additional 45 days in order to allow people adequate time. And again, thank you for coming.	Please see response to Katherine Ellanak 1-7.
Amanda Barnette		My name is Amanda Barnette. I'd also like to thank you for coming to Kodiak and listening to our comments. I think the Navy should establish minimum visibility requirements while training, especially while training with active SONAR, so that the lookouts may identify marine mammals in the immediate area. Thanks.	Please see response to Theresa Peterson 1-6
Katherine		Katherine Ellanak with the Sun'aq Tribe of Kodiak. The other	This comment is duly noted. Please note that the Exxon

ID	Organization	Public Comment (Individual Oral Comment)	Navy Response
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Ellanak 2-1		thing is we already have visual and historical history about what Exxon oil spill did. And it shows what the current is going to be like. And the red tide that happens and years of evolutionary natural disasters that there used to be abundance of fish here of all kinds. But after the '64 earthquake, right over there in Yuzhni where there used to be herring and everything else. The fish that used to be there are no longer there and the fish that we have presently here are in danger of other disasters that are going on. And you know, Bligh Reef is hit again and even the Arctic Slope with the BP having their pipeline problems, I mean even if it's far and beyond us, it's helping to come down here from the pipeline. And things of that kind of disaster, we need to consider those before the fish is going to be depleted.	Valdez oil spill was addressed within the affected environmental baseline descriptions for the GOA area.
Katherine Ellanak 2-2		It's -- I cannot name and I'm not a scientist to see when I was scanning through the EIS -- it's unfathomable to me to try to determine what all else is going to be affected by all the chemicals and toxins and hazardous materials that are going to be expended into the sea.	Please refer to your previous comment and response in Katherine Ellanak 1-6.
Carolyn Heitman 2		I'm sorry, it's Carolyn Heitman. When the Navy did the Environmental Impact Statement for Hawaii, the west coast, Gulf of Mexico, and the entire east coast of the United States they got a permit from NOAA to -- and this is something that I had mentioned in my comments in a -- the last time. They got a permit from NOAA to incidently take two million marine mammals per year for the next five years. And I would like to have you include in the final if that permit will extend to the Gulf of Alaska. And if not will you be requesting a new permit for incidental takes and for how many marine mammals?	Sections 3.8.7.7, 3.8.7.8, and 3.8.7.9 describe the number of estimated takes by species for each of the alternatives. The Navy has requested a Letter of Authorization permit from NOAA for training activities in the TMAA based on the estimated take of marine mammals under the Preferred Alternative; the permit will be specific to the proposed actions in the Gulf of Alaska. Please note that of the approximately 425,000 exposures under the Preferred Alternative, which are estimated without consideration of the Navy's protective measures, only **one** is expected to be a Level A harassment. The remainder are non-injurious Level B exposures. No marine mammal deaths are expected as a result of the proposed training activities.
Theresa Peterson 2-1		Thank you. Theresa Peterson again. I have two brief comments. In reflecting on what Katherine was saying, I feel strongly that we have a lot of unknowns that are approaching our waters in the Gulf of Alaska and this northern climate -- and worldwide, in particular the ocean acidification and the changing ocean environment.	Ocean acidification and climate change, as they apply to GOA, are addressed in Section 4.2.1.2 of the FEIS.
Theresa Peterson 2-2		But also in reflecting about commercial fishing off of that edge which has been -- like I said, I've spend decades out there doing that. And I've noticed a change in the whales	This comment is duly noted.

ID	Organization	Public Comment (Individual Oral Comment)	Navy Response
Kodiak			
		habits when you're long lining halibut and primarily black cod. The sperm whales and the killer whales -- we're kind of like dinner bells out there. They recognize a boat out on the edge, they hear you. You turn on the hydraulics, they come charging up to the boat. The whales in the Gulf just -- primarily over these last 10 years are getting habituated to associating the sound of a fishing vessel to a feeding opportunity. And so in thinking about this, when there's Navy operations going on and the other boats have been requested to leave the area, I would think there's going to be a natural tendency for the boat -- the whales to actually approach a vessel and explore to see what they're doing. Because they have been doing that. And I just wanted to share that thought. Thank you.	
Richard Courtney		My name is Richard Courtney and I'm here representing myself. I'm also representing myself as a 20 year Navy veteran. I served on two aircraft carriers, a helicopter carrier, and a -- one of those large ones that you see right over there. I've ridden smaller destroyers and LST's. I find it absolutely critical for the U.S. Navy to practice in an area such as the Gulf of Alaska. I am an expert on meteorology and oceanography. I'm also an expert on the American sailor running around on a ship. And if you haven't figured it out, I'm still a little nervous here. One of the things we don't recognize very much is what it is to be out there on a ship doing the good deed, that's defending your nation. You cannot go down to Hawaii in the middle of the summertime, run through a five to an eight foot sea state with a 20 knot trade wind and say, hey I know what it's going to be like to be up here in the Gulf of Alaska. It's a different environment. You walk out through your front door, you put a coat on, you put a hat on. You don't run out there bare chested in Kodiak in January. So it's absolutely necessary for us to understand that we have to work in other environments. That's what this is all about. Now back when I was in they didn't have these, or they were greatly reduced. And this is a great thing, it's an honest effort to try and make sure we don't screw something up. But bare in mind that the United States Navy has been around 200 -- more than 200 years actually. We still have fish out there, we still have whales. I have not in the time I road on aircraft carriers, looking for submarines -- yes, I did that. I didn't see any dead whales wash up behind	This comment is duly noted.

ID	Organization	Public Comment (Individual Oral Comment)	Navy Response
Kodiak			
		my ship. I never saw the Navy go out of it's way to try and hurt anything in the ocean. They are very, very studious about watching out for things. I was directly involved in that. I'm not here because I think I owe the Navy something. I'm hear about my own personal interest. I'm not here for every man and woman that is out there on a ship right now that does not know what it's like to get beat up out there. All of you that claim that you've got fishing boats out there, would you take a nice 23 foot skiff and go running through the Bering Sea this time of the year, to go from St. Paul to Dutch Harbor? No, you wouldn't. You'd pick the biggest boat that you can, they one that rides the best and most comfortable. And that's what we're doing with ships. We're training people how to survive an environment. And there's only one way to do that, there's only on way to survive combat. Train like you fight and fight like you train. That comes right out of the Navy. Thank you for putting up with me.	
Geneneiea Pearson 1		My name is Geneneiea Pearson. I've lived in Kodiak since 1941 and have observed the whales since that time. But what I'd like to say is, that I'm disappointed in this meeting in that you did not have an open meeting so that we could hear your answers to questions. I think that would have been helpful and we could hear what -- other peoples concerns are more than just these comments. Because a lot of people are shy about talking, like me.	From past experience, the Navy has concluded that the public hearing format used during the public hearings is the most conducive to effective dialogue. Additionally, all five public hearings held in Alaska exceeded NEPA requirements. Adequate time was given during the open house portion of each meeting to ask questions of a number of subject matter experts.
Geneneiea Pearson 2		The other suggestion I would like to make is that you have a civilian observer, maybe one or two on each of these carriers to observe for the public as to what goes on. So that there's an honest assessment of what happens. If you can come up with something out there, I know it's hard because of the ocean, you can't really tell what's going on.	Please refer to Sections 5.2.1.3 and 5.2.1.4 regarding monitoring during training events to help determine if there are any unforeseen impacts resulting from Navy training activities.
Geneneiea Pearson 3		But I'm very concerned for the fisherman that are being replace -- displaced during the period that the exercises will be taking place.	Because the Navy has no exclusive “right of way” when conducting training activities on the ocean, Navy ships and aircraft intentionally seek areas clear of all other vessel traffic, thereby reducing the likelihood of negatively affecting fishing and tourism industries. In addition, long-range advance notice of scheduled activities and times will be made available to the public and the commercial fishing industry via the Internet. The local 17th District U.S. Coast Guard Notices to Mariners may be found at: http://www.navcen.uscg.gov/lnm/d17/. This site provides the public notice that the military will be operating in a

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Kodiak			
			specific area and will allow you to plan activities accordingly to avoid potential conflicts. The training events will not preclude fishermen from using any portion of the Gulf of Alaska. Please see Chapter 3, Section 3.14 of the Final EIS/OEIS for the description and analysis and potential effects.
Geneneiea Pearson 4		And I'm very concerned for the marine mammals that will be out there and will be attracted to the boats. Because I know the whales now a days come up to the boats. I have fished myself for many, many years. I know that they're trusting us now, which they didn't used to during the years ago. When they were slaughtering them out here, when the Russians were right off shore out here, slaughtering whales. We could see the fleet at night, I looked like a city out there. But I know that at -- after that slaughter was over the whales were very skiddiest. If they saw us they were gone. We only saw then once. Whereas now they aren't afraid of boats and they come right up to the boats sometimes. So I'm very concerned about this whole process and I wish the Navy figure out another way of working their ideas out for antisubmarine warfare. I wish they would go somewhere else to do it. Thank you.	Please see Chapters 1 and 2 regarding the purpose and need for anti-submarine training in the Gulf of Alaska.

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Kodiak			
Richard Courtney 2		Hi, this is Richard Courtney. I live in Kodiak, Alaska. I'd also like to add on to my statement that I made earlier. And one of the biggest reasons I feel it's critical to come up here and learn, as a sailor is exposure to the harsh weather conditions that are up here. At one point in my Navy career, I was up off the coast of Norway and I had 70 knots of wind and 35 foot seas. There was millions of dollars of damage done to five amphibious warfare ships and a destroyer. We had no exposure up there and very few people ever got a chance to work up there. And by learning to come up here and work in these harsher conditions, you have a better understanding of what it takes to survive. Especially in a combat situation. You don't have to look back any farther than World War II, and look at some of the actions of what ships had gone through and how much better they would have been prepared if they actually practiced in foul weather instead of practicing in the calm waters off of Hawaii. So that's why I think it's critical to come up here. I don't expect a complete understanding of everything, but I think it's real critical for the military to come to work as a team up in rough weather. And that's about -- basically all I've got to say.	This comment is duly noted.

1 **I.8.2 ANCHORAGE**

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Anchorage			
Paul Kendall 1-1		My name is Paul, middle initial D, Kendall. I'm an Anchorage, Alaska citizen. And I just came in for the first time to see what you had. It's my first time to be at one of these and I found it to be efficient, professional, entertaining, and amenable. And all you people have been very congenial and professional. Because you're in what they call the Gulf of Alaska up around Cordova, Kodiak and the entry to Cook Inlet, I'd really like to see you bring some type of studies on the tidal. I think it's a high tidal area and there are only so many tidal areas around the world. And I'm of particular interest between Cordova and the Cook Inlet. And when I look at the resources that you're going to bring into the inlet like that, the ships and all of those monitoring devices. I'd like to have you make your data available to the local communities in the event that they move to some type of tidal generation for energy for our residential sectors. And when you consider the fact that a pound of water weights about 62 [sic] pounds, and you put that into a ten foot by ten foot by ten foot cube, which is equal to something along the lines of a UPS delivery van. That content of that van equals about 31 tons or 62,000 pounds. And if you were to bring that poundage on board a ship, in essence you could use that weight on just one van, which is a ten by ten by ten cube of water. You could use that as a counter weight to move down to push gears. And then if you release that water you can actually have crawler or water wheel turn to make electricity as you move the water out. And as you move that water out back into the ocean through a pipe, what will happen is you can displace the air that's in the pipe, and that air will push turbines. And if you close off the back of that pipe as you release the water from the front end of it, you can also as the water runs out it draws the air the other way into a vacuum and those air reversals will turn turbines. So, you in essence have a ship that can generate energy onboard, especially with the tides. And when you begin to look at those ten foot cubic capacities of movement in tide, the numbers are huge and astronomical. So, if you're going to come into an area like that, around Cordova and Kodiak and the Cook Inlet, I would think that there would be some type of a participation. And I think they're getting	The proposed area where the training will occur will not include any of Cook Inlet and the nearest portion of the Temporary Maritime Activities Area (TMAA) is over 25 nautical miles from Cook Inlet. Please see Figure ES-1 in the Final EIS/OEIS for the location of the TMAA. Additionally, no tidal energy projects are considered as part of the proposed action.

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		ready to start the meeting, so I think I'm going to -- no. So, what I'm saying, when I look at the resources and the competency of your people who come into this area, I think you could bring to the people maybe a ship. And you could bring that in -- into the communities of Kodiak and Cordova and Seward, and maybe bring us a couple of extra ships and we could use those ships as power plants and the community could learn about waves and tidal capacity for generating electricity, which is clearly our next future. Other than that I think that's about it.	
Paul Kendall 1-2		Except well there's one more thing. I do think you should have a video webcam here. And that this gentleman which is -- gosh, I have to get my glasses -- the gentleman who's taking this testimony, Clyde E. Pasterski, I think you should furnish him with the money to have a webcam. And the way that should be done is that an individual should be escorted over here and asked if they'd like to make a video or a video and audio, or if they'd like to have a video from a distance and let them sit down and perhaps make their own little video. Because the writing is just too onerous. And I think that the children would like to do that. You get more involvement from the public and it's much more easy. And even if the communication were to go on at length, I think it could still be monitored and curtailed at appropriate times such as we have coming up now. Because I think they're getting ready to have a presentation. Thank you very much for what you're doing. And I love my America and I want it back the way old American values. Thank you.	This comment is duly noted. The Navy is in the process of developing a webcam feature for public hearings.
Wade Willis 1-1		Thank you very much and I appreciate -- first I want to say I appreciate very much the Navy coming up to Alaska and allowing us to speak. We're a State that is very supportive of the military and we are very appreciative of your coming up here to talk. My name is Wade Willis, I'm a biologist for the State. Been up here for 20 years. I have worked extensively in Prince William Sound and worked as a biologist in the Gulf of Alaska, so I know the country pretty well.	This comment is duly noted.
Wade Willis 1-2		Some of the concerns I have are that the operation area is being conducted in shallow areas and shallow shelf areas. And certainly those are areas that are very critical habitat for our resources -- our fisheries resources in Alaska.	Please see Section 3.6 with regard to an analysis of impacts to fish and fish habitat and Section 3.12.1.1 for an analysis of impacts to fishing. The Navy is aware of the importance of the fisheries at Portlock Bank and adjacent shallow water areas.

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Wade Willis 1-3		And I've very -- also very concerned that the operation area is in the middle of critical for migrating whales. I don't really know if it's an appropriate operation area for the military to be conducting more -- it's more aggressive SONAR operations. I would hope there would be areas of the country where we could identify for SONAR work that would not put such a risk to a lot of unknowns with our migrating whales. Several are endangered that move through this area. And using visual sightings of whales is notoriously quite you know, inaccurate. And a lot of the whales like blue whales can be underwater for very long extended periods of time.	Navy lookouts undergo extensive training to include on-the job instruction under supervision of an experienced lookout followed by completion of Personnel Qualification Standard Program. NMFS-approved Marine Species Awareness Training is required before every sonar exercise. Chapter 5.0 of the EIS/OEIS, Mitigation Measures, presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events. While the Navy is very confident in its well-trained lookouts, it does not expect that all animals present in the vicinity of training events will be detected. The acoustic impact modeling estimates provided in the EIS/OEIS are not reduced as a result of mitigation effectiveness, even though many marine mammals will be detected and sonar exposures will be avoided.
Wade Willis 1-4		So, I'm very, very concerned that the military is proposing 42 days in the summer. And as a guide I can tell you there's 90 days in the summer up there. And that's you know, about half of the summer you're proposing of possibility being out there conducting SONAR operations. That's a real concern of mine. I would hope that possible high use times for migrating whales could be avoided. And that possibility SONAR operations could be minimized as much as possible for the Alaska operation area due to the potential risk.	The Navy cares very much about the ocean environment, as it is an environment where we live and work as well. The Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals. Based on the analysis included in this EIS/OEIS, including the Navy's history of operating sonar in the Pacific Ocean with no recorded evidence of harm to marine mammals, the Navy feels its protective measures are adequate. Please see Section 2.3.2.3 regarding a discussion for why an alternative time of year was rejected from further consideration.
Wade Willis 1-5		I'm also very concerned with the amount of toxins, the hazardous waste that's being proposed -- 10,300 pounds. I, particularly am very concerned with persistent organic pollutants which are really going through the roof in Alaska due to multiple sources. Our fisheries, our halibut, and long lived fishes like rockfish and lingcod are being limited in our ability to eat now because of persistent organic pollutants. And our marine mammals are showing extremely high levels of persistent organic pollutants. So, I wasn't able to figure out how much of the 10,300 pounds would be POP's, but I would encourage the Navy to try to mitigate any POP discharge. Thank you.	The Navy always strives to reduce any impacts to the environment when conducting operations. The only known source of key POPs (agreed to in the Stockholm Convention) from Navy training activities would be PCBs. Under the Proposed Action, PCBs would only be found in vessels used in a SINKEX event. Vessels are cleaned according to standards set by the U.S. Environmental Protection Agency to remove all PCB and other potentially problematic materials to the maximum extent practicable. Based on the 1999 SINKEX Letter of Agreement between the Navy and EPA, approximately 100 lb of PCBs are typically left on board each vessel used for SINKEX events. These PCBs are found in materials that cannot be removed without comprising the integrity of the vessel. Text describing removal of PCBs and other materials from SINKEX vessels has been added to

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			Section 3.2.2.2 of the Final EIS. Also, the estimated amount of PCBs (200 lb annually) has been included for the estimation of hazardous materials under Alternative 2 (Section 3.2.2.6).
Tom Lakosh 1		My name is Tom Lakosh, I'm an Anchorage -- Anchorage resident. But I've long been user of Prince William Sound resources and we appreciate your service, but find that some of the responses to my earlier inquires quite distressing. First of all with respect to mitigation methods, I fell it's wholly inappropriate to use the standard of impairment -- hearing impairment of whales as the necessary triggering standard for abating operations. Clearly the standard should be, and adverse behavioral impacts upon marine mammals and should be the standard to cease operations and for avoidance of those oper -- of those species.	As described in Chapter 5, the mitigation distances are based on more than the onset of hearing impairment. At approximately 1,000 yards from the most powerful surface ship sonar proposed for use (see Table 3.8-5), the received level of sound should not exceed approximately 175 dB (re 1 μPa) whereas the onset of the first measurable and temporary hearing impairment (TTS) has been established at 195 dB (re 1 μPa). This TTS threshold would likely not occur outside the 200 yard shut-down distance.
Tom Lakosh 2		And when I inquired as to why we wouldn't schedule the training sessions for periods outside the migration of whales, towards winter obviously. And outside of the migration paths, I was told that, oh well stuff breaks in Alaska winters. Well, we know that. We're out there, I've been a fisherman in the wintertime. You know, freezing spray, et cetera, et cetera. And if you guys don't want to build equipment to protect your 49th state, you might as well just take your stuff elsewhere. You know, bring up stuff that will work, do it in the wintertime outside of the migration seasons, and outside of their migration path.	In Section 2.3.2.3 of the Draft and Final EIS/OEIS, the alternative of training during winter in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further.
Tom Lakosh 3		Establish a standard of avoidance of populations based on impacting behavioral standard of practices of the marine mammals. Set up a preliminary observations both with passive SONAR that is sensitive to the vocalizations of the whales, to find out where they are. Conduct your operations away from them to the greatest extent possible. We realize you need areas to train -- designated areas to train to keep out other commercial activities and vessels and so forth. But that area should be large enough so that you can avoid populations, take adequate time to you know, preliminary you know, pre-scanning of the areas where you plan to train and make concerted effort to avoid population densities to the greatest extend practicable.	Please see Section 5.2.1.6 which includes a discussion why the measures suggested in your comment were considered but eliminated from further consideration. In previous documents NMFS has indicated that seasonal or geographic limitations are a direct and effective means of reducing adverse impacts to marine mammals. However, the concept of geographical and seasonal (or temporal) limitations is inconsistent with the Title 10 responsibilities of Department of Defense to assure a fully trained and ready military force in regards to training activities in the GOA. Such restrictions would not be appropriate in the GOA. It is important that any measures are used carefully at times and places where their effects are relatively well known. For example, if there is credible evidence that concentrations of marine mammals are known to be high at a specific place or during a specific time of

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			the year, or that certain areas are selectively used for important life functions like breeding or feeding, then these types of seasonal or geographic exclusions or limitations can be effective. However, if marine mammals are only known to prefer certain types of areas (as opposed to specific areas) for certain functions (such as beaked whales use of seamounts or marine mammal use of productive areas like fronts), which means that they may or may not be present at any specific time, it may be less effective to require avoidance or limited use of that type of area all of the time. Additionally, as detailed in Section 5.2.16 of the EIS/OEIS, the mitigation measures involve much more than visual observers on ships, make use of those in aircraft, in addition to use of all available sensors such as passive acoustic hydrophones. The mitigation measures presented in the EIS/OEIS were developed in coordination with the National Marine Fisheries Service (NMFS) biologists and scientists to determine which mitigation measures would be both effective and still allows for the Navy to meet the operational needs for realistic training.
Tom Lakosh 4		One other method that is -- that Alaskan's have learned is that you can also call some of these species you know, particularly pilot whales and orcas to your presence by just fishing for black cod and halibut. So, you can call those species out of your test area by hiring a licensed commercial fisheries, ones that have had particular problems in the past, given that the marine -- the whales recognize their hydraulic sounds. And bring the whales out of harms way. Pay the fisherman to feed the whales while you happily ping away out in the Gulf. There are a number of methods here that you haven't fairly considered, you haven't done your job. You could do a better job, you could bring better equipment to operate outside of our peak summer migration and commercial fishing seasons.	As described in Chapter 2, the proposed activities are not a "test" and do not take place in a "test area". As described in Section 5.2.1.6, it is not practical to clear the area where training will occur because Navy training activities are often not scripted and cover hundreds of square miles. In addition, the purposeful feeding of marine mammals would require authorization under the Marine Mammal Protection Act and in some cases, the Endangered Species Act as well, and these activities are not considered as a part of the proposed action due to these concerns.
Tom Lakosh 5		And you know, and a much less impact on our resources. You're here to protect us, not only our hides but our resources. When you talk about Alaskan's, our resources are apart of us. We live in subsistence, we live in tourism, we live in commercial fishing. That's our livelihoods, and that's why a lot of us come here to Alaska is to experience the wild, an undisturbed wild. And we don't need you know, disturbances that we clearly know are going to harm our	Socioeconomic impacts in regard to the fishing industry, tourism, and recreation have been analyzed in the EIS/OEIS in Section 3.12 - Socioeconomics. To help manage competing demands and maintain public access in the GOA, the Navy conducts its offshore activities, which are limited in time and scope, in a manner that minimizes limitations to recreation and commercial activities. Furthermore, no closure or restricted areas are proposed associated with the Navy's proposed

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		interests. We want you to protect us as whole people, not just part of us. And we want you to bring the proper equipment, make the proper preparations, and accordingly appreciate the resources and particularly marine mammals the way we do. Thank you for this opportunity.	action. Please note that there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of the marine environment. As such, the Navy is confident in our analysis, the Final EIS, which concludes that there are no significant impacts to any resources from Navy activities.
Paul Kendall 2-1		My name is Paul, middle initial D, Kendall and I'm an energy activist. And as far as credentials go, I'm neither accomplished, degreed, or published. And I came here primarily out of curiosity and because of my -- I love the Navy, and I love the military, and our services and I think they're one of the few groups in our society that is being taught to represent us all as one society, America. But I'd like to make some suggestions to you. These will most likely be outside the scope of your EIS, but I'm really not sure what the scope is. In my world anything that contributes to a better society is a good thing and should be considered. So, I came here because I'd like to have you consider having some type of assigned energy -- an energy science technology officer, team, or department that travels with these fleets or groups of vessels. And I'd really like to see an actual vessel itself as designated as an energy science technology with each group of ships or vessels. And I'd like to see you gathering a tremendous amount of data in realtime, ice, tidal, temperature, wave, content, body contents, currents, et cetera. I just made a brief list of the things that you could do to contribute to our society. I think that you come to. I'd also like to see you, because you're in such a high tidal impact area, and there's so few tides I think around the world. I'd like to see you check your mothball fleet to see if you couldn't bring some type of a vessel to Homer, Kodiak, Seward, and Cordova. Something that has been mothballed that the community might be able to use. I'd like to see you come up in the winter so that we can get some ice data. And I'd like to see you -- let's see, consolidate your -- I forgot what that was about. My premise this, I'm convinced that we're going to be moving very, very quickly into water partnerships. And that there is no such thing as water ladies and gentleman. It's all hydrogen compounds, or contaminates, or particulates, or partnerships. And if I'm not wrong about this, we're about to see a whole new era of energy. And that energy is going to	This comment is duly noted. Please note that the Navy is engaged in numerous scientific endeavors and continues to make available to the public releasable information through papers, conferences, and manuscripts. Much of the Navy's research details can be found through the Office of Naval Research. However, your proposals are outside the scope of the Navy's proposed action of the GOA EIS/OEIS.

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		revolve around magnetic fields and the hydrogen atoms. And when I see these bodies, these vessels of tremendous capacity, intellectual and data rich with being able -- technology, with gathering -- data gathering rich devices, it would seem to me that it would be more interactive in those bodies of water for multiple reasons. I don't see how we could disconnect energy from anything. I have come to conclusion later in my life that most of the things you see are manifestations of energy. And our children within the next decade are about to learn that connectivity and with that comes responsibility for our balance and our in harmony. And that cast is huge, and the Navy has, I think has a fundamental fiduciary obligation to those creatures in that ocean and those communities along the way. And in closing, I'm coming to an end here, I'm opposed to the War in Iraq and I'd like to see all of my troop and all of my people come back to America and begin to rebuild our values that we all share in common and quality of lifestyles and family lives. Thank you.	
Wade Willis 2-1		Thank you again, my name is Wade Willis. And I want to impress upon the Navy the opportunity they have to help the scientific community acquire baseline data. It is a critical, critical component to our long term stability as a nation and as a State that we understand, as best as possible the current populations of animals that we have, the migration routes, things like that. This is an incredibly good opportunity for the Navy to address that and to support the scientific community in ways maybe beyond the EIS evaluation. But to say you know, if we're going to have MOA we're also going to support some science research beyond this EIS listing, you know. Just to say that that's an important national strategic point as well. That you know, in exchange for our maybe degradating the environment a bit, we're going to help the State and the scientific community know more for the long term benefit, overall benefit may be far greater from the science we learn than the small amount of environment degradation that occurs due to our operations out there for 16 to 41 days a year. So I really hope the Navy will look really hard in helping the scientific community which is dramatically under funded, to acquire some of that baseline data. Especially in the areas that you're getting ready to operate. You know, the Gulf of Alaska is some of	Please see Section 5.2.1.4 regarding research planned as part of the monitoring associated with Navy training events in the Gulf of Alaska. The U.S. Navy has developed a GOA TMAA Monitoring Plan to provide marine mammal and sea turtle monitoring as required under the MMPA of 1972 and the ESA of 1973. The GOA TMAA Monitoring Plan proposes monitoring goals for marine mammals that are unique with regard to their breadth as well as their focus on potential impacts of mid-frequency active sonar (MFAS) and underwater explosions on marine mammals and sea turtles. Additionally, to develop additional baseline data for the Gulf of Alaska, in April 2009, the Navy funded and NMFS conducted the Gulf of Alaska Line-Transect Survey (GOALS) to address the data needs for this analysis. Line-transect survey visual data to support distance sampling statistics and acoustic data were collected over a 10-day period both within and outside the TMAA. The Navy shares your concern for marine life and is very concerned about the environment. As such, the Navy is a leading sponsor of marine mammal research and provides a significant amount of funding and support to marine research.

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		the most difficult areas for the scientific community to get funding for. So that's mainly what I wanted to say on my second round. Thank a lot you guys.	In the past five years the agency funded over $100 million ($26 million in FY08 alone) to universities, research institutions, federal laboratories, private companies, and independent researchers around the world to study marine mammals.
Paul Kendall 3-1		Oh, my name is Paul, middle initial D, Kendall. I think these moments are very, very special that we gather. And the reason that they are is it allows us a collective view of diverse opinions and unknown moments of not really going where everyone's at and allows us to reflect on our own values and ideas. And I wanted to thank you for your ability to come around again. In today's world we're seeing a tremendous repression of the ability to collectively communicate in some unhurried fashion. Some contemplated mode, the more complex our problems become in coming back to some greater understanding of balance is going to require a slower thought process due to the complexity to find a resolution. In having you allow a person to get up and have a fair share of time and then to come back around and circle, I think that's admirable and appreciative thing that deserves recognition. And I just can't stress enough that you should have these moments on camera, on video to share with the rest of the world. So that you can set the bar and show other people. It's very important, I think that all of our data be videoed on the internet. Something that's very magnificent that's happening there. And the reason I actually came up here was to -- I hope that you'll chose Kodiak, and Homer, and Seward, and Cordova, and those places to come in with a couple of ships. There is something magnificent and inspirational about those ships and the men and women that represent some of our more fundamental values that created this great country, that I think are immeasurable in the long term. And naturally you won't forget the energy science technology designated vessel to share with the community. And if I might -- one more thing real quick. To give you and idea of why I'm here to give you -- there are things moving very, very quickly sweeping across the, I think the entire plant, but especially America. There are over 40 manufactures of electric vehicles that are reaching in the next three years. In addition to that the Chinese have announced they are going all electric bicycles. And when you look at things like that, within three years every seven year old child in India, China,	This comment is duly noted. In response to concerns over climate change, Department of the Navy leadership has initiated broad programs to reduce energy consumption and shift energy demand to renewable and alternative fuels to the extent consistent with its national security mission, thereby reducing emissions of CO_2 and other GHG. The Navy has implemented a number of shore installation and fleet programs that have substantially reduced the generation of GHG, primarily through conservation of fossil fuels and electricity. Ashore, the Navy has aggressively encouraged its installations to reduce energy costs, both through facility competitions and through investments in solar, wind, and geothermal technologies. Energy conservation aboard Navy vessels at sea also has achieved substantial reductions in fuel consumption, and thus emissions of GHG. For further detail, please refer to Section 4.2.1.2 of the FEIS/OEIS.

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		and Asia is going to know more about the lithium ion battery and electron (indiscernible) they ever learned. And when you put that into the internet on such a worldwide scale the bookends of those impacts, then pour tens of the times we have never seen before, like an industrial revolution. This new sense of awareness that is now coming through energy, responsible energy management. It not only brings us a new individual freedom and will which we've never seen before. Because it's heading home and transportation. But they pour tons of new degrees of awareness. So, when I see these fleets that represent large amounts of energy in partnershipping and transitioning with the water bodies, the great water bodies. Which are really hydrogen. I think these are moments that I hope that you'll discuss amongst yourself -- maybe more than you are. And thank you again.	
Paul Kendall 3-2		Well, my name is Paul, middle initial D, Kendall. This is like my fourth time I think here on giving testimony. It's my first time to be at one of these. And I just wanted to note for the record that your people have been very accommodating and professional and amiable. And they've made me feel very comfortable. And sometime those little moments in our everyday events go unnoticed and I just wanted to give notice to that. And also your presentation allowing the individuals to come back up after a second comment, I think that really needs to be recognized. These meetings where we gather as a community, as a collective group are very important. They need to be unhurried and plenty of time. But more importantly sometimes when you take testimony from such a diverse gathering, you will actually learn things onsite in multiple orders or reviewing your thoughts. And it's important, I think to allow that person to have a second opportunity to come back up and reflect on a prior position of change or some new insight. And I thought that was really wonderful of being able to have that little nuance. Other than that you might have a little time clock up there with a large six or ten inch LED that -- where a person can see their time, and that way a person can have the dignity to shut themselves down when they're talking, which gives them more -- it empowers the individual to have more capacity to develop their personality and knowing the responsibility of time limit -- time limitations on talking. Anyway, thank you very much. That's it.	This comment is duly noted. The Navy appreciates your suggestions for these meetings and is working on implementing some of them for future Navy public meetings.

1 **I.8.3 HOMER**

ID	Organization	Public Comment (Individual Oral Comment)	Navy Response
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Paul Seaton 1		Commented as follows: Well thank you. I am Paul Seaton, I'm the State Representative for District 35, covering Homer, Seward, and the outer Kenai Peninsula. I received comments of concern from constituents at the initiation of the last training exercise. These concerns were mainly centered on the potential effects of new -- frequency SONAR on whales.	The Navy shares your concern for marine life and is very concerned about the environment. As such, the Navy is a leading sponsor of marine mammal research and provides a significant amount of funding and support to marine research. In the past five years the agency funded over $100 million ($26 million in FY08 alone) to universities, research institutions, federal laboratories, private companies, and independent researchers around the world to study marine mammals. The Navy fully analyzed potential impacts to marine life from sonar, including whales in section 3.8 (Marine Mammals) of the EIS/OEIS. The analysis concludes that there is no significant impact to populations of marine mammals in the GOA.
Paul Seaton 2		I thank the Navy for scheduling this meeting here in Homer for the convenience of our local residents and I really appreciate it. Alaskan's are concerned about the effects of copper in fresh water and marine environments, especially on fish. This includes education of copper used in bottom paints in our fishing fleets, and also we're currently undergoing a review this month of -- by the Alaska Department of Environmental Conversation on the aquatic life standards for copper. As those have been seen -- the current standards have been seen not be adequate to protect juvenile salmon for their homing and responses to avoiding predation. So, I'm concerned that on table 3.2-22 on page 3.2-32, that the sonobuoys that are going to be used will increase the amount of copper discharge from the current level of 38.1 pounds to 2520 pounds under -- that's Alternative 2 versus the No Action Alternative. And the increase of copper from eight pounds to 540 pounds. And that first was copper thiocyanate, and so I would like to request that the Navy look at analyzing the use of a explosive charge to destroy those sonobuoys that does not incorporate those amounts of copper that would discharge into the Gulf of Alaska.	The Navy has studied the release of copper thiocyanate from sonobuoy seawater batteries, and determined that it would achieve a peak concentration of about 0.015 microgram/liter (Department of the Navy 1993). Text describing the anticipated maximum concentration and environmental fate of copper thiocyanate from sonobuoys in the marine environment has been added to Section 3.2.2.4, 3.2.2.5, and 3.2.2.6.
Paul Seaton 3		And so I appreciate that, I appreciate the fact that you are looking at the affect of mid-range SONAR on the whales, as that is a prime concern by my constituents. I don't have -- although I have a degree in biology, whale interaction was	With regard to sonar use, the Navy fully analyzed potential impacts to marine life, including whales in section 3.8 (Marine Mammals) of the EIS/OEIS. The analysis concludes that there is no significant impact to populations of marine mammals.

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		not that -- my expertise. So, I would appreciate you continuing to look at that. And thank you again for having this meeting here in Homer."	Please note that the U.S. Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations. The Navy's analysis indicates and this history indicates there is little relative risk to marine mammal populations from sonar training exercises as proposed in the EIS/OEIS.
Roberta Highland 1		Hi, I'm Roberta Highland. And I just found out about this meeting by reading the Homer News on Thursday. And I've always got issues when such a large amount of effort is put into having public meetings, that the people that are putting it together -- probably one idea is to contact any City Clerk office in the area that you're holding and they can give you the times, because really what would have been helpful was to have had this in the Homer News the week before because it's Saturday. And I just saw it on Thursday. It's just one way because of the cost and the work that goes into it. So, that would be my suggestion.	In order to contact as many people as possible and coordinate the logistics, public hearing locations and dates necessarily were identified in advance. With regard to public notification in Homer, three series of display advertisements were placed in the Peninsula Clarion. The first series of newspaper advertisements occurred after the NOA/NOPH was published in the Federal Register and ran for three consecutive days in the Peninsula Clarion. The second series of newspaper advertisements was published a week and a half prior to the public hearings dates. The third series of newspaper advertisements was published three days prior to the public hearing dates, including the day of the public hearings. Those dates were: 14 December 2009, 15 December 2009, 16 December 2009, 28 December 2009, 30 December 2009, 6 January 2010, 7 January 2010, and 8 January 2010. - In addition, two news releases were distributed by the Commander, Navy Region Northwest Environmental Public Affairs Officer (CNRNW EPAO) to media outlets, elected officials, and other potentially interested parties. The first news release was distributed on 11 December 2009, and announced the availability of the Draft EIS/OEIS. This news release included details on the Proposed Action, public hearings dates, locations, times and comment information. A second news release was distributed by the CNRNW EPAO on 31 December 2009, and announced the Navy's upcoming public hearings. This news release, meant to encourage the public to attend the open houses and presentation/oral comment sessions, provided detailed information on the location, dates, and times of the public hearings, in addition to comment information and details on the Proposed Action. - A public service announcement was distributed twice by CNRNW EPAO (31 December 2009, and 4 January 2010), announcing the public hearing locations, dates, time, close of

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			comment period, and project Web site. - Postcards announcing the availability of the Draft EIS/OEIS, comment information, and the public hearing dates, times, and locations were sent out to 691 individuals on the project mailing list on 23 December 2009. - Fliers announcing the public open houses and presentation/oral comment sessions for each of the five public hearings locations were distributed to 45 locations.
Roberta Highland 2		I always like to ask people to pretend that you're a whale, or a bird, or a fish, or other mammals when any of these decisions are being made. And just take it from that perspective so we're not doing it from our frequent human ideal and so anyhow that's just one of my ideas. Is really take that -- it sounds silly, but kind of take it seriously. And there are the decisions maybe change because of that.	This comment is duly noted.
Roberta Highland 3		And active SONAR sounds a little problematic, for sure. Underwater explosives sound problematic, and birds and fish dying sound problematic. I understand that you are doing a really good job on making sure that the least amount of environmental damage is done. But it's one of those consequences that happens no matter what.	Please see Sections 3.5 to 3.9 regarding an analysis of impacts to birds, fish, and marine mammals with regard to sonar and at-sea explosions. Additionally, please see response to Seaton – 3.
Roberta Highland 4		I'm also wanting the carbon footprint and pollution considered. And I don't know if that's being given the amount of consideration that it needs to be. Because every time a ship goes, an airplane takes off, any of the things that will occur, there is a carbon footprint and there is pollution that happens with that. And that needs to be something we really strongly take into consideration these days.	Carbon footprint and air pollution concerns including greenhouse gas emissions have been discussed in Section 3.1, Air Quality, and in Chapter 4, Cumulative Impacts. Additionally, the anticipated carbon dioxide emissions of the Proposed Action (the "carbon footprint") are quantitatively described under Cumulative Impacts in Chapter 4.2.1.
Roberta Highland 5		And I'm always wondering if there's not a way of doing it more frequently in a -- I'm trying to think of the word, where you are pretending you are doing it.	You are referring to "simulated" training. It should be noted that Navy and Marine Corps training exercises already use, to a large extent, computer-simulated training and conduct command and control exercises without operational forces (constructive training) whenever possible. However, as described in Section 2.3.2.4 of the EIS/OEIS, "Unlike live training, simulated training does not provide the requisite level of realism necessary to attain combat readiness, and cannot replicate the high-stress environment encountered during combat operations." This section and Section 1.2.1 - "Why The Navy Trains," goes further to explain the importance of live training and the current limitations of simulated training.

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Roberta Highland 6		And I know that -- oh, 30 seconds, okay. I'm wondering about the time of year. Summer is when the mammals, and fish, and bird activity is highest and that seems to be a poor choice of time for these exercises. And I'll quit because my time is up. Thank you.	In Section 2.3.2.3 of the Final EIS/OEIS, the alternative of training during winter in the GOA TMAA was considered. The 'Alternative Locations' discussion explains why a change of locations does not meet Navy's purpose and need for the proposed action. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further.
Robert Archibald 1		Good evening and thank you for coming down. Even though it was short notice, we're happy to see you here. And I'd just like to reiterate on what Paul said, that we've had a big battle going here with the androus fish stocks and the effects of copper on them. And it's proving that they are kind of dizzying their navigational systems.	The Navy is very aware of concerns from fishing fleets and fisheries in the Gulf of Alaska. As described in the EIS/OEIS, the Navy is confident that its training activities will not impact fisheries, fish populations, or the livelihood of fishermen in the Gulf of Alaska. In fact, there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of fish populations. With regard to copper, the Navy has studied the release of copper thiocyanate from sonobuoy seawater batteries, and determined that it would achieve a peak concentration of about 0.015 microgram/liter (Department of the Navy 1993). Text describing the anticipated maximum concentration and environmental fate of copper thiocyanate from sonobuoys in the marine environment has been added to Section 3.2.2.4, 3.2.2.5, and 3.2.2.6.
Robert Archibald 2		So, the timing of these exercises -- if they're -- you know, if they're going to be at the same time that we're having fish stocks coming back into this Gulf of Alaska and heading up to the Bering Sea and Bristol Bay. And if this has any significant impact or increases any kind of chemicals in the water, copper be what it is, I don't know what you're using for munitions these days. I would have some problems with that at that particular time of the year.	This comment is duly noted. Please note that the Navy is very aware of concerns from fishing fleets and fisheries in the Gulf of Alaska. As such, the Navy conducted a thorough analysis of impacts from its proposed activities to fish in Section 3.6. As described in the Final EIS/OEIS, the Navy is confident that its training activities will not impact fisheries, fish populations or the livelihood of fishermen in the Gulf of Alaska, and therefore will not impact fish stocks returning to Bristol Bay or the Bering Sea. In fact, there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of fish populations.
Robert Archibald 3		I would hope that if they doubled the length of these exercises they would take into account the time of year for migrations. And I would certainly hope that NMFS and the U.S. Fish and Wildlife Service would have a significant impact on that, as far as giving the Navy adequate information on that. Because I've sailed in and out of Prince William Sound a lot and it's going to be an area where there	As detailed in Section 3.8, migration patterns have been considered for all species throughout the Final EIS/OEIS. In addition, the U.S. Navy is consulting as required under regulations including the Marine Mammal Protection Act and Endangered Species Act which are administered by the National Marine Fisheries Service and U.S. Fish and Wildlife Service. Please note that none of the proposed actions involve

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		is an awful lot of mammal interactions. I so I just hope you sharpened your pencil on that one. And we don't want to see a whole lot of destruction out there with our fish stocks. So, thanks for coming.	Prince William Sound or the areas leading into and out of the sound, which is approximately 60 nm from the TMAA.
Olga von Ziegesar 1-1		Hi, my name is Olga von Ziegesar. I am the Director of Eye of Whale, a nonprofit research group here in Alaska. Our mission is to study and protect the humpback whale and to educate people of the status and the health of the species. We've been documenting the population of humpback whales in Prince William Sound and the north gulf coast of Alaska for 30 years. In 1966 the humpback whale was put on the endangered species list and protected and protected by the Marine Mammal Protection Act. In the 30 years of my study I have seen the population of the North Pacific humpback whale go from 3000 to 20,0000. About 5,000 of these whales migrate up into the north Gulf of Alaska to feed. This area includes the Cook Inlet, Kodiak, the Barren Islands, Kenai Fjords, and Prince William Sound, and the waters in between.	This comment is duly noted.
Olga von Ziegesar 1-2		It is known that military SONAR testing is very damaging to the soft tissue in the marine mammal skulls and organs. These effects can cause brain hemorrhages, mass stranding, and even death. Mid-frequency SONAR has been proved to be very destructive to whales diving and feeding behavior. They will avoid the intense sounds by surfacing too quickly and causing conditions similar to the bends. Now you may think that the military tests would be harmless if they were done in the winter or slightly off season, and not during the summer months when the whales are definitely most abundant in these areas. We are now finding that many whales stay in the northern waters during the winter to continue their feeding. Hydro phone arrays hung from buoys in the Gulf of Alaska have recorded whale songs and calls during every month of the year. You will say that your plan is to have observers aboard to watch for whales. When they are present the testing will be ceased. Marine mammals can hear for many miles underwater. And from the deck of a ship a whale blow can only be seen if it is within a couple of miles. For these reasons it will be impossible to avoid effecting the whales and other marine mammals during any time of the year in the Gulf of Alaska.	The Draft and Final EIS/OEISs use the most current, relevant scientific information to develop the analysis on sonar training and potential impacts to marine mammals. Please see Section 3.8 regarding what is known with regard to sonar impacts to marine mammals. As detailed in Section 3.8, Navy is aware of acoustic monitoring results indicating the presence of many species year-round in the Gulf of Alaska. As explained in Section 2.3.2.1 of the Final EIS/OEIS, a rescheduling of training activities outside the summer months would not support the Navy's Purpose and Need and was therefore eliminated from further consideration. The Navy's protective measures are effective at mitigating, not eliminating, risk to marine mammals. Based on the analysis included in this EIS/OEIS, including the Navy's history of operating sonar in the Pacific Ocean with no recorded evidence of harm to marine mammals, the Navy feels its protective measures are adequate. Navy lookouts undergo extensive training to include on-the job instruction under supervision of an experienced lookout followed by completion of Personnel Qualification Standard Program. NMFS-approved Marine Species Awareness Training is required before every sonar exercise. Chapter 5.0

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			of the EIS/OEIS, Mitigation Measures, presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events. While the Navy is very confident in its well-trained lookouts, it does not expect that all animals present in the vicinity of training events will be detected. The acoustic impact modeling estimates provided in the EIS/OEIS are not reduced as a result of mitigation effectiveness, even though many marine mammals will be detected and sonar exposures will be avoided.
Olga von Ziegesar 1-3		Finally, the humpback whale population is recovering to healthy numbers. And now the Navy proposes to endanger them with intensive SONAR and explosives. It seems to me that we must change something if protecting our country means sacrificing the whales. Thank you.	The U.S. Navy has conducted training using mid-frequency active sonar without incident for decades in Hawaii without any apparent impacts to humpback whales, including within the designated humpback whale sanctuary. There is no evidence of broad-scale impacts that are either injurious or of significant biological impact to any marine mammals from those locations. The Navy conducted a thorough analysis of sonar and at sea explosions in the EIS/OEIS, using the most current and best available science, and with cooperation from the National Marine Fisheries Service, which is responsible for the protection of marine species. Because there is no indication from areas where the Navy routinely trains that training activities have a negative impact on the health of the marine environment, the Navy is confident that there is little relative risk to marine mammal populations from active sonar training or any other training events.
Sue Christiansen 1		I to want to thank you so much for this public process. I thank you for your service to the United States and all of you in your professional roles, your expertise, your commitment to science, and research. I just found out about this today as I was flying in on Era on the same flight as all you guys. So, I'm glad I was able to be here.	This comment is duly noted.

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Sue Christiansen 2		And what I remember, I think it was about five years ago the Navy was doing research off the coast of New Zealand on SONAR -- on new acoustics. And maybe you guys - - are you familiar with that? I heard about this from NPR and I've thought about it after I got off the plane this morning. But there was like a hundred whales that breached [sic], and it -- you know, it started out with about 20 and they tried to figure out what was causing the problem. And it turned out after several years that it was demonstrated or proven that it was the new acoustic SONAR research that was going on that was effecting them. And I just don't want to see that happen here. And I know that everyone involved with the Navy or no one in the Navy wants any of our marine animals to be injured in any way or you have a good intention as well, and that you are doing the best of your -- to your abilities to protect our nation. And have the highest good in mind for all species. And I would just say, my feeling at this time is I think it's a little early for us to be doing this kind of research - - or you know, the games or the activities that you've presented happen here.	Please see the full analysis of marine mammal strandings in Appendix F of the EIS/OEIS – Cetacean Stranding Report. The report discusses the various stranding incidents around the world. Please note the Proposed Action includes no testing of new weapons, but rather the training of Navy personnel with established sensor and weapons systems. Additionally, the Navy fully analyzed potential impacts to marine life from sonar, including whales in Section 3.8 (Marine Mammals) of the EIS/OEIS. The analysis concludes that there is no significant impact to populations of marine mammals.
Sue Christiansen 3		And I support no action alternative at this point. And I'm not sure I support the research for SONAR, if it has the effects of breaching [sic] whales or that kind of thing. Okay, that's it.	As explained in Section 1.4 of the EIS/OEIS, the decision on which alternative the Navy will pursue will be made in light of the Purpose and Need by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process. As stated earlier, the Proposed Action includes no testing of new weapons, but rather the training of Navy personnel with established sensors and weapons systems. Also stated above, please see the full analysis of marine mammal strandings in Appendix F of the EIS/OEIS – Cetacean Stranding Report. The report discusses the various stranding situations across the world.
Amy Christiansen 1		My name is Amy Christiansen, I've lived in Homer -- in and out of Homer for years. But I have some real questions for you guys that don't seem to be addressed, as in how far does the SONAR blast travel? How loud is it 10 miles away? How loud is it 200 miles away? What happens when it comes in contact with some shelf or something? I mean that kind of information, I don't think we really have.	Information of this general nature was presented in Table 3.8-5 with regard to Navy's most powerful surface ship mid-frequency sonar. As that table shows, if the conditions were perfect for sound to be conducted across the entire distance (which is not likely to happen), a sonar ping at 3.5 kHz beginning with a source level of 235 dB was modeled as traveling a maximum of 105 km (approximately 57 nautical miles) in a homogenous water column by the time it had undergone transmission loss resulting in a level of 120 dB at

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			that distance. How "loud" the sound would be perceived at that distance underwater is, again, subject to many variables since some marine mammals (like blue whale) likely cannot hear a sonar at a frequency of 3.5 kHz so there is no means to accurately answer the question. At 10 miles from the same source, dependent on the conditions such as the presence of a distinct temperature layer at depth and the depth of the receiver in the water column, it is possible the sound could not even be present at all.
Amy Christiansen 2		I heard a couple people state that we don't really know that much about marine mammals. We really don't. And for me, just from my heart SONAR -- just discharging SONAR for -- I mean, I would really want to know better reasons what science you're really trying to determine here. Or what is the whole weaponry involvement? I haven't heard a link there. I mean it's nice -- the posters are nice and I do appreciate the chance to talk about it. But I don't feel that it's worthwhile if you really don't know what we're studying yet to harm any marine mammals.	Sonar is a sensor not a weapons system and active sonar in fathometers and fish finders are used by many vessels at sea. The Navy is proposing to use active sonar in Anti-Submarine Warfare training events; there is no testing involved in the proposed training. The EIS/OEIS uses the most current, relevant scientific information to develop the analysis on sonar training and potential impacts to marine mammals. This analysis (in Section 3.8) was completed in cooperation with the National Marine Fisheries Service, which is responsible for the protection of marine species. The Navy will continue to provide a significant amount of funding and support to marine research. In the past five years the agency funded over $100 million ($26 million in FY08 alone) to universities, research institutions, federal laboratories, private companies, and independent researchers around the world to study marine mammals. In addition, as described in Section 5.2.1.3, there will be marine environment monitoring for the purpose of determining any detectable impacts as a result of the training events proposed.
Amy Christiansen 3		I also wonder if there's a lot of this training and stuff going on in California -- I know California and Alaska are different, and waters are different. But I always wonder why -- or I feel like, they can't get away with it in California, so they might be coming up to get away with it in Alaska. And I would really like that issue addressed. Because there's more population in California - - I mean, that part is real for me. And it might be ridiculous because it is different ocean you know, waves or whatever. But some part of that is real for me. That I would like that addressed.	The Navy has been, and is still, conducting similar activities off the coast of California, in the Pacific Northwest, off the coast of Hawaii, on the east coast and in various other places around the world for decades with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals at those locations. The Navy is also conducting similar analysis and environmental planning at each Navy range complex. As explained in Chapter 1 of the EIS/OEIS, part of the selection criteria for choosing Alaska as a training location is whether the proposed action meets the Navy's purpose and need. As described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included moving this exercise to

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			other locations. Such alternatives fail to meet the purpose of and need for the proposed action.
Amy Christiansen 4		And more notice would have been nice. And what else did I think? Oh, like in the book -- science is always a little bit lagging is what I found. If you take sea otters, which are mentioned in your environmental impact study, they are now listed, they are now -- critical habitat has been named. And that's not included in your thick book. And I'm sure that thick book took a long time to put together, but that's something too that is apparent to me. So, okay thanks.	Sea otters are discussed in Section 3.8 of the EIS/OEIS. Additional text has been provided in Section 3.8.1. Please note that since the TMAA is far offshore and well beyond the sea otter Critical Habitat, sea otters are not likely to occur within the TMAA because of two factors: foraging diving depth limitations (ranging from 2 to 75 meters [6.5 to 246 feet]) and the bathymetry of the TMAA (typically deeper than 100 meters [328 feet]).
Whitney Lowe 1		My name is Whitney Lowe, I'm here from Homer, Alaska. And as with everybody else I'd like to thank you very much for giving us the opportunity to be able to comment this evening on this issue. The Navy has a history of poor environmental stewardship including dumping high volumes of garbage into the ocean as well as toxic materials from explosive ordinance. And consequently it is difficult to believe what they might say about being responsible for the environmental impacts of these actions.	The Navy is very concerned about the environment and actually has an excellent record of stewardship. For more information in this regard, see the Navy's Currents Magazine at [http://www.facebook.com/pages/Washington-DC/US-Navy-Currents-magazine/112833481868]. Shipboard waste-handling procedures governing the discharge of nonhazardous waste streams have been established for commercial and Navy vessels. These categories of wastes include solids (garbage) and liquids such as "black water" (sewage), "gray water" (water from deck drains, showers, dishwashers, laundries, etc.), and oily wastes (oil-water mixtures). See Section 3.3.1.2 of the FEIS/OEIS for further details.
Whitney Lowe 2		And I can understand in these times of international terrorism, it's easy to throw out the fear card and say, that all these training exercises are necessary to keep our country safe. But trumping up peoples fears has routinely led to trading off the health and safety of human and other animal habitats because supposedly it was going to make us safer. At some point it would be great that we might learn that the answer to making us safer doesn't result from bigger and more powerfully destructive weapons, nor from destroying our surroundings in the pursuit of those weapons.	This comment is duly noted.
Whitney Lowe 3		At the present moment we have a situation of drastic concern with our worldwide fisheries and marine environment. A November 2006 article in the Journal of Science suggested that there will be virtually nothing left to fish from the seas by the middle of this century if the current trends of catastrophic fish populations declines continue. The primary culprits in this involve over fishing, pollution, and other environmental factors.	This comment is duly noted.

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Whitney Lowe 4		In the face of these issues it's totally irresponsible to increase military training, which involves toxic dumping and tactics known to kill and injure marine life.	The Navy shares your concern for marine life and the health of the ocean and the Navy does not dispose of toxic waste by dumping it at sea. Furthermore, the Navy has conducted a thorough analysis of potential effects from its proposed activities in Chapter 3 of the EIS/OEIS. Because there is no indication, in the area where the Navy trains, that training activities have a negative impact on the health of the marine environment, the Navy is confident that there is little relative risk to the marine environment from active sonar use or other training events.
Whitney Lowe 5		We should be going to great lengths to do anything we can, not only to mitigate the current practices that are causing precipitous decline, but to reverse this trend. To engage further military exercise in this region that is extremely rich in sensitive marine life is a blunder of epic proportions and represents incredibility poor judgement.	This comment is duly noted. Please see Chapter 5 of the EIS/OEIS, Mitigation Measures, which presents the Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events.
Whitney Lowe 6		Our children and decendents in who's hands we are going to leave this incredibility injured world will be asking us, what were they thinking? We can afford to participate in this process, as it represents the epitome of irresponsibility and drastically poor judgement. Thank you.	This comment is duly noted.
Don Lane 1		Thank you for this opportunity -- thank you for this opportunity to speak. This nation's security is a big and the Navy has always played a large role in the safety and security of this country. It's a large part of the success that we all enjoy, and the freedoms that we all enjoy. Having said that, I also understand the taxpayers investment in the tools of that security, it's important to practice. And it's important to understand those tools and it space and it takes time to practice.	This comment is duly noted.
Don Lane 2		Having said that, this map -- the western boundary of the practice area or the football field, as it described to me goes up on the shelf in the Gulf of Alaska. When it goes from dark to light is right around 150 fathom break. Now to the west of that break and over to the edge of the yellow line, that is some of the richest bio-diversity in marine fish as you'll find any place in Alaska. I have spent years out there fishing, long lining, pulling pots and from Montague Island down to off of Kodiak. There are sharks, they are skates, there are halibut, there's grey cod, they are fish there that have air bladders, they are fish there that don't have air bladders.	The Navy is very aware of concerns from fishing fleets and fisheries in the Gulf of Alaska. As described in the EIS/OEIS, analysis of impacts to fish, including those with swim bladders, are found in Section 3.6. The shallow water shelf area including Portlock Bank referenced in the comment is too close to the borders of the TMAA and would unnecessarily constrain maneuverability. As such is not a likely operating area where at sea explosions would be occurring.

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		There's this huge bio-diverse population that are -- fish that are there year round. My concern is; is that some of that water that's up on that shelf, it doesn't show on that picture, is 150 to 180 feet deep. It's not very deep, there are -- Portlock Bank area up there that's 35 fathoms, off of Montague Island, sticking south of that island there's an area -- it's all less than -- some area of it are less than 200 feet deep. And imagine a huge explosion on that wall and you're over here. And you're a fish on the bottom. That's about the distance between the surface and the fish if there was an explosion. So what I would like to see, while I know you need the area to practice.	
Don Lane 3		There was the comment about the sinking of the ship, as the target would be in 1000 fathoms. I think it's important to consider any ordnance or major explosions that were to occur during the practice should be off of that ledge into 1000 fathoms. It's not that far to move off that shelf to deep water. It's an area of maybe five miles to break from 180 fathoms down to over 1000 fathoms. And the difference between being that wall to this wall in a major explosion and all those fish that are laying on the bottom and 1000 fathoms is a mile. So, that would be my only is; is that western -- that western shelf there is -- when you talk about environmental impact, there's a lot of environment there. And some of it is not very far down. And if it was considered -- you know, you could drop a bomb there in any of that area, that would be a mistake in some of those areas, because it's not that deep.	The vessel used for SINKEX is placed in a specific location that is greater than 50 nm (93 km) out to sea and in water depths greater than 6,000 ft (1,830 m) (40 C.F.R. § 229.2) so that when it sinks it will not be a navigation hazard to marine traffic. These parameters would not allow for any activities to occur on the continental shelf due to the distance and depth requirements. See Figure 2-7, "Possible locations of a SINKEX within the TMAA", for a graphic representation of the areas that meet SINKEX requirements.
Elise Wolf 1-1		My name is Elise Wolf. I'm on the Board of Directors for the Kachemak Bay Conservation Society. Thank you for being here. And I'll ditto what everyone else has said. While we appreciate you coming to Homer, I have some issues. And I'm surprised that you're not in Seward because as you can see this map shows -- there's a few tourism operators, whale watching companies that probably would have something to say to you that probably wouldn't be very nice. And I think you missed them in your environmental impact statement. You also missed Glacier Bay, I mean if we're going to mimic the French like they do bombing Tahiti, why not hit Glacier Bay too? I mean you picked two -- one of the second most important areas for tourism in Alaska other than Glacier Bay for whale tourism. So, I'm just wondering	Public hearing locations were determined based on the location of potential or perceived impacts to the human environment. Because of the large geographic area of the GOA ATA's, it would be an imprudent use of taxpayer funding to conduct public hearings where there are limited or no potential impacts. As such, the Navy chose locations that would enable it to contact as many people as possible without imprudent use of taxpayer funding to conduct public hearings. Three locations were originally chosen for public scoping meetings. Based on feedback from the public scoping meetings, the Navy added two additional public hearing locations for a total of five in Alaska: Anchorage, Cordova, Homer, Juneau, and Kodiak.

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		why we're not in Glacier Bay as well?	
Elise Wolf 1-2		Now the only reason that you can say that there's no significant impacts on whales is because you deny the impacts from seismic sound on whales. You have been sued over this. The Navy has been sued, and you're going to be sued again. Not by our little company or little group down here in Homer. But by the other big environmental groups, which don't bother to come to these because they are already planning suing you. So, we can just expect that. But that's why. And the only reason that you can deny impacts on whales is because you're getting your legal advice from the tobacco industry or some other company that -- lawyers that tell you that if you wait 50 years and say that there's no correlation long enough, then everyone will start to believe it, until the suits finally start coming in, and the death toll is high that you can't deny it.	There is no use of seismic sound sources proposed in this EIS/OEIS. The science of sound in the water and its effects on marine life is evolving. The Navy conducted a thorough analysis of sonar and at sea explosions in the EIS/OEIS, using the most current and best available science, as required by NEPA. This analysis was completed in cooperation with the National Marine Fisheries Service, which is responsible for the protection of marine species. Please see Section 3.8 for a full discussion of potential impacts on marine mammals including whales.
Elise Wolf 1-3		Now there is one antidotal evidence and antidotal evidence that shows that beaching occurs with whales and all the other things Olga said. There are science professors around the world that testify on this all over the globe. So, this is something that you just simply are choosing to ignore. There's no evidence to the contrary.	A complete analysis of marine mammal strandings is in Appendix F of the EIS/OEIS – Cetacean Stranding Report. The report discusses the various stranding situations across the world. In addition, there are discussions specific to species presented in Section 3.8. The best available science is considered in preparation of this EIS/OEIS. As a general matter, the Navy shows consideration of the best available science when we ensure the scientific integrity of the discussions and analyses in the GOA TMAA. Specifically, this EIS/OEIS identifies methods used, references reliable scientific sources, discusses responsible opposing views, and discloses incomplete or unavailable information, scientific uncertainty, and risk (See 40 CFR,1502.9 (b),1502.22,1502.24).
Elise Wolf 1-4		The other issue that you have is -- well your timings bad. But as Olga says, maybe there is no good timing.	In Section 2.3.2.3 of the Final EIS/OEIS, the alternative of training during winter in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further.
Elise Wolf 1-5		Your mitigation is inadequate.	Please see response to Olga von Ziegesar 1-2.
Elise Wolf 1-6		Your cumulative impacts are inadequate.	The cumulative impacts analysis addresses the environmental impacts that result from the incremental impact of Navy activities when added to the past, present, or reasonably foreseeable future actions that affect the same resources. Table 4-1 succinctly depicts the categories of past, present,

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			and reasonably foreseeable future actions that affect marine populations. Identifying such activities and in fact comparing them for relative impacts is an appropriate approach to cumulative impacts analysis. The EIS/OEIS analyzes in detail the effects of Navy actions on specific resources, and places those in the context of other sources of impacts.
Elise Wolf 1-7		Climate change shows that Ph changes are proving to increase the conduction of sound in our oceans. That's completely absent in your environmental impact statement. So, you are -- your cumulative impacts, which would include climate changes and the impacts thereof, and these pH changes that we now have evidence of are completely absent in your document. And I'm going to go ahead and wait until my time is up. Thank you.	Climate Change and Ocean Acidification are addressed in Section 4.2.1.2 of the EIS/OEIS. Please note that while current literature supports the hypothesis that acidification will increase the propagation of sound, most models and calculations show the effects to be limited to lower frequencies (~ 1–3 kHz and below). The current literature indicates that sound travels farther due to changes in the amounts of pH-dependent species such as dissolved borate and carbonate ions, which absorb acoustic waves. The effect of changing pH on mid and high-frequency sound propagation is currently being explored.
Mako Haggerty		Hi, my name is Mako Haggerty. I run a water taxi here, but I think for this event I'll be an assemblyman, which I was just recently elected to assembly. So, I'll speak from that standpoint. So, I want to thank you for coming here. And the displays here are very informative and I really appreciate that. I learned a lot tonight. I think this openness that we have here is really important. And what I seen on the -- not this slide here but the one that had the deadline for the comments to the EIS is January 25th, which gives the impression that the communication is going to stop between the coastal communities here and the Navy on the 25th. And I would hope and ask you, to please keep the communication open between the coastal communities beyond that deadline. Because there's going to the things that we learn and there's going to be things that you learn, and I would think that a healthy exchange of that information needs to continue beyond that deadline. And you're all real nice people. And I understand why they sent you here, because you are nice people. And we like to you know, sometimes we can be confrontational and you've -- and there's a reason for that. Is because we get the nice people and then you go on and do what you're going to do anyway. And a lot of times those of us that live in these coastal communities get a little tired of that. And so, I guess the	This comment is duly noted. The Navy is always looking for ways to better improve its public outreach capabilities and processes. The Navy has kept the website up and open during the entire EIS/OEIS process to keep the lines of communication open. The Navy complied with NEPA requirements in the development and consideration of alternatives. This FEIS/OEIS analyzes all alternatives in Section 2.3 and explains why the Navy has considered but eliminated alternatives in Section 2.3.2. The decision on which alternative to pursue has been considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.

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		main point is let's please keep the communication open. If there's going to be things that are going to impact the various communities in this area, we would like to be made aware of that in a timely fashion. And also if you learn anything, please let us know what that is. We like to learn things here too. Anything about the whales or the environment and we learn things and maybe you'd listen to us too. Thank you.	
Todd Hoppe 1		Thank you. My name is Todd Hoppe, commercial fisherman here in Homer and appreciate you gentlemen coming and giving me the opportunity of speak. I don't -- actually could you go back to that map please. I also am concerned about the continental shelf also. I make a large part of my living along there, and I'm concerned that DON explaining of activity along there.	The Navy is very aware of concerns from fishing fleets and fisheries in the Gulf of Alaska. The majority of the TMAA is located off the continental shelf and in deeper water of the Gulf. Impacts to fish under the proposed action from explosions would be possible, but these elements of the action are not expected to have measurable or detectable impacts to fish given the vast area encompassing the TMAA (42,146 nm^2 [144,557 km^2]). In addition, please note that long-range advance notice of scheduled activities and times are made available to the public and the commercial fishing industry via the Internet. The local 17th District U.S. Coast Guard Notices to Mariners may be found at: http://www.navcen.uscg.gov/lnm/d17/. These sites provide the public notice that the military will be operating in a specific area and will allow you to plan activities accordingly to avoid potential conflicts.
Todd Hoppe 2		And you know, if say there was going to be some impact with whales and it did -- it wasn't learned until later on down the line from your things.	Monitoring reports from exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. (Please see the recent results supporting this as presented in training ranges monitoring reports "Marine Mammal Monitoring for the U.S. Navy's Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)" available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). An integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the EIS/OEIS.
Todd Hoppe 3		The commercial fisherman will be the one's that are targeted first. You'll come up and do your test for 14 or 21 days, and go and what not. And down the line if something does happen it will be the commercial fisherman that are blamed	As described in Section 5, monitoring associated with the training events is planned in addition to a stranding protocol should something unexpected occur. Taking into consideration that there is no indication, in any area where the Navy trains,

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		for it first. In my opinion and in my experience in what we seen happen with steller sea lions and what was proven scientifically afterwards.	that training activities have a negative impact on the health of the marine environment, the Navy is confident, and the analysis indicates, that its training activities will not impact the marine environment off the Gulf of Alaska.
Todd Hoppe 4		And I'm also was here to make a comment on a comment - - public comment you had in Kodiak that your staff was maybe aware of, that there was a suggestion that you could hire some boats to do a fair amount of fishing to try to get the sperm whales to congregate in an area outside your boundary area. And that possibility could work. But what wasn't considered in that is who's going to be -- how do I want to word that -- there's not going to be anybody responsible for the quota. That's not going to come off the quota. It will be -- I'm not wording that right, I've got a fart in my train there. The fish will not be accounted for. Right now we're in a quota system, every fish -- every pound that's caught is accounted for. If you have boats fishing black cod to try to pull the sperm whales out of your area -- your test area, those fish aren't really going to be eaten and not accounted for out of the quota. And that's a reverse -- negative impact on the quota. So, thank you very much for your time.	Because it would be considered a behavioral harassment under the Marine Mammals Protection Act and would affect an Endangered Species, the Navy does not intend to implement mitigation measures that attempt to relocate sperm whales by fishing for black cod. Proposed mitigation measures to be implemented have been discussed in Chapter 5 of the EIS/OEIS. Section 5.2.1.6 which discusses other alternative protective measures that have been considered but eliminated for implementation.
Brenda Dulma		I just wanted to share -- I'm Brenda Dulma. And I just wanted to share what my daughter said when I just said that there was potentially going to be testing in the area. And this was her one response, how can we think about this when we have genetically unique species in our area. And that was her concern. So, I just want to share that and that may have been addressed, but -- and since I'm late, I was spending time with my child. So, I just wanted to share that. That we need to consider the bio-diversity that we have in this area, it's very unique. And that needs to be seriously considered before you make any final decisions. Thank you.	The Navy is aware of the diverse biological presence in the area and has conducted a thorough analysis of potential effects in Chapter 3 of the EIS/OEIS. The Navy is not proposing to conduct any testing, but is proposing to continue conducting training as have in the past with the proposed addition of some new activities as described in Chapter 2. Please see Chapter 3 of the EIS/OEIS for the description and analysis of potential effects. Chapter 4 includes cumulative analysis of all past, present, and reasonably foreseen future projects by the Navy and non-Navy activities.
Stephanie Zuniga 1		My name is Stephanie Zuniga and I am a teacher, third through sixth grade as well as I used to be sea bird biologist for Fish and Wildlife Service. And I also just heard of this last minute through a friend. And I wish I would have heard about it before because our kids right now are studying currents. And involved with that are current events and currents in our oceans. And last quarter we studied communication. So this is a perfect -- I'd love for them to	Please see response to Highland – 1.

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		have been here tonight. And if you want to stick around until Monday to come into the schools. So I would love to share this with my students because it's -- this is their playground, this is their home, this is where they are going to grow up and fish, be fisherman and fisher women, be tour guides, be scientists, biologists. And this matters to them and they need to be involved in this process of public comment as well.	
Stephanie Zuniga 2		When I was a biologist I worked in the Gulf of Alaska on the Barren Islands. And that area -- it's highlighted, is within breeding grounds of sea lions, within the main feeding grounds of sea birds and humpback whales. I mean I remember standing on -- or sitting on cliffs watching our sea birds and taking down data and looking out you know, for miles away and just seeing humpbacks feed. I mean, 20 humpbacks feeding. And you know, I'm looking just -- just in that area where that yellow is. And I'd be concerned, I'd be really concerned and I'd want to know more before just going in there and doing that. Especially that time of year. It was interesting to hear Olga's comments about that all times of year will effect these whales. But they are feeding, they are getting the bulk of their food in them before they head on south -- some of them. Thank you. Thanks for coming.	As per Chapters 1 and 2 of the EIS/OEIS, with the exception of Cape Cleare on Montague Island, the TMAA is located over 12 nm (22 km) from the northern point of the TMAA, the nearest shoreline (Kenai Peninsula) is located approximately 24 nm (44 km) north of the TMAA's northern boundary. The approximate middle of the TMAA is located 140 nm (259 km) offshore; the location of the TMAA has been chosen as a location adequate for training and for the least possible effects to critical habitats.
Elise Wolf 2-1		My name is Elsie Wolf and I'm on the Board of Directors for Kachemak Bay Conservation Society. This is a continuation of comments previously started. For the audience, there is significant research done by Natural Resources Defense Council on SONAR and seismic testing. So this is a good website to start going in and looking at links. Don't read the environmental impact statement and expect that to be completely fully disclosed information about seismic testing and impact on whales or fish. This is highly concerning.	Please note that seismic testing is not part of the Proposed Action. Because of the differences in sound characteristic and sound propagation (impulsive versus continuous noise), the analysis of each noise source (seismic and sonar) and their effects are independently evaluated.
Elise Wolf 2-2		And so let's talk about mitigation for a minutes. Because your mitigation suggests that you're going to power down and shut off your engines. Well we know from what's going on in the Arctic -- seismic testing right for oil and gas development, that it's highly expensive -- very expensive for a vessel of that -- of these sizes to power down. It's extremely costly. So what happens is in the mitigation plans, note p-l-a-n-s, plan, it says that you'll power down. But in reality, Shell for example has yet to power down, because	The power down directives in Navy mitigation measures are related to sonar power downs and not engine power downs. Potential impact from engine noise is also discussed within respective biological resource sections. As stated in the above response, seismic testing is not part of the Proposed Action. Additionally, sonar is just one of many sensor systems onboard Navy vessels. As such, powering down or even shutting down sonar would not prevent the continuation of overall training. These mitigation measures have been used

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		it's too expensive. So they come back a year later when they do their reports to the National Marine Fisheries Service and have in an armful or basketful of excuses as to why they couldn't power down.	since 2006 and Navy has implemented these measures during training, which has been reported to NMFS as required. It should be noted that the U.S. Navy in conjunction with NMFS and USFWS is best suited to determine what mitigation it can effectively use during its training and testing activities to mitigate harm to marine mammals while still being able to meet its operational needs to train for real-world conditions it may face. Please refer to chapter 5 of the EIS/OEIS which presents the US Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events.
Elise Wolf 2-3		And then let's talk about the people that are standing on your decks. These three people or however many. Are they going to be standing on the decks when you're out in 25 foot seas? How about eight foot seas? How about a cloudy day? How about the dark? How about five hours of daylight in the middle of the -- of you know, December 31st. These are unrealistic mitigation plans.	Navy lookouts undergo extensive training to include on-the job instruction under supervision of an experienced lookout followed by completion of Personnel Qualification Standard Program. NMFS-approved Marine Species Awareness training is required before every sonar exercise. In addition, as noted in the Final EIS/OEIS in Section 5.2.1.2, all Navy surface ships participating in anti-submarine warfare exercises will have two additional personnel on watch as lookouts. While the Navy is very confident in its well-trained lookouts, it does not expect that 100% of the animals present in the vicinity of training events will be detected, especially in conditions of limited visibility as described in the comment. The mitigation measures are designed to reduce potential impacts, not to guarantee they will not occur. Please note the proposed training would be scheduled for the summer months and would not take place in the winter timeframe (such as Dec 31). Please see chapter 5 for a complete discussion on the Navy's mitigation measures.
Elise Wolf 2-4		Now you're talking about this in the middle of summer, and this is probably why. Because you have 18 or 19 hours of daylight.	In Section 2.3.2.3 of the EIS/OEIS, the alternative of training during winter in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further.

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Elise Wolf 2-5		Still, we have experts in the Arctic Ocean right now, natives who cannot identify whales, and don't know the difference between a bearded seal and a ring seal. So, if Shell is having these problems and they're doing this all the time in these Arctic waters, then I'm not sure -- I don't -- I not -- I don't have any confidence that this is going to happen. National Marine Fisheries Service rubber stamps this stuff all the time.	Please see the response to your third comment above (Elise Wolf 2-3).
Elise Wolf 2-6		The fact that we are coming up with no significant impacts concerns me greatly. There's one final comment that I have to say, in that there is philosophical and spiritual and ethical proof if you want to call it, or cultural standards among most human societies that place some level of inherent of value. And what I mean by inherent value, that is the value of a being outside of the human want and desire. And that is completely absent in your plan. Thank you.	Your comment is duly noted.
Roberta Highland 2-1		My name is Roberta Highland and I didn't have time to prepare comments because I did just find out about this meeting. Now that I've heard the comments of people that really know what they're talking about in this area. I have become very alarmed. And I going to ask a question later. And what I would really like to see you do is don't go back to your stations, I would prefer that you take questions from the audience so we can all hear the answers. And I would really hope you will do that since you spent all the money and time to get here. That would be -- that's our usual preferred way of being able to communicate with you. So when we get to that point I am going to ask about ocean acidification. And I'm going to find out what the Navy is doing about ocean acidification.	From past experience, the Navy has concluded that the open house format used during the public hearings is the most conducive to effective dialogue and fosters a peaceful and non-confrontational setting for all involved. Additionally, all five public hearings held in Alaska exceeded NEPA requirements. Adequate time was given during each meeting to ask questions of a number of subject matter experts. All public concerns have been analyzed and addressed in the Final EIS/OEIS.

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Roberta Highland 2-2		And now that I've heard, and I should have figured that out, that this is really a rich area. It's incredibly rich. And what in heavens name are we thinking of even having allowed these types of activities to go on before? I am now feeling like this is a very poor place -- I don't know where a good place is. But this is not one. So, I'm going to be going on record saying, I don't what this activity going on in this area at all.	The Navy is aware of the abundant marine life in the area and has conducted a thorough analysis of potential effects in Sections 3.5 to 3.9 of the EIS/OEIS. However, to implement its Congressional mandates, the Navy needs to support and conduct current and emerging training activities in the GOA ATA's to enhance and sustain its training. These objectives are required to provide combat capable forces ready to deploy worldwide in accordance with U.S.C. Title 10, Section 5062. As described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included moving this exercise to other locations. Such alternatives fail to meet the purpose of and need for the proposed action.
Roberta Highland 2-3		And the other thing I'm going to bring is my four E's. And my four E's is something I would like to go national, state, worldwide when anything is brought up to make decisions on. Is economy, environment, energy, and ethics. And I am trying to get this being used as a template for every decision that gets made. And when I talk about ethics, I mean is it ethical for the animals, is it ethical for anything? Is it ethical for the worms? Of what we're planning on doing. But when you take into consideration economy, environment, and energy -- what the kind of energy use is being taken to do any of these things. And what the consequences are. I am trying to get that nation, worldwide and you could help. And I hope you think it's a good idea. Thank you.	This comment is duly noted.
Olga von Ziegasar 2-1		I also have not followed -- my name is Olga von Ziegesar. I'm from Eye of the Whale and I study humpback whales in Alaska, in the Gulf, and in Prince William Sound. And there are huge numbers that migrate along that shelf there. And we actually don't know exactly how they migrate out in the deeper waters, but there definitely been sightings of even Southeast Alaska humpbacks up there. So, they must circle somewhat before they go to their destinations to feed.	This comment is duly noted. Section 3.8 discusses the recognized presence of humpback whales and other marine mammals and includes an analysis of effects to marine mammals from the proposed Navy training activities. As presented in Section 3.8, the Navy does not anticipate any population level effect on humpback whales in the Gulf of Alaska from Navy training activities. The use of tracking data (for example as detailed in Section 3.8.3.3 for humpback whales) was used in determining the likely presence of marine mammals in the TMAA.
Olga von Ziegasar 2-2		I know that there have been a lot of studies on this SONAR. It's been going on for years off of Hawaii, off of New Zealand, off of California. The last Marine Mammal Conference there were lots of papers on the effects of the SONAR. It's hard for me to believe that we don't know more than you're saying. And I -- I'm afraid I haven't read	Please see response to Olga von Ziegesar 1-3

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		everything on it. But, I would propose that there be no SONAR and no explosives. I can see -- I was told that it's important that the boats come in that close so that they can fly up into these interior areas. But, I still don't really see why we should take any chances with SONAR or explosives. Thank you.	
Stephanie Uniga 2-1		I just -- my name is Stephanie Zuniga. And I just want to -- and somebody made the comment of how ocean acidification or the change in pH in our oceans is changing the way that sound carries underwater. And I -- this is pretty new for a lot of us. And I just wanted to suggest to those involved in making these decisions with our communities to watch A Sea Change, which is a movie, a documentary that is going to be here in Homer on Tuesday night I believe. I hope everyone here gets a chance to go watch that. It's on ocean acidification and there is website, a sea change.com I think it's called. And I would suggest that that be viewed by our decision makers, as an educator. Thank you.	This comment is duly noted. Please note that ocean acidification is addressed in Section 4.2.1.2 of the EIS/OEIS.
Robert Archibald 2-1		My name is Robert Archibald again. And I'm looking in this booklet here, and I haven't had much of a chance to look at your EIS. But, one thing that caught my attention is when they would power down. Is that going to be active SONAR at 1000 feet or 1000 yards? And again, shut it off at 500. And I don't know if that -- I do know that at 1000 yards it's still a pretty strong signal. And I don't know the research that's gone on there. But in a high population of mammals it seems a little ridiculous to me to expect to be able to be able to provide a safe environment at 1000 feet when you're going to shut them off.	The mitigation measures detailed in Section 5.2.1.2 include the first power down of active sonar at 1,000 yards from a detected marine mammal, a second reduction at 500 yards, and shut down at 200 yards. These mitigation measures were developed to minimize exposing marine mammals to sound levels that could cause TTS or PTS as described beginning in Section 3.8.7.2. Implementation of the safety zones discussed above will prevent exposure to sound levels greater than 195 dB re 1µPa for animals sighted. Lookouts are responsible for monitoring a much larger area and are expected to report everything observable within 10,000 yards of the vessel.
Robert Archibald 2-2		And also, I'm a little disappointed in our State for not putting up a little more -- if we have industry come in with an operation like this, they would certainly be out there demanding a little bit better information to the public than what you people are providing. And I say that myself because I haven't had a chance to review that. And I don't think it's been out -- put out to the general public. And this operation that you're proposing, be it warranted for our national security, I think you know, I don't have a problem with that. I have a problem with the destruction with the environment. And I think everybody should have a little bit better knowledge of what's going here, so. And I think it	Prior to and during the development of the EIS/OEIS, the Navy contacted and consulted with numerous federal, state, and local agencies and representatives. For a complete listing, please see Appendix G "Public Participation".

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		should be processed through the State also. And I haven't heard anything about the State being involved, so. Thank you.	
Linda Feiler 1		Sorry, Linda Feiler. Before I came I didn't know about the inert bombs that were going to be dropped, the missiles, the gun shells, the small arms, the pyro flares, the dyes, the expended materials, the hazardous materials. I didn't know a lot of it, and most of the community doesn't know a lot about it because like everything else, you come into the community, bang-o we have these meetings. Nobody ever gets their questions answered. If we have questions and we want them answered, that's why a lot of us come here. You know, because you're the ones who has the answers. I wanted to know how many pounds, how many bombs, how much toxic material is going into the water.	In compliance with NEPA, the Navy has chosen to implement a forum for comments to be made to foster a peaceful and non-confrontational setting for all involved. All public concerns and comments have been analyzed and addressed in the Final EIS/OEIS. The Final EIS/OEIS thoroughly analyzes the impacts of expended materials used during Navy training activities. As shown in Table 3.2-18 and 3.2-19, an estimated 352,000 lb (176 tons) of material would be expended during the training activities proposed under Alternative 2, with less than 3 percent of that material (about 5 tons) considered to be hazardous. Section 3.2 of the EIS/OEIS describes the impacts from the perspective of potentially hazardous materials such as explosives constituents. Section 3.3 describes the impacts of expended materials in terms of water and sediment quality. In addition, the existing discussion on the breakdown of hazardous materials in Environmental Consequences of Section 3.2.2, Expended Materials has been reviewed and, as appropriate, expanded. The analysis in the EIS/OEIS concludes that Expended and hazardous materials under the Proposed Action would not have a substantial effect on the marine environment.
Linda Feiler 2		You've done this for 40 year for 14 days, 40 years you've done it in various parts all over the United States. And I think most of us want to know where we call to get an answer because it's going to be in the newspaper. And we're going to have a dialog with ourselves through the radio station and we want to know where we call and where we get answers. Who's going to answer our questions before the 25th? MS. HIGHLAND: A phone number, that's what I want is a phone number. MS. FEILER: Yeah. A phone number, a name -- someone who's actually going to be there. And it probably should be 20 or 30 people there..... MS. FIELER: No. Because we already that. We already looked through the IRS [sic] and found out -- sitting with the expert here, that the answers were not in there. It doesn't say. I've asked all -- every single one of you already, how many, how many pounds, what are they made of, what are	Your request for a phone number is duly noted and multiple points of contacts were provided via many methods: the Federal Register, Navy Notice of Public Hearings, press releases, newspaper ads and articles, and in person at the public meetings.

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		the bombs made of? I want -- we what, I'm sure because I know there's at least 10 of us here who believe the same thing. We just want answers, that's all. And we want to know how we can get answers. And if we know that we're not going to be given answers, that is going to be highly publicized. So, please let us know who will answer any questions we have before the 25th. Thank you. MS. HIGHLAND: And a phone number.	
Brenda Dulma 2-1		I'm Brenda Dulma, very concerned citizen. I pick up this beautiful image of a sea anemone on the front cover. And I heard an amazing story at our museum the other day. We had a -- so my question is, what is the impact of this testing on the oceans invertebrates? The story I heard was in our own museum we had a sea anemone that hasn't opened up for four months because one fish is harassing it. So, if this is the response to an invertebrate in a very safe environment, that a fish is harassing it. What are the studies on all invertebrates with this kind of testing? So, my questions is, how are the invertebrates responding and other micro-organisms that we have no impact in this web of life? So, my question is, for my third time, what are the impacts on the invertebrates and micro-organisms in the ocean habitat from the testing? Thank you.	The Proposed Action includes no testing of new weapons, but rather the training of Navy personnel with established weapons systems. The Navy has conducted a thorough analysis of marine invertebrates in the EIS/OEIS, using the most current and best available science, as required by NEPA. The effects of underwater explosions on invertebrates are described in Section 3.5, Marine Plants and Invertebrates. Most expended materials are inert and dense and readily sink deep into existing sediments or become covered with sediment over time. These materials would also become encrusted by chemical processes or by marine organisms that further isolates them from the environment. Once deposited, the materials would not pose a hazard to benthic communities. Because high quality habitat occupies only a small portion of the benthic environment, there is a small potential for the communities to be affected by initial impact of expended materials. However, localized impacts to bottom-dwelling organisms could occur if struck but population level effects are not anticipated.
Whitney Lowe 2-1		My name is Whitney Lowe. And just a one other -- couple other things I want to add in addition to my earlier comments. I want to mention you know, it was brought up too that there's been a good bit of research done with seismic testing in some of the marine environments around here. And the oil companies have actually found that there's a possibility of residence for seismic testing up to 500 miles in some areas. And I know a lot of the focus has been on what's going on with certain marine mammals, such as the effects on whales.	Please see response to Elise Wolf 2-1.
Whitney Lowe 2-2		But the other thing I would ask you to really think about is that nobody is also taking about -- the whales aren't the only creatures in the ocean and we don't know how this might	Please see Sections 3.5 through 3.9 of the EIS/OEIS for the description and analysis of potential effects to all marine species. The Navy is aware of the diverse biological presence

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		effect sharks, fish, other animals that are not coming up and beaching themselves that are likely to be affected by this as well. So, while there's a lot study on certain marine mammals, like whales the very fact that we know this is killing a number of marine mammals, would ask us to think, maybe this is also having other damaging effects on other marine life that we really don't know about it. Is this really a good idea to engage in it. Thank you.	in the area and has conducted a thorough analysis of potential effects in Chapter 3 of the EIS/OEIS using the best available science as required by NEPA. Potential effects on all marine species have been discussed within the marine resources sections of Chapter 3.
Robert Highland 3-1		I just have to wonder you know, I was talking to everyone presenting and I think that we have come a long way. And that people just don't throw their trash in the ocean anymore they used to, hopefully. I think the Navy's probably come a long way, and they've hired scientists and they've hired environmentally conscientious people. But I still say, we are moving to fast at this point to just keep going. At some point the environmental impact has got to be totally important to each of us. And most important. So, I'm glad that there are better things happening all over the place. But I'm also worried -- what is your munition? What are you throwing into the ocean? I think I have a right to know. I mean is that a question of defense? Because if I know then some Arab might find out? To bad, I want to know what you're throwing in the ocean. And I have a right to know.	Please see response to Linda Feiler 1.
Robert Highland 3-2		What the difference between D-U and agent orange? Okay. That's it.	DU is the acronym for Depleted Uranium, which is the byproduct of enrichment of U-235. It is no longer used in munitions fired by Navy vessels. Agent Orange is the name for a herbicide and defoliant used by the U.S. during Vietnam and is not part of the proposed action.
Geneva Craig		[Ms. Craig was seated next to Ms. Feiler] Comments read by Linda Feiler: Okay. I'm speaking for Geneva Craig, who is 91 years old. And this is what she has to say: I believe in life. I do not believe in killing any living creature. The oceans are full of life. My reason for being a long time vegetarian is to avoid having any creature killed on my behalf. How could you practice bombing and not kill? I am strongly against any practice that will harm, stress, or kill in the ocean or on the land. I once supported the military because I believed it would prevent death. But now I have seen that we need to mend our ways and negotiate or learn ways to have peace. That was from Geneva Craig, who lives in Homer.....	This comment is duly noted.

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Linda Feiler 2-1		.....and my name is Linda Feiler, and I live in Anchor Point. Unfortunately my brother has brain cancer and I told him I was coming to the meeting, and he wished me luck and said, it's pathetic that we even have to comment on issues like this. I believe that we've done enough damage to our food sources and enough damage to our environment, enough damage to our seas and land. And that I don't believe that it's necessary for anyone to practice harming something else, killing our food sources, or killing our wildlife in the name of the military. If you need to kill in order to help us, what good does it do? Thank you very much.	This comment is duly noted.
Jaspar Kigar		My name is Jasper Kigar, I live and work in Homer, Alaska. I'm very impressed with the U.S. Navy's presentation and importance that they're placing on protecting marine animals. And I'm confident that the U.S. Navy is doing it's best to protect marine animals in the area in any of its activities. I understand after today that the U.S. Navy uses local fishing fleets and boat fleets in its war games as decoys and targets or for other purposes. And I would encourage the U.S. Navy to continue to use these fleets and to use more local Alaskan vessels in its activities in order to stimulate the local economy. Thank you	This comment is duly noted. The Navy strives to involve local entities when possible.

1 ## I.8.4 JUNEAU

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Greg Brown 1		Okay. My name is Greg Brown. I have no military experience, but I am a licensed commercial pilot. I'm also a licensed boat captain. And I've operated a little bit in Alaska. Live here in Juneau. And although I'm opposed to this exercise -- I'm not comfortable at all with the analysis regarding the air pollution	Carbon footprint and air pollution concerns including greenhouse gas emissions have been discussed in Section 3.1, Air Quality and in Chapter 4, Cumulative Impacts.
Greg Brown 2		and the water pollution associated with it.	The Final EIS/OEIS thoroughly analyzes the impacts of expended materials used during Navy training activities. As shown in Table 3.2-18 and 3.2-19, an estimated 352,000 lb (176 tons) of material would be expended during the training activities proposed under Alternative 2, with less than 3 percent of that material (about 5 tons) considered to be hazardous. Section 3.2 of the EIS/OEIS describes the impacts from the perspective of potentially hazardous materials such as explosives constituents. Section 3.3 describes the impacts of expended materials in terms of water and sediment quality. In addition, the existing discussion on the breakdown of hazardous materials in Environmental Consequences of Section 3.2.2, Expended Materials has been reviewed and, as appropriate, expanded. The analysis in the EIS/OEIS concludes that Expended and hazardous materials under the Proposed Action would not have a substantial effect on the marine environment.
Greg Brown 3		My biggest issues is the Navy SONAR activity. I found it pretty questionable when I asked why this had to be done in one of the richest areas in the world for marine mammals and fish activity.	The purpose and need and the activities proposed are presented in Chapters 1 and 2 of the Final EIS/OEIS; See pages ES-9 and ES-10 for a summary. The complex bathymetric and oceanographic conditions, including a continental shelf, submarine canyons, numerous seamounts, and fresh water infusions from multiple sources, create a challenging environment in which to search for and detect submarines in ASW training activities. Please see Section 3.6 for sonar impacts on fish and 3.8 for sonar impacts on marine mammals.

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Greg Brown 4		And why it had to be done in May and June. And the response was, well for safety sake we -- that's the most calm weather for us to do that. And anybody -- all of us in Alaska, we go out in weather in November, December, and January. We seem to be able to get through it okay. So, I think that was a pretty -- that's not a very good comment in opinion.	In Section 2.3.2.3 of the Final EIS/OEIS, the alternative of training during winter in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further. Additionally, the season during which Navy training is proposed is during the April to October timeframe.
Greg Brown 5		I am very concerned about the whales. I make -- I do whale watching in addition to other activities here in Juneau. And I'm not at all comfortable that we really know what the effect of this -- the SONAR, this high intensity SONAR will do. Thank you very much for your comments and thank you very much for letting us make these comments.	Please see Section 3.8 of the Final EIS/OEIS for a discussion of sonar impacts to marine mammals. This analysis was completed in cooperation with the National Marine Fisheries Service, which is responsible for the protection of marine species. Please note that the Navy has conducted training using mid-frequency active sonar for decades in the Pacific ocean at training ranges in Southern California and Hawaii. There is no evidence of broad-scale impacts that are either injurious or of significant biological impact to marine mammals from those locations.
Lynn Wilbur 1		I'm Lynn Wilbur. I just want it on the record I came from Sitka. There's quite a few concerned folks over in Sitka as well, couldn't make it due to the short notice. I have quite a few concerns. Air quality is supposed to be 123 fold increase of emissions, including green house gas emissions. There's only going to be a 3000 foot window and then you're not going to consider. You think that these emissions, pollutants will disbursed through precipitation or dealt with.	Carbon footprint and air pollution concerns including greenhouse gas emissions have been discussed in Section 3.1, Air Quality and in Chapter 4, Cumulative Impacts. As indicated in Table 3.1-5 on page 3.1-12 of the DEIS/OEIS, air pollutant emissions under Alternative 2 would be 69 percent greater than under the No Action Alternative. Greenhouse gases are discussed in Chapter 4 of the Final EIS/OEIS. The 3,000-foot limit was only with regard to estimating ground-level air pollutant impacts, in accordance with USEPA recommendations. With regard to greenhouse gas emissions and other air quality issues, all air pollutant emissions from the Proposed Action are taken into account. Dispersal of air pollutants by atmospheric processes and scavenging of air pollutants by precipitation are well-established processes that must be considered in the air quality analysis.
Lynn Wilbur 2		No mitigation plan. I'm sorry, I support the no action alternative on that one.	As described in Sections 3.1.2.4 and 3.1.2.6, annual emissions of criteria and hazardous air pollutants produced by the Proposed Action are well below a level that could degrade regional air quality. Therefore, no mitigation measures are required to reduce the impacts on the environment of air emissions from the Preferred Alternative, Alternative 1 or the No Action Alternative.
Lynn Wilbur 3		Expended materials, the pollutants involved in that are heavy metals, tungsten, which is toxic to marine life.	Please see response to Greg Brown 2.

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		Fluoride compounds, which is toxic. One hundred and fifty times the safe level of hydrogen cyanide, these are all from bombs, and sonobuoys and other training materials	
Lynn Wilbur 4		also plastics. I'm hoping people are following the issue we're having in the ocean right now with plastics building up in gyre, and taking pretty much over the Pacific. That's a problem to me and I don't see that you've got much of a mitigation plan for that. I think you're 360 percent increase on that one, in your alternative two. So, I support the no action alternative on that as well.	The Navy is a seagoing force, which means that many of our environmental initiatives focus on ocean stewardship and seek opportunities to control our "ecological footprint" in relation to marine life, coastal impacts, and water quality. We have installed technology aboard our ships to keep plastics out of the ocean and safely manage our biodegradable waste stream. Shipboard waste-handling procedures governing the discharge of nonhazardous waste streams have been established for commercial and Navy vessels. These categories of wastes include solids (garbage) and liquids such as “black water” (sewage), “gray water” (water from deck drains, showers, dishwashers, laundries, etc.), and oily wastes (oil-water mixtures). See Section 3.3.1.2 of the FEIS/OEIS for further details.
Lynn Wilbur 5		On fish you agree that there's not a lot of studies done with sound. There's a lot of disagreement exactly on how to approach, using controls. You mentioned Grey literature, yet you reference your own documents, and letters, and impact statements invalidating your -- no basically not much of mitigation as far as fish are concerned. And I can go into more detail later, because I'm going to run out of time. But I'm going to support the no action alternative where fish are concerned.	There have been very few studies on the effects that human-generated sound may have on fish; these have been reviewed in a number of places (e.g., NRC, 1994, 2003; Popper 2003; Popper et al. 2004; Hastings and Popper 2005; Popper 2008), and some more recent experimental studies have provided additional insight into the issues. Many of these investigations such as Gray literature (non peer-reviewed reports) have not been used for analysis due to critical reviews of this material. No additional mitigation measures are proposed or warranted because no significant effects on fish or fish habitats have been identified.
Lynn Wilbur 6		And marine mammals, this is probably where it's going to hit home for a lot of people. I too, am concerned about SONAR. Beaked whales are the most vulnerable because they're deep divers. And in the Bahamas in 2000 there were some expert witnesses that can attest to what happened there.	The Navy conducted a thorough analysis of sonar and at sea explosions in Section 3.8 of the Final EIS/OEIS, using the most current and best available science, and with cooperation from the National Marine Fisheries Service, which is responsible for the protection of marine species. The Navy’s analysis indicates there is little relative risk to populations of marine mammals from sonar training exercises. The Navy’s protective measures are effective at mitigating, not eliminating, risk to marine mammals. Therefore, mitigation and monitoring are implemented to further reduce impacts. Also, note that the U.S. Navy has conducted active sonar activities for decades at the training ranges in Southern California and Hawaii with no

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			indications of broad-scale impacts that cause adverse biological impact to marine mammal population stocks at those locations. Because there is no indication from areas where the Navy routinely trains that training activities have a negative impact on the health of the marine environment, the Navy is confident that there is little relative risk to marine mammal populations from active sonar training or any other training events. Please see Appendix F, Cetacean Stranding Report, for additional information regarding whale stranding and a discussion regarding the circumstances surrounding the Bahamas incident. The Bahamas incident is specifically discussed in Section F.1.6.1. In addition, there is new evidence from controlled exposure experiments on beaked whales in the Bahamas documenting that beaked whale exposure to mid frequency sonar is not, in all cases and maybe most cases, going to result in strandings or injury to those animals (Tyack 2009).
Lynn Wilbur 7		I just don't think that in the Gulf of Alaska your Beaufort 3 conditions are going to be not be really good for spotting whales. Whale experts have made the comments that you really can't spot whales very well in anything over a Beaufort 1 in the Gulf of Alaska. So, the use of onboard spotters, and you mentioned maybe possibility aerial craft if the conditions are right and if they have time, is how I interrupted your mitigation on that. I just don't think that's suffice. So, again I'm supporting the no action alternative.	Please see Chapter 5 for a discussion of the Navy's proposed mitigation measures. While the Navy is very confident in its well-trained lookouts' ability to detect marine mammals at the surface in reasonable conditions, it does not expect that 100% of the animals present in the vicinity of training events will be detected visually by lookouts aboard ships, in aircraft, or by passive acoustics in all cases. One of the primary jobs of Navy lookouts is to detect and report on any anomalies in the water and therefore their purpose and training is very different from that of biologists and they are positioned with a height of eye above that of most research and fishing vessels. While Navy lookouts are not expected to identify marine mammals to the species level as some biologists could, it is not a necessary component for implementation of the mitigation measures (except for the case of bow-riding dolphins). Additionally, effective training in the TMAA dictates that ship, submarine, and aircraft participants utilize their sensors to their optimum capabilities as required by the mission, which increases the detectability of whales in the vicinity of training activities.
Lynn Wilbur 8		It seems like you've dismissed a lot of recommended mitigation's. You've got a series of them, you've got a lot of them you've dismissed. Including recommendations from NOAA. And I can go into that in a little more detail if we get	Please see Chapter 5 for all mitigation measures that have been implemented and Section 5.2.1.6 which discusses all alternatives that have been considered but eliminated for implementation. Additionally, please note that the U.S. Navy,

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		to a second round. But I'm running out of time. So, again I support the no action alternative. Thank you.	in conjunction with NMFS and USFWS, are best suited to determine what mitigation it can effectively use during its training and testing activities to mitigate harm to marine mammals while still being able to meet its operational needs to train for real-world conditions it may face. Both the Navy and NMFS agree that no significant harm to marine mammal species will result from the Navy's proposed activities. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
Alex Simon 1		Thanks for the opportunity to speak. So my name is Alex Simon. I did have a chance to speak with some of you before and one of the things that impressed me, you seemed like well intentioned individuals. I think the reason why I'm supporting the no action alternative. Well there's several reasons. But one of the things, if we look at the history of the military in the United States, there's a long history of very well intentioned people concerned with national defense. Implementing programs that result in long term environmental health. And so, before I lived in Alaska I lived in Utah. And some of you might be familiar with down winders. These are victims of above ground atomic testing in the 1950's. And so there's still people alive today who -- and I've met many of these individuals, who suffer from cancers and other effects. And I think you know, if you look back then we were facing you know, the Soviet Union. An adversary that was using weapons that were pretty much comparable to what we had, as far as technology. And that -- I think that was a case of well intentioned individuals, very concerned about national defense, like yourselves. And I worry about those mistakes being repeated. Particularly, back then we were dealing with concerns of human life. I assume the bar is set lower for your concerns about marine life.	This comment is duly noted.
Alex Simon 2		A second point is I think that geo-politics have changed substantially since then. Military realities that we're facing, really our main adversary at this point at least, I realize there are potential for others to come along. But, is Al-Queda, Al-Queda doesn't have a Navy. That -- none of our adversary's really have advanced Navy's. You know, I mean if we look	This comment is duly noted.

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		at you know, Iran, et cetera. That we're spending as much now on the Military as all the nations combined. I really, I know, the case could be made better back in the 1950's that it was critical that such tests be conducted. I don't really think this is critical for national defense.	
Alex Simon 3		A third point that I would like to make. If we look at the local fisheries. There's many thing --unfortunately whether or not this testing is done, the fisheries, the aquatic life, they're already under a lot of stress. And so locally, of course the lands rising faster than the oceans, is that many of the local salmon runs apparently go extinct due to global warming. That there's already all kinds of problems. I think to step in and exacerbate those problems seems unwise. Okay. That's all I have to say. Thank you for your time and consideration.	As detailed in Section 3.6, the Navy is very aware of concerns from fishing fleets and fisheries in the Gulf of Alaska. As described in the EIS/OEIS, the Navy is confident that its training activities will not impact fisheries, fish populations, or the livelihood of fishermen in the Gulf of Alaska. Socioeconomic impacts in regard to the fishing industry have been analyzed in the EIS/OEIS in Section 3.12 - Socioeconomics.
Andrea Doll 1		Well thank you -- thank you for giving me the opportunity. I am not a member of the military, although I've been a military dependent wife for over 30 years. My husband was a DESERON Commander that did exercises in the Gulf for as long as I can remember. And then I had the opportunity to serve the public as a legislator and was on the Military Affairs Committee.	This comment is duly noted.
Andrea Doll 2		So, I'm very interested in what's going on here tonight. And my suspicion is that this huge military machine is moving forward and it's going to take an awful lot to stop it. We have been in that no action alternative for some time, not using SONAR up here. But now the Navy wishes to go not only to one, but they want to go to two. And I am not quite sure just what kind of testimony you're going to hear tonight that will change this machine that's moving forward, to stop that moving and go back to the no action alternative. I am very interested in hearing comments on that from the military and to see exactly what kind of effect this will have -- our testimony here tonight, on you. I think that is fairly much what I wanted to say on this.	This comment is duly noted. The decision on which alternative to pursue will be considered by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
Andrea Doll 3		I did want to point out that while I was in the Capital I was mailed those circular things that you turn around and you can see what kind of whale you're looking at. When you tell me that the Navy is going to be trained on these watches, where they stand on the destroyer and they look out and they see some movement, and then twirl that little card around and say, I want to get to -- let me get to the control	The "circular things" that you refer to are called "whale wheels" and are more or less a public outreach tool rather than a training device. A full discussion of the actual mitigation measures is presented in Chapter 5 and does not involve use of the whale wheel. Please note that Navy lookouts undergo extensive training to include on-the job instruction under supervision of an experienced lookout followed by completion

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		tower here and talk to you about this -- you know, I mean it's really pretty laughable actually.	of Personnel Qualification Standard Program and the NMFS-approved Marine Species Awareness Training.
Andrea Doll 4		So, I am hoping that by this testimony you will be able to show us what areas we will be able to have a real effect on when you start these exercises. I know there are some things the Navy must do, they have to do. And there's no give or take. But there are areas that there are give and take. How can we effect those areas, how can we really have that impact? That is what I would like to know and would like to get some kind of response on. Thank you very much.	This comment is duly noted. Please note that all public comments and concerns on the training activities and the EIS/OEIS document itself are equally weighted under the Navy NEPA process, and are all taken into consideration by Navy decision makers in the preparation of the Final EIS/OEIS document.
Jan Crichton 1		Hi. Alaska already has a long standing problem and history.....a pretty long standing problem with leftovers from the military. All kinds of health and environmental issues where the military has been real eager to go in and do exciting new things. And then left and dumped problems and toxins for future decades to have to deal with. And the cost has been really high to all of us.	Please see response to Lynn Wilbur - 4.
Jan Crichton 2		Also, Alaska is one of the last places that has a really viable, healthy marine mammal population. But they're stressed our. They're going to start experiencing problems, some of them already are. The pinipeds and marine mammals are already going down in population, and we don't even know why. I think it's unwise to start shooting off active SONAR in their home waters.	Please see response above to Greg Brown 5. In addition, please note that sonar use outside the Navy is common in the Gulf of Alaska including, for example, fathometers, fish-finders, and NOAA research involving acoustic trawl surveys for fishery resources.
Jan Crichton 3		Especially during the summer months, which are very critical to them for feeding and everything. We have a short summer, they need that. They need to be uninterrupted. I would have to support the no action alternative simply because it does not include any active SONAR, and that's the thing that concerns me the most. We know that it has already caused problems off California and I don't think the negative impacts that have been happening there have even been researched. It's not a time for us to turn around and start doing this in Alaska waters. I think the problem of potential impacts on marine mammals is not acceptable or reasonable given the perceived need to these repeated active SONAR exercises when I don't really see any good reason to do it. That's basically it.	Your support of the No Action Alternative is noted, however, it is incorrect that there have been “problems” (“negative impacts”) resulting from sonar use in California since there have been no stranding incidents or other indications of impact to marine mammals or other marine life over decades of sonar use history at the Southern California Range Complex. Please see Chapters 1 and 2 of the Final EIS/OEIS for the reasons why this training is essential. With regard to sonar and at sea explosions, please refer to response in Lynn Wilbur 6.
Mark Anderson 1		Yeah. My name is Mark Anderson and I am also in support of the no action alternative. I find the analysis has	Your support of the No Action Alternative is noted. Federal mandates include provisions of NEPA and Sections 106 and

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		overlooked, and I think made some incorrect conclusions. Cultural resources, native people, and actually all people of Alaska consider our wildlife a cultural resource. So, I think if you are having an effect on wildlife you are effecting cultural resources.	110 of the National Historic Preservation Act (NHPA) and their implementing regulations at 40 Code of Federal Regulations (C.F.R.) 1500 and 36 C.F.R. 800, respectively. As described in Section 3.10 and as required in these regulations, the Navy has complied with the requirements for using the NEPA process to achieve Section 106 compliance. Groups that have been formally notified about the project include affected Alaska Native tribes and the Alaska SHPO. As stated in Section 3.10.1.5, on 18 May, 2010, the Alaska SHPO signed a letter indicating concurrence with the Navy's analysis that the Proposed Action would not affect submerged cultural resources (see correspondence in Appendix C). The Navy also has undertaken public involvement activities throughout development of this EIS/OEIS.
Mark Anderson 2		Socioeconomics, a large developing industry in Alaska is marine mammal observation.	Socioeconomic impacts have been analyzed in the EIS/OEIS in Section 3.12, Socioeconomics. Please note that the proposed activities will take place in the Temporary Maritime Activities Area far out to sea which is not a location where whale watching generally occurs. Please also see Chapter 3 of the EIS/OEIS for the description and analysis and potential effects. Specifically, analysis to marine life in Sections 3.5 through 3.9. Because the Navy has no exclusive "right of way" when conducting training activities on the ocean, Navy ships and aircraft intentionally seek areas clear of all other vessel traffic, thereby reducing the likelihood of negatively affecting fishing and tourism industries.
Mark Anderson 3		Also, bird observation. I don't think you've done a good enough analysis on effects to birds, of which there are millions and millions of sea birds out there in this area at this time. May and June is a critical time for them. A lot of them have flown from the Southern Hemisphere to get here. We have very large migration routes and if something upsets them along the migration route. We've been having some serious problems.	Section 3.9 of the Final EIS/OEIS provides a thorough analysis of potential impacts to birds, including migratory birds as mentioned in your comment. This analysis concluded that the Navy's activities would have no significant impacts to migratory birds.
Mark Anderson 4		I don't think you've done enough research on what happens to fish. Most fish have an air bladder that is going to be negatively affected by a sound blast. We know that sound does have an effect of fish, and I don't think you've actually studied that enough to know what is going to happen to the fish. Alaska has a long history of cooperative management between the State and the Federal government. And that's	Please see Section 3.6.2.2 and 3.6.2.3 with regard to an analysis of potential impacts on fish, including a review of research involving the potential to affect the air bladder in fish from exposure to sound. Section 3.6.2.4 presents the most recent science available on effects of SONAR on fish. The limited information currently available suggests that populations of fish are unlikely to be affected by the projected

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		why we still do have marine mammals and fish here. But, they are stressed.	rates and areas of use of military sonar. Most fish species would be able to detect mid-frequency sonar at the lower end of its range. Short-term behavioral responses such as startle and avoidance may occur, but are not likely to adversely affect indigenous fish communities.
Mark Anderson 5		We have several endangered species that we're talking about here. And I think that the Endangered Species Act has been really overlooked in your analysis as well.	All ESA species have been included and analyzed in the Final EIS/OEIS in Sections 3.5 through 3.9. Additionally, the U.S. Navy is engaged in consultation with the USFWS and NMFS under the Endangered Species Act. The USFWS has concurred with the Navy's analysis of species under their jurisdiction, concurred with the Navy's "may affect, not likely to adversely affect" determination.
Mark Anderson 6		I guess that's really all the comments I have. I think -- I'm not sure you're going to hear a lot of people supporting alternative one or two here tonight. I think that the current level of operations in Alaska is acceptable. And I think you may just be moving to Alaska because you think that you can get it done -- you can do it here where you've had quite a bit of public opposition to doing it down south and in other areas where you've tried this before. So, those are my comments. Thank you.	Your support of the No Action Alternative is noted. As explained in Section 1.4 of the Draft and Final EIS/OEIS, the decision on which alternative the Navy will pursue will be made in light of the Purpose and Need by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process. The Navy has not been blocked from training with active sonar in any areas of the ocean and is seeking to continue joint training in the waters of the proposed TMAA because an alternate location for Navy training in the ATA that meets the purpose of and need for the Proposed Action does not exist. The proposed area for Navy training in the TMAA is based on the mission of Alaska Command to support the needs of military forces within Alaska and forces deploying through Alaska.
Victoria Dance 1		Victoria Dance. And I'm wondering if this process is genuine in it's intent. Because I know that you went through the process in -- or the Navy went through the process in Southern California when you used the SONAR. And there was a protest, and one of the outcomes of that protest was a lawsuit that banned the use of the SONAR. But then the courts lifted the ban, and they went ahead -- the Navy went ahead and used the SONAR that they're wanting to use up here. That was in August. Two weeks later three great blue whales were reported as floating dead in that area, the	The U.S. Supreme Court upheld the Navy's continued use of sonar during training activities in the Southern California Range Complex last year. These activities have been occurring for decades in that location and the EIS/OEIS was developed (in part) so Navy could seek authorization under the Marine Mammal Protection Act and Endangered Species Act for the continuance of those activities. The necropsy on the 3 blue whales referenced were found to be victims of ship strikes in the commercial shipping channels and not related to SONAR activities. The Biological Opinion

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		localized area. And then October 2nd another was found dead off of Big Sir. And then another washed on shore in Fort Bragg.	prepared by the National Marine Fisheries Service for the Southern California Range Complex indicated that in the event blue whales are exposed to mid-frequency sonar, they are not likely to hear those mid-frequency sounds since their hearing is centered on lower frequency sound (see http://www.nmfs.noaa.gov/pr/pdfs/permits/socal_biop.pdf; page 204).
Victoria Dance 2		So, when there's talk about protective measures and those protective measures being to localize. What we see in -- and of course we can't prove, that those whales were damaged by the SONAR. But there's a migration pattern you know, how can you localize it? I mean you can really localize it. So, that as a protective measure, I don't think that's realistic.	Over decades of sonar use in California there have been no stranding incidents or other indications of impact to marine mammals or other marine life over decades of sonar use history at the Southern California Range Complex. For further information on the analysis of sonar, please see response to Lynn Wilbur 6.
Victoria Dance 3		And then the other protective measure mentioned was about minimal impact. So, I guess I'd want to know what the definition of minimal is, because those are three -- those were instances that became visible. But the unfortunate thing about the ocean is that there's so much that is invisible. And that was referred to very nicely by some previous comments about what we can see that has happened in the Navy's training to birds, and environment, above -- in the air.	Please see response above to Lynn Wilbur 7.
Victoria Dance 4		And so, I'd have to say I question the genuine intent of the Navy stewarding the environment. And I'm really kind of offended that you use it. I'm questioning this process that feels like a charade when we see what happened in Southern California. And I forget the fellows name who mentioned that he felt like it was -- or Jan -- well, I'm sorry that I can refer back to some wonderful comments. But I can refer to Andrea's suspicion that this is a machine that is going to be difficult to stop. And then also, Jan's comment on not enough adequate research. It's only been a year since these events happened in Southern California. And here you're wanting to go again without really understanding what you're doing. Thank you very much.	The Navy provides reports to NMFS as part of the MMPA permit and those reports are available to the public via NMFS's website. Please note that monitoring reports from exercises since 2006 have demonstrated the ability to detect marine mammals, the success of these mitigation measures, and a lack of observable impacts to marine species as a result of Navy training events. (Please see the recent results supporting this as presented in training ranges monitoring reports "Marine Mammal Monitoring for the U.S. Navy's Hawaii Range Complex (HRC) and Southern California Range Complex (SOCAL)" available at [http://www.nmfs.noaa.gov/pr/pdfs/permits/hrc_socal_report.pdf]). An integrated monitoring plan for the activities in the TMAA is also planned as presented in Section 5.2.1.4 of the EIS/OEIS.
James Voelckers 1		Hello, my name is James Voelckers. Thank you for the opportunity to speak. I want to express my gratitude first off to the Navy for keeping us well defended, and other military institutions. However, I believe there are a number of points	Please see Chapters 1 and 2 for a discussion of the purpose and need. Specifically, Section 2.2.2 details why training with sonar is required.

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		that they have not considered or that are getting overlooked. You mentioned realistic training a number of times. Yet, as was brought up before we don't really have any enemies with naval capabilities. It seems like the terrorists certainly don't. So that leaves China or Russia. With the proliferation of spy satellites it seems very unlikely that they would be able to attack us with any sort of sizable surface craft, which brings me to submarine detection. Which is what I think many of us are here for, with the SONAR, active SONAR. That seems like -- the only use for it if we know that they're there. And if we know that they're there, then I mean, they're not doing what submarines are supposed to do. Which is, I believe initiate a first strike. There are way to few ships to prevent such a first strike, so this seem to me to be a moot point. We can find them if we know they're there.	
James Voelckers 2		Secondly, I would wonder why exactly why we are doing this here. This was just brought up, it happened in California, to much public outcry. Which is why I think perhaps, you'll try here for a lighter population density so, less protest. However, Alaskan waters are some of the most -- most fertile in the entire world. Especially this area which is very pristine. And as you said, that you were only going to be doing this in the summer months, that that's when I believe most marine mammals are feeding in these fertile waters. They go to Hawaii, I believe in the winter. So, why would our enemies, if we have them, be they China or Russia, not attack us in the winter when you haven't trained, or during a storm. It seems like it's a sunny day situation to be running a lot of naval exercises on sunny days and good weather in the Gulf. Whereas, if somebody actually did have harmful intent, it seems like they would want to hit us when a, we could be least likely to respond. So, I would question why you were not using the winter weather to be fully prepared and fully trained.	Please see Section 2.3.2.3, describing why the Navy considered but rejected an alternative timeframe such as holding the training in the winter. Additionally, please see response to second part of Mark Anderson 6.
James Voelckers 3		And so in conclusion, I believe I would ask that some of these activities could not be carried out instead in the deep waters of perhaps the Hawaiian coast or other Pacific where they wouldn't, as adversely effect the ocean. I realize you will probably do whatever you have to do. Which is your job. But here perhaps is not the best location. Thank you.	As described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included moving this exercise to other locations. Such alternatives fail to meet the purpose of and need for the proposed action.

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Tina Brown 1		I'm Tina Brown. I support the no action alternative also. The other alternatives pose to many air and sea pollution problems.	Your support of the No Action Alternative is noted.
Tina Brown 2		And the Navy SONAR testing endangers marine wildlife. We've listed birds, fish, turtles, whales of course, all marine mammals. Not even the Navy knows all of the behavioral and physiological effects of SONAR testing on marine life. Clearly the Navy needs to train.	There is no testing of sonar proposed. The proposed activities include use of active sonar and other sensors during anti-submarine warfare training. Please see Chapter 2 for a description of the proposed activities.
Tina Brown 3		But choosing some of the most prolific marine wildlife areas in the United States, if not the world, particularly at a time when migrating marine life is there is irresponsible. This is not the place to practice. And the time you chose is not the time to practice there. Not the place and not the time. Thank you.	In Section 2.3.2.3 of the Final EIS/OEIS, the alternative of training during winter in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further.
Dixie Belcher 1		My name is Dixie Belcher, I'm with Turning the Tides in Juneau. Turning the Tides raises awareness about what is happening to the ocean and the effect it has on human health. I want to speak especially to the 360 degree increase in water pollution	Impacts on water resources under each of the alternatives would be below thresholds that could result in long-term degradation of water resources or affect water quality. Please see section 3.3 for a full analysis of water quality.
Dixie Belcher 2		and the 123 fold increase in air pollution.	Air pollutant emissions from training activities would be released to the environment in a remote area with good circulation and few other existing sources of air pollutants. Training emissions would be rapidly dispersed over a large ocean area where few if any individuals would be exposed to them. Residual air pollutant effects during the large portion of the year when training was not being conducted would be negligible. Based on the estimated levels of air pollutant emissions presented in Table 3.1-5, no substantial air pollutant effects are expected under any alternatives. Also, please see response to Lynn Wilbur - 1.
Dixie Belcher 3		The ocean is 71 percent of our planet. It provides food, and according to Dr. Sylvia Earle, up to 85 percent of the worlds oxygen. We cannot live without the ocean. We have dumped millions of tons of poisons, chemicals, radioactive waste, and other garbage into the ocean. Some whales and other sea mammals can now be legally classified as toxic dumps. We have thousands of dead zones where nothing grows. The largest 1000's of square miles. We are finding fish with cancer. What are we thinking? The ocean is in fragile health. Ocean scientists often refer to their work now as, documenting the decline. If we are to survive we must	This comment is duly noted. Please note that ocean dumping in general and the dumping of hazardous materials at sea is not conducted by Navy ships. Please see Section 3.2.1.2.

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		stop contributing to the demise of the ocean. We must stop using the sea's and the life within them as toxic dumps to do with as we please. I believe the greatest threat to the United States and to the planet is irretrievably damaged ocean.	
Dixie Belcher 4		Please consider if SONAR testing and military dumping are contributing to the health of the ocean or furthering its demise. If it's impossible to stop SONAR and additional poisoning of air and water from military exercises, please use the no action alternative. Thank you.	The Navy is aware of the diverse biological presence in the area and has conducted a thorough analysis of potential sonar and air/water pollution effects in Chapter 3 of the Final EIS/OEIS. The Navy does not dump toxic pollutants into the oceans. With regard to sonar, please see response to Lynn Wilbur 6. Your support of the No Action Alternative is noted.
Frank Bergstrom		Gentlemen, lady I would -- I've got very brief comments here. Not particularly well prepared for them. But it's surprising to say, I would like to thank the Navy for fulfilling its mission. I would like to thank you for training for that mission. I would like to thank you for training all the young sailors and aviators, daughters and sons that come from our communities to join the Navy to protect this country. You do a great job. And I appreciate it very much. I would like to thank you for a careful analysis of this issue. I can't think of another nations military in the world that would go to such efforts to do their job and to take care of the environment at the same time. I would like to thank you for coming to Alaska to fulfill that mission. I would only ask that when you do, you might stop into Juneau, buy some gas, get a burger or two, and spend some time. Thank you very much. [MR. MICHAELSON: Mr. Bergstrom, I just need to ask you -- if you could just say your name for the record.] MR. BERGSTROM: My name is Frank Bergstrom from Juneau.	This comment is duly noted.
Henry Larsen		Gunalcheesh. Ya'x gu 'oo, my English name is Henry Larsen, L-a-r-s-e-n. I too am opposed to against the -- what was that? (Mr. Larsen conferred with Ms. Wilbur) I too support the no action alternative. I think you need to -- the Navy needs to do more studies on the fish and the marine life you know, too. I think they need to do that because, I was talking to somebody earlier, and I too am a captain. I have a 200 ton license. And I've traveled from Sitka to Seward and I've seen fur seal -- fur seal and sea otter 22 hours offshore. And that's in that yellow area you guys were thinking about testing. That's all I have to say. Thank you.	Your support of the No Action Alternative is noted. Please see Sections 3.5 through 3.8 of the Final EIS/OEIS with regard to marine life and specifically 3.7 with regard to a review of the available studies involving fish. As presented in Section 3.8.5.4, Navy is aware of the possible presence of fur seals in the Temporary Maritime Activities Area (TMAA). With regard to the sea otter located far offshore and potentially in the TMAA, all available published information indicates that sea otters normally remain near-shore as presented in Section 3.8.1, although at another public hearing location, the Navy heard a similar yet off-the-record account of a sea otter interacting with a fishing boat located far out to sea. The

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			potential use of or migration through offshore areas by sea otters would be interesting future research to attempt to determine if these two reported sightings were anomalies or if they reflect a normal yet previously unknown and rare portion of the sea otter range in the Gulf of Alaska. In the interim, the analysis of impacts to the sea otter in the EIS/OEIS will remain based on the best available science indicating that the sea otter should not be in the TMAA during the proposed training events.
Murray Walsh		Murray Walsh. I would extend my compli -- first of all welcome to Juneau. I guess I don't think anybody's said that to you yet. You may not feel all that welcome right now. But I should say that people who do get up and speak in setting like this show a little more courage than those that don't. And I have to admire that even if I disagree with almost everything I heard. But if you want a test a public speaking, go back to 1974 when the Navy was not doing any of this kind of environment work. I was an employee of the State of Washington, and I had to be the one to tell the Admiral there in Seattle that before they could build the Bangor Submarine Base, they were going to have to talk to the State of Washington first. You talk about public speaking. I guess I'd offer a little perspective. The actual amount of activity that the Navy is proposing to do in the Gulf is insignificant compared to the other human maritime activity that is already there. You've got a season coming where you're going to be operating at the no action alternative. Maybe make some notes about what happened, how many times you did change an exercise because you saw whale or whatever it is. And come back and tell us about that. Then go a head and go to alternative two and keep track of it. And reevaluate -- if you are killing whales right and left, then it's time to go back to something else. But we don't even know. And so -- and this is a decision that you get to make every year. So, it's important to pay attention to the environmental matters. I admire you for doing it. And Al-Queda does have a Navy. It's housed in Iran right now and North Korea. Those countries both use the Kilo submarine, the quietest submersible fighting ship in the world. Yeah, I want you guys to be able to find them. Thanks.	Please see response to Victoria Dance 4.

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Dan Holt 1		Thanks for coming. My name is Dan Holt. I applaud you guys for coming and actually doing this. Because most of the time, as far as the military is concerned we hear about it afterwards, after it's done. So, this is great that we have this ability to comment. And I guess if -- if it's true that the SONAR is actually killing off whales, such as the one lady said -- gave a good illustration about Southern California.	This comment is duly noted. Please see response above to Greg Brown 5.
Dan Holt 2		Then I think that's a good idea to do the -- to oppose it. But otherwise, I'm all for alternative one. Getting in there and learning more and keeping our best interest at heart, and keeping on the cutting edge of research and development.	This comment is duly noted.
Dan Holt 3		That being said, I'm also with the Civil Air Patrol here in Juneau, Alaska. And I wondering if there's any way our group, as far as the Civil Air Patrol can help out with your exercise, so. And I've actually put that on my card. Thanks.	The proposed action does not necessitate the use of the CAP but thank you for your offer.
Lynn Wilber 2-1		I'm Lynn Wilber. I've heard some interesting comments. One of the things that I wanted to fit into my comment was the left over materials from the military. Anybody who's hiked around Sitka knows that we step in stuff from World War II all the time. Bins of oil, weird liquids, I have no idea what they are. And its been a tradition of the military to not deal with the mess that they've made. I appreciate our military, I really do. I appreciate the work you do. And I appreciate that you're training and preparing. But the lack of a mitigation plan is just astounding to me. And the overwhelming opposition you've received in every training range, it doesn't seem that you've taken these public comments to heart.	Clearly the way refuse was disposed of during WWII is very different than is standard practices today over 65 years later. Please see Chapter 5.0 of the Final EIS/OEIS, Mitigation Measures, which presents the U.S. Navy's procedures for dealing with oily waste, hazardous materials and discharges.
Lynn Wilber 2-2		One other thing I want to make clear is the Navy is undergoing or going through the NEPA process because they were court ordered to. They were taken to court and the court ordered you to do this. So they've been training, in fact the Atlantic Fleet Training Range is operating on a no action alternative, which is similar. There are other alternatives -- toning down the exercises and not using SONAR. And they did that and they didn't go through the process, from my understanding from reading the news and following the time line. There's a lot of information, available congressional reports, things on the internet that you can read. I like to enter into these types of debates with an objective mind. And I've heard other people who are -- whether they're experts, whale biologists, scientists, ex-	Please see Chapters 1 and 2 with regard to the purpose and need for undertaking this environmental analysis. This EIS/OEIS is not being prepared pursuant to any litigation or court order. Navy has taken a programmatic approach to the GOA EIS/OEIS in accordance with the Secretary of Navy's At-Sea Policy of 28 December 2000 directing Fleet commanders to develop programmatic approaches to environmental compliance for ranges and operating areas.

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		military say that they wanted to go into this objectively.	
Lynn Wilber 2-3		And just couldn't because of the gross negligence, the lack of mitigation. Some of the measures that have been recommended to you for decreasing the chance of harassments or takes on marine mammals have been dismissed. I'd said I was going to try to get back to that. You talk about in the impact statement, you talk about an unusual stranding event. Where NMFS gets involved and tries to recover if there's a dead animal or a mass stranding. They apparently don't have and nor do you have in place yet a stranding response or communication response. And I'm sorry, I actually thought I had a little more time than the three minutes. But this is just not acceptable. Thanks again.	Please refer to chapter 5 of the Final EIS/OEIS which presents the US Navy's protective measures, outlining steps that would be implemented to protect marine mammals and Federally listed species during training events. Please also Section 5.2.1.6 which discusses mitigation measures that have been considered but eliminated for implementation. Please see Section 5.2.1.5 regarding the Stranding Response Plan for Navy training events in the Gulf of Alaska.
Mark Anderson 2		Yeah. This is Mark Anderson. I guess the thing that occurred to me as I was sitting and listening to some other comments is, you have three alternatives here. And I don't think that is a reasonable amount of alternatives to really have. I think there are a number of others. You don't have any alternatives that have increased science, increased -- you don't even mention any alternatives where you would be doing some studies before you actually go do your testing. So, I think that you need to go back to the draft EIS and develop some more alternatives that do take into account more scientific study, a slower approach. You may be able to get to a higher alternative in your mind by actually doing these things first. Otherwise, I think you're probably going to be running into another problem with litigation. Thanks.	See Section 2.3.2 regarding other alternatives considered but eliminated resulting in the three alternatives carried forward in the document. Please be aware that there is no “testing” proposed in any of the alternatives. As presented in Chapter 2, the Navy is proposing to conduct Navy training activities, which does not involve testing of untried systems or devices.
Tina Brown 2		I'm Tina Brown again. And I just want emphasize the obvious. Once an animal is dead, it's dead. And going back to see why it died doesn't bring it back to life.	This comment is duly noted.

1 **I.8.5 CORDOVA**

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Rosemary McGuire 1		Okay. Sorry to call you guys all back like this. I sort of didn't quite understand how this was going to work out. But I do think it was important that we all get a chance to hear some of what, we as a community -- some our concerns might be. Personally, I listened carefully and looked at the posters and stuff like that. It seems to me that there is a good deal of uncertainty about why, when, and how often marine mammals such as whales are impacted by SONAR. But it's very clear that it does sometimes cause mass strandings and it can cause mortalities. And it seems to me that since we don't know why, we ought to be very careful about using it. I would prefer not to have active SONAR used in the Gulf of Alaska.	Please be aware that sonar use outside the Navy is common in the Gulf of Alaska including, for example, fathometers, fish-finders, and NOAA research involving acoustic trawl surveys for fishery resources. Regarding the uncertainty with regard to Navy use of sonar during training, the Navy has been conducting active sonar activities at the training ranges in Southern California and Hawaii with no indications of broad-scale impacts that are either injurious or of significant biological impact to marine mammals and other species for decades. Therefore, it is not likely that any additional risk posed by the proposed activities will have any significant impact on species in the TMAA.
Rosemary McGuire 2		Our livelihoods do depend on having a working ecosystem out there. And I'd really appreciate it if you guys would consider going with the same level of activity that you're doing now, which does not include active SONAR. So, thank you for your time.	The Navy's analysis demonstrates there is little relative risk to marine life from sonar use as proposed in the EIS/OEIS. Additionally, as explained in Section 1.4 of the EIS/OEIS, the decision on which alternative the Navy will pursue will be made in light of the Purpose and Need by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.
Charles Weaverling 1		My name is Charles Weaverling. I'm the former mayor of Cordova. I organized and operated the wildlife rescue fleet during the EXXON VALDEZ oil spill, and I'm a former Navy submariner. Qualified in diesel electric and FBM's. I'm very concerned about this proposed increase in training activity. And I'm not reassured by the posters and the comments I've seen here tonight. I do not think that it would be a positive impact on wildlife and fisheries to increase the training. I don't think it's a positive impact given the training that's used now. But active SONAR, especially the newer SONAR's that are available, are certainly more effective than SONAR's that were used in the past. I don't think it would be a neutral impact on the wildlife and the fishery.	Please see the response to McGuire-1 above. In addition, please be aware that the basic sonar systems proposed for use in the Gulf of Alaska have been in use in use since the 1970's. While the processing of the received sonar echo has improved due to the increase in computing power, the output of sound into the water from the system has remained basically the same.
Charles Weaverling 2		This area has not yet recovered from the EXXON VALDEZ oil spill. I think it would be a negative impact on the fishery, the marine mammals, and the wildlife in the proposed area.	Please see Figure ES-1 for the location of the area where the proposed activities will occur. While it is understood that marine life is seldom restricted to a single area, none of the proposed activities will take place in or around Prince William Sound or coastal areas directly impacted by the Exxon Valdez

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			oil spill. For the area where the training activities will occur, Chapter 4 presents the cumulative impacts analysis addressing the environmental impacts that result from the incremental impact of Navy activities when added to the past, present, or reasonably foreseeable future actions that affect the same resources. Table 4-1 succinctly depicts the categories of past, present, and reasonably foreseeable future actions that affect cetacean populations. Identifying such activities and in fact comparing them for relative impacts is an appropriate approach to cumulative impacts analysis. The Final EIS/OEIS analyzes in detail the effects of Navy actions on specific resources, and places those in the context of other sources of impacts.
Charles Weaverling 3		This is a very rich biological area. And we depend on a healthy marine environment for our livelihood here. Activity in the wintertime, though I'm not a biologist, I understand is less productive during -- is less productive for -- is less used by marine mammals and fish during the wintertime. But even given that, basically I would prefer to see the level stay at it's current level or reduced. Thank you very much. I'd be happy to answer any questions, but I guess this is not a discussion. Thank you.	In Section 2.3.2.3 of the Final EIS/OEIS, the alternative of training during winter in the GOA TMAA was considered. Unstable winter weather conditions in the Gulf of Alaska create unsafe conditions for Navy training and such alternatives were considered infeasible and were not evaluated further. Regarding the level of training and the alternative that will be selected, please see response to McGuire – 2.
Ellen Americus 1		Hi, my name is Ellen Americus and I'm just a resident of Cordova. I used to live a Hatcher Pass and there was a lot of air activity over Hatcher Pass, in a pristine environment. And socially I think it really upset a lot of people who recreated there. And I see that the Gulf of Alaska is a wild place, and that area in particular. And I think that bombs and missiles in that area and a lot of aircraft would be upsetting to citizens and wildlife.	The GOA Final EIS/OEIS deals with Navy training in the Temporary Maritime Activities Area and therefore did not analyze impacts to inland areas. Analysis of overflight noise can be found within the Air Force and Army documents listed in the Final EIS/OEIS and available on the GOA EIS website. Additionally, because sound-generating events in the TMAA are intermittent, occur in remote areas or off-limits areas, and do not expose the public to high noise levels, no sensitive receptors are likely to be exposed to sound from military activities.
Ellen Americus 2		And I'm especially concerned about when the missiles and the bombs breakdown in the water, and so there's like lead, and heavy metals, and when that stuff goes through the food chain and bio-cumulates. And you know, it's going to effect these people. And you know, I don't have -- we've learned a lot about plastics and how harmful plastics are in the food chain. And heavy metals, that's even scarier to me. So, anyway thank you.	The bioaccumulation process is discussed in this EIS/OEIS in Section 3.8 and Section 4.2.8.2. A detailed species by species analysis of bioaccumulation potential for all possible contaminants is not possible with the best available scientific data at this time. Impacts from bioaccumulation present a large and complex set of variables, including marine mammal and fish occurrence in the TMAA, population size, toxicity to each individual species, and habitat types and characteristics of the TMAA. An analysis of this magnitude would overwhelm the

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			reader with details and scientific data, without adding substantial value to the overall analysis conclusions. Due to the short-term duration and impacts of Navy training activities in the GOA, bioaccumulation impacts are not significant
Kristin Smith 1		Hi, I'm Kristin Smith. And I'm here speaking on my own behalf. My day job is working as a nonprofit director for the Copper River Water Shed Project, which is committed to sustainable economic development. And so I have a lot of interaction with fisherman and folks in this area, and what I often tell people is that what we have in this region, both down here in Cordova and up river, is a wild salmon economy. We have a commercial salmon economy, we have a subsistence salmon economy, both here and up river. And we have a sport fish salmon economy. And all that's happening because those fish are rearing and growing to adulthood out in the Gulf of Alaska and in the Pacific Ocean. That is where they live. And that is where this town's livelihood comes from. And I'm only repeating what everybody else has already said, but we do not want to see SONAR in this region because of the effect that it could have on fish and wildlife. And I admittedly took a very quick, cursory look through there on the posters, but I saw words like anticipated. We anticipate this won't have very much effect. That's not good enough for a whole town full of people, both here and up river that depend on fish for their livelihood. And I think it doesn't just Cordova, it effects other towns in the sound and Yakutat, and other areas along the coast. So, I think it's critical that the Navy think very, very hard about the effects that this has on wildlife.	As detailed in Section 3.6, the best available science indicates that salmon cannot hear within the frequency range of the sonar proposed for use in the Gulf of Alaska. Please also be aware that sonar use outside the Navy is common in the Gulf of Alaska including, for example, fathometers, fish-finders, and NOAA research involving acoustic trawl surveys for fishery resources. In Navy training ranges in Southern California, Hawaii, and the East Coast where training involving sonar use has been occurring for decades, there are no indications of impacts to the marine environment and these areas continue to support healthy fisheries and abundant marine mammal populations.
Kristin Smith 2		And I think that when the Navy started, and maybe other entities started using SONAR, the effects weren't so well know. But we know a lot more now then we did 20 years ago. We know that it has harmful effects on marine mammals. And knowing that -- you know, I understand that you're probably thinking, hey we have a lot to do with -- we have to protect national security. Well, in my mind the national security issues are over in the Middle East today. And this money could be better spent doing other things and not adversely effecting our fish and wildlife. Thank you. And I just want to say thank you for doing this EIS. I understand that you haven't necessarily been doing them regularly over	Please see your previous comment regarding indications of impacts to the marine environment. Please see Section 3.6 with regard to an analysis of impacts to fish and fish habitat and Section 3.12.1.1 for an analysis of impacts to fishing. Additionally, please see Section 5.2.1.4 regarding research planned as part of the monitoring associated with Navy training events in the Gulf of Alaska. The U.S. Navy has developed a GOA TMAA Monitoring Plan to provide marine mammal and sea turtle monitoring as required under the MMPA of 1972 and the ESA of 1973. The GOA TMAA Monitoring Plan proposes monitoring goals for marine mammals that are unique with regard to their breadth as well as their focus on potential

ID	Organization	Public Comment (Individual Oral Comment)	Navy Response
Cordova			
		the past few years. So, I appreciate that you are coming here and asking us for our comments. Thanks.	impacts of mid-frequency active sonar (MFAS) and underwater explosions on marine mammals and sea turtles.
Carolyn Roesbery		My name is Carolyn Roesbery. Any other information? Okay. I'm not convinced that activities -- Naval activities in the Gulf of Alaska won't contribute to the decimation of our fishery. We have one of the last wild salmon fisheries in the world. We have very rich, diverse environment. It is one of the biggest fresh water influxes in the world, here in Prince William Sound. We're just now finding out what our fish are doing when they're not in the spawning and where they're going. We just now have the technology and are researching that. And it is out there where you intend to be. And I'm not convinced that -- that you have all the science that you need. You may have acquired all the available science that is assessable to you, but I think you need to go further. I think it's very, very important. Thank you.	The Navy conducted a thorough analysis of sonar and at sea explosions in the EIS/OEIS, using the most current and best available science, and with cooperation from the National Marine Fisheries Service, which is responsible for the protection of marine species. Because there is no indication from areas where the Navy routinely trains that training activities have a negative impact on the health of the marine environment, the Navy is confident that there is little relative risk to marine mammal populations from active sonar training or any other training events.
Kris Ranney		I'm Kris Ranney, I'm in the Boy Scout Troop 624. And just to add on to what she just said. There's another species of fish that lives out there, the halibut. Most of them move in the summer to shallow waters, but some of the bigger fish stay out in the deep water. So, when you are bombing those boats and sinking them, and some of the bombs and guns might disrupt their habitat. And a lot of peoples livelihoods depend on the halibut too. So, that's just what I think. And it takes 25 years to -- for a halibut to get to 100 pounds, so -- and after that they're growth slows even more. So, if one of the ships hits a 600 pound halibut that would take 100's of years to replace. So, thanks for your time.	Thank you for participating in this public process. The activity where a ship or hull is sunk is called a SINKEX. This event, by regulation, must take place where the depth is over 1,000 fathoms (Section 2.6.1.1 of the Final EIS/OEIS, Figure 2-7). While it is possible a halibut could be off the bottom and in the water column where a SINKEX occurred, this would be a very unlikely co-occurrence and it is even less likely that the ship or hull would hit a halibut.

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Danielle Bennett 1		Okay. My name is Danielle Bennett and I'm a resident of Cordova. From my perspective Alaska has one of the few functioning fisheries left in the world. From what I've seen of the EIS, the impact has been minimized to individuals, but many individual impacts amount to a cumulative negative effect. We know for a fact that SONAR does have a negative impact. And that is reason enough to not expand the activities, as far as I'm concerned.	As detailed in Section 3.6, most fish cannot hear in the frequency range of mid and high frequency sonar. While there may be a few species that can hear within this range, it is anticipated that the effects could range from no effect to physical damage and that it would be dependent on intensity and proximity (basically the list of potential effects that was provided in Section 3.6.2.2.3). Given the temporal and spatial nature of the activities, it is anticipated that any effect would be localized and not affect fish populations as a whole. Also note that sonar in the frequency range of that used by the Navy for Anti-submarine warfare is often used in acoustic trawl surveys by NOAA in fisheries research. It is not likely that sonar use by the Navy will have any impact, individual or cumulative, on fisheries in the Gulf of Alaska.
Danielle Bennett 2		What concerns me even more, however is -- are the things that we don't know. There are a number of uncertain statements. Anticipated effects, possible outcomes that are indicated. This ecosystem is important enough that those things should be addressed first before we have negative impacts that we don't even anticipate.	While additional research or further scientific advances may provide a more definitive analysis, a NEPA document is necessarily based on information available at the time the document is prepared, and the current state of the science. The Navy also acknowledges that it is impossible to know the exact impacts that Navy training activities will have on the ecosystem in the GOA in advance of these activities. Taking into consideration that there is no indication, in any area where the Navy trains, that training activities have a negative impact on the health of the marine environment, the Navy is confident, and the analysis indicates, that its training activities will not impact the marine environment off the Gulf of Alaska.
Danielle Bennett 3		Please find another habitat or an already dead zone in which to operate. Historically speaking, this region has little reason to trust in regulation. When I think of national security, I see protecting whatever is left of functioning ecosystems as of the most vital importance. I recommend proceeding with the no action alternative or reduce activity all together. Thank you.	As described in Section 2.3.2.1, the Navy considered, but rejected, alternatives that included moving this exercise to other locations. Such alternatives fail to meet the purpose of and need for the proposed action. Also, as explained in Section 2.3.2 of the EIS/OEIS, a reduction in levels of training within the GOA ATAs would not support the Navy's Purpose and Need and was therefore eliminated from further consideration. Finally, as explained in Section 1.4 of the EIS/OEIS, the decision on which alternative the Navy will pursue will be made in light of the Purpose and Need by Navy representatives following the review of all relevant facts, impact analyses, and comments received via the EIS/OEIS public participation process.

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