



**FINAL
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT
FOR
SURVEILLANCE TOWED ARRAY SENSOR SYSTEM
LOW FREQUENCY ACTIVE
(SURTASS LFA) SONAR
Volume 2 of 2**



**Department of the Navy
Chief of Naval Operations
April 2007**

Prepared for
Department of the Navy

in accordance with
Chief of Naval Operations Instruction 5090.1B

pursuant to
Executive Order 12114
and
National Environmental
Policy Act Section 102(2)(C)



Final Supplemental Environmental Impact Statement for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar Volume 2 of 2

April 2007

Abstract

This Supplemental Environmental Impact Statement (SEIS) evaluates the potential environmental impacts of employing the Surveillance Towed Array Sensor System (SURTASS) Low Frequency Active (LFA) sonar. It has been prepared by the Department of the Navy in accordance with the requirements of Presidential Executive Order (EO) 12114 (Environmental Effects Abroad of Major Federal Actions) and the National Environmental Policy Act of 1969 (NEPA). The Navy currently plans to operate up to four SURTASS LFA sonar systems. At present the Research Vessel (R/V) *Cory Chouest* and the USNS IMPECCABLE (T-AGOS 23) are the only vessels equipped with SURTASS LFA sonar. The additional SURTASS LFA sonar systems would be installed on the USNS VICTORIOUS (T-AGOS 19) Class ocean surveillance vessels. In addition to the No Action Alternative, the SEIS analyzed four additional alternatives. The analysis of these five alternatives is intended to address NEPA deficiencies identified in the Ninth District Court's 26 August 2003 opinion, as well as to fulfill the Navy's responsibilities under NEPA with regard to providing additional information related to the proposed action. The SEIS considers mitigation measures, including coastal standoff restrictions of 22 and 46 km (12 and 25 nm) and the designation of additional offshore biologically important areas.

Please contact the following person with comments and questions:

Mr. J. S. Johnson
Attn: SURTASS LFA Sonar EIS Program Manager
4100 Fairfax Drive, Suite 730
Arlington, VA 22203
E-Mail: eisteam@mindspring.com

APPENDIX B

COMMENTS

Appendix B

Comments

This appendix contains the comments received on the SURTASS LFA Sonar Draft SEIS during the 90-day comment period, which ended on 10 February 2006. Comments on the Draft SEIS were received in the following forms: letters, written statements received via the public hearing, oral statements made at the public hearings, and e-mail correspondence. Transcripts from the public hearings are presented in Appendix C.

B. 1 Receipt of Comments

Less than 100 comments were received from congress; federal and state agencies; groups and associations; and private individuals. Comments postmarked by 10 February 2005, or e-mail on, or before, 10 February 2005, were reviewed and are considered in this Final SEIS. Table B-1 presents a summary of the comments received.

Table B-1 Summary of Comments

Commentor Classification	Number of Comments
Congresspersons	1
Federal Agencies and Officials	6
State Agencies and Officials	2
Organizations and Associations	15
Individuals	74
Total	98

B. 2 Identification of Comments

Each submission received was assigned one of the following characteristic codes:

- G Federal and state agencies and officials;
- C Congresspersons
- O Organizations
- I Individuals

These labels were assigned for the convenience of readers and to assist in the organization of this document, priority or special treatment was neither intended nor given in the responses to comments. Within each of the categories, each submission was then assigned a number, in the order it was received and processed, such as C-001, I-001, and so on.

Because of the number of comments received and the fact that many comments concerned similar issues, the responses to comments were prepared on a summary basis in accordance with 15 CFR 1503.4.

All comments were reviewed/analyzed and categorized into broad issues (see Chapter 10 of the Final SEIS, Volume I). These issues were further subdivided into more specific comments. Responses to these comments were then drafted and reviewed for scientific and technical accuracy and completeness. When a comment generated a revision to the Draft SEIS, the location of this revision was identified by the chapter, subchapter, or appendix in the Final SEIS. Where the existing text of the Final SEIS was deemed to adequately respond to a comment, the appropriate chapter, subchapter, and/or appendix were also identified.

Copies of all substantive comments have been included at the end of this appendix. The alphanumeric code associated with each written submission is marked at the top of each page of each of these comments.

B.3 Form Letters

33 of 98 of the comments received were in the form of one of three standard letters. Each type of these “form” letters, contained the same or very similar comments. All of the form letters have been reproduced in Appendix B.

B.4 Location of Responses to Comments

Tables B-2 to B-B provide alphabetic summaries of all comments received by congressperson and federal/state agencies; organizations and associations; and individuals, respectively. Each commentator can locate their specific comment by checking the “Location” column in the appropriate table. Substantive comments are reproduced at the end of this appendix in alphanumeric sequence.

As stated above, specific comments were grouped according to issues. These issues were further subdivided into more specific comments and assigned a “comment number,” such as 1.1.1. Specific comments with their responses are found in numeric order in Chapter 10 of the Final EIS. In each comment, comment number(s) are found in the right-hand margin indicating the location of the response to the particular paragraph or sentence of the comment. Each commentator can thus locate the response(s) to their particular comment(s) in Chapter 10 of the Final EIS, Volume I.

Table B-2. Congresspersons and Federal/State/Local Agencies

<u>Organization</u>	<u>Commenter Number</u>
Fisheries and Oceans Canada	G-005
Marine Mammal Commission	G-002
Marine Mammal Commission	G-008
National Oceanic and Atmospheric Administration	G-003
State of California - California Coastal Commission	G-001
State of Maine - Maine State Planning Office	G-006
US Congress - Rep. Michael Michaud	C-001
US Department of Interior	G-007
US Environmental Protection Agency	G-004

Table B-3. Organizations and Associations

<u>Organization</u>	<u>Commenter Number</u>
Animal Welfare Institute	O-004
Animal Welfare Institute	O-013
Citizens Opposing Active Sonar Threats	O-008
Earth Island Institute	O-005
Earth Island Institute	O-006
Earth Island Institute	O-011
Friends of Santa Clara River	O-007
Green Party of Hawai'i	O-002
Kingdom of Hawaii	O-003
NRDC	O-001
New York Whale and Dolphin Action League (Taffy Lee Williams)	O-015
NRDR (with CD attachment of works cited)	O-014
Ocean Mammal Institute/International Ocean Noise Coalition	O-010
Seattle Aquarium Society	O-009
Sierra Club	O-012

Table B-4. Individual Commenters

<u>Commenter Name</u>	<u>Commenter Number</u>
Aaron (Manor School class)	I-050
Aila, Pansy	I-007
April (Manor School class)	I-035
Ari (Manor School class)	I-041
Botwin, Wendy	I-060
Boyle, Karen (RN)	I-003
Boyle, Karen (RN)	I-005
Browe, Courtney	I-070
Charlotte (Manor School class)	I-042
Christian (Manor School class)	I-046
Crabill, Robert E.	I-074
Cronin, Marc	I-015
Dashu, Max	I-056
Diana (Manor School class)	I-047
Dziak, John	I-030
Eagle, Kathleen	I-066
Eagle, Wesley	I-063
Ellenby, John	I-022
Ellis, Dulanie	I-019
Emma (Manor School class)	I-040
Friedman, Debbie and Paul Kelby	I-016
Gibbs, Ashley Eagle	I-062
Gibbs, Thomas	I-067
Goodman, Janet	I-069
Gray, Sylvia Ruth	I-024
Grunther, Doug	I-059

Guzman, Piedad	I-012
Honda, Laura Dax (Manor School class)	I-033
Hubacker, Peggy Kala	I-010
Hurley, Gail	I-065
Husband, Arianna	I-052
Jack (Manor School class)	I-051
Jasper, Marilyn	I-025
Julia (Manor School class)	I-036
Klein, Wendy	I-053
Leonard, Gordana	I-028
Levine, Jodi	I-017
Louise (Manor School class)	I-043
Lundy, Dee	I-073
Maas, Mila	I-054
Magill, Cheryl	I-072
Mainland, Edward	I-027
Marcus, Lucy	I-023
Martin (Manor School class)	I-048
Max (Manor School class)	I-037
McMillan, Jeff	I-026
Murray, Jay	I-021
Olivia (Manor School class)	I-049
Parsons, Chris (PhD)	I-058
Petta, Janice	I-031
Plaster, Deane	I-057
Public, Jean	I-001
Rasmussen, Pat	I-018
Reed	I-071

Reinz, R. (PhD)	I-068
Salem (Manor School class)	I-044
Sara (Manor School class)	I-045
Schmidt, Robert	I-029
Selena (Manor School class)	I-038
Sinclair, Scott	I-020
Sinkin, Lanny	I-004
Stewart, Kay	I-002
Taylor (Manor School class)	I-039
Trent (Manor School class)	I-034
Wardell, Merrie B. (Rev)	I-055
Weilgart, Linda S. (PhD)	I-011
Weintraub, Rona	I-064
Weis, Laura	I-061
Weiss, Valerie	I-008
Wheeler, Jeanne	I-014
White, Sean	I-032
Williams, Craig	I-013
Williams, Taffy Lee	I-009
Wray, Russel	I-006

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MICHAEL H. MICHAUD
2ND DISTRICT, MAINE

WASHINGTON OFFICE
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WASHINGTON, DC 20515
PHONE: (202) 225-6306
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SENIOR WHIP

Congress of the United States
House of Representatives
Washington, DC 20515

December 19, 2005

COMMITTEES:
TRANSPORTATION AND INFRASTRUCTURE
HIGHWAYS, TRANSIT & PIPELINES SUBCOMMITTEE
ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS &
EMERGENCY MANAGEMENT SUBCOMMITTEE

VETERANS' AFFAIRS
SUBCOMMITTEE ON HEALTH
RANKING MEMBER

SMALL BUSINESS
SUBCOMMITTEE ON RURAL ENTERPRISE,
AGRICULTURE, AND TECHNOLOGY
SUBCOMMITTEE ON TAX, FINANCE, AND EXPORTS

Mr. Joe Johnson
US Department of the Navy
4100 Fairfax Drive
Suite 730
Arlington, VA 22203

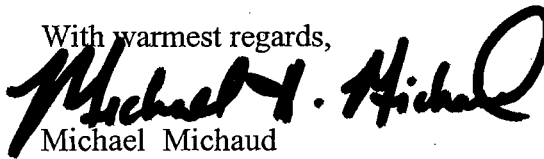
Dear Mr. Johnson:

I am writing to you regarding the comment period for the Draft Supplemental Environmental Impact Statement for the Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar. I request that the period for written comment be extended beyond the current deadline of Tuesday, December 27, 2005, to ensure that interested parties have sufficient time to provide written testimony on this important issue.

As you know, the Department of the Navy has prepared and filed with the U.S. Environmental Protection Agency a Draft Supplemental Environmental Impact Statement (Draft SEIS) to provide supplemental analyses for the Navy's employment of Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar systems. The proposed action is the Navy's employment of up to four SURTASS LFA sonar systems in the oceanic areas of the Pacific, Atlantic, and Indian oceans, and the Mediterranean Sea. Given the new, mounting and not fully understood evidence linking sonar systems to negative impacts on marine mammals, I would ask that you allow an extension of the comment period so that complex and necessary input can be provided for this important discussion.

I would like to thank you for your time and consideration of this request. Please do not hesitate to contact my office if you have any questions.

With warmest regards,


Michael Michaud
Member of Congress

BANGOR:
23 WATER STREET
BANGOR, ME 04401
PHONE: (207) 942-6935
FAX: (207) 942-5907

LEWISTON:
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PRESQUE ISLE, ME 04769
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FAX: (207) 764-1060

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16 COMMON STREET
WATERVILLE, ME 04901
PHONE: (207) 873-5713
FAX: (207) 873-5717

CALIFORNIA COASTAL COMMISSION

45 FREMONT STREET, SUITE 2000
SAN FRANCISCO, CA 94105-2219
AND TDD (415) 904-5200



December 8, 2005

Joe Johnson
4100 Fairfax Drive
Suite 730
Arlington, VA 22203

Re: U.S. Navy, Draft Supplemental EIS, SURTASS LFA (Low Frequency Active Sonar)

Dear Mr. Johnson:

Thank you for the opportunity to comment on the DSEIS for the SURTASS LFA program. While the document purports to update changes in applicable federal law changes and court actions, the document does not similarly reflect changes since the time of the original EIS regarding any state agency actions or considerations (which arise under federal law, the Coastal Zone Management Act (CZMA)). We believe it is incumbent on the document to update these reviews as well.

Section 3.3.4 of the DSEIS (p. 3.3-19) correctly points out that Navy activities, even in federal waters, may be subject to state reviews under the CZMA. However, we believe the document is misleading, or at a minimum, incomplete, when it goes on to state (same page) "None of the [state coastal management] programs contain specific provisions regarding sonar activities or related acoustic impacts." As you are aware, several states (including California, Hawaii, and Maine) have asserted that Navy LFA sonar is subject to review under these states' coastal management program, and while they may not have policies specifically directed at sonar per se, they do have policies to protect marine resources (including marine mammals) and recreation (including diving). You are also aware that: (1) California's coastal management has a still pending consistency determination from the Navy (submitted on November 8, 2000, and withdrawn from active consideration in December 2000 by the Navy); (2) Hawaii issued a consistency determination concurrence in 1997 (which included project modifications); and (3) Maine invoked the federal consistency "reopener" clause (15 CFR Section 930.45¹) and requested additional information and/or submittals from the Navy

¹ §930.45 Availability of mediation for previously reviewed activities.

(a) Federal and State agencies shall cooperate in their efforts to monitor federally approved activities in order to make certain that such activities continue to be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the management program.

(b) The State agency may request that the Federal agency take appropriate remedial action following a serious disagreement resulting from a Federal agency activity, including those activities where the State agency's concurrence was presumed, which was: (1) Previously determined to be consistent to the maximum extent practicable with the management program, but which the State agency later maintains is being conducted or is having an effect on any coastal use or resource substantially different than originally described and, as a result, is no longer consistent to the maximum extent practicable with the enforceable policies of the management program; or (2) Previously determined not to be a Federal agency activity affecting any coastal use or resource, but which the State agency later maintains is being conducted or is having an effect on any coastal use or resource substantially different than originally described and, as a result, the activity affects any coastal use or resource and is not consistent to the maximum extent practicable with the enforceable policies of the management program. The State agency's request shall include supporting information and a proposal for recommended remedial action.

Page 2

(and which the Navy agreed in response to provide, before it would conduct LFA sonar testing off that state).

We believe the document would not be complete without referencing the applicability of these state's programs and state responses (or pending actions), including any further proceedings we may not be aware of. We further recommend you include chart indicating which states the Navy submitted consistency determinations to, what each state's response was, and where a state review was based on an applicable enforceable state program policy, what the policy language provided.

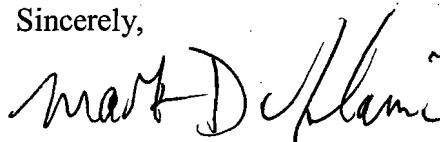
For your recollection, the following link to the Coastal Commission's web site contains the still pending Coastal Commission staff recommendation (CD-113-00), and following that, the Navy's submitted consistency determination:

<http://www.coastal.ca.gov/cd/CD-113-00.pdf>

At this point, it is obvious from events that have elapsed since 2000 (e.g., necropsy results from the Bahamas strandings, other strandings possibly linked to Navy mid-frequency sonar, and increased knowledge of the capabilities of the Navy's high frequency active sonar), as well as from the Navy's DSEIS itself, that circumstances have changed significantly since that time, and that additional information is available that would need to be evaluated prior to any future California Coastal Commission consistency review. Clearly, both our previous staff report and the Navy's 2000 consistency determination can only be considered woefully out of date and in need of revision to reflect current and future conditions. Accordingly, we strongly urge the Navy to withdraw the previous consistency determination, and if and when the Navy does intend to conduct LFA testing off California waters, to resubmit a new consistency determination providing all the pertinent available data and analysis that is available at that time.

Please feel free to contact me at (415) 904-5289 if you have any questions.

Sincerely,



MARK DELAPLAINE
Federal Consistency Supervisor

cc: Coastal States Organization
Maine Coastal Management Program
Hawaii Coastal Management Program

B-10

From: David Cottingham
To: eisteam@mindspring.com
Subject: LFA SURTASS EIS comments
T : Dec 19, 2005 11:33 AM

Dear Team --

The Marine Mammal Commission is faced with difficulties getting the comments to you by Dec 28. Could we please have a 2 week extension? I will be happy to submit a more formal request if that is necessary.

David Cottingham

David Cottingham
Executive Director
Marine Mammal Commission

From: "cristi.reid"
To: eisteam@mindspring.com
Cc:

Subject: Comment letter from NOAA on the DSEIS for SURTASS LFA
Date: Dec 20, 2005 11:58 AM
Attachments: DSEIS 0511-09 signed SURTASS.pdf

Dear Mr. Johnson:
Please accept this email transmission as NOAA's submission of comments on the DSEIS for the Surveillance Towed Array Sensor Low Frequency Active Sonar. We have also faxed and mailed a hard copy of these comments to you.

Please contact Shelby Mendez by phone at 301-713-1622 x207 or by email at Shelby.L.Mendez@noaa.gov if you have any questions.

Thank you,
Cristi Reid

--
Cristi Reid <> <>
Environmental Protection Specialist
Department of Commerce
B-111 National Oceanic & Atmospheric Administration (NOAA)
Program Planning and Integration (PPI)
Coordination and Compliance



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
 PROGRAM PLANNING AND INTEGRATION
 Silver Spring, Maryland 20910

Mr. J. S. Johnson
 SURTASS LFA Sonar EIS Program Manager
 4100 Fairfax Drive, Suite 730
 Arlington, VA 22203

Dear Mr. Johnson:

The National Oceanic and Atmospheric Administration (NOAA) has reviewed the Supplemental Draft Environmental Impact Statement for Surveillance Towed Array Sensor Low Frequency Active (SURTASS LFA) Sonar and provides the following comments for consideration by the Department of the Navy. As a cooperating agency in the development of this document, NOAA recognizes the Department of the Navy's need to employ SURTASS LFA sonar systems in oceanic areas while minimizing the environmental effects of these activities.

NOAA offers the following comments to assist the Department of the Navy in completing the environmental review of this project.

NOAA supports the preferred alternative which incorporates the protections for national marine sanctuary resources developed in the course of consultation pursuant to section 304(d) of the National Marine Sanctuaries Act (16 U.S.C. 1434(d)). This consultation concluded with a commitment by the Navy to ensure this system is operated in a manner that minimizes the potential for the system to injure sanctuary resources.

4.7.1

NOAA asks that the Navy consider adding the Davidson Seamount to the list of Offshore Biologically Important Areas (OBIA). As mentioned in our May 15, 2001 letter, Davidson Seamount is an important feeding ground for sperm whales along the California coast. This area is very close to the OBIA already established for the Monterey Bay National Marine Sanctuary (MBNMS). NOAA is currently in the process for expanding the boundary of the MBNMS to incorporate Davidson Seamount. An approximate center coordinate for Davidson Seamount is 35° 43' 12" North latitude, 122° 43' 12 West longitude.

4.7.19



NOAA requests Table 2-4 (which appears on page 2-14) be modified by including location descriptions from areas numbered 5-9 as follows (additions in bold):

Area number	Name of Area	Location of Area	Months of importance
5	Cordell Bank NMS	Boundary coordinates can be found at 15 CFR 922.110	Year round
6	Gulf of the Farallones NMS	Boundary coordinates can be found at 15 CFR 922.80	Year round
7	Monterey Bay NMS	Boundary coordinates can be found at 15 CFR 922.130	Year round
8	Olympic Coast NMS	Within 23 nm of coast; Boundary coordinates can be found at 15 CFR 922.150	December, January, March, and May
9	Flower Garden Banks NMS	Boundary coordinates can be found at 15 CFR 922.120	Year round

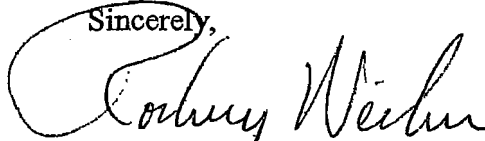
4.7.19

The entry for the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve (area number 10 in Table 2-4) should be clarified. Currently the location of the area is defined as "Within 12 or 25 nm." The description should be revised to more clearly describe the location. The boundary of the Reserve is described generally in Executive Order 13178 as being 50 nm from the center line of the island chain. The reference to 12 or 25 nm is therefore somewhat confusing.

4.7.17

Thank you for considering NOAA's comments on this DEIS. We look forward to continued cooperation on this important project. Please direct any questions to Shelby Mendez by phone at or by email at

Sincerely,



Rodney F. Weiher, Ph.D.

NEPA Coordinator

NOAA Office of Program Planning and Integration

From:
To: eisteam@mindspring.com
Subject: Fw: EPA Comments on SURTASS LFA
L : Dec 23, 2005 1:04 PM
Attachments: EPAComments.pdf

A PDF of EPA's comment letter is attached and the hard copy for your files has been mailed. If you have any questions please contact Marthea Rountree at

(See attached file: EPAComments.pdf)

Elaine Suriano
Office of Federal Activities
Environmental Scientist

General Mail Delivery
US EPA (2252-A)
1200 Penna Ave., NW
Washington DC 20460-0001

Fed EX, UPS or Courier
US EPA (Rm 7235 C)
1200 Penna Ave., NW
Washington DC 20004



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

DEC 23 2005

Mr. J. S. Johnson
Attn: SURTASS LFA Sonar EIS Program Manager
4100 Fairfax Drive, Suite 730
Arlington, VA 22203

Dear Mr. Johnson:

In accordance with our responsibilities under Section 309 of the Clean Air Act and the National Environmental Policy Act (NEPA), the Environmental Protection Agency (EPA) has reviewed the Draft Supplemental Environmental Impact Statement (EIS) for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar (CEQ# 20050460).

The original Final Overseas Environmental Impact Statement/Environmental Impact Statement (FOEIS/EIS) (prepared pursuant to Executive Order 12114 and NEPA) for SURTASS LFA sonar was completed in January 2001 by the Navy with the National Marine Fisheries Service (NMFS) as a cooperating agency. NMFS is also a cooperating agency in the development of this draft supplemental EIS. The purpose of the proposed action remains the same as that in the original FOEIS/EIS, which is to meet the U.S. need for improved capability to detect quieter and harder-to-find foreign submarines at long range. This capability would provide U.S. forces with adequate time to react to and defend against potential submarine threats while remaining at a safe distance beyond a submarine's effective weapons range. To meet its long-range detection need, the Navy has determined low frequency active sonar as the only system capable of providing long-range detection during most weather conditions, day or night. It has also determined that low frequency active sonar is the only available technology capable of meeting the U.S. need to improve detection of quieter and harder-to-find foreign submarines at long range.

The primary focus of this draft supplemental EIS is on providing additional information regarding the environment that could potentially be affected by employment of SURTASS LFA and providing additional information related to mitigation of the potential impacts of the system. It also addresses pertinent deficiencies raised by the U.S. District Court for the District of Northern California including additional mitigation and monitoring, additional area alternatives analysis, and analysis of the potential impacts on low frequency sound on fish. Finally, it also provides the information necessary to apply for a new five-year rule that would provide for the

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incidental takes under the Marine Mammal Protection Act, taking into account the National Defense Authorization Act FY04 amendments to the Marine Mammal protection Act for military readiness.

The Navy's proposed action is to employ up to four SURTASS LFA sonar systems in the oceanic areas. Based on current operational requirements, exercises using these sonar systems would occur in the Pacific, Atlantic, and Indian Oceans, and the Mediterranean Sea. To reduce adverse effects on the marine environment, areas would be excluded as necessary to prevent 180 decibel sound pressure levels or greater within specific geographic range of land, in offshore biologically important areas during biologically important seasons, and in areas necessary to prevent greater than 145 decibels at known recreational and commercial dive sites.

EPA commends the efforts of the Navy in the preparation of this comprehensive and well-organized document. Based on our review of the draft supplemental EIS and the incorporation of the mitigation measures discussed above, we believe that the proposed action will not cause any significant adverse impacts. Accordingly, we have rated the document as LO-Lack of Objections.

We appreciate the opportunity to review this draft supplemental EIS. We also look forward to reviewing the final supplemental EIS related to this project. The staff contact for the review is Marthea Rountree and she can be reached at

Sincerely,



Anne Norton Miller
Director
Office of Federal Activities

From: "Rose, Carol Ann (O&H)"

To: eisteam@mindspring.com

Subject: Comments on draft SEIS

Date: Feb 10, 2006 2:13 PM

Attention: Joseph S. Johnson
 SURTASS LFA Program Manager
 4100 Fairfax Drive
 Suite 730
 Arlington, VA 22203

Re: Draft Supplemental Environmental Impact Statement for the Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar

On behalf of Fisheries and Oceans Canada (Maritimes Region), I would like to thank you for the opportunity to provide information related to the draft Supplemental EIS (SEIS) for the Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar.

With respect to Section 2.6.3 of the draft SEIS (Alternative 2) describing the listing of additional Offshore Biologically Important Areas, we draw your attention to the Gully Marine Protected Area Regulations enacted under Canada's Oceans Act in 2004 (Canada Gazette Part II, Vol. 138, No. 10, May 19 2004, pp. 663-694; available online:

<http://canadagazette.gc.ca/partII/2004/20040519/pdf/g2-13810.pdf>
 <<http://canadagazette.gc.ca/partII/2004/20040519/pdf/g2-13810.pdf>> and/or
<http://canadagazette.gc.ca/partII/2004/20040519/html/sor112-e.html>
 <<http://canadagazette.gc.ca/partII/2004/20040519/html/sor112-e.html>>)

The Gully, located off Nova Scotia on Canada's east coast, is the largest submarine canyon in the western North Atlantic. The canyon reaches depths greater than 2500 metres and provides important habitat for a variety of cetacean, dolphin, fish and seabird species. In July 2002 the National Marine Fisheries Service indicated that a significant portion of the Gully was protected within the North American East Coast OBIA by way of a straight-line projection of the 200 metre isobath across the canyon mouth (Response to Comment MIC8, Federal Register, Vol. 67, No. 136, Tuesday, July 16, 2002, pp. 46712-46789). Please note that the 2004 regulations creating the Marine Protected Area designate an area beyond the shelf break.

4.7.19

As described on page 3.2-64 of the draft SEIS, the Gully provides important habitat for Northern bottlenose whales (*Hyperoodon ampullatus*). Due to low numbers of mature individuals (< 250) in the Gully and adjacent canyons (Haldimand and Shortland), the Scotian Shelf population of Northern bottlenose whales was assessed as endangered by the Committee on the Status of Endangered Wildlife in Canada. The Government of Canada is currently in the final stages of adding this population to the List of Wildlife Species at Risk under Canada's Species at Risk Act. The recommendation to list this population as endangered was published in December 2005 (Canada Gazette Part I, Vol. 139, No. 50, December 10, 2005, pp. 4037-4054; available online: <http://canadagazette.gc.ca/partI/2005/20051210/pdf/g1-13950.pdf> <<http://canadagazette.gc.ca/partI/2005/20051210/pdf/g1-13950.pdf>> and/or <http://canadagazette.gc.ca/partI/2005/20051210/html/regle1-e.html> <<http://canadagazette.gc.ca/partI/2005/20051210/html/regle1-e.html>>)

A supporting hard copy of this letter is also being sent to you. In the meantime, please feel free to contact myself or Tim Hall, Oceans and Coastal Management Division for more information on this matter.

Sincerely,

B-14

Carol Ann Rose
A/Regional Director
Oceans and Habitat Branch
Fisheries and Oceans Canada (Maritimes Region)
Dartmouth, Nova Scotia, Canada



STATE OF MAINE
 EXECUTIVE DEPARTMENT
MAINE STATE PLANNING OFFICE
 38 STATE HOUSE STATION
 AUGUSTA, ME 04333

JOHN ELIAS BALDACCI
 GOVERNOR

MARTHA E. FREEMAN
 DIRECTOR

February 9, 2006

Mr. J. S. Johnson
 ATTN: SURTASS LFA Sonar EIS Program Manager
 4110 Fairfax Drive, Suite 730
 Arlington, VA 22203

RE: Comments; Draft SEIS; SURTASS LFA (Low Frequency Active Sonar)

Dear Mr. Johnson:

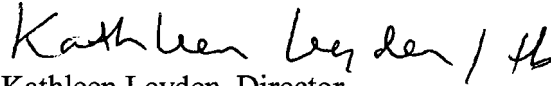
I am writing to provide comments on behalf of the Maine State Planning Office, Maine Coastal Program ("SPO") regarding the Navy's Draft Supplemental Environmental Impact Statement ("DSEIS") concerning its SURTASS LFA (Low Frequency Active Sonar) program. As further discussed below, we think that the summary in the DSEIS regarding the Coastal Zone Management Act ("CZMA") is incomplete and needs to be updated to accurately reflect the status of the Navy's CZMA consultation with coastal states.

Section 3.3.4 of the DSEIS (p. 3.3-19) provides a general discussion of the nature of the Navy's obligations and coastal states' review authority under Section 307(c)(1) of the CZMA. This section should be supplemented to indicate the current status of the Navy's consultation with coastal states.

As you'll recall, the State of Maine has a pending request pursuant to 15 C.F.R. §930.46 for supplemental coordination with the Navy in advance of employment of the SURTASS LFA system in or in areas proximate to the Gulf of Maine. In its October 2, 2001 response to this request, the Navy did not object to supplemental coordination but indicated that additional consultation was then premature since the Navy "has no plans to employ the SURTASS LFA system in the Gulf of Maine" and suggested that the FEIS would resolve questions posed by the State's Department of Marine Resources ("DMR") regarding potential effects on coastal resources and uses. The DSEIS (*see* ES 2-1 and Figure 2-2) indicates that, based on its current operational requirements, the Navy may undertake exercises using SURTASS LFA in the Atlantic among other areas when ships outfitted with LFA become available in FY 08 or FY 09. The DSEIS itself attests to the fact there is significant new information and changes in circumstances since the Navy's initial consistency determination. Consequently, we continue to believe that further consultation as requested to address DMR's questions about potential effects of deployment of LFA on the State's coastal resources and uses is appropriate if any such exercises are to be undertaken in or in areas proximate to the Gulf of Maine.

We appreciate the efforts that the Navy has made to date to consult with the State and avoid and minimize potential adverse environmental effects of SURTASS LFA. We look forward to your continued cooperation with the State in these efforts. Please contact Todd Burrowes on my staff (207-287-1496) if you have questions or need additional information. Thank you for your consideration.

Sincerely,

Handwritten signature of Kathleen Leyden in cursive, followed by a vertical line and the number 46.

Kathleen Leyden, Director
Maine Coastal Program

cc: /

Senator Olympia J. Snowe

Senator Susan H. Collins

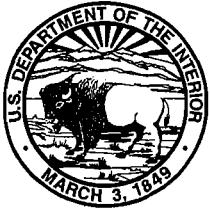
Congressman Thomas A. Allen

Congressman Michael Michaud

Charles Ehler, NOAA

Donald R. Knowles, NMFS

George Lapointe, DMR



United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Custom House, Room 244
200 Chestnut Street
Philadelphia, Pennsylvania 19106-2904



IN REPLY REFER TO:

February 9, 2006

ER 05/973

Joseph S. Johnson
Attn: SURTASS LFA Program Manager
4100 Fairfax Drive, Suite 730
Arlington, Virginia 22202

Dear Mr. Johnson:

The U.S. Department of the Interior has no comment on the November 2005 Draft Supplemental Environmental Impact Statement (DSEIS) for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar System.

Thank you for the opportunity to review the DSEIS.

Sincerely,

Michael T. Chezik
Regional Environmental Officer

B-16

**MARINE MAMMAL COMMISSION
4340 EAST-WEST HIGHWAY, ROOM 905
BETHESDA, MD 20814-4447**

10 February 2006

Mr. J. S. Johnson
ATTN: SURTASS LFA Sonar EIS Program Manager
4100 Fairfax Drive, Suite 730
Arlington VA 22203

Dear Mr. Johnson:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the Draft Supplemental Environmental Impact Statement for the Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar, dated November 2005 (the DSEIS). The Commission provides these comments and recommendations on those sections of the document related to the assessment of the impacts of the proposed action on marine mammals.

The proposed action is to continue training operations using SURTASS LFA sonar systems on up to four ships and to expand the operating areas in the Pacific Ocean basin. The stated purpose of the DSEIS is fourfold:

- To address deficiencies in National Environmental Policy Act (NEPA), Endangered Species Act (ESA), and Marine Mammal Protection Act (MMPA) compliance found by the U.S. District Court for the Northern District of California in its 26 August 2003 order and opinion concerning a lawsuit brought by several environmental groups;
- To provide information necessary for application to the National Marine Fisheries Service for a new five-year incidental harassment rule (2007-2012) that would provide for incidental takes of marine mammals in accordance with the MMPA, taking into account legislative changes in the Act made by Congress in response to a Navy request and the need to employ two additional SURTASS LFA sonar systems;
- To analyze potential impacts for LFA upgrades; and
- To provide additional information and analyses pertinent to the proposed action.

The DSEIS evaluates a no-action alternative and four alternatives. Alternative 1 is, in essence, extension of the current monitoring and mitigation measures to additional operating areas. Alternative 2 would continue the current monitoring and mitigation measures and provide a number of additions to the currently designated offshore biologically important areas (OBIAs) where sound exposure levels are limited to no more than 180 dB. Alternative 3 would further restrict operations to limit sound exposure levels to no more than 180 dB within 46 km (25 nm) of any coastal area, rather than the 22 km (12 nm) "stand-off" range currently in effect. Alternative 4 would integrate alternatives 2 and 3 by combining the additional OBIAs in alternative 2 with the increased standoff

Mr. J. S. Johnson
10 February 2006
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distance in alternative 3. Alternative 2 is identified as the preferred alternative. Under all of the alternatives, each ship would operate its SURTASS LFA sonar system no more than 72 hours on a 49-day mission, for a maximum of 432 hours per year.

With regard to marine mammals, the DSEIS concludes that alternative 2 will ensure that the envisioned operations of the four LFA sonar systems will not have biologically significant impacts on any marine mammal species or population stock. It also concludes that use of small boats and aircraft for pre-operational surveys would not be practicable and could both increase harassment of marine mammals and jeopardize the safety of those conducting the surveys. **5.4.1**

The Marine Mammal Commission concurs that carrying out small boat or aerial surveys immediately before and during SURTASS LFA sonar operations in the various offshore training areas would not be a practicable mitigation option. However, the draft statement's conclusion that the proposed operations are unlikely to have biologically significant impacts on any marine mammal species or stock is based primarily on two assumptions: **4.7.2**

1. Behavioral responses to the sonar transmissions would be temporary (of biologically insignificant duration), and exposure to received levels at and below 180 dB would not have biologically significant effects on the behavior of any marine mammal; and **4.7.2**
4.7.8

2. The mitigation and monitoring measures described in section 5 of the DSEIS will reduce, to a negligible likelihood, the risk that any marine mammal would be exposed to received levels greater than 180 dB. **5.0.2b**

For the reasons explained below, the Commission questions whether these assumptions are valid. Further, from the information provided in the DSEIS, the Commission is unable to make a reasoned judgment as to whether extension of the current mitigation and monitoring measures, as outlined in section 5, would ensure that the proposed action has biologically insignificant impacts on marine mammals. Also, for the reasons explained below, the Commission questions the conclusion that alternative 4 would pose a greater risk of harassing marine mammals than would alternative 2, the preferred alternative. **4.7.2**

Validity of Conclusions concerning the 180-dB Threshold Response

In its 27 October 1999 comments on the original DEIS concerning the SURTASS LFA sonar, the Commission pointed out that the 180-dB "impact threshold" would be valid only if its underlying assumptions were valid. It appears from the DSEIS that substantial uncertainty remains concerning the validity of some of those assumptions. Thus, there is still a high degree of uncertainty as to whether preventing the exposure of marine mammals to LFA sonar sounds louder than 180 dB will, in fact, ensure that the proposed action does not have biologically significant impacts on any species or stock. The DSEIS references the 2005 National Research Council (NRC) report, *Marine Mammal Populations and Ocean Noise: Determining When Noise Causes Biologically Significant Effects*. That report concludes that an activity that adversely affects the growth, survival, or reproduction of an individual marine mammal can potentially have a biologically significant population-level effect on small populations. Further, the DSEIS cites a number of case studies in which marine mammals were observed to respond to anthropogenic sounds at received levels far

Mr. J. S. Johnson
 10 February 2006
 Page 3

below 180 dB (e.g., Dahlheim et al. 1984, Frankel and Clark 2000, Erbe 2002). It contends that such responses would have been biologically insignificant because most were of limited duration and no evidence of harmful effects was found. As an example, while the DSEIS acknowledges that some masking of cetacean vocalizations by the LFA sonar transmissions is likely to occur, it concludes that the effects would be temporary and biologically insignificant because the sonar transmissions are infrequent and of limited duration (6 to 100 seconds).

Such a conclusion would be justified if (1) the effectiveness of the vocalizations used for navigation, communication, attracting mates, defending territories, etc., were maintained despite masking during the longest sonar ping; and (2) repetition of single-ping masking were not to occur over large areas for biologically significant periods. Available information concerning the functions and effective durations of various types of vocalizations is insufficient to be confident that all short-term masking would have biologically insignificant effects on growth, survival, and reproduction. Conversely, available information is sufficient to conclude that many vocalizations are effective at received levels substantially less than 180 dB and that masking therefore could occur over large areas and be repeated regularly over the course of each training exercise. Whether the repetition could compromise the effectiveness of any vocalizations is unknown. Thus, because of this uncertainty, a precautionary approach would conclude that exposure of marine mammals to LFA sonar sounds of less than 180 dB could have biologically significant effects.

The Marine Mammal Commission recommends that the final supplemental EIS (FSEIS) should (1) acknowledge the aforementioned uncertainties concerning the effectiveness of the 180-dB impact threshold to mitigate impacts on marine mammals and (2) provide a description of the research being done and planned to address the uncertainties.

4.3.14

4.7.8

Effectiveness of the Mitigation and Monitoring Measures

Section 5.2 of the DSEIS describes the visual and the passive and active acoustic monitoring that has been required and that would be continued as part of the proposed action to prevent injury to marine animals when employing the SURTASS LFA sonar. It indicates that all visual sightings and passive and active acoustic contacts are logged and that sonar transmissions are suspended if marine mammals or sea turtles are detected in or approaching the "LFA mitigation zone." Further, it indicates that logs of all of the visual sightings and both the passive and active acoustic contacts "are provided as part of the LTM [Long Term Monitoring] to monitor for potential long-term effects." There is no indication of what constitutes the LTM or to whom the logs are provided. Likewise, there is no indication of where and how the data are archived and analyzed and whether the monitoring has provided any indications of either immediate (short-term) behavioral or other effects or possible long-term or cumulative effects.

5.3.1

Tables 4.4-2 to 4.4-10 on pages 4-43 to 4-51 of the DSEIS provide estimates of the percentages of marine mammal stocks potentially affected in the course of 19 LFA sonar operations in four different areas. Although these estimates are of interest as to the species and numbers of animals possibly affected by the operations, they provide no indication of, or basis for judging, the effectiveness of the monitoring and mitigation measures. In this regard, we assume that the data logs contain information on such things as (1) the track line of the ship during LFA sonar operations; (2) the species, numbers, and group sizes of marine mammals observed visually during each operation;

Mr. J. S. Johnson
 10 February 2006
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(3) the location (distance and bearing) of the animals relative to the ship when first sighted; (4) the movements of the animals relative to the ship during each encounter (e.g. any indications that the animals were being attracted to, moving away from, ignoring, or avoiding the ship); (5) the activities of the animals when first sighted (e.g., swimming, diving/feeding, milling) and any changes in activities that were observed subsequently; (6) the nature (e.g., call type), number, frequency, bearings, etc., of vocalizations detected passively and any changes that occurred during operations; (7) the numbers, locations, species, and activities of animals detected with the HF/M3 sonar; (8) any apparent response of animals to the HF/M3 sonar; and (9) the nature and duration of any suspension or other alteration of operations made in response to a marine mammal observation.

The Navy has invested millions of dollars in developing databases that compile information from many marine surveys into comparable GIS-based systems. The Living Marine Resource Information System (LMRIS) and Ocean Biogeographic Information System – Spatial Ecological Analysis of Megavertebrate Populations (OBIS SEAMAP) databases are designed to provide access to information on a wide variety of biological and physical conditions. We realize that work on the databases is continuing and that they are not yet fully operational. Nevertheless, assuming that the logs contain the above types of information, the Marine Mammal Commission recommends that the Navy (1) assure that the information from the monitoring is included in the LMRIS and OBIS SEAMAP systems and (2) analyze and include the data in the FSEIS and that the analyses include an empirical evaluation of the effectiveness of the monitoring and mitigation measures. The Commission also recommends that copies of the data recording forms be included in the FSEIS. Further, if it is not already being done, the Commission recommends that the Navy and the National Marine Fisheries Service review the monitoring data at least annually to identify possible marine mammal “hot spots” that should be avoided or be considered for designation as OBIA. If such data are not being collected, the Marine Mammal Commission recommends that the FSEIS indicate why this is the case and that the Navy begin collecting and analyzing relevant information as described above.

5.2.6

Comparison of the Relative Risks of Alternatives 1, 2, 3, and 4

Section 4.7.6 of the DSEIS compares the 22 km (12 nm) coastal standoff range in alternatives 1 and 2 with the 46 km (25 nm) coastal standoff range in alternatives 3 and 4 in terms of their potential to adversely affect marine animals. As illustrated in Table 4.7.2 and Figure 4.7.1, it concludes that, because the ocean area exposed to sound levels between 155 and 165 dB would be substantially greater for the 25 nm standoff than for the 12 nm standoff, alternatives 3 and 4 would have greater potential to adversely affect marine animals than alternatives 1 and 2. This conclusion would apply with particular force to marine mammals that inhabit shelf-break habitat. The validity of this conclusion depends on two assumptions: (1) that all, or at least a major portion, of the LFA sonar operations would be carried out in coastal areas and therefore the zones of potential influence would be as portrayed in Figure 4.7-1; and (2) that exposure of marine mammals to received levels below 165 dB would pose no more than insignificant impacts.

There is no indication in the DSEIS of the numbers or proportions of operations to be conducted in offshore vs. coastal areas. If a large proportion of the operations is expected to occur beyond the 25 nm standoff, the conclusion is moot. If, as the DSEIS assumes, exposure to received levels of less than 180 dB poses no more than negligible impacts on marine mammals, then the

4.7.16

Mr. J. S. Johnson
10 February 2006
Page 5

conclusion is also moot. In the Commission's view, alternative 4 offers greater protection to marine mammals than alternative 2 unless most or at least a major portion of the operations are to be conducted between 12 and 25 nm from the coast. If operations inside the 25-nm standoff range are considered essential for training purposes, the Navy should say so. Before concluding that the additional standoff range is detrimental to marine mammals, the Navy needs to better explain where the training will occur relative to coastlines. 4.7.16

Please contact me if you have questions concerning these comments and recommendations. The Commission will also comment on the Navy's application for incidental harassment regulations when the National Marine Fisheries Service considers and distributes it.

Sincerely,



David Cottingham
Executive Director

From: "Escalante, Linda"
To: eisteam@mindspring.com
Subject: LFA SEIS letter to Joe Johnson
Date: Nov 28, 2005 8:02 PM
Attachments: LFA SEIS letter to J.Johnson 11-28-05.PDF

Dear Mr. Johnson,

Attached you'll find a letter regarding the draft SEIS for SURTASS LFA sonar from Cara Horowitz, Project Attorney for the Natural Resources Defense Council.

Cordially,

Linda Escalante

Program Assistant
NRDC Ecosystems Program
1314 2nd St.
Santa Monica, CA 90401



NATURAL RESOURCES DEFENSE COUNCIL

By Overnight Mail and Email**REQUEST FOR EXTENSION OF
PUBLIC COMMENT PERIOD**

November 28, 2005

Joe S. Johnson
 SURTASS LFA Sonar EIS Program Manager
 U.S. Department of the Navy
 4100 Fairfax Drive
 Suite 730
 Arlington, VA 22203

Email: eisteam@mindspring.com

Re: Petition for Extension of Public Comment Period on Draft Supplemental
 Environmental Impact Statement for SURTASS LFA Sonar

Dear Mr. Johnson:

On behalf of the Natural Resources Defense Council ("NRDC") and our more than 650,000 members, I am writing to petition the Navy for an extension of the public comment period on its Draft Supplemental Environmental Impact Statement ("SEIS") for SURTASS LFA sonar. See "Notice of Public Hearings for a Draft Supplemental Environmental Impact Statement for the SURTASS LFA Sonar," 70 Fed. Reg. 69526 (Nov. 16, 2005). For the following reasons, we urge the Navy to extend the comment period, now scheduled to expire on 27 December, by 45 days.

First, both the document itself and the activities analyzed by the document are of a scope that makes infeasible careful review in the period allotted. As recognized by the U.S. District Court that struck down the original EIS for this system, the Navy's use of SURTASS LFA sonar has potential for serious, long-term environmental impacts on marine life, including whales and other marine mammals. See Natural Resources Defense Council, Inc. v. Evans, 279 F. Supp. 2d 1129, 1188 (N.D. Cal. 2003). Yet the SEIS analyses a proposed deployment significantly beyond what was authorized by the court in that case, including a doubling of the number of SURTASS LFA sonar systems in use as well as a proposed expansion of the geographic area of use across several ocean basins, from the Pacific to the Indian to the Atlantic to the Mediterranean. SEIS at 2-3 and 2-5. For each single ship proposed to be equipped with SURTASS LFA sonar, the Navy seeks not just a few exercises but up to 240 days per year of active sonar operations. SEIS at 2-6. And, at 429 pages, the DEIS itself is quite lengthy and highly technical in nature (incorporating, for example, 62 pages of references cited).

1.1.6

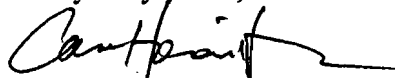
Mr. Joe Johnson
 November 28, 2005
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Second, the SEIS deals with a subject of extraordinary public controversy, as demonstrated by the overwhelming public outcry at the Navy's original EIS for this system and the subsequent court case striking that EIS down. The Navy attempts to address a number of critical and complex issues that troubled the court in that case, including questions of mitigation, alternatives, and impacts on fish. The widespread interest shown by the scientific community and the general public in the Navy's use of SURTASS LFA means that full and meaningful public participation in this SEIS— participation of the sort we believe is not possible in the limited time frame proposed by the Navy for review—is essential to allow these communities to satisfy themselves that this SEIS cures the faults identified by the District Court and lays forth a proposal for the use of SURTASS LFA that will not irreparably and unnecessarily harm marine life.

Third, making review more difficult is the fact that the Navy's proposed public comment period falls virtually entirely in the heart of the holiday season, beginning a week before Thanksgiving and ending two days after Christmas. It also coincides squarely with the public comment period set by the Navy for another lengthy and technically complex DEIS dealing with sonar and its impacts to marine life, issued for the proposed Atlantic Undersea Warfare Training Range at which the Navy hopes to conduct year-round active sonar training. As you may be aware, the public comment period for that DEIS ends on December 28, one day after the comment period on the SURTASS LFA SEIS. See "Notice of Public Hearings for a Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Undersea Warfare Training Range," 70 Fed. Reg. 62102 (Oct. 28, 2005). We are sure we speak for many interested members of the public when we say that reviewing both documents in the allotted periods will be a significant and unnecessary hardship and will result in less meaningful review of both projects than is warranted by the potential harms to marine life they implicate.

In sum, given the length and technical nature of the document; the complexity of the issues surrounding acoustical impacts on marine life; the public's demonstrated interest in and concern over the use of this technology; the coincidence of the Navy's proposed comment period with the holiday season; and the close overlap of this comment period with that of the Navy's proposed Atlantic sonar training range, we believe the currently prescribed public comment period is inadequate to its purpose of facilitating public participation and input and must be extended. As always, we would welcome discussion with the Navy at any time.

Very truly yours,



Cara A. Horowitz
 Project Attorney
 Marine Mammal Protection Program

cc: Hon. Gordon R. England, Secretary of the Navy
 Steve Leathery, National Marine Fisheries Service
 Donna Wieting, National Marine Fisheries Service



GREEN PARTY of HAWAI`I

Statement on Navy's "Draft Supplemental Environmental Impact Statement for Deployment of Low Frequency Active Sonar"

Honolulu, Hawai'i
Dec 5, 2005

My name is Ira Rohter. I am appearing on behalf of the Green Party of Hawai'i, who have been plaintiffs in four different lawsuits related to LFA.

Let us review "Why are you here?" once again in Hawai'i involved in a hearing on deployment of low frequency active sonar.

Paid Pseudo- Science

FIRST, We know why you are **not** here.

You are not here to acknowledge the evidence about the harmful effects that emerged in 1998 when the Navy came to Hawai`i Island to test the LFA system. At that time, numerous whale watch boat captains, helicopter pilots, and shore observers reported that the Humpback Whales disappeared from the test area. The permit for the testing called for suspension of the tests if there was an abnormal absence of whales. Despite the filing of several such reports with the Navy and the National Marine Fisheries Service, the tests continued. Despite the extensive experience of the observers reporting the absence of whales from the area, you chose to ignore that evidence when considering the results of the tests. Your paid scientists dismissed these observations as "anecdotal," as if that term negated the credibility and validity of the knowledgeable observations themselves.

2.7.3

Honest science would require your paid scientists to interview these observers , to attempt to document their observations, and otherwise treat their information as relevant to the impact study underway. Ignoring their evidence and dismissing their observations as anecdotal is pseudo- science in service to a predetermined outcome.

You are not here to apologize to the naturalist studying dolphins who received extensive exposure to an LFA broadcast while she was in the water, which left her with psychological and physiological problems lasting for two years. You ignored the evidence presented in court regarding the impact of the exposure and never made any attempt to contact her or discuss her condition. You choose to rely on data collected on professional Navy divers, and ignore the potential impact of LFA transmissions on the general public.

4.0.4
4.5.6

Honest science would have led to your contacting the injured individual and her doctor to determine the nature and extent of the injuries. Ignoring her injuries is pseudo-science in service to a predetermined outcome.

You are not here because the birth rate in two dolphin pods that frequented the test area dropped dramatically in the birthing season following the LFA tests. You have chosen to ignore that evidence as well.

Honest science would have led to examining the vast data base collected by the pod observer and determining the significance of the precipitous drop in dolphin birth rates. If that drop appeared credible, a whole area of potential impacts -- such as the potential for LFA broadcasts at the resonant frequency of tissues important to gestation -- would have been raised.

Your entire approach to the deployment of LFA has been to seek out evidence that would justify deployment and ignore evidence that would argue against its use. For years you knowingly pursued the development, testing, and deployment of LFA without any regard for the numerous environmental laws that required you to perform studies and evaluate the potential impact of this new technology. You invested more than 100 million dollars before beginning to assess environmental impacts. You could hardly conclude that you have made a terrible mistake, so you skewed the science to justify deployment.

Gaming the Legal Process

You are here because your irresponsible behavior in 1998 outraged thousands of people in the islands. They have written letters to Congress, the Navy, the National Marine Fisheries Service, and elsewhere objecting to your cavalier attitude towards the whales and to deployment of this technology.

You are here because the efforts by the people of these islands to protect the whales and other sea life from your disregard included the filing of numerous lawsuits challenging the tests, the deployment, and the failure to prepare an EIS for deployment during threat and warfare conditions.

So you have begrudgingly been forced to return to a place that you know is very concerned about and active on the issue of low frequency active sonar. So you try to slip in with as little notice as possible.

The guidelines for draft environmental impact statements call for the issuing agency to circulate the document to parties known to be interested in the subject. Yet you made no effort to timely inform the public or those parties in Hawai`i that showed particular interest about the release of the Supplemental Environmental Impact Statement. The Green Party of Hawai`i filed four

different lawsuits related to LFA. You did not send a copy of the draft SEIS to either the Green Party or its attorney in all those cases, Lanny Sinkin. In the list of "Other Interested Organizations" found in the Draft SEIS, the only organization sent a copy in Hawaii was the Pacific Whale Foundation on Maui, an organization that has **not** been involved in litigation on the LFA issue. Obviously, you knew there was substantial interest in this issue, and chose a process that limited the likelihood we would learn about the document.

We assume that the level of activity in Hawai`i opposing the deployment of this technology led to your decision to exclude organizations and individuals and otherwise minimize your exposure to public scrutiny and comment. Those who did not receive the document are left to download a 429 page text and print it out themselves. You only sent CD disks, not hard copies, to the libraries, requiring them to sit at a library machine for hours. You have made the document virtually inaccessible to those who did not receive hard copies.

Your failure to send out the SEIS to interested Hawaiian parties is evidence of a deliberate attempt to minimize public knowledge of and participation in the process. You want to be able to stand before a judge and say you held a hearing in Hawai`i, so you went through the motions without substance.

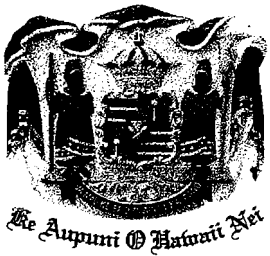
On behalf of the Green Party of Hawai`i, I say shame on you for your lack of commitment to scientific objectivity. Shame on you for your lack of commitment to democracy and public participation. And shame on you for being willing to threaten the health of the marine community and of humans who might be present when you turn on your low frequency active sonar.

*Ko Hawaii Pae Aina
The Hawaiian Islands*

Founded by Kamehameha Akahi - A.D. 1810

*Ke Aupuni O Hawaii Nei
The Hawaiian Kingdom*

Under the Sessions Law of 1892 Chapter LVII, Section 5 (Common-law)



Ua Mau Ke Ea O Ka Aina
I Ka Pono O Iesu Kristo



Leon Siu
Minister of Foreign Affairs
Ministry of Foreign Affairs
Ke Aupuni o Hawaii Nei
General Delivery (62107)
Manoa Station
(U.S.P.Z. Exempt 96822)
001.808.521.5430

B-22

TREATIES of the
HAWAIIAN KINGDOM

TIES	
United Kingdom	1836, 1846, 1851
France	1839, 1846, 1857
Denmark	1846
Hanseatic City of Hamburg (Ger.)	1848
United States of America	1850, 1875
Hanseatic City of Bremen (Ger.)	1851
Sweden	1852
Norway	1852
Belgium	1862
Netherlands	1862
Italy	1863
Spain	1863
Switzerland	1864
Russia	1869
Japan	1871
Germany	1879
Samoa	1887
CONVENTIONS	
Portugal	1882
United States of America (Postal)	1875, 1883, 1884

HISTORICAL DATES

Capt. James Cook arrives	1778
Kamehameha I unites islands, forms the Hawaiian Kingdom	1810
Kamehameha II bans kapu system	1819
American missionaries arrive	1820
Kamehameha III institutes Declaration of Rights	1839
First Hawaiian Constitution	1840
Unlawful overthrow of Hawaiian Kingdom by Great Britain	1843
Restoration of Hawaiian Kingdom by Great Britain	1843
into Family of Nations recognized as sovereign state)	1843
Unlawful overthrow of Hawaiian Kingdom aided by United States	1893
Apology by United States for over- throw of Hawaiian Kingdom	1993
Withdrawal by United States from Hawaiian Kingdom	

LAWFUL PUBLIC NOTICE:

**Honolulu, Hawaii
5 December 2005**

Lawful Notice is hereby given by the Hawaiian Kingdom Government, functioning under its national *common-law*; in assertion of its right as the lawful Government of this sovereign, independent and neutral nation;

To the United States of America, its leaders and representatives:

To Wit: The Hawaiian Kingdom Government categorically protests, opposes and condemns the illegal, unilateral plan by the United States Navy to deploy *Low Frequency Active Sonar* in our Hawaiian territorial waters.

The Hawaiian Kingdom is a sovereign nation, having treaties intact and in effect with numerous foreign nations, including the United States. That Hawaii has been under a prolonged, unlawful military occupation by the United States, does not alter Hawaii's sovereign status. Therefore, unless there is a bi-lateral treaty with the de jure Government of the Hawaiian Kingdom regarding the LFA sonar system, the United States has no lawful authority to deploy this device in our Hawaiian territorial waters.

The Hawaiian Kingdom hereby prohibits, for cause, the United States Navy or any of its agencies, from deploying this sonar system or conducting any military exercise pertaining to its application in Hawaiian waters.

This Government furthermore warns through this *lawful notice*, that should the United States choose to not comply to this prohibition, it will be regarded as a breach of international law as well as Hawaiian Kingdom law; and the Hawaiian Kingdom will prosecute this case to its fullest extent in the appropriate international courts of law.

Respectfully,

Aran Alton Ardaiz, *Attorney General.*
Ke Aupuni O Hawaii Nei
Ko Hawaii Pae Aina

Leon Kaulahao Siu, *Minister of Foreign Affairs.*
Ke Aupuni O Hawaii Nei
Ko Hawaii Pae Aina

cc: Mr. George W. Bush, *President of the United States and Commander in Chief of the U.S. Armed Forces.*
Secretary of State (U.S.)
Chairman, Joint Chief of Staff (U.S.)
Secretary of the Navy (U.S.)
Governor, (de facto) State of Hawaii
Kofi Anan, Secretary General of the U.N.

Minister of the Interior (HK)
Puuhonua Kanahale (HK)
Acting Regent, Keanu Sai (HK)

No na wahi pana 'O Hawai'i nei

Holo mai ka leo o ka Mo'i

Uwehe kaipu, Uwehe ka mana'o pono

Eia ka ho'o mana'o nui o ka Mo'i Hawai'i nei

No ka 'akau, ka hema, ka mua, ka hope, ka mauka, ka makai

Ku I mana Hawai'i nei!

[From the sacred places of Hawai'i

Comes the voice of the King

Uncover the ipu, uncover the truth

Here is the great remembrance of the King of Hawai'i

From the East, the West, the before, the after, the mountains, the sea

The mana of all Hawai'i rises up!]



ANIMAL WELFARE INSTITUTE

PO Box 3650, Washington, DC 20027-0150 www.awionline.org
 telephone: (703) 836-4300 facsimile: (703) 836-0400

December 12, 2005

Mr. J. S. Johnson
 SURTASS LFA Sonar EIS Program Manager
 U.S. Department of the Navy
 4100 Fairfax Drive, Suite 730
 Arlington, VA 22203

By Email: eisteam@mindspring.com

Re: Draft Supplemental Environmental Impact Statement for the Surveillance Towed Array
 Sensor System Low Frequency Active Sonar (70 Federal Register 69526)
 Petition for Extension of public comment period beyond December 27, 2005

Dear Mr. Johnson:

The Animal Welfare Institute (AWI) petitions the US Navy to extend the public comment period for its Draft Supplemental Environmental Impact Statement for the Surveillance Towed Array Sensor System (SURTASS) Low Frequency Active Sonar (LFA) (DSEIS).

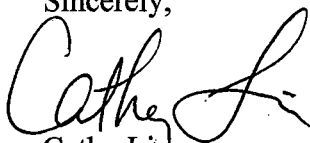
AWI received notification of the publication of the DEIS on November 16, 2005. The DEIS is over 400 pages long and contains a proposal to double the number of platforms using the SURTASS LFA in addition to expanding the geographical area in which it will be used from a restricted area of the Pacific to several ocean basins. The planned action will change the natural balance of the world's marine ecosystem forever. To expect the public to review and comment on such a significant document within 29 working days, including two federal holidays, is not reasonable.

1.1.6

4.4.18

We appreciate the opportunity to comment on the DSEIS and respectfully request that we be allowed to do so to the fullest extent possible and given sufficient time in which to do so. Please contact Susan Millward at this office if you require further information.

Sincerely,


 Cathy Liss
 President

From: Mark Palmer
To: eisteam@mindspring.com
Subject: Petition for extension of public comment period
Date: Dec 17, 2005 8:39 PM
December 17, 2005

Mr. Joe S. Johnson
SURTASS LFA Sonar EIS Program Manager
U.S. Department of the Navy
4100 Fairfax Drive
Suite 730
Arlington, VA 22203

ADD TO THE RECORD

Re: Petition for extension of public comment period beyond
December 27, 2005
Draft Supplemental Environmental Impact Statement for the
Navy's SURTASS Low Frequency Active Sonar
(70 Federal Register 69526, November 16, 2005)

VIA E-MAIL & MAIL: <eisteam@mindspring.com>

Dear Mr. Johnson:

On behalf of Earth Island Institute's International Marine Mammal Project, we request that the comment period for the Draft Supplemental EIS for the Navy's SURTASS LFA Sonar be extended to allow additional information and to allow more time for the public to comment.

We believe setting a comment deadline in the middle of the holidays is not in the best interest of the public.

There is no question that the deployment of SURTASS LFA Sonar is of immense controversy in the public realm, where almost monthly we are seeing news of new strandings of cetaceans around the world that coincide with naval maneuvers and exercises. Scientific information continues to be limited, despite additional attention to the problem.

Furthermore, we believe additional information would be useful both for the Navy and for the public in preparing comments, including:

The US National Marine Fisheries Service is conducting studies on the stranding of a number of different cetacean species that have occurred along the coast of North Carolina coincidental to Navy activities offshore. The results of these studies may significantly change the claims of the SEIS for potential impacts on marine mammals. Therefore, delay of the comment deadline until this information is available is important.

While we appreciate that the Navy has prepared a Supplemental EIS to address some issues and update their information, we still find the review of some such information superficial and based on inadequate data, particularly the analysis of impacts on marine mammals and fish stocks. For example, by focusing on two freshwater species (trout and catfish) under experimental laboratory conditions, the Navy continues to trivialize the science of biological impacts of underwater noise and ignore recent studies in situ suggesting severe impacts on fisheries from sources of ocean noise, including low

frequency sources.

The SEIS still does not address the use of SURTASS LFA during conditions "in armed conflict or direct combat support operations, nor during periods of heightened threat conditions". We are deeply concerned, not only about the potential adverse environmental impacts of deployment of SURTASS LFA, but also of the provocative nature of the use of SURTASS LFA in waters throughout the world. The nations, within whose boundaries the Navy proposes to ensonify thousands of square miles of oceans, are nominally at peace with the US. What is the effect of our "exercises" offshore on these nations? So far, the United Nations and the European Parliament have expressed deep concerns with the potential impacts of ocean noise on marine life.

1.1.4

4.6.1

Thank you for your consideration of our request for a delay in the comment period for the DSEIS for SURTASS LFA. Please enter these comments into the Record of the comment period.

Sincerely,

David Phillips
Director

Mark J. Palmer
Associate Director

"I have never made but one prayer to God, a very short one: 'O Lord, make my enemies ridiculous.' And God granted it."
--Voltaire

Mark J. Palmer
Assistant Director
International Marine Mammal Project
Director
Wildlife Alive
Earth Island Institute
300 Broadway, Suite 28
San Francisco, CA 94133

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B-24



December 17, 2005

Mr. Joe S. Johnson
SURTASS LFA Sonar EIS Program Manager
U.S. Department of the Navy
4100 Fairfax Drive
Suite 730
Arlington, VA 22203

ADD TO THE RECORD

Re: **THANK YOU for extension of public comment period beyond
December 27, 2005**
Draft Supplemental Environmental Impact Statement for the
Navy's SURTASS Low Frequency Active Sonar
(70 Federal Register 69526, November 16, 2005)

VIA E-MAIL & MAIL: <eisteam@mindspring.com>

Dear Mr. Johnson:

On behalf of Earth Island Institute's International Marine Mammal Project, we would like to thank you for extending the comment period for the Draft Supplemental EIS for the Navy's SURTASS LFA Sonar.

We believe your action will help the public better prepare their written comments. We appreciate your help on this issue.

Sincerely,

David Phillips
Director

Mark J. Palmer
Associate Director

From: RonGin Bottorff
To: eisteam@mindspring.com
Subject: 70 FR 68443 - LFA Sonar
Date: Jan 26, 2006 2:16 PM

These comments apply to federal register number 70 FR 68443. Please include them in the Record of the Decision. Friends of the Santa Clara River is strongly opposed to the use of low-frequency active sonar (LFA) proposed for Navy's Surveillance Towed Array Sensor System Low Frequency Active Sonar. More ships equipped with this technology will only further increase the risk to valuable marine life. The ocean environment is already in jeopardy throughout the world due to pollution from many sources, as well as over-fishing. We strongly oppose the addition of another harmful practice to the multitude of forces threatening the viability of this planetary life-sustaining ecosystem.

Sincerely,
Ron Bottorff, Chair
Friends of the Santa Clara River

Citizens Opposing Active Sonar Threats
COAST
536 Point Road
Hancock, Maine 04640
207-422-8273

February 6, 2006

Mr. J. S. Johnson
Attn: SURTASS LFA Sonar EIS Program Manager
4100 Fairfax Drive, Suite 730
Arlington, VA 22203

Dear Mr. Johnson:

The Following comments are in regards to the Navy's Draft Supplemental Environmental Impact Statement for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar. Please include these comments in the public record.

The DSEIS preface states (P-1) that one of its purposes is to "Address deficiencies in the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), and Marine Mammal Protection Act (MMPA) compliance found by the U.S. District Court for the Northern District of California in its 26 August 2003 Opinion and Order." Another purpose is to "Provide additional information and analyses pertinent to the proposed action." COAST believes this seriously flawed DSEIS has failed in both regards. The DSEIS repeatedly makes assumptions, and comes to conclusions that are not supported by scientific fact. Often this is done even where there is strong evidence which contradicts these assumptions and claims. The DSEIS then uses these assumptions and conclusions to make sweeping claims as to the benign nature of SURTASS LFA sonar. The DSEIS has also failed to address some information which is extremely pertinent to the proposed action. Oftentimes this information contradicts or otherwise suggests that the case being made by the DSEIS is not accurate. While it is understandable that the authors of the DSEIS may have felt that inclusion of the information, and a thorough discussion of it might weaken their "case," their failure to include it undermines the effectiveness of this environmental analysis. The DSEIS makes much of its mitigation measures. Indeed, one of a number of claims made about these measures are (4-63) that "the operation of SURTASS LFA sonar with monitoring and mitigation will result in no lethal takes." Yet a close look at these mitigation measures reveals some rather pathetic strategies which have been proven largely ineffective in the past and will likely remain so. COAST believes that this DSEIS was written not with the intention of fulfilling the requirements of a detailed environmental analysis, but rather, in such a way as to confuse the reader and mislead them into accepting the Navy's predetermined conclusion. The DSEIS approach is not unlike that of a government "fixing the intelligence" in order to achieve a desired policy result. To put it bluntly, the DSEIS attempts to "pull the wool over our eyes."

In a manner that is typical of the DSEIS (ES-2), changes requested by the DoD to the

MMPA are termed “clarification.” In fact, these changes amounted to nothing less than a drastic weakening of the protections offered by that law, and a clear undermining of the law’s original intent.

1.2.1

The DSEIS (1-2) stresses the threat of “quieter and harder to find foreign submarines,” and states that this threat is the reason why SURTASS LFA sonar is needed. It points to the proliferation of these submarines, but fails to ever look at the U.S. role in that proliferation. Do U.S. defense contractors play any role in this proliferation? Has the U.S. government ever been involved in supplying these submarines or the technologies required to produce them to other nations? Are governments allied with the U.S. government, or corporations based in these nations playing any role? How have the economic, political, and military policies of the U.S. government affected the security of other nations? Given the U.S. invasion and occupation of Iraq, both of which are in violation of international law, it is possible, indeed likely, that if in fact some nations are seeking this technology, they are doing so in the hopes of deterring or defending themselves against what may be perceived as U.S. aggression.

1.1.1

While the DSEIS repeatedly highlights the threat of foreign submarines, it is very clear that it does not view environmental degradation as a threat to either U.S. or global security. Yet, a look at some of the conflicts occurring today around the world shows that some of these are directly related to dwindling resources such as oil, although these conflicts are often waged under other pretenses. Why does the Navy not acknowledge the importance of a healthy, sustainable environment, not only in terms of avoiding conflicts with other nations over resources, but also for the very simple reason that without a healthy, sustainable environment, we are threatened by an environment heading for collapse? This also affects global and national security. While this DSEIS was undertaken by the Navy as is required by law, its deficiencies make it very clear that it does not view environmental degradation as a threat to national security. This lack of understanding is detrimental to the real security of Americans.

The deployment of even one source of SURTASS LFA sonar will impact vast expanses of ocean. Closer to this source, LFA noise levels will injure and kill. But the great majority of impacts will occur farther from the source, where noise levels will be reduced but still be intense enough to disturb behavior, interfere with the ability to hear other sounds, and cause stress in marine animals who dwell in these waters.

4.3.1

Regarding invertebrates, the DSEIS (3.2-2) has neglected to address some rather important information. Why did it fail to mention the 2001 and 2003 strandings of giant squid which occurred coincident to seismic surveys (Mackenzie 2004)? These giant squid were found to have not only severe ear injuries, but also extensive injuries to other internal organs. What about strandings of squid reported in Guerra et al.(2004) which also occurred coincident with seismic surveys? What about the research (DFO 2004) done on the effects of seismic noise on snow crabs? This research also revealed impacts to the organs from exposure to this noise. While seismic noise differs in some ways from LFA sonar sound, it does share some characteristics. Seismic noise is largely in the low frequency range, and is also very intense. Since we do not know precisely which characteristics of the seismic noise caused these reactions

3.2.5

in the squid and snow crabs, it is possible that LFA sonar sound may have similar effects. If this is the case, and marine invertebrates are indeed impacted by LFA sonar operations, these impacts will be felt all the way up the food chain. The omission of this information weakens the credibility of this DSEIS.

The DSEIS (4-21) conclusion that “the impact on fish is likely to be minimal to negligible” is not a reasonable conclusion. The Navy study on the effects of SURTASS LFA sonar was inadequate to make such a claim. The DSEIS states “Thus, recognizing the need for caution when extrapolating among species, these results strongly indicate that SURTASS LFA sonar is likely to have a negligible impact on fish when they are exposed to underwater sound signals within the decibel levels used in these studies.” The DSEIS has done exactly what it cautioned against. It has taken the results of these four one week studies on rainbow trout and two week long studies on channel catfish to extrapolate to all the fish species in the world’s oceans. This extrapolation cannot be supported and is inappropriate.

4.1.12

The DSEIS (4-16) statement “It should also be noted that 193 dB RL had no real adverse effects on the fish tested” seems strange. Does this mean that the 10-20 dB hearing loss which occurred is not considered to be an adverse effect, even when recovery from this loss took 24 hours or longer? Surely the authors of this DSEIS know that fish hear for a reason. If fish hearing is impaired, their ability to survive may be reduced, as they will be less able to find food, avoid predators, and engage in other important behaviors. This is clearly a significant adverse impact.

4.1.6

The DSEIS (4-6) claim that it examined the long-term effects of LFA sonar sounds on sensory hair cells of the ear is not accurate. A time period extending to only 96 hours post-exposure cannot reasonably be described as “long-term.”

4.1.17

The DSEIS describes as “potentially interesting” the variability of degree in hearing loss in trout, dependant on time of the year. The DSEIS states that “the only variables between experimental times may have been water temperature and/or how the fish were raised prior to their being obtained for study.” Is it possible that in other water temperatures, hearing loss could have occurred in a greater percentage of fish exposed? Might the damage have been more serious, perhaps lasting for greater time periods? Because the study did not address these questions, we do not know the answers.

4.1.7

Given the fact that fish behavior might well be limited by the small tanks in which they were confined, the behavior which was observed seems rather significant. For example, a “startle” response might indicate that the fish were being startled or alarmed. The fish then lining up and facing the signal source for the duration of the sound, may have been an attempt on their part to protect themselves from this sound. These changes in behavior clearly indicate that the fish were affected by this sound, and were likely taking measures to attempt to reduce its impacts. To state, as the DSEIS (4-19) does that “these investigations provide some initial evidence that the sounds used in the studies did not have a marked effect on behavior of the fish studied” is strange. What kind of behavior would these fish have had to engage in for the “investigators” to have concluded the sound had a marked effect upon them? Perhaps the

4.1.7

investigators believed that had the fish really been affected, they would have fallen into a formation reading “SOS,” or exhibited some other similar type behavior?

The DSEIS (4-16) cites a recent study by the Norwegian Navy on the effects of the sonar on fish, and then states (4-17) that “the only exception to almost full survival was exposure of two groups of herring tested with SLs of 189 dB, where there was a post-exposure mortality of 20 to 30 percent.” Again, this is a strange statement, as a 20 to 30 percent die-off is hardly insignificant.

4.1.15

The DSEIS failed to adequately address the issue of the impacts of LFA sonar upon fish eggs, larvae, and fry. Kostyuchenko (1973), Dalen and Knutsen (1987), and Booman et al. (1996) have shown that exposure to seismic noise reduced their ability to survive. If impacts are similar for LFA sound, how might this affect fish populations? How did the authors of the DSEIS determine that similar effects would not result from deployment of the Navy’s LFA sonar?

4.1.17

In assessing the impacts of masking on fish, the DSEIS (4-21) claims that “masking would be temporary.” Even if this was true in all cases, temporary masking would still leave fish more vulnerable to predation and interfere with important behaviors. It does not necessarily take a long time period to be caught and eaten by a predator. However, while the DSEIS appears to be eager to point out the limited bandwidth and duty cycle of SURTASS LFA sonar, it completely fails to mention how effects such as reverberation of the LFA signal could greatly increase the time period that this sound may be heard. If fish, or any other animals, are located in an environment where effects such as reverberations of the LFA sound occur, then impacts such as masking may take place over longer time periods. Needless to say, masking can occur where RLs are much reduced from the source level. Because of the vast ocean areas which will be ensonified by deployment of even one source of LFA sonar, masking is likely to result in population-level impacts.

4.3.39

In addressing the potential for SURTASS LFA sonar signals to affect shark migrations, the DSEIS (4-24) states “it would be likely that the shark would be able to eventually reestablish its direction along the path.” Is this wishful thinking? What is this assumption based upon?

4.1.8

The DSEIS does admit that “Long-term effects of masking sounds on hearing and potential injury to shark hearing by intense sounds have not been studied.” It then goes on to stress the limited bandwidth and duty cycle of LFA sonar, once again downplaying the potential for impacts to occur within short time periods, and again ignoring the potential for those time periods to be extended by effects such as reverberation. The DSEIS conclusion that there is not a significant potential to affect shark stocks seems to be based largely upon the admitted assumption that shark stocks are evenly distributed. What if this assumption is not correct?

4.1.13

This DSEIS has failed to seriously investigate how fish and fish populations may be impacted by LFA sonar operations. Obviously, if fish are adversely impacted, the repercussions will be felt throughout the entire food chain. It is not conservative, but rather extremely reckless of the Navy to push forward with these operations given the great probability of far-reaching

4.1.6

adverse effects.

The determination by the DSEIS (3.2-3) that “there would be no impact to seabirds, including those that may be threatened or endangered” is not reasonable. The DSEIS states “While it is likely that many diving seabirds can hear underwater LF sound, there is no evidence that seabirds use sound underwater.” Is there evidence that they don’t use sound underwater? Is this statement meant to imply that they cannot be affected by sound underwater unless they use sound underwater? The statement “In addition, seabirds spend a very small fraction of their time submerged, and they can rapidly disperse to other areas if disturbed” is itself disturbing. Clearly, once again the DSEIS is attempting to downplay potential impacts. It should be pointed out that serious negative impacts can occur in a short space of time. Because seabirds spend only a small fraction of their time submerged does not mean they cannot be disturbed, injured or killed in that time. This statement is rather like saying because scuba divers spend only a very small fraction of their time underwater, they cannot drown. Or, because soldiers spend only a very small fraction of their time in combat, they can’t be killed. Obviously, these are silly statements, as is the attempt by the DSEIS to assure the reader that seabirds will not be impacted because they only “spend a very small fraction of their time submerged.” To state that seabirds, including endangered seabirds, “can rapidly disperse to other areas if disturbed” does not address the fact that this may disrupt biologically important behavior, or that this dispersal may deplete energy required to meet other needs necessary for survival.

3.2.2

The DSEIS (3.2-3) exclusion of sea snakes from further evaluation is unreasonable. Inshore waters will be ensonified by LFA sonar. While the RLs may be at lower levels, how has the DSEIS determined that these levels will not have any adverse impacts? The DSEIS states that “there is no information on the hearing sensitivity in these species.” Is that supposed to be a legitimate reason for excluding them from further evaluation? The DSEIS has simply assumed there will not be any adverse impacts to sea snakes without offering any justification for this assumption.

3.2.4

In dealing with LFA sonar impacts to sea turtles, the DSEIS again has reached some strange conclusions. The DSEIS (4.2.1) states “Very little is known about sea turtle hearing and what may cause injury to it. However, the New England Aquarium acoustic data collection discussion below supports the premise that, using a 180-dB injury threshold, a sea turtle would have to be within the LFA mitigation zone when the sonar was transmitting to be at risk of injury, including permanent loss of hearing (i.e., PTS).” The New England Aquarium acoustic data collection information is, as the DSEIS has pointed out, based upon one middle-aged female green sea turtle who had spent her entire life in a relatively noisy oceanarium. Any conclusions reached from this data must be very limited. In what way does this information support the premise that in the natural marine environment, all sea turtles of both sexes, of all ages, and of all species would have to be within the LFA mitigation zone to be at risk of injury, including permanent loss of hearing? The DSEIS (4-27) states “Given the lack of scientific data on permanent threshold shift (PTS) in sea turtles caused by LF sound and the conclusion stated in Subchapter 4.2.1 above, the potential for SURTASS LFA sonar to cause PTS in sea turtles must be considered to be negligible.” What can possibly justify such an assumption? Generally, a lack

4.2.3

of scientific data is not considered to be a positive factor when coming to a scientific conclusion.

The DSEIS (4-27) states “As with PTS, there are no published scientific data on temporary threshold shift (TTS) in sea turtles caused by LF sound.” It then states that because there are no new data that contradict any of the assumptions or conclusions reached in the OEIS/EIS, it has concluded “that the potential for SURTASS LFA sonar to cause TTS in sea turtles must be considered to be negligible.” Since there was no published scientific data on TTS in sea turtles caused by LF sound when the OEIS/EIS was written, and there still was none when this DSEIS was written, what exactly was it that led the authors of this DSEIS to this conclusion? Wishful thinking perhaps? Clearly, this conclusion was not scientifically based.

4.2.3
4.3.9

The behavioral changes noted in the studies where sea turtles were exposed to seismic air guns were significant. To simply dismiss these behavioral changes as not being relevant to LFA sonar because some of LFA sonar’s sound characteristics are different than those of seismic air guns, is not reasonable, as some of the characteristics are quite similar. Because the behavioral changes noted in these studies occurred at sound levels below 180 dB, should the characteristics of the seismic sound which the sea turtles responded to be similar to those in LFA sonar sound, sea turtle behavior may be disrupted in areas well beyond the LFA mitigation zone.

4.2.5

The DSEIS (4-28) states “If a sea turtle happened to be within proximity of a SURTASS LFA sonar operations area, it may hear the LF transmissions.” While it is encouraging that this has been admitted, the DSEIS has failed to state anywhere how it defines proximity. If proximity is defined as, for example, anywhere where the RLs are 120 dB or greater, that would mean an ocean area of about 3.9 million square kilometers (Johnson 2003). This is a very large area in which significant numbers of sea turtles may hear LFA sonar transmissions. These endangered and threatened species may not only hear these transmissions, but they may also be adversely impacted by them.

4.2.1
4.2.6

What is the basis of the DSEIS (4-28) assumption that “the majority of sea turtles encountered would probably be transiting in the open ocean from one site to another”? Why might they not already be at one site or the other? It is not reasonable to use this type of logic to conclude that “the possibility of significant displacement would be unlikely.” Why has the DSEIS (ES-10) assumed that it is unlikely that SURTASS LFA sonar operations would coincide with a sea turtle “hot spot”?

4.2.2
FEIS 4-2.4

The DSEIS (4-29) again attempts to minimize the impact of masking by stating “However, masking would probably be temporary.” Even if this is the case, if sea turtle’s ability to find food or avoid predators or ship strikes is reduced even for short time periods, there may still be adverse consequences. Once again the DSEIS has failed to address the issue of how effects such as reverberation of the LFA signal may result in masking occurring over longer time periods.

4.2.20
FEIS 4-2.2

It is interesting that there is no discussion of the potential for LFA sonar noise to cause stress in sea turtles. Stress may be caused by noise levels that are considerably less intense than

B-28

those which injure and kill. Because the sound field of LFA sonar is so vast, sea turtles and other animals, who are disturbed by the noise will be unable to avoid it. There is certainly the potential for this to cause stress in these animals, perhaps at a population level, which could have serious long-term implications for the survival of these endangered and threatened species. Yet the DSEIS failed to mention this. Has it concluded that sea turtles are not susceptible to stress? If so, how was this conclusion reached?

When the numbers of individuals making up a population is low enough, it is by no means a stretch to say that every individual is important to that population. The DSEIS does not acknowledge the fact that when dealing with endangered and threatened species, such as these sea turtles, that impacts to even one individual can lead to population-level effects if the individual effected cannot then reproduce or if it should die. The animal need not be killed outright by LFA sonar to cause this population-level effect. If an animal should die because it is unable to avoid predators due to the effects of stress, masking, hearing loss, or any other injury caused by LFA sonar, the effect is the same. Should an animal be unable to mate, or successfully locate a nesting beach for the same reasons, then this too can result in population-level effects.

4.2.7

It is not surprising that the “default assumption for pelagic animals” is used to assume an even distribution of leatherbacks, but because animals are often clumped in distribution, impacts to the population could be far greater than what the DSEIS would have the reader believe. What might that mean for this endangered species? The DSEIS conclusion that “Therefore, the potential for SURTASS LFA sonar operations to impact leatherback sea turtle stocks is negligible, even when up to four systems are considered” is very debatable.

4.0.6

4.2.1

The DSEIS (3.2-6) exclusion of sea otters, chungungo, and West Indian, Amazonian, and West African manatees, as well as dugongs from further evaluation is unreasonable. These animals may occur mostly in fresh, estuarine, and coastal waters. However, at times some of these animals do in fact venture farther offshore. How has the DSEIS determined that LFA sonar will not injure or kill these animals, some of whom are endangered? While the LFA sound may have attenuated to lower RLs nearer to shore, these lower levels may still cause negative effects such as stress, masking, and behavioral disturbances, as well as an increase in the potential for injuries and death occurring from boat or ship strike. Clearly, the DSEIS should have addressed these issues.

3.2.8

Regarding LFA sonar’s impacts upon marine mammals, the DSEIS assumes that there is not a potential for injury below a RL of 180 dB. This assumption is absolutely unjustified. There is considerable evidence, already existing, showing that cetaceans have been injured by sonar and other intense sound sources at RLs far below this.

4.0.1

While the DSEIS focuses largely on injuries to the ear resulting in PTS or TTS, it only very briefly discusses non-auditory injury. Concerning the issue of physical injury due to resonance, the DSEIS (4-31) states “These extensive connective tissues, combined with the probable collapse of the alveoli at the depths at which significant SURTASS LFA sonar signals can be heard, make it very unlikely that significant lung resonance effects could be realized.”

4.3.44

4.3.12

While there is anatomical evidence that marine mammals have evolved and adapted to dramatic fluctuations in pressure during long, deep dives; it should not be assumed that this has resulted in an ability to withstand pressure changes from sound. Marine mammals are able to have some degree of control over the pressures they encounter when diving, but they certainly have less control when the pressure is in the form of sound which cannot be avoided and whose onset may be sudden. 4.3.45

The November 2002 report on the Workshop on Acoustic Resonance as a Source of Tissue Trauma in Cetaceans discussed needed research including the use of trained animals to test the theory of bubble growth, and then studying the tissues damaged by bubble growth/decompression sickness and comparing this with the injuries in beaked whales already studied. Subjecting cetaceans, whether wild or captive, to sound levels or anything else that leads to their becoming stressed or injured is simply not ethical, and should never take place. 4.3.46

In its brief discussion of acoustically mediated bubble growth, the DSEIS (4-30) cites an article posted in *Nature* by Piantadosi and Thalmann (2004) in response to the article in the same journal by Jepson et al. 2003 (4-32) states that whales do not develop sufficient gas supersaturation in the tissues on ascent to cause extensive bubble formation in the liver. They then explain that not enough gas is taken up to produce bubbles, except during multiple rapid dives to depths approaching the lung's closing volume. This may be true, but it is well known that beaked whales, sperm whales and other species do indeed engage in multiple dives to considerable depths. While it is not yet known if bubble growth is induced by the sonar sound, or the whale's behavioral reaction to that sound, it is widely accepted that in vivo bubble growth can occur in supersaturated marine mammal tissue when the animals are exposed to sounds as low or lower than 150 dB RL, leading to their injury or death (Houser et al. 2001, Fernandez et al. 2005, Cox et al. In press). 4.3.47

The conclusion reached in the DSEIS (4-35) "that the potential impact on any stock of marine mammals from injury (such as permanent loss of hearing) is considered negligible" is not believable. This presumably is based on two assumptions; the first being that marine mammals will not be injured by RLs below 180 dB, and the second being that marine mammals would be protected within the 180 dB zone by mitigation measures. As stated above, there is no scientific evidence to support the claim that marine mammals will not be injured by RLs below 180 dB. On the contrary, it is well documented that injuries and deaths have occurred in marine mammals at far lower RLs. For example, a report of the Scientific Committee of the International Whaling Commission states that the whales who mass stranded in 2000 in the Bahamas were exposed to mid-range sonar RLs of no more than 160-165 dB for 30 seconds. It has also been estimated that these whales were exposed to an average RL of less than 140 dB (Hildebrand and Balcomb 2004). Secondly, for the reasons stated below, the mitigation measures described are entirely inadequate to ensure that marine mammals will not be harmed either inside of or outside of the mitigation zone. Stocks may be impacted when animals are killed by LFA sonar. They may also be impacted when injured animals are no longer able to reproduce or care for their young, or engage in behavior necessary for their survival. Obviously, this is particularly true when that stock is endangered. When the number of individuals making up a stock is low enough, the 4.3.17
4.4.18
5.0.1

survival of every individual is crucial. If LFA sonar were to cause the death, either directly or indirectly, of even one North Atlantic right whale, the impacts to the stock could never reasonably be considered negligible.

The DSEIS reveals an extraordinary lack of any real concern on the part of its authors and the Navy when it comes to endangered and threatened species, not only a lack of concern for the creatures themselves, but also a total lack of understanding as to the importance of these species to the ecological systems of which they are a part. It demonstrates the level of either ignorance or denial regarding the consequences of species and biodiversity loss, and the very real implications that they may have for a genuinely “secure” future for Americans and the people of other nations.

3.2.1

The DSEIS (2.6) incorporates Offshore Biologically Important Areas into Alternatives 1-4. It might be reasonably argued regarding endangered species and stocks, that when their numbers are so small, and threat levels are so high, that all areas these animals are in are biologically important areas. If a member of that species or stock is in a location, it is there for a reason. If it is harassed, injured, or killed in that location, it will be just as harassed, injured, or dead as it would be were it to have occurred within a designated OBIA, and the impacts to the species or stock will be just as great.

4.7.19

DSEIS (4-35) states “Therefore, animals suffering from TTS over longer time periods, such as hours or days, may be considered to have a change in a biologically significant behavior, as they could be prevented from detecting sounds that are biologically relevant, including communication sounds, sounds of prey, or sounds of predators.” Do the authors of the DSEIS believe that TTS over short time periods can’t have just as significant effects? As pointed out above, serious impacts can sometimes occur rapidly, over short time periods. An animal may be unable to detect and therefore avoid predators, or an oncoming ship, or entanglement in fishing gear, immediately after the onset of TTS. Because LFA sonar will ensonify large ocean areas with RLs high enough to cause TTS, it is very likely that impacts to marine mammals will be far greater than the DSEIS states. When these impacts are borne by endangered species, it is highly unlikely it will have only minimal effects on the stock.

4.3.2

4.3.27

The conclusion stated in the DSEIS (4-37) that the potential effects on the stock of any marine mammal from behavioral change are considered minimal cannot be justified. This conclusion was apparently based upon the Low Frequency Sound Scientific Research Program. One major problem with this program was that the whales were exposed to LFA sound at RLs only up to 155 dB. Because LFA sonar will be deployed at levels far greater than this, and marine mammals will be exposed to RLs far greater than this, it simply is not known how this will affect their behavior. As stated by the authors in the Executive Summary of the Quicklook: Low Frequency Sound Scientific Research Program, Phase III: Responses of Humpback Whales to SURTASS LFA off the Kona Coast, Big Island Hawaii (Feb 28-March 3, 1998), “it will be difficult to extrapolate from these results to predict responses at higher exposure levels.” Yet this is exactly what has been done, without justification.

4.3.30

FEIS 4-5.1

A second major problem with the LFS SRP is that the tests were conducted on only four

species of whales, and these were all mysticetes. The LFS SRP assumption that because the mysticetes have more sensitive hearing in the SURTASS LFA sonar frequency band, they are more likely to be affected may not be true. Given the fact that the deeper diving cetaceans are all odontocetes, they may be more vulnerable to noise (Houser et al. 2001). The beaked whales certainly have shown themselves to be very susceptible to injuries and deaths resulting from exposure to loud sound, and they are odontocetes. The test results have been extrapolated from only four species of mysticetes to cover not only all cetaceans but all marine mammals. This is unjustified.

Another problem with the LFS SRP is the fact that these tests were designed to observe behavioral responses in these four species during the test periods, which were limited to around a month or less. Because of this, we do not know anything about how these four species would respond if exposed to LFA noise over the long-term. This lack of knowledge should be of great concern, as long-term impacts may be far greater than expected.

Yet another problem with the LFA SRP was in the reporting and interpretations of behavioral responses. The DSEIS (4-35) states, in an attempt to downplay the impacts, that the responses were short lived. Does this mean that the authors of this DSEIS believe that short-term behavioral changes cannot have serious consequences? While some behavioral responses were dismissed as being unimportant, others were simply not reported. To state, as it does in the OEIS/EIS (4.2-28), that Phase I tests showed no immediately obvious responses from either blue or fin whales, when in fact blue whales decreased their vocalizations by 50% and fin whales vocalizations decreased by 30%, is misleading. This decrease might result for instance, in fewer whales finding mates. If this were to be the case, it would obviously affect the population negatively.

Regarding the second phase tests on migrating grey whales, the DSEIS (4-36) states that whales resumed their normal activities within ten minutes after the initial exposure to the LFA signal. This does not mean that no adverse effects took place during exposure or in the 10 minutes following exposure. The interruption of their normal activities may have impacts that are simply not known to us. Did this study determine that young whales were not separated from their mothers or other important members of their group? If so, how was this determined? If not, the claim that whales resumed their normal activities within ten minutes cannot be substantiated. Beyond that, it is extremely presumptuous to assume that enough is known about these animals to state that they resumed their normal behavior, with the implication being that because of this, everything is fine and there were no negative impacts. In the first place, not enough is known about their behavior to make such a statement, and in the second place, if their behavior was disturbed the whales may not exhibit it in ways that are obviously recognizable, even when observers are sincerely looking to spot behavioral disruptions. There is also the very important fact that most of the whale's behavior was not observed. The great majority of the time they are below the surface, where they cannot be visually observed. Unless vocalizations are picked up by acoustic monitoring, their behavior cannot be observed at all, visually or acoustically, while they are submerged. Therefore, while it may appear that whales resumed their normal activities, this cannot be said with any certainty. As for the unstated assumption that 10 minutes after exposure

the whales were all fine and had experienced no adverse impacts; it is unfounded. It simply isn't known.

4.3.32

Regarding the third phase tests on humpback whales, the OEIS/EIS (4.2-29) again attempts to downplay the observed behavioral changes. Even when half the humpbacks stopped singing, it states "However, an equal number of singing whales exposed to the same levels showed no cessation of song during the same LFA sound transmissions." This is something like saying "Half the whales died, however, an equal number survived." Obviously, neither of these statements addresses the fact that a very significant proportion of the whales were clearly impacted. Given the fact that these disruptions occurred in the whale's mating grounds, it is possible that whales who would have otherwise mated, were unable to. Clearly, this would be a very significant impact upon this endangered population. The OEIS/EIS states that the SURTASS LFA sonar system would be operated well offshore of these humpback breeding areas, implying that it would not then be a problem. If this is the case and the RLs are lower, how has the DSEIS determined that these diminished levels of LFA sound will not be problematic for breeding and calving humpback whales, or other marine mammals? How did the OEIS/EIS ascertain that the operation of LFA sonar in waters well offshore will not disrupt the mating and calving in species living in these offshore waters? How does LFA sound affect whales who are pregnant? How does it affect the unborn whale? If the OEIS/EIS and the DSEIS had been written with the honest intention of investigating the potential impacts of LFA sonar on the marine environment, questions like these would have been raised and discussed in depth. The OEIS/EIS neglected to mention the fact that Dr. Mobley's 1998 survey report indicated that the area north of the airport, which was shown to be preferred habitat in his 1993 and 1995 surveys, had been vacated. This was also observed by a number of experienced whale watch boat captains. Why has this not been discussed? Finally, the response to comment 4-5.25, regarding the melon-headed whale calf is ridiculous. How has it been determined that it was impossible for this calf to strand around two weeks after the LFS SRP Phase III test was completed? Perhaps this calf was separated from its pod because of the LFA transmissions, and was then unable to find adequate nourishment, and as a result weakened and stranded. It is not reasonable to assume that any marine mammal impacted by LFA sonar will immediately strand or not strand at all. The response to the question of the very unusual behavior exhibited by the lone humpback whale calf is disturbing, and raises the question: what behavior would marine mammals have to exhibit for it to be considered significant enough for the Navy to conclude that LFA sonar was disrupting behavior to the extent that it will cause adverse impacts? It would seem that nothing short of outright strandings or deaths would bring the Navy to this conclusion. Even then, there would most likely be attempts by the Navy to deny its sonar use led to these consequences.

FEIS 4-5.10

4.3.35

The OEIS/EIS (4.2-59) cites the reasons for its conclusion that LFA sonar masking effects are not expected to be severe as its limited bandwidth, maximum pulse length of 100 seconds, signals not remaining at a single frequency for more than 10 seconds, and the system being off at least 80 percent of the time. However, the DSEIS (4-61) itself admits that "There is a possibility for upward masking of high-frequency noises by low frequency noises." Richardson et al. (1995) have shown this to be the case. Why then are the limited bandwidth and 10 second maximum duration of a signal still being used as a reason for concluding masking will not be

4.3.37

severe? If masking is to occur over a period of 100 seconds, that is 100 seconds where important acoustic information cannot be used. Predators and ships cannot be heard approaching, fishing gear may not be perceived, communication and foraging attempts may be unsuccessful. Much can happen inside of a 100 second period. Given the fact that upward masking can occur, and that significant impacts can occur within 100 second time periods, it is very clear that masking may indeed be severe. Added to this is the fact that factors such as reverberation may come into play, greatly extending the duration of masking, perhaps to the point where masking will be continuous. Given the vast ocean area over which marine mammals may be subjected to masking from LFA sonar noise, the DSEIS (4-37) conclusion that “Any auditory masking in marine mammals due to SURTASS LFA sonar signal transmissions is not expected to be severe and would be temporary” is absurd. In fact, it is very likely that masking would have severe impacts upon marine mammals and marine mammal stocks.

Why has the potential for impacts to marine mammals (and other marine animals) brought on by stress caused by LFA sonar noise not been addressed? Where is the discussion on the effects of increased noise levels upon young animal’s development? Where is the discussion of physiological effects that may result from exposure to increased noise levels? How might this affect pregnancy and birth rates? If increased stress levels lead to increased aggression, what might the impacts of this be? How might increased stress resulting from exposure to LFA sonar noise add to the stress levels marine mammals may already be bearing due to other anthropogenic sound sources? In oceans that are oftentimes already filled with sound from these other sources, the addition of even low RLs of LFA sonar noise will certainly increase stress levels. As stated above, the 120 dB isopleth of LFA sonar operations would include about 3.9 million square kilometers. If LFA noise creates stress in marine animals at RLs of, for example, 100 dB, a far greater expanse of ocean habitat will be affected, as will the numbers of impacted animals. The failure of the DSEIS to discuss the issue of stress clearly demonstrates its lack of sincerity in investigating what the impacts to marine animals from LFA sonar operations may really be.

4.3.52

The DSEIS (4-53) very briefly discusses “Strandings potentially related to anthropogenic sound.” This is a strange and inappropriate way to characterize this discussion, as all three of these strandings were in fact related to anthropogenic sound, and naval sonar in particular. It opens the discussion by stating “SURTASS LFA sonar has not been implicated in any stranding event since LFA prototype systems were first operated in the 1980s.” First, because the unlawful testing of these prototypes was to a very large extent unknown, how would people investigating strandings which may have been caused by its use know to look at these prototypes as a possible cause? They wouldn’t have, because they did not even know of their existence. Secondly, the May 1996 mass stranding involved a NATO sonar with many similar characteristics to SURTASS LFA sonar, including low frequency sound. And lastly, before SURTASS LFA sonar can be implicated, the strandings must be observed and then reported. Not all strandings are observed, particularly those which occur in remote areas. Nor are all observed strandings carefully and transparently investigated, especially when they occur on the shores of places where the resources to carry out such investigations are not available. Many strandings do occur, and while some may be natural occurrences, others may not be. Unless all strandings are carefully and transparently investigated, to say that SURTASS LFA sonar has not been implicated does

4.4.12

not mean much. Furthermore, LFA sonar operations are not commonly witnessed by anyone apart from the Navy. Should a stranding occur coincident to their operations, it is perhaps naive to believe that the Navy would then come forward and offer its sonar use as a possible cause, given the fact that it routinely denies connections between its sonar use and stranding events.

4.4.12

It is quite conceivable that in some cases involving mass strandings of cetaceans that investigations do not take place because political or economic pressure is applied by governments wishing to keep evidence implicating naval sonars in cetacean deaths from being released. It is also possible that, for the same reason, necropsy or stranding reports are written so as to intentionally mislead the reader regarding the cause of stranding and deaths. Because of these possibilities, it is likely that far more strandings are actually caused by naval sonar than have been documented.

The DSEIS has demonstrated a lack of sincerity in its “discussion” of marine mammal stranding events. It fails to mention (4-52) that the 1989 mass stranding in the Canary Islands occurred coincident to naval exercises. The DSEIS states that “much of the information on strandings over the years is anecdotal, which has been condensed in various reports, and some of the data have been altered or possibly misquoted.” First of all, anecdotal information may have value, and should not be lightly dismissed. Is the reason the DSEIS failed to cite the naval exercises in its mention of the 1989 Canary Islands mass stranding event because it considered this information anecdotal? As this discussion is supposed to be about strandings related to anthropogenic sound, these exercises would seem to be rather relevant and should have been discussed, even if the use of the ship’s mid-frequency sonar cannot be proven and there is no necropsy data. Secondly, why didn’t the DSEIS cite the altered and misquoted data? The fact that military exercises were being conducted off the coast of the Florida Panhandle in March 2004 may have been a factor which contributed to the stranding which occurred along the Panhandle. To state, as the DSEIS does, that “no physical evidence of blast or acoustic trauma was found” does not necessarily mean that noise from these exercises couldn’t have caused the dolphins to strand. Perhaps the noise from the exercises disoriented or panicked them, leading to them stranding. The DSEIS implies that because the exercises were “conducted a significant distance from the stranded animals” they could not have led to this stranding. Yet naval sonars have already injured and killed whales at significant ranges, as is discussed below. This statement also fails to take into account that injured animals may travel considerable distances before stranding, and the same may be said for already dead animals who may be carried distances by the sea.

4.4.18

4.4.18

The discussion of the May 1996 stranding which occurred on the Greek coast failed to mention some of the findings of SACLANTCEN M-133, NATO’s report on this incident. One of these is the fact that the movements of the NATO ship (which was the source of the sonar transmissions) corresponded very closely in time and space with the strandings of these whales. This report also ruled out all other environmental factors as a cause of this stranding. It has been estimated that because the first whale to strand did so 40km from the ship transmitting the sonar an hour after the exercise began, and because beaked whales swim at a maximum of 15 km/ hr, that this whale must have been at least 25 km from the sonar source. That is a considerable

4.4.12

4.4.15

distance. It has also been estimated, using NATO calculations, that the RL for this whale, at this distance, was around 150 dB. Why has the DSEIS neglected to discuss this information? Why did it fail to mention the fact that the NATO sonar shares many characteristics with SURTASS LFA sonar? This important information should not have been neglected by the DSEIS.

Regarding the March 2000 mass stranding in the Bahamas, the DSEIS (4-53) statement that “Seven animals died and ten animals were returned to the water alive” might be mistaken to mean that only seven animals died. The DSEIS (4-54) states “In addition, the animals that were returned to the sea did not re-strand, which is consistent with non-permanent trauma (Ketten, 2003).” Because these animals did not re-strand does not necessarily mean that they survived. In fact, at least seven animals died, and what became of the animals who were returned to the water is simply unknown. They may have died as well. If this was the case, it would be hard to argue their trauma was not permanent. These animals were part of a resident population which was the subject of years of ongoing research, including the photo-identification of individuals. There is good reason to believe that this population either abandoned the area or were killed off by this single event (Balcomb and Claridge, 2001). Why is it that this important information was not mentioned? If these whales were all killed, what became of the bodies of those who did not die on the beach? This is very important to ask, as it raises the question of whether animals that wind up injured or dead on the beach are actually only a small fraction of the total numbers of animals who are being injured and killed by high-intensity naval sonars; the proverbial tip of the iceberg. Regardless of whether the whales were all killed, or those whales surviving abandoned the area, either way, the impacts on this population can never be considered to be negligible, particularly if this resident population had a distinct genetic makeup, as appears to be the case in some beaked whale populations (Dalebout et al. In press). That this population-level effect occurred after only one sonar event is extremely troubling, especially when the impacts of ongoing sonar operations are considered. As stated above, Hildebrand and Balcomb (2004) have estimated that these whales had received an average level of less than 140 dB. The 180 dB RL threshold, below which the OEIS/EIS assumes no serious problems in the hearing capacity of marine mammals will occur, looks rather silly when compared to the average RLs the whales in the Bahamas experienced. Finally, it should be mentioned that while oceanographic features and bathymetry may have been contributing factors in this stranding event, it is also possible that they were not necessary ingredients. It is likely, given the information above and below, that the simple combination of Navy sonar and beaked whales, minke whales, and a spotted dolphin were all that was needed to produce such an event.

To state, as the DSEIS does regarding the 2002 Canary Islands mass stranding, that “Efforts to study the whale specimens from this incident continue and a report has not yet been published” is not true. What about Jepson et al.(2003), published in volume 425 of Nature? What about Fernandez et al. (2005) 42 Veterinary Pathology? These are both highly respected journals. That the DSEIS appears to deny the publication of these articles is very strange. It also should be noted that while the DSEIS says that six animals were returned to the sea, this does not mean that they necessarily then survived.

While the DSEIS (4-54) devotes a full paragraph to discuss pinniped stranding events,

none of which have been associated with noise, it somehow neglected to mention numerous other cetacean strandings which have been associated with naval maneuvers and sonar, or other sources of intense noise such as seismic surveys. Why is this? Many of these events have been documented and have been reported on by the media as well as in scientific publications. They are extremely relevant and should be included in the discussion. The discussion should include, at a minimum, an in depth look at the strandings and deaths of beaked whales in Taiwan (2004), (Gulf of Alaska (2004), Gulf of California (2002), Madeira (2000), Vieques (2000, 1998), Virgin Islands (1999), Greece (1997), Canary Islands (2004,1991,1989, 1988,1985), Lesser Antilles (1974), Corsica (1974), Ligurean Sea, Italy (1966), Gulf of Genoa, Italy (1963), Sugura Bay, Japan (1990,1987,1978) and in Sagami Bay, Japan (1989, 1979,1978, 1963). Why is it that this DSEIS failed to discuss the fact that before high-intensity mid-range sonars were deployed in the 1960s, mass strandings of Cuvier's beaked whales were extremely rare events (Friedman 1989). Did the authors of this DSEIS believe that the ever-growing number of these previously rare stranding events is not relevant to the discussion? Or is the reason they failed to carefully look at and thoroughly discuss these strandings and deaths because it might lead the reader to conclude that naval sonar and other loud anthropogenic sounds are having serious adverse impacts upon beaked whales and beaked whale stocks?

4.4.18

Very little is known about most of the beaked whales. Some species were only fairly recently documented. It is possible that other species of beaked whales may exist that humans are not yet aware of. It is also possible that some beaked whale species or stocks may in fact already be endangered. Abundance estimates are not available for a number of species. If reliable estimates are not available, how can the DSEIS possibly determine that no more than negligible impacts will occur to the species and stocks, especially given beaked whale's proven vulnerability to naval sonars?

4.4.5

When the injuries and deaths of beaked whales (and other marine animals) occur at sea, it is unlikely they will be observed or reported. How might this affect the ability to detect serious impacts to the species and stocks, especially considering how little is actually known about them currently? It is possible that non-negligible impacts could occur and go undetected, or be detected only after the species or stock has suffered impacts to such an extent that recovery is impossible.

5.2.5

Why did the DSEIS fail to mention stranding events which occurred coincident to Navy sonar exercises that involved cetacean species other than beaked whales? Where is the discussion of, for example, the Haro Strait incident of 2003? Where is the discussion of the event that occurred in July of 2004 in Hanalei Bay? Where is the discussion of the stranding that took place on North Carolina's coast in January 2005? While many of these unmentioned and undiscussed events have been associated with mid-frequency sonar and not LFA sonar, they are still pertinent to the discussion of impacts resulting from LFA sonar operations. Both low and mid-frequency sonars, and seismic surveys all share the characteristic of producing very intense noise. Again, the failure of the DSEIS to even mention these events strongly suggests that the authors would rather the reader didn't know of them.

4.4.18

The DSEIS (4.4.3.3) conclusion regarding marine mammal strandings is strange. What exactly is meant when it states that “there is an ongoing issue with public perception of the cause that must be dealt with.”? This statement seems to suggest that the Navy is much more worried about bad publicity than it is about the adverse impacts its sonar operations are having on the marine environment. Does this mean that the Navy intends to address the public relations aspect, while continuing to ignore the very real and serious impacts its use of high-intensity active sonars is causing? 4.4.1.3

Subchapter 4.5 of the DSEIS supposedly addresses the potential impact of LFA sonar operations on commercial and recreational fisheries, other recreational activities, and research and exploration activities. The conclusion reached is that it will not have any effect or any impact on these activities. Given the reasons stated above, it is likely that LFA sonar operations will in fact have a considerable impact upon fisheries, many of which are already in a very bad state. It is likely it will also negatively affect the whale watching industry, as whale populations could be reduced by LFA sonar operations. It is also possible that cetaceans would abandon an area, and not return to it, following a bad experience encountering the LFA noise in that area. LFA sonar operations are also likely to impact recreational and commercial divers as well as swimmers and those who are snorkeling for several reasons. Limiting LFA sonar RLs to 145dB at known recreational and commercial dive sites is insufficient protection because people affected may not be in as good physical condition as the divers were in the Navy study. This may be particularly true for members of the general public, of all ages and levels of fitness, who swim. Then there is also the question of what happens to people who are swimming, snorkeling, and diving in areas outside of these known dive sites? What happens to people who may be initiating swimming, snorkeling, or diving activities from boats far offshore? It is also unlikely LFA sonar will have no impacts on those who are carrying out research, particularly when that research is acoustic research. 4.5.1
4.5.2
3.3.7

The DSEIS (4-63) summary of cumulative impacts concludes with the statement “the SURTASS LFA sonar systems do not add appreciably to the underwater sounds that fish, sea turtle, and marine mammal stocks are exposed to. Moreover, SURTASS LFA sonar will cause no lethal takes of marine mammals.” Neither of these statements is believable. The first statement is nonsense. The opposite is true. LFA sonar operations will add very significantly to the noise levels of oceans which are already too noisy. As stated above, this noise will not be contained inside of small areas; rather it will be flooding vast ocean expanses with LFA sound. That much of the ocean is already noisy does not diminish the fact that LFA sonar operations will add to this noise, thereby increasing noise levels still further. The second statement, that LFA sonar use will cause no lethal takes of marine mammals, rests entirely on the assumptions and conclusions reached in the DSEIS, which, as seen above, are not valid. 4.6.4
4.3.8

The DSEIS has failed to adequately address the issue of LFA sonar sound fields combining with the sound fields of seismic surveys and other anthropogenic sound sources. In addition, there are problems with the brief OEIS/EIS (4.2-54) analysis of 2 LFA sound sources employed at one site. The OEIS/EIS claims to be acting conservatively by doubling the single source potential effects. This is very debatable. Marine animals who are caught in the sound field 4.6.7

of one system may be unable to escape it simply because the field is so vast. In a case where they are caught between the sound fields of two LFA systems, marine animals may become confused and unable to even determine which direction they should head in an attempt to escape the noise. The result may well be that the real effects are actually much more serious than those for a single source doubled.

The “AD Hoc Group on the Impact of Sonar on Cetaceans” report, cited in the DSEIS (4-61) states “It appears that sonar is not a major current threat to marine mammal populations generally, nor will it ever be likely to form a major part of ocean noise.” The 2004 report of the International Whaling Commission’s Scientific Committee would seem to contradict the first part of this statement when it says that there is “compelling evidence” that entire populations of marine mammals are potentially threatened by intense anthropogenic underwater noise, which would include sonar noise. Regarding the second part of the statement, if sonar does account for 10 percent of human sound in the ocean, that is a significant amount. It is interesting to note that this report stated that sonar noise is not expected to increase, while the DSEIS (4-60) states that commercial sonar use is expected to continue to increase. It does not, however, say that military sonar use will also likely increase, though this is obviously the case. Other nations already have, or are developing or obtaining systems similar to LFA sonar and mid-range sonar. Both commercial and military sonar use will increase, and because of this, noise levels will increase as well. The DSEIS has failed to acknowledge this.

4.6.9

Some whales killed by ship strike have been found to have suffered hearing impairment (Andre et al. 1997). The DSEIS (Subchapter 4.6) has failed to address the fact that LFA sonar operations would likely increase the numbers of sea turtles and marine mammals who are injured and killed by ship strike, due to increased hearing loss and masking effects. Hearing impairment may also increase the chances of whales becoming entangled in fishing gear (Todd et al. 1996). The DSEIS has failed to discuss how LFA sonar operations could lead to an increase in numbers of marine mammals injured and killed in fishing gear. The threat to marine mammals of death as bycatch is huge, but will be made even greater by the deployment of LFA sonar.

4.6.20

The DSEIS (4-62) states that “Japan, under its self-issued scientific research permit, is authorized to annually kill 400 minke whales around the Antarctic.” The claim that this “scientific” whaling is authorized is very debatable. In fact, it is commercial whaling done under the guise of science. The IWC has expressed concern that the current “scientific” whaling operations represent an act contrary to the spirit of the moratorium presently in place on commercial whaling, and that the IWC’s provisions allowing for scientific whaling were not intended to be exploited to provide whale meat for commercial purposes, as the Japanese killing does. The IWC has repeatedly asked the Japanese government to end these Japanese operations. In addition, in January 2006, 17 nations signed onto a statement calling on Japan to “cease all its lethal scientific research on whales” which was delivered to the Japanese government.

The DSEIS (4-63) attempts to downplay impacts of the Navy’s sonar use by comparing it to other sound sources, including rather bizarrely, whale vocalizations and other naturally occurring sounds. Marine animals have evolved over great time periods and have no doubt

adapted to some of these sounds, whereas most of the human produced noise that is currently flooding the oceans is a relatively sudden and recent addition which these animals have not had time to adapt to. Aside from this, the point of addressing the issue of cumulative impacts is not to see who is most to blame for ocean noise, be it the shipping, oil and gas, or fishing industries, or the military. Rather, the point should be how all these noise sources together, in combination, may impact marine animals. Very clearly, the DSEIS in no way addresses this question.

4.6.6

As stated above, the mitigation measures proposed in the DSEIS are entirely inadequate to ensure protection of the marine environment and its inhabitants. This is true for several reasons. To start with, for the reasons stated above, marine mammals, sea turtles, and other ocean dwellers will not be adequately protected by limiting their exposure to LFA sonar sound to a RL of 180 dB or less. Nor will ensuring that no known recreational or commercial dive sites are subjected to LF sound pressure levels greater than 145 dB RL be enough to protect human divers and swimmers.

5.0.1

4.3.5

Incorporating geographic restrictions and Offshore Biologically Important Areas could be effective mitigation tools, if the sound field affecting these areas was limited to a RL that would not kill, injure, cause disruption of behavior, masking, or stress. However, the DSEIS mitigation allows for a sound field of up to 180 dB RL. Therefore, all of these impacts are likely to be inflicted upon animals in these areas even if the maximum allowable level is not reached. This is not effective mitigation. Added to this is the fact that it is up to the Navy and the National Marine Fisheries Service to determine which areas are deemed to be “biologically important.” Neither this DSEIS nor any of the Navy’s actions in the past do much to inspire confidence that the Navy knows, or cares to know about such things, or that it will make appropriate determinations. Given the total disregard the Navy has exhibited in the past when deploying its sonar in areas known to have concentrations of marine mammals, it is hard to believe it has any concern for these things at all.

4.7.21

Similarly, NMFS has not always acted in a manner that inspires confidence that it will appropriately determine OBAs. To start with, even while NMFS was aware of the fact that the Navy was secretly developing and testing LFA sonar, it did not press the Navy to obtain the legally required permits necessary for this under the MMPA and the ESA. That is troubling. Also troubling is the fact NMFS was found to have improperly issued the letter of authorization to the Navy for deployment of LFA sonar in 2002, and in so doing had violated the MMPA, the ESA, and NEPA. That NMFS issued this LOA implies an inappropriate willingness to accept the scientifically unfounded assumptions and conclusions contained in the LFA OEIS/EIS. NMFS has responded to the crisis North Atlantic right whales are facing due to deaths from ship-strike and entanglement in fishing gear with a total lack of meaningful action. The failure on the part of NMFS to ensure adequate protection for the critically endangered right whale does not inspire confidence it will appropriately determine OBAs.

1.2.3

NMFS has repeatedly failed to issue reports on unusual stranding events in a transparent and timely manner, including the report on the January 2005 North Carolina mass stranding of 37 whales from three different species which occurred coincident to Navy sonar exercises off the

4.4.18

coast. This particular event is extremely relevant to the Navy's proposed Undersea Warfare Training Range, and in particular its site of choice off that same coast. Despite the fact that the extended deadline for public comment on the Navy's DEIS for its USWTR was January 30, 2006, the report was only released days before the deadline, and only after NMFS was sued by the Natural Resources Defense Council, and a federal judge ordered its release. This alone is very disturbing. The coordinator of the NMFS stranding response program noted in her preliminary report in April 2005 that injuries to some of the whales "may be indicative" of injuries caused by active sonar, including air bubbles in a pilot whale's liver similar to those found in whales killed by NATO sonar exercises off the Canary Islands. NMFS very quickly released an "updated" version of the original draft, eliminating all references to sonar. The reason given for this exorcism was that air bubbles in the liver had not been conclusively confirmed! NMFS appears to have first delayed the release of its stranding report, and then when legally obligated to release it, to have altered it to minimize any association between the Navy's sonar use and the dead whales. NMFS's handling of this entire incident strongly suggests that politics are playing a far greater role in this stranding report than science is. This is very disturbing and does not inspire confidence in NMFS.

Neither does the recent survey of NMFS scientists, conducted by the Union of Concerned Scientists and Public Employees for Environmental Responsibility, which found that 69% of the survey respondents did not trust NMFS decision makers to make decisions that would protect marine resources and ecosystems. This survey also found that large numbers of NMFS scientists reported political interference in scientific determinations, and many felt that this has undermined NMFS's ability to fulfil its mission of protection of marine species and their habitat. Given all of this, why should anyone have any confidence that NMFS will appropriately determine OBIA's?

If near-real-time environmental data is important for estimating sound fields, why are acoustic model updates nominally made only every 12 hours, or more frequently when meteorological or oceanographic conditions change? As the LFA ship moves across the water, conditions must nearly always be changing. Why aren't these updates made more frequently? What happens if modeling is not accurate, and RLs are higher than predicted? Rather than estimating RLs, why can't they actually be measured? Measuring sound fields would provide the Navy with real data that could then be compared with modeling efforts. This would help not only in improving the accuracy of modeling, but also to ensure that RLs are not actually much higher, and therefore more dangerous, than estimated.

5.1.1

The DSEIS (ES-17) states that an objective of mitigation measures is to avoid injury to marine mammals and sea turtles near the LFA source, and that this objective will be met by its mitigation measures. It also makes the claim (4-63) that because of monitoring and mitigation measures, the operation of LFA sonar "will result in no lethal takes." The DSEIS (5-3) lists three different methods it will use to monitor for marine mammals in order to prevent their injury. Unfortunately, there are problems with all of these methods which will make monitoring efforts largely ineffective. The effectiveness of visual monitoring is extremely limited by a number of factors. It is well known that many marine mammals can remain submerged, some for quite

4.3.8

extended periods of time. Sperm whales, for example can remain submerged for well over an hour. When submerged, marine mammals can become impossible to visually detect from a ship, unless they are in very close proximity to the ship. While submerged, these animals do not necessarily remain in the same location. Oftentimes individuals or groups of marine mammals swim while submerged, thereby changing their location. Even if these animals had been visually detected while at the surface, once submerged, visual detection ceases to be effective. Given the duration periods a number of these species can remain submerged, and the distances they can travel while submerged, visual detection is an extremely unreliable method for determining these animals are not in a given area even under the very best of ocean and weather conditions. In choppy or rough seas, it is often extremely difficult to visually detect marine mammals even when they are at the surface. Weather conditions can further contribute to this difficulty. It is estimated for example, that only one in fifty beaked whales surfacing in the track line of a ship would be sighted in anything stronger than a light breeze. Because of these factors, visual detection of marine mammals, as well as sea turtles, is extremely unreliable even for highly trained and highly motivated individuals. 5.2.12

The question must also be asked; is it possible that Navy shipboard lookouts would ever feel any pressure that could cause them not to see or report seeing marine mammals or sea turtles? Pressure can be felt even if it is only imagined. Pressure can also be perceived even when it is not explicitly exerted. In the real-life situation where training exercises are occurring, it is reasonable to believe that even trained shipboard lookouts might choose not to see or be hesitant to report the sighting of marine mammals or sea turtles, particularly if they were not absolutely sure of the sighting, or if they felt that the sighting was outside of the range presumed to require a change in operations. It is also possible the lookout would not want to be perceived by others as responsible for disrupting or interfering in the continuation of exercises. Although the DSEIS stresses the qualifications and training of the shipboard lookouts, it does not address the “real world” issue of pressure coming from above as well as one’s peers. 5.0.3b

The fact that visual monitoring will only take place in the time period between 30 minutes before sunrise until 30 minutes after sunset means that from shortly after sunset until shortly before sunrise, no visual monitoring will occur. As LFA sonar operations are not limited to the daylight hours, this means that much of the sonar’s operational time will have none of the limited benefits of visual monitoring. 5.2.10

The DSEIS (5-3) states that the objective of visual monitoring is to “maintain a track of marine mammals and/or sea turtles observed and to ensure that none approach the source close enough to enter the LFA mitigation zone.” What happens when marine mammals or sea turtles are seen approaching the mitigation zone but before it can be determined with any degree of certainty whether or not they will enter, the animals submerge? What happens when animals appear to be tracking past the zone without entering it, but these animals then submerge and change course so that they enter the zone while still submerged? 5.2.20

There are problems with relying on passive acoustic monitoring to detect marine mammals and sea turtles, for the simple reason that in order to detect them they must be making 5.2.14

enough sound that is distinguishable from background sounds to be detected and then be identified as sounds produced by these animals. The DSEIS (5-4) states that if a sound is estimated to be from a marine mammal that may be potentially affected by LFA sonar, that the Officer in Charge would be alerted. How will this estimate be made? Is the technician an expert who is able to identify vocalizations for all marine mammals? And which marine mammals won't be affected? Sea turtles do not appear to produce much sound, and so the passive acoustic method of monitoring is useless for their protection. While marine mammals at times do vocalize, at other times they do not, and so this method of detecting marine mammals is not reliable. The fact that the SURTASS towed horizontal line array will not detect a large percentage of the sounds of odontocetes further reduces the effectiveness of this passive acoustic monitoring system.

The other method proposed for monitoring for marine mammals, and to some extent, sea turtles, is HF/M3 sonar. There are also problems with this method. Not enough is really known about a number of species' ability to detect sound at various frequencies. It is not known how HF/M3 sonar will impact their ears or other organs. Given this, and the fact that HF/M3 sonar will be deployed at levels starting at 180 dB and ramped up from this level, how has it been determined that this sound won't itself have negative impacts on animals exposed to it? While this system may be able to detect some animals, particularly the larger ones, it still will not detect all of them. In fact, it is very possible that marine mammals and sea turtles will escape detection by all three monitoring methods. Finally, the fact that more loud sound is being introduced into the marine environment to protect marine animals from loud sound does not make much sense. 5.2.17

The DSEIS (5-9) dismisses the small boat and pre-operational aerial surveys as not practicable, but it would have been more truthful perhaps, to say that these measures would be inconvenient. The fact that the DSEIS states that new regulations on aerial surveys have "increased the costs markedly" is truly outrageous. What are the costs to the individual animals who are made to suffer because of LFA sonar? What are the costs to endangered species or stocks when their small numbers are impacted? What are the costs to the ecosystem when species or stocks disappear? What are the costs to human security when ecosystems are damaged? For the Navy, with its immense budget, to raise the issue of monetary cost as a reason not to use every mitigation measure necessary to reduce threats to marine life is absolutely deplorable. To use the argument that small craft surveys would have impacts on marine mammals, while it may be true, cannot be taken very seriously given the total disregard the Navy has shown for the impacts already wrought upon these animals by their own sonar use. 5.4.3

The DSEIS has not made it clear what long term monitoring will occur to assess the impacts of LFA sonar on the marine environment, but the OEIS/EIS (2-24) does refer to such a program, which includes an incident monitoring element. There are several problems with this program. The first very large problem is that the Navy will be the party that is monitoring the impacts of this Navy activity. Should monitoring indicate that LFA sonar operations are having negative impacts, is it reasonable to assume that the Navy will report this? Considering how this DSEIS has inappropriately minimized the potential for adverse effects to the point of absurdity, and has grossly downplayed the seriousness of those impacts it admits may occur, and given its 5.3.1

refusal to even look at its role, or the role of other navies in all but three mass stranding events, the only conclusion one can reasonably come to is, no. It is not reasonable to make such an assumption. Nor is it reasonable to assume that Navy funded monitoring findings will accurately reveal impacts which have occurred. Those who are engaged in the collection of data, or its processing, or in reporting on the results of a monitoring effort, may feel pressure to achieve certain results favorable to the Navy. Perhaps there is fear that funding may be cut off if results are not favorable, or that their career future may be jeopardized should results be unfavorable. Pressure may be felt regardless of whether or not it is explicitly applied. Even were negative impacts brought about by LFA sonar operations to be accurately depicted by Navy funded monitoring reports, it may be naive to assume that the Navy would then allow their public release.

5.3.1

Another problem with the long term monitoring program described in the OEIS/EIS is its tiny \$1M per year budget. This budget is way out of proportion considering the huge impacts that will result from LFA operations, and the cost of those impacts to the environment.

5.3.2

The incident monitoring element of the long term monitoring program has at least two problems. First, while it certainly would be beneficial for the Navy to coordinate with marine mammal stranding networks, it is wrong of the Navy to assume, as it appears to, that only stranded animals may have been impacted by LFA sonar operations. Why is there not a serious effort to survey for marine mammals, sea turtles, or any other animals who may be behaving unusually, or are injured or dead during and following LFA sonar use? Related to this question, another question must be raised. Is it even realistic to assume that if such a survey did occur, and unusual behavior, or injured and dead animals were seen, that the Navy would then report this when they have good reason to believe that LFA sonar use caused these effects? In light of the growing public concern about the impacts of high-intensity active naval sonars on marine animals, it is unlikely the Navy would invite more bad publicity by reporting such a sighting. It is also reasonable to assume the Navy would rather not contribute to the growing body of evidence indicating that their sonar use is harming marine life. Given this, it is important to challenge the assumption that the Navy will reliably report negative impacts to marine animals which occur as a result of their sonar use, particularly when impacts have occurred far offshore, and there is little or no chance the animals will strand, and they are unlikely to be observed by anyone else.

5.3.1

The DSEIS lists five alternatives including the Navy's preferred alternative, and a no action alternative. Alternative 2 does offer more protection to marine mammals than does Alternative 1 but both are entirely inadequate. Alternative 3 offers more protection than does Alternatives 1 or 2, because extending the coastal standoff distance will, in some areas at least, extend past the shelf break. Because many marine mammals, of many species, concentrate at the shelf break, it is the shelf break, and not the coast that the standoff distance should be set by. Extending the 180dB standoff to 25 nm from the designated Offshore Biologically Important Areas would help to reduce impacts in these areas, but not sufficiently. Alternative 4 is an improvement on Alternatives 1, 2, and 3. Obviously, protection of more OBIA's is good. However the protection offered by maintaining sound pressure levels to below 180dB RL within 25 nm of the coast and designated OBIA's is totally inadequate to ensure the protection of marine

mammals. As mentioned above, the 180 dB RL criterion is absolutely unfounded. Were this to be reduced to a level that in reality did not cause death, injury, behavioral changes, masking or stress in marine mammals, then its application to RL standoffs would be more meaningful. Even then, it would be insufficient as marine mammals and other marine animals would still be exposed to LFA sonar sound at levels that can kill, injure, and cause behavioral changes, masking, and stress outside of these standoff regions. Therefore, none of the Alternatives 1- 4 offer any real degree of genuine protection to the marine environment or its inhabitants. That leaves the No Action Alternative. Unfortunately, this alternative is also insufficient, at least in how it is described in the DSEIS. The DSEIS (4-65) states that the no action alternative would require the use of a greater number of mid-frequency sonars, which have been proven to injure and kill marine mammals and are most likely dangerous for other marine life as well. This increased use of mid-range high-intensity active sonar would still fill the oceans with harmful sonar noise. Therefore, none of the alternatives presented in the DSEIS will adequately protect this nation and the marine environment.

4.7.3

Attempting to deal with the threat of quieter and harder to find foreign submarines through the use of LFA sonar, or increased use of mid-frequency sonars, as described in the DSEIS, will not succeed. Putting any of these alternatives into action will, however, do two things. It will intensify the sonar/submarine arms race among nations. And it will act to bring the planet's oceans even closer to the point where they are no longer able to sustain healthy, living, ecosystems.

Another alternative worth considering would involve a shift in the way that threats are perceived. While some may call this alternative naive, it is no more so than the DSEIS alternatives which neither realistically addresses threats to the environment, nor how these environmental threats affect the security of not only humanity, but all life on the planet. This shift would require an understanding of the interconnectedness of the "web of life," and how when strands in that web are broken, the whole web is weakened. To put it in other words, when ecological systems are stressed from human activities, including LFA sonar operations, it can lead to the eventual collapse of those systems. Because we are all entirely dependant upon those systems, such a collapse is not beneficial to anyone's security. This understanding would then lead to the recognition that environmental threats such as global climate change, human overpopulation, and the mass extinction of species are at least as serious as those coming from quieter and harder to find foreign submarines. With this recognition, it might be hoped, would come a sincere commitment to protection of the environment. However, the threat of foreign submarines would still need to be dealt with. One way to stop the proliferation of these submarines, and all other weapons that threaten global security, would be to negotiate international treaties which forbid the development, production, sales, possession, and use of these weapons by any individual, group, or nation, and establishing a system whereby this can be verified. When this is accomplished, vast amounts of money, energy, and other resources that once went into massive military budgets can then be used by governments to actually meet the needs of people. If wealthier nations were to then offer genuine, meaningful assistance to others nations, instead of arming themselves against them, it would go a long way in diffusing existing tensions. This would then further enable people to effectively deal with the overwhelming

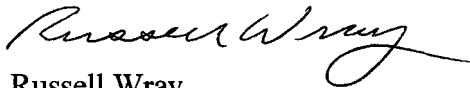
4.7.3

environmental problems facing life on this planet. This alternative is more realistic than those presented in the DSEIS, as it addresses both the threat of quieter and harder to find foreign submarines and threats to the environment.

COAST believes that because of the unsupportable assumptions and inappropriate extrapolations that have been made use of, a number of conclusions reached in the DSEIS are not valid. The DSEIS failure to include information critical to the discussion further damages not only the credibility of this DSEIS, but the possibility for a realistic assessment of impacts. When the ineffectiveness of the proposed mitigation measures is also taken into account, it is clear that SURTASS LFA sonar operations do in fact represent a very serious threat to marine life and the marine environment, and therefore, all of us. Because of these very serious flaws, this DSEIS must not be mistaken for a detailed environmental analysis.

COAST urges the Navy to begin to see environmental degradation for what it is, a threat to the real security of all who live on this planet. The Navy needs to change its course and take an approach which recognizes the right of all the life within Earth's oceans, not only to existence, but to lives lived in a healthy environment. We appreciate the opportunity to comment on the DSEIS, and look forward to having our questions and comments responded to.

Sincerely,



Russell Wray

From: Rebekah Crowley
To: eisteam@mindspring.com
Cc:

Subject: SURTASS LFA Sonar DSEIS
Date: Feb 8, 2006 5:47 PM
Attachments: SURTASS LFA Sonar DSEIS.pdf

Good Afternoon:

Please review the attached letter that is being submitted as part of your public input process for the SURTASS LFA Sonar DSEIS. Please feel free to contact me if there is any problem with opening this attachment. Thank you for your time and consideration.

Sincerely,

Rebekah L. Crowley
Executive Assistant
Seattle Aquarium Society

www.seattleaquarium.org



SEATTLE AQUARIUM SOCIETY

February 8, 2006

Mr. J.S. Johnson
 Attn: SURTASS LFA Sonar DSEIS Program Manger
 4100 Fairfax Drive, Suite 730
 Arlington, VA 22203
 Email: eisteam@mindspring.com

RE: SURTASS LFA Sonar DSEIS

Dear Mr. Johnson:

The Seattle Aquarium Society would like to take this opportunity to comment on the proposed implementation of "Surveillance Towed Array Sensor System Low Frequency Active Sonar (SURTASS LFA) off the coast of Washington.

According to the Draft Supplemental Environmental Impact Statement (DSEIS) dated November 2005, potential impacts of SURTASS LFA to marine mammals include: "behavioral changes, temporary or permanent tissue/organ damage and possibly mortality." Such potential impacts would vary depending upon the species, age and general health of the marine mammal, the distance from the sonar and the intensity and frequency of the sonar. The DSEIS concludes that the potential impacts from these sonar operations is considered minimal or negligible; any impacts are not expected to be severe and would be temporary.

Despite the above conclusions, the Seattle Aquarium Society wants to underscore the potential impact on the southern resident orca whale population which has recently been listed as endangered on the ESA. Although these orcas frequent coastal waters inshore of the proposed operations, during many times of the year they also swim in ocean waters and possibly in the vicinity of sonar testing. In addition, other orca populations (offshore or transient orcas) are known to occur in these offshore locations.

3.2.11

The Seattle Aquarium Society urges a very tight oversight with regards to monitoring environmental safeguards included in the DSEIS to limit these impacts. We request a scientific monitoring protocol be established to watch for impacts of the operations and that an annual report be provided to the public. Please include the Seattle Aquarium Society on the list for further information and tracking on SURTASS LFA operations off the coast of Washington.

Sincerely,

Robert W. Davidson
 Chief Executive Officer

cc: John R. Braden
 Mark Plunkett
 Gary Smith

From: Joyce O'Neal
To: eisteam@mindspring.com
Subject: IONC comments to the Draft LFA EIS
Date: Feb 9, 2006 10:37 AM
Attachments: IONC LFAS DSEIS final.doc

Mr. Joe Johnson,

I am attaching to this email the comments from the International Ocean Noise Coalition for the LFAS Draft EIS.

If there are any problems receiving this email please call me at:

Sincerely,
Joyce O'Neal
Chief Operations Manager
Ocean Mammal Institute



February 9, 2006

Mr. Joe Johnson
 4100 Fairfax Drive
 Suite 730
 Arlington, VA 22203

Re: Draft Supplemental Environmental Impact Statement (DSEIS) for the Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar

On behalf of the International Ocean Noise Coalition, we submit our comments on the above-referenced proposed Draft Supplemental Environmental Impact Statement (DSEIS) for the Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar.

We are writing to express our concern that the current Supplemental Environmental Impact Statement on LFA sonar is inadequate. Unfortunately the research on the impacts of SURTASS LFA on marine life is not definitive enough to allow the conclusion that it will not have serious impacts.

Impacts to Marine Mammals

The determination of the 180 dB threshold impact level for marine mammals is not supported by field research. The Scientific Research Program (SRP) was extremely limited in scope studying four species of whales for periods of weeks to a month or so. Even then, significant results of avoidance or behavioral or vocal change were noted, yet these are dismissed. Additionally, the program to test the effects of LFA sonar on humpback whales in 1998 was inadequate because actual sonar deployment levels were not used in the tests. This is clear from several statements in the Hawaii "Quicklook: Low-Frequency Sound Scientific Research Program, Phase III: Responses of Humpback

4.3.11

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Whales to SURTASS LFA off the Kona Coast, Big Island Hawaii (Feb. 28 – March 3, 1998).” On page five this Quicklook states, “The research did not use the full source level of LFA.” They also only “tested” the system in the omni directional mode, not the beamed mode in these Hawaii “tests.” On page 6 this Quicklook states, “The playback protocol used in this Phase III research was specifically designed to expose animals to LFA sounds at levels that are not harmful.” In the Executive Summary of this Quicklook the authors state “..... it will be difficult to extrapolate from these results to predict responses at higher exposure levels.” 4.3.3

Since the test protocol was purposely designed to expose animals to LFA levels that were not harmful, and since we can’t extrapolate from these results to effects at higher exposure levels, and since the SRP was so limited in scope, there really was no adequate field testing of the impacts of the actual LFAS system on humpback whales. In addition, the fact that 80% of humpback whales tested in Hawaii stopped singing even at the low test levels, has not been adequately addressed in the DSEIS. This could affect the whales’ reproductive success. The Miller et al. (2000) published paper on humpbacks lengthening their songs during low level LFA transmissions should be included in this DSEIS at the very least. 2.3.7

The DSEIS ignores other important negative effects the sonar had even at the low levels used in Hawaii. It does not address the fact that two separated cetacean calves were observed in the relatively small test area in Hawaii during and shortly after testing. Separated cetacean calves are rare. Do sonar signals disrupt the mother-calf bond? 4.3.35

LFA sonar testing on blue, fin and gray whales was also inadequate. The fact that blue and fin whales decreased their vocalization rates and inshore gray whales changed their migration route when exposed to LFA type signals indicates that the sonar could have long term effects on these animals’ ability to find food and mates. These long term effects have not been studied at all. In addition, baseline data on the distribution and behavior of marine mammals is not available, making it impossible to evaluate the long term effects of LFAS. Therefore, under NEPA, the Navy must make it clear that this baseline information is not available and discuss how this lack of information affects their ability to evaluate possible adverse impacts on marine life. FEIS 4-5.10
4.3.10
4.3.11
1.4.1

The determination of the 180 dB impact level also is not supported by field research on gray whales. Indeed, gray whales avoided much lower LFA levels (around 130 dB) while migrating (SRP results). The fact that offshore gray whales did not avoid such lower levels can mean that less sensitive or more marginal (sub-optimal) animals migrate offshore. This scenario is supported by the fact that mothers and calves (assumed to be more sensitive as has been confirmed by research on humpbacks by McCauley et al. (2000) for instance) tend to migrate inshore. Downplaying this impact because offshore animals behaved differently is not scientifically valid. Is this result a consequence of the inshore vs. offshore environment or because of the different age/sex classes or sensitivity levels of animals in either environment or some other interpretation? The answers to these questions remain unknown. 4.3.10

The assumption that odontocetes are less likely to be affected by exposure to LF sounds than mysticetes is simply an assumption not backed by data. While odontocetes do specialize more on the mid - to high frequencies, there are other aspects about odontocetes that may make them more vulnerable to noise than mysticetes. For one, the deep divers are all odontocetes, and deep divers are thought more vulnerable to noise (Houser et al. 2001). Also, odontocetes more frequently mass strand, and beaked whales have been shown to be especially sensitive to noise. We know of no data to support the idea that marine mammals' adaptation to pressure changes due to diving enables them to tolerate pressure changes from noise. Please supply the evidence for this statement. 4.3.43

This DSEIS implies human-produced underwater sounds and natural sounds have similar impacts on marine mammals. It is not scientifically defensible to imply that the vocalizations made by whales have impacts similar to loud human-produced noises. Please provide evidence to support your implication. 4.3.4

This DSEIS makes several major conclusions with no evidence to support them, as follows:

1. The effects on marine mammals from behavioral change or auditory masking from LFAS broadcasts would be minimal. Are there data to show this? 4.7.2
2. Sonar is not a major threat to marine mammal populations. In fact, the only evidence involving population effects comes from the Bahamas stranding incident and shows that most of the population was killed or left the area as a result of a SINGLE transit of naval vessels in March, 2000 (Balcomb and Claridge, 2001) Please address this issue. 4.6.10

We see no justification for concluding that the potential effects on the stock of any marine mammal from behavioral change or auditory masking would be minimal. Based on what evidence? Again, the Scientific Research Program was extremely limited in scope, even when significant results of avoidance or behavioral or vocal change were noted the results were dismissed and no studies have been conducted on marine mammals using the full operational sonar. 4.3.30

Strandings

Certainly there has been a correlation with certain strandings and high intensity sonar transmissions. A stranding in Greece was linked to use of an LFA – type system (Frantzis, 1998). The stranded whales were spread out along 38.2 kilometers of coast and the location of the stranded animals coincided precisely with the locations of the LFAS- producing vessel. However, most strandings have been correlated with the use of mid-frequency sonar rather than LFAS. It must be kept in mind that LFAS has not been used as extensively as mid -frequency sonar, though. 4.4.18

International Ocean Noise Coalition

- It is not particularly reassuring to say that there have been no reported strandings or Level A harassment takes associated with LFA transmissions in the northern Pacific. Who has been looking? When was LFA used and how extensive was the monitoring for stranded or injured animals? How many strandings occurred in the area during LFA use and when LFA was not in use? Just because no strandings or injuries were reported does not prove that none occurred. For the Bahamas stranding in 2000, the Bahamas Interim report concluded that “all evidence points to acoustic or impulse trauma” and that the naval sonars “are the most plausible source.” Yet, this DSEIS says that the hemorrhaging in that stranding could have been caused by factors other than acoustic trauma. What other factors? Please identify them and also please explain why the final report on the Bahamas stranding has not been released at this point in time which is now 6 years after the incident? Also please address the fact that most of the beaked whales in that population have never been resighted (Balcomb and Claridge). Why isn't this discussed as a population level effect? 4.4.12
4.4.18a
4.4.18b
4.4.18c
- This DSEIS does not seem to recognize that behavioral reactions can produce Level A harassment, as has been indicated by beaked whale reactions to sonar. It is not yet known whether a non-auditory or a behavioral reaction or something else caused the growth of bubbles in beaked whale tissues during a noise event. It certainly has been postulated that these bubbles, and the decompression sickness that results, occur as a result of a behavioral reaction (surfacing too quickly, staying at depth too long, etc.) (e.g. Cox et al. In press). The best estimate of the average level of sound the whales in the Bahamas received before stranding and dying is on the order of 130 dB (Hildebrand and Balcomb 2004). How then can 180 dB be used as the threshold for impact, even Level A harassment? Please address this critical issue. Also, why is there no threshold given for behavioral impacts (Level B harassment)? 4.3.42
- We believe the Beaked Whale Workshop (Cox et al. In press) concluded that resonance was considered less likely than some non-auditory effects but still was an open question. None of the workshop participants were willing to rule out resonance as a possible mechanism for noise-induced strandings. Considering the huge unknowns in this area, we think it premature to exclude any such effects. Resonance effects in fish also need to be addressed. Low frequency sounds certainly caused swim bladder rupture in fish in studies by Turnpenny et al. (1994). Even though there is some criticism of the study, it is impossible to rule out these effects entirely, especially for all species, at all depths, at all life stages, in all water temperatures, etc. etc. 4.3.53
4.1.8
- This DSEIS is remiss in failing to point out the characteristics associated with acoustically-induced strandings, such as mixed species composition, the frequent presence of beaked whales, individuals spread out over tens of kilometers of coastline, etc. etc. The examples of stranding events classified as “natural” (Tasmania, Florida Panhandle) may have had noise as at least a contributing factor. The role of noise in these strandings cannot be simply dismissed. 4.4.22
4.4.18

This DSEIS needs to discuss the fact that Cuvier's mass strandings were almost unheard of before the 1960's when powerful sonars began to be deployed (Friedman 1989). Also, this DSEIS omits mentioning that there are over 30 stranding events linked to noise that are not mentioned at all in the document. These strandings must be included and discussed. Tables of these stranding events are readily available from the Scientific Committee of the IWC. 4.4.19

It is a misconception that acoustic trauma is required to establish a link between a stranding and an acoustic event. Whales may strand due to panic, if close to shore and especially when herded toward the shore by noise (as drive fisheries have done purposely for decades). Under this scenario, there would be no trauma other than that of the stranding. That inner ears were not examined in the Greek stranding should not mean that no association between this stranding and NATO's LFA can be made. The co-occurrence between the ship's movements and the timing and locations of the strandings is very compelling indeed and should be discussed. 4.3.50 4.4.12

To say that the hemorrhaging in the Bahamas stranded animals (2000) could have been caused by factors other than acoustic trauma is not consistent with the paragraph which follows cited from the Interim Report on the stranding ("all evidence points to acoustic or impulse trauma" of which the naval sonars "are the most plausible source"). Interestingly, the DSEIS does not mention what these so-called "other factors" might be. That re-floated animals apparently did not re-strand, does not mean that they lived. Some re-stranded repeatedly immediately after being re-floated, but then, once guided into deep water, ultimately did not return. The re-floated animals were never seen again, though these animals were a part of a well-studied resident population. Balcomb and Claridge (2001) maintain that most, if not all, of these animals died or abandoned their home area. It is impossible to say whether the various oceanographic factors, the bathymetry, etc. were all necessary to produce this stranding. They may or may not have contributed, and this may or may not have been an unusual confluence of conditions. The evidence seems to point toward such noise-induced strandings not being as rare as once thought. 4.4.18a 4.6.10

It is disappointing that the Canary Islands stranding of 2002 is not adequately discussed. Not only have three peer-reviewed articles appeared in highly respected journals about this stranding, but preliminary results were published in the European Cetacean Society's Newsletter (Special Issue). Where are the Jepson et al. (2003), Jepson et al. (2005) and Fernandez et al. (2005) articles? It is inadequate to merely state that "efforts to study the whale specimens from this incident continue and a report has not yet been published." 4.4.18

Cumulative Effects

The Navy does not address the effects of possible cumulative stress on marine mammals from LFAS. Much literature indicates that loud sounds cause stress in most species tested and this possibility needs to be considered. 4.6.2

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This DSEIS ignores the scale of the area affected by LFA. How are you going to ensure that noise from LFA and seismic surveys don't overlap with each other if one significantly raises noise levels over 3.9 million sq. km. and the other over 300,000 sq. km (seismic)? 4.6.8

Both bycatch and ship strikes could increase due to noise impacts if marine mammals can no longer hear approaching ships or other threats like fishing gear. Todd et al. (1996) found that more humpback whales were entrapped in fishing gear in an area where underwater explosions were taking place, apparently causing hearing impairment. Such impairment seems likely to have caused whales to blunder into nets, based on the unusual entrapment patterns observed (repeat entrapments, unusual age classes entrapped, area of entrapment, etc.). Similarly, whales killed by collisions with high-speed ferries showed hearing impairment when later necropsied (Andre et al. 1997). These are all examples of synergistic effects, effects that interact to produce a magnified impact greater than the sum of their parts. 4.6.20
4.6.21
4.6.22

There is no discussion of the possibility of synergistic effects from several LFA systems working concurrently and with overlapping areas of impact. What if the ensuing sound field is so complex that marine mammals would not know how to escape it (supposing they could otherwise)? 4.4.27

It is important to acknowledge that impacts from noise sources and other threats will all be occurring *together*, thus, all the threats marine mammals are faced with need to be evaluated in concert. Please address these issues. 4.6.6

Sound Exposure Level

The Navy does not address the concerns of the Marine Mammal Commission about LFAS stated in their 1997 Annual Report to Congress. In addition, there is a significant body of research data showing that whales clearly begin to avoid sounds at 115-120 dB. Research done by the Ocean Mammal Institute shows humpback whales swim significantly faster to move away from boat engines at received levels of 120 dB. If many species of whales avoid 120 dB, what will happen at the unknown LFAS deployment levels that produce levels of 120 dB over 3.9 million sq. km.? 4.6.12

The Au and Green (2000) study may have concluded that the humpback's auditory system would not be seriously affected by the small boats used in the study, yet this study did show significant changes in the behavior of the whales from these boats. In the DSEIS, it is not clear if source decibel levels refer to the output from one LFA projector or from all 18. This makes a big difference in actual sound levels and needs to be clarified. Many people now believe that the 215 dB number used refers (ambiguously) to only one LFAS projector. If all 18 projectors are operating the sound pressure level would be much higher, especially in the far field. 4.6.17

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Also, the Navy admits sound levels above 160 dB are damaging to mice, rats and humans in water (cited in Technical Report #3). But in the DSEIS they say anything below 180 dB is almost harmless to cetaceans. What is the evidence for this statement about cetaceans? This needs to be clarified. 4.3.18

Earlier in this letter we cite the fact that LFAS was tested on cetaceans only at levels well below 180 dB. In the initial EIS on LFAS in Appendix D the statement is made that “the lack of empirical evidence between 155 and 180 dB is an issue.” Yes, it is an issue and needs to be addressed. Also, the whales in the Bahamas stranded at average received levels of 130 dB according to Hildebrand and Balcomb (2004). This evidence does not support the contention that 180 dB is safe for cetaceans. 4.3.11

Impacts to Fish

The DSEIS says LFAS would not reduce the productive capacity of any fish stock. Where are the data to support that statement? Research we are aware of indicates cause for concern relative to fish and fish eggs. Why are the studies not included? Certainly several studies show that commercial fish catch rates have been significantly reduced in the presence of loud sounds (air guns). 4.1.17

There is absolutely no scientific basis for concluding that LFA does not “reduce the productive capacity of any fish stock”. It is an entirely plausible effect, especially given the increased mortality on fish eggs, larvae, and fry found with exposure to seismic noise which is also predominantly low frequency. 4.1.17
4.1.4

Why is there no discussion of recent work on fish larvae showing they use noise for the selection of, and orientation to, suitable settlement sites (Simpson et al. 2005)? Disruption of such behavior would again most likely have population consequences. 4.1.17

The DSEIS states that for fish exposed to intense noise “there was no damage to [non-auditory] tissues either at the gross or cellular levels.” But there was for snow crabs and giant squid. Several tissues were affected both at the gross and cellular levels. Please include these studies.

It is false that there has been no evidence of hearing loss associated with sensory hair cell loss in fish and that such a connection is “only conjecture”. The very reason why McCauley et al. (2003) examined pink snapper hair cells in the ears is because the fish were not showing the stereotypical reaction to seismic noise that they had previously. They “fed and appeared to behave normally” because they were *captive*. Whether they would have survived in the wild is another question. I don’t know that the ability to “depart the immediate sound field” would have helped the pink snapper avoid ear damage. In the case of LFA, they would have been presented with a fairly complex sound field and may have had difficulty finding a way to escape. Further, they may not 3.2.5

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be able to swim fast enough, especially if there is some confusion as to where they should swim to lessen the noise exposure.

We disagree that the exposures from LFA would necessarily be shorter than what the pink snapper experienced. There were very few seismic “shots” at high intensity in this study—the vast majority were much lower exposure levels. A key question is how the LFA-equipped ship would move. Would it be in a straight line, with a consistent heading? Or rather in a non-transiting mode, circling an area, or doubling back over its track at some times? 4.1.14

We agree with this document that “...it is difficult to extrapolate among species with regard to the effects of intense sounds.” It is also difficult to extrapolate from studies using low levels of LFA to predict responses at higher exposure levels which is what the authors of this DSEIS are trying to do with marine mammals. 4.3.25

Mortality rates of 20-30% in herring exposed to sonar signals is cause for concern. There is no RL indicated but rather a SL of 189 dB. Is this a typo? Was stress measured in these fish? 4.1.15

The Wardle et al. (2001) study did indeed show some indications of change in the long-term day-to-night movements of pollock. The fact that fish did not seem to leave with exposure to seismic noise is hardly surprising. These are reef fish that are very tied to their home territory, as the authors also note in their paper. There are many documented cases of animals staying near damaging noise, even to the point of injury (NMFS 1996), so as not to lose feeding or breeding opportunities, a situation that may have occurred had the fishes’ territories been abandoned. This is an important point to take into consideration. 4.1.10

It is not valid to conclude that LFA impacts on fish would be negligible because only an inconsequential portion of any fish stock would be present within the 180 dB sound field at any given time. There is no evidence that makes a compelling case for 180 dB being a “highly conservative” figure. Also, allowances must be made for sublethal, more subtle, or long-term effects. Delayed development hasn’t been adequately studied, nor non-immediate mortality through injury or overstimulation of neuroendocrine systems. Secondly, please cite the evidence for the conclusion that only inconsequential portions of a fish stock would be affected? Fish are clumped and would be concentrated around areas of productivity. As such, one broadcast could affect large numbers of several species of fish at once. And what about the effects on fish eggs, larvae, or fry? Studies such as Kostyuchenko (1973), Dalen and Knutsen (1987), and Booman et al. (1996) show increased mortality with seismic exposure of fish eggs, larvae, and fry compared with controls. One spawning aggregation ensouffied could have population consequences. Even a 5% loss at critical stages of development and metamorphosis could impact recruitment into a fishery and thus affect the population. 4.1.17

Since most of the world's fisheries are already seriously depleted, the additional effect of loud noise on fish needs to be more thoroughly addressed in this document.

Impacts to Sea Turtles

This document does not address the potentially negative impact of behavioral effects at lower sound levels on sea turtles. Population-level effects of masking or stress are ignored, for instance. If only one LFA system is operating in the Pacific at one time and marine life is behaviorally impacted at levels of 120 dB or so (as indicated by previous noise research) (e.g. Richardson et al. 1995), then the area impacted is around 3.9 million sq. km. (Johnson 2003). Why is the area of impact at the 120 dB RL not even given in this DSEIS? Since many marine animals react to noise at this average RL, it seems imperative that this isopleth be stated. So, in fact, many animals would indeed be impacted over a large amount of time, not the <0.2 animals per year per vessel as estimated for leatherbacks, for instance.

4.3.34

Also, it is misleading to use low numbers impacted like this when we are talking about a highly endangered population. The loss of even one breeding individual can be significant in small populations. Using such figures as 0.2 animals per year per vessel also ignores the fact that animals are generally clumped in distribution, so that if a concentration of animals is impacted, the population could suffer.

4.3.23

Why is the lack of scientific data on sea turtle PTS a valid rationale for concluding LFA will not cause PTS in sea turtles? The point is we don't know anything about PTS in sea turtles and, therefore, should apply the precautionary principle.

4.2.3

It is not scientifically defensible to dismiss the concerns raised by seismic noise impacts on sea turtles by simply saying that seismic signals differ from sonar in some characteristics. Please provide the evidence that LFA does not negatively impact sea turtles.

4.2.5

Impacts to Sea Birds

The rationale that seabirds "can rapidly disperse to other areas if disturbed" is troubling. Would this not count as an impact, particularly for endangered seabirds? To further complicate the matter, research on birds shows that those individuals that have least energy reserves or no alternative habitat cannot afford to repeatedly flee from disturbance but must remain and continue feeding, even if this places them in increased danger. Indeed, disturbance studies show that the weaker the response, the more serious may be the impact on the population (Gill et al. 2001; Stillman and Goss-Custard 2002). So, no, birds can't always "rapidly disperse to other areas if disturbed". They are there for a reason, and that reason is likely not to be arbitrary.

3.2.3

Impacts to Invertebrates

This DSEIS has erroneously dismissed cephalopods and decapods from consideration as potentially affected organisms. To say that “we may cautiously suggest that [there would be no lasting impact on these animals unless they were only tens of meters from the source]”, is anything but cautious. It is a wild guess—one that moreover is contradicted by recent scientific knowledge. McCauley et al. (2000) show impacts from seismic noise on squid. Not only did squid react to the noise (release ink), but they sought an acoustic shadow at the water’s surface. This is quite a sophisticated response, meaning that squid could evaluate acoustic gradients and find the acoustic minimum, which is more than most fish seem to manage. Guerra et al. (2004) also noted the occurrence of several squid (sometimes live) strandings over several years coincident with seismic surveys. A total of nine giant squid has stranded coincident with seismic surveys in 2001 and again in 2003 (MacKenzie 2004). Squid showed signs of ascending from depth too quickly. The squid showed no surface damage but all had internal injuries, some of them massive (disintegrated muscles, unrecognizable organs.) 3.2.5

Research on the effects of seismic on snow crabs (DFO 2004) also showed that some organs and ovaries of animals exposed to seismic were bruised and hemorrhaging compared to controls, ovaries were abnormal, there were changes in some organs consistent with a response to stress, embryo development appeared delayed, larvae were slightly smaller, and there were indications of greater leg loss. For the most part, the independent scientific experts on the peer-review panel of this study were concerned that the studies indicated unexpectedly severe effects from seismic noise, which could have conservation implications. 3.2.5

Also, sound exposure in tanks may cause physiological changes in brown shrimp that increase mortality and reduce reproduction. A modest increase in continuous background noise caused an increase in metabolic rate leading to significant reduction in growth and reproduction over three months (Lagardère 1982; Régnault and Lagardère 1983). Seismic noise is predominantly low frequency, and some of the surveys mentioned above were relatively low in intensity. All this evidence should be enough to warrant the inclusion of at least decapods and cephalopods in this DSEIS as potentially affected species. 3.2.5

Mitigations

Turning off LFA sonar only if marine mammals are detected in the area around the deploying vessel is not an adequate mitigation measure since the impacts of underwater sound travel vast distances and many undetected animals can be impacted. 4.7.7

It is difficult to see why active acoustics would be unable to detect fish schools reliably, especially since this is a standard measure of fish abundance used by fishers. 5.2.16

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- Pre-operational small boat or aerial surveys are given very short shrift. The arguments against them do not seem compelling. What about large boat surveys? Why is this not considered as an option? 5.4.2
5.4.3
5.4.5
- Estimating SPLs during or prior to transmissions is usually too inaccurate. Why can't they be actually measured? Time and time again estimations have not been accurate in that levels are found higher than predicted. They can also be lower than predicted, though there is less danger in mistakes in this direction. 5.1.2
- The use of passive acoustic monitoring is a very good idea, but using the SURTASS array, which is presumably just tuned to low frequencies, is a big mistake. Most marine mammal species could thus not be detected. 5.2.13
- Using HF/M3 sonar is also ill-advised, as some marine mammals may be affected by this noise as well. Again, audiograms, even for those handful of species for whom we have them, do not tell the whole story. Sound perception can occur through various means, not necessarily just the ear. Also, animals may detect the sound "envelope" without actually hearing the whole sound. We are simply not yet at the stage where we can definitively say which marine animals can detect which sounds, especially in regard to the great whales, whose hearing has never been tested. To illustrate this point, HF/M3 sonar first used a frequency thought to be above gray whale hearing detection. Later, gray whales were shown to respond to it after all. We cannot afford to keep making mistakes like this. Mitigation should not add yet more noise to the original noise-producing activity. Moreover, the effectiveness of HF/M3 to reliably detect marine mammals or turtles without many false positives has not been demonstrated. 5.2.18
5.2.20
- We disagree that Alternative 2 would only slightly decrease the potential for impacts to marine mammals from LFA. Depending on how many and which of these biologically important areas are excluded from LFA transmissions, concentrations of marine animals of many different species could be better protected. It would not offer perfect protection, but could be a significant improvement. 4.7.5
- The calculation of the area erisonified should state which RL is being used. 4.7.15
- Exposing offshore biologically important areas to less than 180 dB does not offer enough protection. This is still a very high level, and there is literally a complete absence of information on what the long-term impacts of such exposures on the behavior and population health of any marine animal might be. 4.7.21
- Experienced observers should be used to conduct visual monitoring for marine mammals. Also, resuming LFA broadcasts after only 15 minutes of no animals being detected is not safe since marine mammals are often underwater for more than 15 minutes. 5.2.7

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The Officer in Command is only alerted to marine mammal vocalizations (detected through passive acoustic monitoring) IF “the sound is *estimated* to be from a marine mammal that *may potentially be affected*” by LFA sonar? This needs more clarification, as this leaves considerable leeway for the Navy to a) incorrectly estimate the species and to b) make the determination that it will not be affected. Based on what? 5.2.15

The actual need for LFAS is not adequately discussed in the DSEIS. Under NEPA the DSEIS is required to explain the underlying need for the sonar and explore and evaluate reasonable alternatives. The Navy must address the need and offer safer alternatives to the public. 1.1.2

Additionally, this document does not discuss many reasonable and accepted mitigation procedures which may be consistent with military training such as those included in a recent notice issued by NMFS concerning a series of Air Force gunnery missions at Eglin Air Force Base in the Gulf of Mexico. 71 Fed. Reg. 3474, 3484-84 (Jan. 23, 2006). We are especially concerned that this impact statement rejects the mitigations that the federal court urged the navy to consider. 2.6.1

Impacts to Humans

The SDEIS also fails to address the fact that Chris Reid was exposed to LFA sonar at about 125 dB during the Hawaii tests in 1998 and was diagnosed by a physician as suffering from acute trauma when she left the water. 5.1.4

It also ignores the fact that a scuba diver was injured by LFAS transmissions over 100 mi away on August 25, 1994.

Setting the 145 dB threshold for diving and recreational sites acknowledges there is a risk to humans. It is unreasonable to conclude that humans are more sensitive than marine mammals to underwater noise. It would make sense to use this level for marine mammals as well. In fact, NATO uses a 145 dB impact level to denote harassment of marine mammals. 4.3.5

We are particularly concerned that for the first time this impact statement states that an LFA sonar system will be used in “shallow littoral ocean regions” since the danger of impacts to humans increases with use in these areas. 1.1.7

The geographic restriction imposed by the 145 dB RL exposure criterion for known commercial and recreational dive sites does nothing to support the conclusion that LFA sonar contributions to oceanic ambient noise are small and incremental. The 145 dB criterion will be used in a tiny fraction of the ocean, since it only applies to known dive sites. 4.6.12

Socioeconomic Impact

We disagree with the contention that LFA would not affect whale watching unless LFA were nearby. What if whale stocks suffer a slow decline or vacate certain areas due to intermittent or persistent, moderate noise levels from LFA? Even one very unpleasant noise event could cause animals to leave the area permanently because of the negative association with the noise event. Again, LFA produces high noise levels over smaller areas but moderate noise levels over huge areas. 4.5.2

We don't understand the logic behind "Many [recreational activities] would not be affected by LFA because...they do not involve the use or creation of underwater sound." So only serious consideration needs to be extended to other noise producers, so that LFA not interfere with *their* noise? Recreational boaters, divers, swimmers, and snorkelers will likely have a different opinion. Many will not be in favor of any degradation of the marine environment through LFA noise, as one of the reasons they enjoy the ocean is because of its marine inhabitants. 4.5.3

Why are costs to only whale watching listed in Sec. 3.3.2? Many of these same costs (trash, ship strikes, pollution from boats) apply to all ships at sea, including military vessels. The fact that there are several reports of ship strikes on whales from whale watching vessels must surely be a function of reporting. How many cargo or military ships studiously monitor the number of whales they've struck? They probably wouldn't even notice. "Trampling coastal areas" or "the effects of petroleum products on the environment when you drive or fly to the [whale watching] site" are unconvincing arguments and a clear double standard. What about tourism in general? . 3.3.1 4.6.23

Why is whale watching's impact on whales being evaluated here? This DSEIS is supposed to address the impact of LFA sonar. This sort of finger-pointing is not helpful, especially since all these impacts are likely cumulative. How can it be concluded that LFA has so far not harmed whale watching when LFA operations to date have been restricted to around Taiwan, an area not known for its whale watching industry? 3.3.2 3.3.3

Inconsistencies

The long wavelengths used by LFA mean that only larger targets can be detected. Small submarines, for instance, would escape detection. How would this deficiency be overcome or why is it not considered a deficiency? 2.1.5

To argue that LFA sonar does not add appreciably to ocean noise is not believable. Flooding areas of 3.9 million sq. km with noise levels of 120 dB clearly and significantly adds to ocean noise levels. This argument attempts to use the logic that each one source of noise pollution is small (as is each power plant emission compared to all power plants' emissions)—logic that is particularly inappropriate in the case of LFA sonar. To illustrate this further, the DSEIS states that "fisheries contribute less than 1% of the U.S. 4.6.13

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economic activity”. So, closing down U.S. fisheries would constitute a “negligible impact” using the same logic as the DSEIS uses regarding marine mammal impacts. We think there would be a substantial outcry if the U.S. fishing industry were eliminated, especially in coastal communities.

Section 2.7, p. 2-15. There are several problems with the characterization of the Oxford process. Firstly, the process was agreed to be confidential at this stage, so that it is highly inappropriate to be referring to it in this public document. Secondly, the planning document is not detailed, as maintained, but is a general overview of potentially useful future research in this area. Thirdly, the Oxford process has not restricted itself to *experimental tests* of, among other things, the effects of LFA sonar on deep-diving marine mammals, but rather takes a broader view of studies that may inform on this topic such as retrospective studies, modeling, necropsies, studies of the natural behavior of wild animals, etc. 2.7.1

The final proposed research topic (long-term cumulative effects on a stock of marine mammals regularly exposed to LFA) is very worthwhile and important. However, how are the studies going to separate out impacts from other noise or environmental threats or oceanographic and ecosystem changes? If the study is inconclusive because other factors could have caused a change in population, then not much will have been gained. 2.7.2

The latest worldwide sperm whale estimates have not been cited (Whitehead 2002). Estimates of worldwide sperm whale numbers over 1 million are invalid. When first introducing the beaked whales, the DSEIS should state that the reason Ziphiidae are not listed under MMPA, ESA, or IUCN, is because they are data deficient. Thus, they may be endangered, but not enough is known to say. 3.2.12
3.2.13

The Gully population of Northern bottlenose whales has been assessed by COSEWIC (the official Canadian independent panel of scientific experts) as endangered. It is not mentioned in the DSEIS that the Gully population is resident year-round. Instead, there is reference to migrations in the DSEIS, which is inaccurate for this discrete, non-migratory population. Winn et al. (1970) is based on one encounter and is not considered well-documented. It has been largely superseded by the research mentioned subsequently and thus should be deleted. 3.2.14

We are not sure why maximum SLs of the individual marine mammal species’ vocalizations are constantly listed in Section 3. This implies that somehow natural sounds can be equated with human-made sounds. On pp. ES-15 and 4-63, the same is done, listing human-made and then natural sounds under a discussion of potential cumulative impacts of four LFA systems in operation simultaneously. To mention “whale vocalizations” as some of these cumulative impacts in this context is highly misleading and inappropriate. Marine mammals have, to some degree, presumably adapted over evolutionary time to natural noise sources, whereas human-made noise is a comparatively new addition to their environment. It is scientifically invalid to compare the two. To compare human-made noise sources with the marine mammals’ own 4.3.4
4.6.16

vocalizations is particularly deceptive. Surely marine mammals distinguish the two and modify their behavior accordingly (by avoiding accidental ensonification of each other to dangerous levels unless they use their sounds as a weapon occasionally, by spacing themselves when vocalizing loudly, etc.). 4.6.16

Our general impression of Section 3 is that it is often inaccurate and not well-referenced (not the most appropriate references are used). Ex.: p. 3.2-73 "Audiograms for Risso's dolphins indicate their hearing SLs equal to or less than approximately 125 dB in frequencies ranging from 1.6-110 kHz." We assume RLs are meant here? 3.2.15

Canada is not mentioned in the text (p. 3.3-9) as allowing aboriginal whaling, though it does. It is stated in tables, however. 3.3.5

We are unclear why bycatch is listed under socioeconomic impacts of LFA. LFA can certainly potentially affect the health of fish populations, and thus fisheries, but how does LFA impact bycatch specifically? We can easily believe that masking from LFA can prevent or hinder marine mammals from detecting fishing gear and thus contribute to bycatch, but this argument is not made in the DSEIS and the rationale should be made more explicit. Otherwise, the bycatch section can be misread as a ploy to downplay the impacts LFA could cause, by pointing the finger at bycatch instead. Again, this logic would entirely miss the point of cumulative or synergistic impacts. 3.3.6

Non-auditory injury can conceivably occur below 180 dB RL, in contrast to what is implied on p. 4-2. Moreover, not only resonance but effects such as static diffusion fall under this category. 4.0.3

Does injury have to be permanent to fall under Level A harassment? If a deep gash is caused in a marine mammal from some ship strike, for instance, which limits and impedes their daily function, yet this heals over time, is this considered an injury? If so, why isn't TTS considered injury?

On the one hand, the DSEIS urges caution in extrapolating between species, yet summarily concludes that there will be negligible impact on fish from LFA exposure. Again, behavioral changes or stress are all but ignored. 4.1.11

The Gausland (2003) document should be ignored. Its statistics are entirely invalid. It uses the same data as Engås et al. (1996) [not 1995 as is stated in the citation and in the references] yet splits them up for no valid reason, and then notes they are no longer statistically significant. Anytime you split the data up, you will lose statistical power, so it is no surprise that this sort of manipulation will result in insignificant results. This in no way invalidates the Engås et al. (1996) study, and moreover, is an incorrect use of the data. To say that the variation Engås et al. (1996) noted is within normal fishing season variation is neither here nor there. The fact is that the variation occurred under a systematic study and was related to when seismic exposure was present compared with when not. The results were dramatic, obvious, and large scale. That there is variation in 4.1.9

catch rates over several fishing seasons is well-known (however, the Engås et al (1996) study occurred over one fishing season, not over many). What happens when there are low catch rates due to oceanographic factors and then seismic exposure reduces them even further? These are the sorts of synergistic or cumulative impacts that can cause tremendous damage to fish populations. This argument offers no valid rationale for criticizing the Engås et al. (1996) study. Quite the contrary, it provides more reason for caution. **4.1.9**

The DSEIS does not make clear that noise does not need to be the same frequency as the signal of interest to mask it. At low and very high frequencies, a noise can mask a much wider range of frequencies (Richardson et al. 1995). This would apply to LFA, as a low frequency signal. **4.3.38**

This DSEIS repeatedly urges caution when extrapolating between fish species or between fish and sharks, for instance, but then goes on to do just that. It also argues that the LFA signal is too different from LF sounds made by struggling fish to be attractive to sharks, yet has no problem with equating natural sounds, even marine mammal vocalizations, to man-made noise. For instance, in its discussion of the potential cumulative effects of several LFA systems operating simultaneously, “whale vocalizations” are considered an additive impact together with LFA noise! The DSEIS makes the assumption that it is the pulsed nature of the playback sounds that caused sharks to withdraw. Since LFA is not pulsed, it argues, sharks would not withdraw from LFA. Yet these pulsed sounds were usually attractive and only caused withdrawal at higher, but still very modest, received levels of 111 dB. Thus, one could just as easily conclude that it may be the higher sound level, not the pulsed nature that causes shark withdrawal. **4.1.12**

Conjectures about the potential disruption of shark migration are made that are wholly unsubstantiated. Basically, we have no idea what the impact of LFA would be on shark migration, and this fact must be honestly acknowledged. **4.1.13**

There are no confidence limits on any of the numbers of individuals of each species in the area nor on the number of animals in the stock. These are generally highly **4.4.4**

inaccurate estimates, so using only one number to denote them is very misleading and gives no sense of the potential range of percentage of animals affected. The **4.4.6**

identification of stocks is also very inexact and prone to many errors unless genetic analyses have conclusively ascertained whether populations are interbreeding or not. What does “% affected < 180 dB” mean? What is the minimum RL considered to affect an animal behaviorally? This information is vital to have to be able to evaluate these **4.4.7**

numbers adequately. Based on our best knowledge from past research, an appropriate minimum RL for behavioral effects would be 120 dB (though behavioral effects have occurred considerably below these RLs). As the 120 dB isopleth extends out to 1,111 km, the percentage of animals affected would be much greater than given here. Again, it is very telling that nowhere in this DSEIS is the range of area affected to RLs of 120 dB ever given. **4.3.34**

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When the document cites the Au and Green (2000) study under “cumulative impacts”, there is no mention of behavioral impacts from small boat noise. Yet under the mitigation section, when surveys by small boats are considered, it cites the same study and mentions, for the first time, the behavioral impacts on whales from small boats! Suddenly, when it serves their interest, the Navy is highly concerned about the impacts of small boats and the additional noise animals would be subjected to! According to this reasoning, it is then logical to conclude that we should be very concerned about impacts from LFA sonar which blankets 3.9 million sq km of ocean with noise levels known to cause whale avoidance (120 dB). 4.6.17

Issues not addressed

Is the 180 dB isopleth distance given anywhere in this DSEIS? We didn’t see it anywhere and it seems like it would be very important for the reader to know how far from the source 180 dB can be heard. 4.3.15

It is profoundly disturbing that the Navy has not yet undertaken and published an analysis of stranding data as related to naval maneuvers around the world. Why this hasn’t been done yet is hard to fathom and would certainly have been an important contribution to this DSEIS. 4.4.9

Are the recent studies on fish undertaken by the Navy peer-reviewed? 4.1.1

We strongly question the assumption that invertebrates are not considered because they have no delicate organs or tissues whose acoustic impedance is significantly different from water and because there is no evidence of auditory capability in the frequency range used by LFA. Given the recent research and observations concerning squid and snow crabs, we find such statements unsupportable. Not much is known about hearing in most invertebrates but our knowledge is evolving rapidly. For instance, not too long ago squid were thought to be deaf. Fish and some invertebrates have a lateral line (or equivalent) system which detects water movement and could also conceivably detect sound or particle motion. Both squid (McCauley et al. 2000; MacKenzie 2004; Guerra et al. 2004) and snow crabs (DFO 2004) appear to show reactions to seismic noise which is predominantly low in frequency. While it is unknown which characteristics of the noise they are reacting to, it seems irresponsibly premature to conclude that these characteristics are ones not shared by LFA sonar. 3.2.5

The effects of reverberation are not addressed in this DSEIS, and how reverberation can increase the effective duty cycle in terms of masking and other impacts. 4.1.8

While masking is certainly a very widespread potential impact of human-made noise, it is not the only impact. Stress, increased aggression, and effects on the ecosystem are some other widespread potential impacts. 4.3.39

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The developmental effects of growing up in a noisy environment are not addressed in this DSEIS. Experiments with young rats show brain development suffers under even moderate noise conditions (Chang and Merzenich 2003). Chronic noise increases the risk of cardiovascular disease in humans (Willich et al. 2005). Yet the focus is almost exclusively on PTS and TTS. 4.3.54

We understood the law as requiring that not only should the effect on the stock of any marine mammal from significant change in a biologically important behavior be minimal, but that natural behavior patterns cannot be disrupted to a point where patterns are abandoned or significantly altered in *individual* animals. This is not reflected in ES-18 under Alternative 1. That auditory masking from LFA is not continuous may be true, but reverberations from the ocean floor can make signals (such as pings given every 24 s) all but continuous, as shown by analysis of the Bahamas stranding (Hildebrand and Balcomb 2004). The same has been found to be true for such noise events as seismic surveys. Masking is not just restricted to the duration of the signal; rather, reverberation effects draw out the duration of the masking considerably. If the LFA signal can be over 1.5 mins. long in duration and the time between transmissions could be as little as 6 mins., then, including reverberations, the noise could be nearly continuous. 1.2.2
4.3.39

What exactly is the full power of the HF/M3 sonar if it is ramped up *starting* at 180 dB? Why is this SL not given? Why is there no indication of the error rates in the detection of various species by HF/M3? How many animals of which species escape detection? How many false positives? Why is the HF/M3 ramped up, but not LFA? What are the mitigation measures for HF/M3 exposure? Does the Navy see any conflict between adding yet more noise in the name of mitigating for noise? 5.2.20

Why, in the risk analysis/sensitivity flowchart is there no mention of the “No Action” alternative. What if the risks are too great? 4.4.8

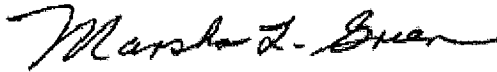
LFA broadcasts have an enormous and unprecedented potential area of impact. The long-term population consequences of the lower intensity noise levels heard over these huge areas has not been examined in any marine species. This all adds up to taking a gamble of vast proportions with our marine environment. Therefore, the “No Action” alternative should be pursued. Only if the No Action alternative is impossible should Alternative 4 be chosen. This DSEIS has contributed no new information which would warrant modification of the conclusion that LFA is indeed a threat to the marine environment. 4.7.6

The serious issue of ignoring the available evidence about numerous impacts of LFA on whales even at the low test levels used in the SRP needs to be addressed. The fact that the real, higher levels of LFA were never tested needs to be addressed. It is obvious that testing at actual deployment levels raises ethical issues. Indeed the potential severe consequences of testing LFA at actual deployment levels may be the reason why it hasn't been tested at those levels. If it is too dangerous to test at actual deployment levels, then it is obviously too dangerous to use at those levels. 2.7.3

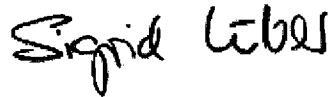
International Ocean Noise Coalition

We would like this letter to be part of the public record.

Sincerely,



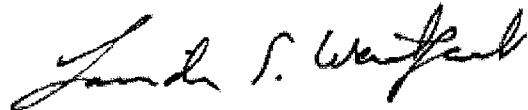
Marsha L. Green, Ph.D.
North American Representative



Sigrid Lüber
European Representative



Elsa Cabrera
Latin American Representative



Linda Weilgart, Ph.D.
Scientific Advisor
Assistant Professor of Biology &
Research Associate
Dalhousie University

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From: Mark Palmer
To: eisteam@mindspring.com
Subject: Comments on Draft SEIS for LFA Sonar
Date: Feb 10, 2006 3:36 AM
EARTH ISLAND INSTITUTE
INTERNATIONAL MARINE MAMMAL PROJECT

February 10, 2006

Mr. Joe S. Johnson
SURTASS LFA Sonar EIS Program Manager
U.S. Department of the Navy
4100 Fairfax Drive
Suite 730
Arlington, VA 22203

ADD TO THE RECORD

Re: Comments re:
Draft Supplemental Environmental Impact Statement for the Navy's
SURTASS Low Frequency Active Sonar
(70 Federal Register 69526, November 16, 2005)

VIA E-MAIL & MAIL: <eisteam@mindspring.com>

Dear Mr. Johnson:

The International Marine Mammal Project of Earth Island Institute provides the following comments on the draft Supplemental EIS for the deployment of SURTASS Low Frequency Active (LFA) Sonar:

Please add our comments to the Record of the SEIS.

Earth Island Institute Opposes Deployment of LFA Sonar:

Earth Island Institute is opposed to the deployment and continued testing of the Navy's Surveillance Towed Array Sensor System (SURTASS) Low Frequency Active (LFA) Sonar.

The SEIS proposes to increase the number of naval vessels equipped with LFA Sonar from 2 to 4 vessels. These vessels will operate all around the world, in "the Pacific, Atlantic, and Indian Oceans, and the Mediterranean Sea." With this SEIS, the Navy is also admitting, for the first time, that a "compact" LFA Sonar system will be used in "shallow littoral ocean regions," essentially to support seaward invasions of other countries.

1.1.6

1.1.7

LFA Sonar Poses a Global Threat to Whales and Dolphins:

At peak power, the LFA Sonar system sends out pulses of sound underwater the equivalent of standing five feet away from the Saturn rocket on liftoff. A number of incidents of whales becoming stranded and dying have occurred around the world linked with the use of very loud military sonars. To date, none of the many incidents involve LFA Sonar, although (1) LFA Sonar has not been used in close proximity to whale populations and (2) the Navy continues to deny that any military sonars impact marine life. Earth Island believes LFA Sonar may have more lethal impact over longer distances due to

3.1.1

4.4.13

B-50

the nature of low frequency sound transmission underwater. The Navy claim that the problem of whale strandings is one of "public perception" is gratuitous and ignores the scientific record.

4.4.13

The SEIS's Proposed Mitigation for Whales and Dolphins is Unacceptably Inadequate:

As mitigation, the Navy promises only to turn off LFA Sonar if they spot or detect whales in a very small area around the ships. Since the impacts of underwater sound, both to do physical harm to whales and also to disrupt and harass whales' and dolphins' own communication, feeding, and orientation, cover enormous distances, these mitigation measures are too paltry to protect the health of whales and dolphins and are unacceptable.

4.7.7

The SEIS Rejects Nearly All of the Measures Urged by the District Court to Protect Whales, Fish, and Other Marine Life:

The federal court that struck down the Navy's earlier EIS wrote: "...endangered species, including whales, listed salmon and sea turtles, will be in LFA Sonar's path. There is little margin for error without threatening their survival." The court therefore urged the Navy to consider protective measures such as wide coastal exclusion zones, more effective surveys for whales before sonar exercises, shut-down procedures for fish, and the use of training areas that present less risk to marine life. The Navy's SEIS rejects each of these ideas.

4.7.23

The SEIS is Inadequate in Discussing Impacts on Fish and Fishermen:

We know that sound can do great harm to fish stocks -- Earth Island suspects the adverse impacts of military sonars on fish may be greater than the impacts on whales and dolphins. But the Navy's SEIS dismisses such concerns and provides no mitigation. The Navy claims that mitigating the LFA Sonar system for fish is "impractical."

4.1.4

Given the importance of fish resources for the world's hungry and the wide impacts of LFA Sonar on such resources, we find the overall SEIS inadequate in addressing this important issue.

The SEIS Only Deals With Peacetime Use:

During periods of "armed conflict or direct combat support operations, (or) during periods of heightened threat conditions," the Navy will operate LFA Sonar without any limitations or mitigation whatsoever.

1.1.4

During the Gulf War, Iraq's Dictator Saddam Hussein fired the Kuwait oil fields and deliberately dumped millions of gallons of oil into the Persian Gulf. This act prompted strong protests from around the globe for the conduct of "ecological warfare". Is the U.S. Navy now planning to emulate this dictator's actions by conducting ecological warfare against whales and other marine life, using the excuse that the ends justify the means? Will use of LFA Sonar, even during peacetime "tests", be considered a provocative act by other nations? Is the U.S. Navy prepared to knowingly allow wholesale destruction of the marine environment?

Thank you for the opportunity to present these comments.

Sincerely,

David Phillips
Director

Mark J. Palmer
Associate Director

"I have never made but one prayer to God, a very short one: 'O Lord,
make my enemies ridiculous.' And God granted it."
--Voltaire

Mark J. Palmer
Assistant Director
International Marine Mammal Project
Director
Wildlife Alive
Earth Island Institute

www.earthisland.org

B-51

From: Meagan Honnold
To: 'EIS Team'
Subject: Sierra Club comments on LFA Sonar
Date: Feb 10, 2006 3:10 PM
Attachments: [Comments from Sierra Club on LFA Sonar.doc](#)

Attached you will find the Sierra Club comment letter on the Supplemental Environmental Impact Statement for the Surveillance Towed Array Sensor System Low Frequency Active Sonar.

Thank you.

Meagan Honnold

Administrative Coordinator

NC Sierra Club



February 10, 2006

SURTASS LFA Sonar EIS Program Manager
 4100 Fairfax Drive, Ste. 730
 Arlington, VA 22203
 Email: eisteam@mindspring.com

Re: Comments on the Supplemental Environmental Impact Statement for the Surveillance Towed Array Sensor System Low Frequency Active Sonar

To Whom It May Concern:

The North Carolina Chapter of the Sierra Club, representing 19,000 members, and the Marine Wildlife and Habitat Committee of the National Sierra Club (hereinafter, referred together as "Sierra Club") has serious concerns about the possible effects of the Surveillance Towed Array Sensor System (SURTASS) Low Frequency Active (LFA) sonar which the Navy is proposing to operate, and presents the following comments.

In the (EIS), the Navy proposes to increase the number of naval vessels with LFA sonar from two to four. These vessels will operate in oceans world-wide, broadcasting low frequency sonar which can travel for many miles. In addition, a compact LFA sonar system will be used in shallow littoral ocean regions.

1.1.6
 1.1.7

1. The Sierra Club is concerned that the EIS vastly underestimates the effects of LFA sonar on marine life, such as fish and endangered and threatened sea turtles. Not all organisms that are affected are likely to strand or wash up on shore. Many may sink and never be seen. Sonar-related injuries often occur far from shore, before strandings occur, and as a result, many more organisms may be dying than are realized.

4.0.5

Below the ocean surface, lies a stable layer of water, the isothermal sound channel, capable of conveying sound over thousands of miles with little attenuation. When the Navy's LFA sonar is fully operational, over half of the world's ocean could be inundated with sound from LFA sonar.

4.6.15

Levels of noise in the ocean are increasing. The EIS must factor in baseline levels of anthropogenically caused ocean noise and how it affects communication, feeding and navigation of marine life in the analysis of the cumulative effects of LFA sonar. In addition, major shipping lanes, oil and gas exploration, habitat degradation, contaminants and debris must all be considered in combination with the employment of LFA sonar.

4.6.6
 4.6.25

Low levels of received sound have the potential to disrupt a large portion of a population, if the sound reduces hearing sensitivity enough to mask normal stimuli. The EIS should discuss, for studies used to predict the behavior of marine life exposed to sonar, the ability (or statistical power) of each study to detect subtle changes in behavior, such as reduced prey capture per unit effort, or reduced time spent feeding – critical life functions. The amount of uncertainty in the EIS analyses should be stated explicitly.

4.3.40
 1.4.2

The federal court that struck down the Navy's earlier EIS wrote: "endangered species, including whales, listed salmon and sea turtles, will be in LFA sonar's path. There is little margin for error without threatening their survival." The court recommended protective measures, such as wide coastal exclusion

4.7.23

zones, more effective surveys for whales before sonar exercises, shut-down procedures for fish, and the use of training areas that present less risk to marine life. Even if the Navy was willing to enact all of these measures, there is still too much risk of harm to marine life in large areas of the world's oceans. With such wide-ranging operations, measuring the effects of the LFA sonar will be extremely difficult.

The Navy's research on fish impacts involved just two species, and freshwater ones at that - rainbow trout and channel catfish. Extrapolating the effects of LFA sonar from this research, which was conducted in the artificial environment of tanks, to the myriad of fish in various life forms that will be exposed to sonar, is completely inappropriate. Over 800 species of fishes from 109 families worldwide are known to be vocal, and use sound to overcome the problem of living in a dark or visually opaque medium (Rountree, 2002). Many fish species could be disturbed as a result of LFA sonar use. Commercial, recreational and subsistence fishing could all be affected as a result.

2. A number of whale strandings and deaths around the world have been linked with the use of military sonar (Theriault, 2005). Scientists believe LFA sonar may have more lethal impacts than other types of sonar due to the ability of low frequency sound to transmit greater distances underwater. The Sierra Club is extremely concerned about the effects of LFA sonar on whales, including the critically imperiled North Atlantic right whale (*Eubalaena glacialis*). Even if sonar use is restricted in coastal waters, right whales will still be affected by LFA sonar employed in the North Atlantic, as they range offshore on a regular, if not frequent, basis. Many records exist of right whale sightings between 20 and 200 miles off North Carolina (CETAP, 1982; Scientific Alert Network, Smithsonian Institution; NOAA Northeast Fisheries Science Center, 2006).

With only 300-350 individuals left, the North Atlantic Right whale population is on the brink of extinction. Any additional pressure on the species, such as from LFA sonar, could significantly affect their survival. The Sierra Club requests that the Navy consider the following:

- “There have been few studies of the effects of anthropogenic noise on right whales specifically. In general, the impact of noise from shipping or industrial activities on the communication, behavior and distribution of right whales remains unknown (NMFS, 2005).”
- In a study published in Nature, researchers from the Woods Hole Oceanographic Institution showed that preventing the deaths of just two female right whales a year could allow the North Atlantic right whale population to increase to more than a replacement level, significantly improving the species' odds of survival. (Fujiwara and Caswell, 2001).

Behavioral changes of marine mammals caused by sonar must be seriously addressed as they may have substantial consequences that cannot be easily observed. “The status of any population is the consequence of the accumulation of many effects; resulting in marginal changes in survival and reproduction over time...the end result is often so far removed in time from the proximate causal events that they cannot simply be traced post hoc” (Ocean Studies Board, 2005).

Short-term disruptions to migration, whether a pause or a change in course, can cause a female to miss an opportunity to breed. This is especially important for the endangered whales, which reproduce very slowly. Interruptions in feeding can reduce the fitness of entire populations, if they involve females that are already in poor condition and have long intervals between calvings. Disturbance from sonar could also separate females from their infants, leaving the offspring susceptible to predation. The effects of LFA sonar on infant whales may be unknown, but they may be more sensitive to noise than adults; this uncertainty should be factored into the EIS analysis. It is not reasonable to assume that behavioral shifts are of no long-term consequence, when there may be loss in time, energy, and opportunity. Repeated exposure to sonar could also lead to chronic, long-term stress, which can cause suppressed immune system function, cardiovascular disease and other health problems.

We hope the Navy and NMFS will note the following from the Ocean Studies Board (2005), under the National Academy of Sciences:

- 180 dB re 1 uPa is “considered by regulators to be a threshold of risk for injury.”

- The timing and spatial extent of mass strandings associated with naval maneuvers “suggests a possible risk of stranding for whales exposed to noise as low as 160 dB re 1 uPa.” **4.4.10**

Injury to marine mammals may occur below the decibel levels at which the EIS assumes injury. **4.3.17**

Although there are significant knowledge gaps, the circumstantial evidence provides enough impetus that the risks to marine mammals from high-power acoustic sources such as sonar must be assessed and managed (Therriault, 2005). Even at distances between 100 and 200 miles from the LFA sonar, where the 240 dB pulses have diminished to 160 dB, severe tissue damage still occurs in sea mammals. **4.3.49**

The “mitigation” measures proposed by the Navy involve monitoring for whales and turning off the LFA sonar if whales are detected in a small area around the vessel. This is unacceptable to protect the health of whales and dolphins.

3. The EIS only deals with peacetime training sessions. During periods of “armed conflict or direct combat support operations, (or) during periods of heightened threat conditions,” the Navy will operate LFA sonar without any limitations or mitigation whatsoever. **1.1.5**

Based on the above, the Sierra Club opposes the SURTASS LFA operations proposed by the Navy. The threats to marine life are too great to justify the risk. Please include our comments in the record. Thank you.

Sincerely,

Mary Frazer
Coastal Committee
North Carolina Chapter, Sierra Club

John Swingle
Chair
Marine Wildlife and Habitat Committee
Sierra Club National

From: Cathy Liss
To: eisteam@mindspring.com
Subject: Draft SEIS, SURTASS LFA
Date: Feb 10, 2006 3:54 PM
Attachments: [AWI LFA SEIS Comments 2-10-06.pdf](#)

Attached are comments from the Animal Welfare Institute.

Cathy Liss, President
Animal Welfare Institute



Animal Welfare Institute

PO Box 3650, Washington, DC 20027
(703) 836-4300 • www.awionline.org

February 10, 2006

Mr. J. S. Johnson
SURTASS LFA Sonar EIS Program Manager
U.S. Department of the Navy
4100 Fairfax Drive, Suite 730
Arlington, VA 22203

By Email: eisteam@mindspring.com

Re: Draft Supplemental Environmental Impact Statement for the Surveillance Towed Array Sensor System Low Frequency Active Sonar (70 Federal Register 69526)

Dear Mr. Johnson:

The Animal Welfare Institute respectfully submits the following comments on the above-referenced proposed Draft Supplemental Environmental Impact Statement (DSEIS) for the Surveillance Towed Array Sensor System (SURTASS) Low Frequency Active (LFA) Sonar. Please enter this comment letter into the record.

The U.S. Navy proposes the use of up to four SURTASS LFA sonar systems in global oceanic basins which include the Pacific, Atlantic, and Indian oceans, and the Mediterranean Sea. Currently the Navy operates two SURTASS LFA sonar systems in a restricted area of the western Pacific Ocean established through a District Court Preliminary Injunction (November 2002). The area of operation has been expanded twice through Mediation Conference, most recently in July 2005.

1.1.6

The DSEIS has been prepared to supplement the Final Overseas Environmental Impact Statement/Environmental Impact Statement (FEIS) on SURTASS LFA completed in 2001. The purpose of the DSEIS is:

- to address deficiencies in the FEIS that were identified in a U.S. District Court Order in August 2003 and relating to compliance with the Marine Mammal Protection Act, the Endangered Species Act and National Environmental Policy Act;
- to take account of revisions to the MMPA pertaining to military activities and which came into law in November 2003 under the National Defense Authorization Act; and

- to provide information to support an application for a new five-year rule to allow for incidental takes under the MMPA, including the two additional SURTASS LFA systems starting in 2007.

The Animal Welfare Institute believes that the operation of the SURTASS LFA as proposed will radically change the acoustic makeup of global ocean basins forever. In view of the magnitude of the proposed action, the DSEIS is a document that is wholly inadequate in addressing the impacts that SURTASS LFA will inflict on marine life and consequentially on cultures and economies across the planet. In the DSEIS the Navy acknowledges the dearth of scientific data on the subject of ocean noise and its effects on marine creatures and dismisses more recent data which suggest that impacts could be far greater and affect more species. Throughout the document, the DSEIS claims that impacts will be negligible because there is no contradictory data. The absence of evidence does not equate to evidence of absence. In the absence of data, precaution should prevail. The DSEIS offers no new information to suggest that SURTASS LFA will not harm marine life. The No Action Alternative is the only logical decision.

4 . 7 . 4

1.0 Purpose and Need

The DSEIS states that the U.S. has a need for “improved capability to detect quieter and harder-to-find foreign submarines at long range.” (page 1-2) This is because it states that nowadays the “*global submarine threat is becoming increasingly more challenging*” (page 1-5) as larger numbers of nations obtain an increasing number of the quieter, diesel submarines. The DSEIS also states that it is anticipated that future naval conflicts will take place in the littoral zone, which is notoriously noisy and therefore is a difficult place to detect submarines using passive acoustic technology. The Navy states that LFA is the only system capable of providing long range detection during most weather conditions, day and night and “*the most effective and best available means to monitor submarines in the littoral areas.*” (page 1-3)

This desire by the U.S. to remain one step ahead of potential adversaries in being able to detect them approaching underwater is a step on a circuitous route to global underwater pandemonium. The U.K. is already fitting ships with sonar 2087, its version of LFA. France, Germany, Canada, The Netherlands, and Norway also have systems in development.¹ It is only a matter of time before many other industrialized nations follow suit and the oceans become a cacophony of LFA systems using loud noise to try and find each other in an increasingly loud environment. The U.S. should rethink this “need” and come up with a better way to find these quiet submarines. The lead obtained by the use of SURTASS LFA can only be transitory and certainly not worth

1 . 1 . 8

¹ Natural Resources Defense Council. 2005. *Sounding the Depths II: The Rising Toll of Sonar, Shipping and Industrial Ocean Noise on Marine Life*. New York, NY. Pages 22-25.

the devastation to the worlds' marine creatures, and the livelihoods of so many people who depend on the sea for survival.

2.0 Effects

Throughout the document, the Navy states that the SURTASS LFA ships move in two dimensions whereas marine animals move in three dimensions. It uses this logic to state that the amount of time that an animal will be in the sonar transit beam is very low. A ship does move in two dimensions, and so if ship strikes were the only concern then this rationale would work, however, sound propagates in three dimensions so the logic is flawed.

4.0.6

Similarly, the DSEIS minimizes impacts by emphasizing the small number of SURTASS LFA systems to be employed and the narrow bandwidth of the active sonar signal. It is the intensity and pervasiveness of the SURTASS LFA sonar systems that is important in the discussion of impacts. The fact that there is more than one system merely compounds the problem. To declare that the low number and narrow bandwidth are mitigation measures is ludicrous.

4.0.7

Invertebrates

The DSEIS states that animals must be able to hear low frequency sound and/or some organ or tissue must be capable of changing sound energy into mechanical effects in order for them to be affected by sound. It then goes on to state that to be impacted by a noise, an organ or tissue's acoustic impedance must be different from water. In this way the DSEIS discounts most invertebrates from further analysis. This is premature as there have been studies which indicate impacts to invertebrates from low frequency noise.² The DSEIS should address these studies.

3.2.5

² Department of Fisheries and Oceans (DFO). 2004. *Potential impacts of seismic energy on snow crab*. DFO Can. Sci. Advis. Sec. Habitat Status Report 2004/003;

Guerra, A., et al. 2004. *Calamares gigantes varados: victimas de exploraciones acústicas*. Investigacion y Ciencia (Spanish edition of Scientific American) July 2004. Pages 35-37;

MacKenzie, D. 2004. *Seismic surveys may kill giant squid*. New Scientist.com news service, 22 Sept.;

McCauley, R.D., et al. 2000. *Marine seismic surveys: analysis and propagation of air-gun signals; and effects of air-gun exposure on humpback whales, sea turtles, fishes and squid*. CMST 163, Report R99-15, prepared for the Australian Petroleum Production Exploration Association from the Centre for Marine Science and Technology, Curtin University, Perth, Western Australia.

Seabirds

The DSEIS excludes seabirds from the acoustic impacts analysis despite stating that *[T]here are few data on hearing in seabirds and even less on underwater hearing* (page 3.2-3) and that *“it is likely that many diving birds can hear underwater LF sound.”* (page 3.2-3) The reasons given for this swift exclusion are: 3.2.3

- there is no evidence that seabirds use sound underwater;
- the seabirds that can occur in areas where SURTASS LFA can operate are generally shallow divers;
- seabirds spend a very small fraction of their time submerged; and
- they can rapidly disperse to other areas if disturbed.

Absence of evidence does not equate to evidence of absence and even if there was evidence suggesting that seabirds do not use sound underwater, this doesn't mean that they will not be impacted by noise. In addition, even if some seabirds do spend a very small fraction of their time submerged, while it might lessen the likelihood of severe acoustic impact, it doesn't mean that impacts won't happen and certainly is not true for deep diving birds. 3.2.2

Seabirds forced to leave a feeding area if disturbed by noise could constitute an acoustic impact under the MMPA.

Sea Snakes

One of the reasons given in the DSEIS for discounting sea snakes from a noise impacts analysis is that “there is no information on the hearing sensitivity in these species.” In the absence of data, again precaution must prevail. 3.4.2

Fish

The DSEIS states that the SURTASS LFA sonar will ensonify fish with RL noise levels of over 180 dB at frequencies of 100 to 500 hertz (the range at which most fish are able to detect sound and for some, their optimum hearing range) within 1 km of the source.

The DSEIS acknowledges that because of the intensity and frequency range of the SURTASS LFA, there is the potential to impact fish. Available literature supports this theory and suggests that low frequency noise can have significant impact on fish, both in terms of hearing loss and 4.1.2

tissue and organ damage.³ Indeed, the DSEIS cites a Norwegian study conducted to assess the impact of 1.5-6.5 Hz sonar on herring, Atlantic cod, saithe, and spotted wolffish. Mortalities of 20-30% were reported. 4.1.5

Despite the theoretical inference supported by practical evidence, the Navy chose to conduct a few controlled studies using LFA in a freshwater lake on a few species and then to extrapolate these results to wild fish populations and to reach the conclusion that SURTASS LFA would not impact commercial or recreational fishing operations. 4.1.4

The DSEIS does not state whether the fish exposure studies were published or peer reviewed and does not discuss anticipated results during different seasons, at different water temperatures and at different salinities. The results of these studies included hearing loss for 24 hours after exposure to LFA for channel catfish. The DSEIS dismissed this result as insignificant, yet an animal's or a group of animals' inability to hear for more than a day could have severe survival consequences because of a compromised ability to avoid predators, communicate, track and catch food, and to avoid dangerous environments such as areas of high intensity noise. 4.1.1
4.1.6

In concluding that fish populations will not be significantly impacted by the use of SURTASS LFA, the DSEIS states that only an inconsequential portion of any fish stock would be present within the 180 dB sound field at any given time and that this is a very conservative estimate. The Norwegian study alone reports 20-30% mortality at sonar source levels of 189 dB. This is not conservative or insignificant. 4.1.5

The DSEIS also emphasizes the relative insignificance of the impacts of LFA sonar on fish when comparison is made with the numbers of fish taken by commercial and recreational fisheries. The depletion of the world's fish populations is a serious issue.⁴ For the Navy to argue that the impact of LFA will only nominally add to the depletion of the world's fish is irresponsible. 4.1.19

³ Dalen, J. and Knutsen, G. M. 1987. *Scaring effects on fish and harmful effects on eggs, larvae and fry by offshore seismic explorations*. Pages 93-102. In: Merklinger, H. M. (Ed.). *Progress in Underwater Acoustics*. New York: Plenum Press;

Engås A., et al. 1996. *Effects of seismic shooting on local abundance and catch rates of cod (Gadus morhua) and haddock (Melanogrammus aeglefinus)*. Can. J. Fish. Aquat. Sci. 53: Page 2238-2249;

Løkkeborg, S. 1991. *Effects of a geophysical survey on catching success in longline fishing*. ICES CM B:40. Page 9;

Løkkeborg, S. and Soldal, A.V. 1993. *The influence of seismic explorations on cod (Gadus morhua) behaviour and catch rates*. ICES mar. Sci. Symp. 196. Pages 62-67;

Popper, A. N. 2003. *The effects of anthropogenic sounds on fishes*. Fisheries 28 (10). Pages 24-31.

⁴ Myers, R. A. and Worm, B. 2003. *Rapid worldwide depletion of predatory fish communities*. Nature.423. Pages 280-283.

Food and Agriculture Organization of the United Nations. 2004. *The State of the World's Fisheries*. Available at http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/007/y5600e/y5600e00.htm.

Sharks

The DSEIS acknowledges the lack of published, peer reviewed reports on the impacts of low frequency sound on sharks and opts to take the discussion on fish impacts and apply it to sharks. It then states that extrapolating from bony fish to sharks is difficult and must be considered provisional since the ears of fish and sharks are so different. The DSEIS does relate the results of some studies on the reactions of certain sharks to impulse noise whereby some sharks were attracted to the source. In other studies sharks noticeably withdrew from pulsed sounds. The DSEIS then uses these results to state that since LFA sonar is not a pulsed sound source, it won't impact sharks. This is nonsensical.

4.1.12

Again, a lack of data is not a satisfactory reason to deduce no impacts. In the absence of data, precaution should prevail.

Sea Turtles

The DSEIS states that sea turtles can hear and likely hear sound in the low frequency range but that there is a lack of data on the effects of noise to sea turtles species. Despite the acknowledged lack of data, the DSEIS concludes that impacts from LFA sonar on sea turtles will be negligible. It continues by claiming that since turtles tend to be located in temperate zones where sound propagation is characterized by downward refraction (higher transmission loss, shorter range) and not in colder waters where ducting (lower transmission loss, longer range) occurs, the impacts will be even less severe. This is inaccurate. Ducting can exist in temperate regions and can be found well within sea turtle diving ranges.

4.2.3

Again, a lack of data is not a satisfactory reason to negate impacts. In the absence of data, precaution should prevail.

Marine Mammals

The operation of the SURTASS LFA will alter the acoustic makeup of ocean basins the world over forever. In its discussion of acoustic impacts the DSEIS is flawed because it:

- centers its entire analysis on a questionable premise – a sound pressure level threshold of 180dB RL for marine animal impact; 4.0.2
- chooses to base its entire evaluation of the potential acoustic impacts to marine mammals on selective data, while ignoring more timely, widely accepted and peer reviewed science, including the applicability of actual stranding events; 4.4.18
- chooses to dismiss evidence suggesting behavioral reaction to sound can produce Level "A" harassment; 4.3.17

- dismisses cumulative and synergistic effects by minimizing the magnitude of the potential impacts and explaining away the unavoidable impacts with promises of ineffectual mitigation measures. 4.3.23

The association between anthropogenic ocean noise and its impacts on marine mammals is well documented although there is still scientific uncertainty over the actual causal mechanisms of impacts. It is generally accepted that impacts can range from altered behavior through temporary injury to mortality. Altered behavior can include a startle response and can affect an animal's ability to: feed, find mates, stay on a migration path, communicate, stay at or return to a favored feeding area, nurse, care for young, and catch prey and escape predators. Mortality can result directly from exposure to sound or indirectly as a consequence of altered behavior or temporary injury. 4.3.2

The DSEIS attempts to group impacts into four "levels", ranging in severity from permanent loss of hearing and non-auditory injury (both equated with Level "A" harassment in the DSEIS), through temporary hearing loss and behavioral change (equated with Level "B" harassment in the DSEIS) to masking.

The DSEIS states that the FEIS contained analyses of the potential impacts on marine mammals and that since there are no new data that contradict any of the assumptions or conclusions in the FEIS, those findings remain valid and are incorporated into the DSEIS. 4.4.10

Those findings for all global populations of marine mammal include:

- negligible effects for Level "A" impacts (non-auditory injury or permanent loss of hearing);
- minimal effects from temporary hearing loss;
- minimal Level "B" impacts (behavioral change); and
- temporary and "not severe" impacts from masking.

The DSEIS states that "the operation of SURTASS LFA sonar with monitoring and mitigation will result in no lethal takes." (page 4-63) This is a lofty claim. The evidence obtained from actual mortality incidents associated with anthropogenic noise suggests that the mechanisms by which animals are impacted by noise are far less straightforward than the DSEIS suggests. There is now increasing evidence that non-auditory injury or permanent loss of hearing are not the only mechanisms by which mortality can result from exposure to noise. For example, an alteration of behavior (Level "B") such as a startle response leading to beaching can result in death whereas a gash injury (Level "A") can heal and have no long term impact. The DSEIS should concede that 4.3.2

the knowledge base surrounding the causal mechanisms of marine mammal impacts is too scant to be so readily compartmentalized. Again, precaution must prevail.

The DSEIS uses 180dB RL as the threshold for impacts to marine animals and persistently reminds the reader that this is a conservative figure. Field data suggest that this figure is much too high. In the Bahamas multi-species mass stranding incident of 2000⁵ estimates of the average sound exposure level that caused those animals to strand was less than 140 dB re 1 μ Pa.⁶ The DSEIS dismisses the Bahamas stranding event saying that the hemorrhaging in the stranded animals could have been caused by factors other than acoustic trauma. This is not consistent with the actual findings published in the Interim Report on the event which states “all evidence points to acoustic or impulse trauma” and identifies “mid-range tactical Navy sonars operating in the area as the most plausible source of the acoustic or impulse trauma.”⁷ The Navy’s reputation for responsible environmental stewardship is also brought into question since in this incident the Navy persisted with denying any culpability despite the strong coincidence between the presence of Navy ships and dead animals, until the Interim Report was released.

4.3.17

4.4.18a

The DSEIS sets a threshold sound pressure level of 145 dB for diving and recreational sites which is an attempt to be precautionary to humans. This is over 1,000 times less intense than the threshold set for marine mammals. Marine mammals are acoustic individuals who spend their entire lives immersed in sound in water. Their bodies have evolved to make use of sound to navigate, communicate, find food, locate and attract mates, and avoid predators. Their world is “surround sound” at its best. It is irrational to assume that marine mammals are less sensitive to sound in water than humans are. It would make far better sense to adopt 145 dB as the threshold for all animals, including humans.

4.3.5

The FEIS was completed in January 2001. Since that time there have been at least five mass stranding incidents associated with ocean noise and several studies and papers related to the range of impacts of noise on marine mammals.⁸ To so easily affirm that none of this new data

4.4.10

⁵ Department of Commerce and Secretary of the Navy. 2001. *Joint Interim Report: Bahamas Marine Mammal Stranding Event of 15-16 March 2000*.

⁶ Hildebrand, J. and Balcomb, K. 2004. *Modeling the Bahamas Beaked Whale Stranding of March 2000* (Presentation at the Third Plenary Meeting of the U.S. Marine Mammal Commission Advisory Committee on Acoustic Impacts on Marine Mammals, 27-29 July 2004, San Francisco, California).

⁷ Department of Commerce and Secretary of the Navy. 2001. *Joint Interim Report: Bahamas Marine Mammal Stranding Event of 15-16 March 2000*. Page 47.

⁸ Balcomb, K.C. and Claridge, D.E. 2001. *A mass stranding of cetaceans caused by naval sonar in the Bahamas*. *Bahamas Journal of Science* 8 (2) pages 1-12;

Cox, T. M. et al. In Press. *Report of a workshop to understand the impacts of anthropogenic sound on beaked whales*;

Brownell, R.L. et al. 2004. *Mass strandings of Cuvier’s beaked whales in Japan: U.S. Naval acoustic link?* Paper SC/56/E37 presented to the International Whaling Commission Scientific Committee, Sorrento, Italy (unpublished);

contradicts the assumptions or conclusions in the FEIS is questionable. In fact, as more information is obtained from each new stranding incident coincident with noise - particularly related to sonar – it seems there is a more compelling evidence to suggest that: a) the mechanisms by which animals strand as a result of a noise event are very complex; b) different mechanisms can be involved and different impacts can result depending on the species and the circumstances; c) the noise intensities at which animals strand are likely lower than those previously assumed; and d) tissue injury is not necessary to cause animals to strand and die.

4.4.10

The DSEIS claims that the association between marine mammal stranding events and military sonar is an issue of “public perception” and specifically that “[a]lthough much of the public have the impression that military sonar usage is a principle cause of marine mammal strandings, the facts that are available indicate otherwise.” (page 4-55) While this might be true for mass stranding events of a non-anthropogenic origin, it is a grossly misleading statement.

4.4.13

The DSEIS mentions only three noise-related marine mammal stranding events under the heading “*Strandings potentially related to anthropogenic sound.*” (page 4-53:54) [emphasis ours] These three events are the 1996 Greece stranding event, the Bahamas incident of 2000 and the Canary Islands stranding incident of 2002. The Greece incident occurred after trials in the use of low- and mid-frequency sonar and involved 12 animals. The Bahamas incident is known

4.4.17

Engel, M. H. et al. 2004. *Are seismic surveys responsible for cetacean strandings? An unusual mortality of adult humpback whales in Abrolhos Bank, northeastern coast of Brazil.* Paper SC/56/E28 presented to IWC Scientific Committee, Sorrento, Italy (unpublished);

Fernandez, A. et al. 2005. “*Gas and fat embolic syndrome*” involving a mass stranding of beaked whales (Family Ziphiidae) exposed to anthropogenic sonar signals. *Vet Pathology*. 42. Pages 446–457;

Hildebrand, J. and Balcomb, K. 2004. *Modeling the Bahamas Beaked Whale Stranding of March 2000* (Presentation at the Third Plenary Meeting of the U.S. Marine Mammal Commission Advisory Committee on Acoustic Impacts on Marine Mammals, 27-29 July 2004, San Francisco, California).

International Whaling Commission Scientific Committee (IWC/SC). 2004. Annex K: *Report of the Standing Working Group on Environmental Concerns.* Annual IWC meeting, Sorrento, Italy, 29 June–10 July 2004. page 56;

Jepson, P. D. et al. 2003. *Gas-bubble lesions in stranded cetaceans. Was sonar responsible for a spate of whale deaths after an Atlantic military exercise?* *Nature*. 425. Pages 575-576;

Jepson, P. D., et al. 2005. *Acute and chronic gas bubble lesions in cetaceans stranded in the United Kingdom.* *Vet Pathol* 42:291-305.

Levine, H. 2004. *Active Sonar Waveform.* JASON Group Report. JSR-03-200;

Morton, A.B. and Symonds, H.K. 2002. *Displacement of Orcinus orca (L.) by high amplitude sound in British Columbia.* *ICES Journal of Marine Science*. 59. Pages 71-80;

Romano, T.A. et al. 2004. *Anthropogenic sound and marine mammal health: measures of the nervous and immune systems before and after intense sound exposure.* *Can. Jo. of Fisheries and Aquatic Sciences*. 61 Pages 1124-1134;

Taylor, B. et al. 2004. *A call for research to assess risk of acoustic impact on beaked whale populations.* Paper SC/56/E36 presented to IWC Scientific Committee, Sorrento, Italy (unpublished);

Weller, D.W. et al. 2002. *Influence of seismic surveys on western Grey Whales off Sakhalin Island, Russia in 2001.* Paper SC/54/BRG14 presented to International Whaling Commission Scientific Committee, Shimonoseki, Japan (unpublished).

to have been caused by anthropogenic Navy sonar.⁹ The animals that stranded just hours after the Neo Tapon naval exercise in the Canary Islands incident showed “acute and chronic tissue damage.”¹⁰ One of the veterinary pathologists conducting the necropsies concluded in a *Nature* article that “acoustic factors could be important in the aetiology of bubble-related disease” and “our findings need to be taken into account in considering the regulation and limitation of the adverse impact of anthropogenic sonar on cetaceans.”¹¹ The DSEIS lists this incident as *potentially* related to anthropogenic sound and avoids further discussion by stating that “[efforts to study the whale specimens from this incident continue and a report has not yet been published.” (page 4-54) There is irrefutable evidence that anthropogenic sound causes marine mammal strandings. What is not known with any scientific certainty is the actual causal mechanisms.

In only listing three marine mammal stranding incidents “potentially” related to anthropogenic sound, the DSEIS is being disingenuous. Not only are there many, many more of such strandings, but when all atypical mass stranding events are tabulated, the overwhelming majority is associated with naval maneuvers, and likely sonar usage. The DSEIS should have discussed all of the following and especially those associated with naval activity:

4.4.17

Year	Location	Species (numbers)	Associated Activity ¹²
1914	New York, US	Cuvier’s beaked whale (2)	Unknown
1960	Sagami Bay, Japan	Cuvier’s beaked whale(2)	US Fleet
1963	Gulf of Genoa, Italy	Cuvier’s beaked whale (15+)	Naval maneuvers
1963	Sagami Bay, Japan	Cuvier’s beaked whale (8-10)	US Fleet
1964	Sagami Bay, Japan	Cuvier’s beaked whale (2)	US Fleet

4.4.18

Table Continues...

⁹ Department of Commerce and Secretary of the Navy. 2001. *Joint Interim Report: Bahamas Marine Mammal Stranding Event of 15-16 March 2000*.

¹⁰ Jepson, P. D. et al. 2003. *Gas-bubble lesions in stranded cetaceans. Was sonar responsible for a spate of whale deaths after an Atlantic military exercise?* *Nature*. 425. Pages 575-576;

¹¹ *Ibid.*

¹² Data for the stranding table collated from the following sources:

Brownell, R.L. et al. 2004. *Mass strandings of Cuvier’s beaked whales in Japan: U.S. Naval acoustic link?* Paper SC/56/E37 presented to the International Whaling Commission Scientific Committee, Sorrento, Italy (unpublished);

International Council for the Exploration of the Sea (ICES). 2005. *Report of the Ad-hoc Group on the Impact of Sonar on Cetaceans and Fish (AGISC)*. ICES CM 2005/ACE:01;

Martin, V. et al. 2004. *Mass strandings of beaked whales in the Canary Islands*. In: Evans, P.G. H. and Miller, L. A. (Eds.). *Proceedings of the Workshop on Active Sonar and Cetaceans*. European Cetacean Society Newsletter, No. 42 (Special Issue). Pages 33-36.

Table Continued

Year	Location	Species (numbers)	Associated Activity
1968	Bahamas	Cuvier's beaked whale (4)	Unknown
1965	Puerto Rico	Cuvier's beaked whale (5)	Unknown
1966	Ligurian Sea, Italy	Cuvier's beaked whale (3)	Naval maneuvers
1967	Sagami Bay, Japan	Cuvier's beaked whale (2)	US Fleet
1974	Corsica	Cuvier's beaked whale (3), Striped dolphin (1)	Naval patrol
1974	Lesser Antilles	Cuvier's beaked whale (4)	Naval explosion
1975	Lesser Antilles	Cuvier's beaked whale (3)	Unknown
1978	Sagami Bay, Japan	Cuvier's beaked whale (9)	US Fleet
1978	Suruga Bay, Japan	Cuvier's beaked whale (4)	US Fleet
1979	Sagami Bay, Japan	Cuvier's beaked whale (13)	US Fleet
1980	Bahamas	Cuvier's beaked whale (3)	Unknown
1981	Alaska, US	Cuvier's beaked whale (2)	Unknown
1983	Galapagos	Cuvier's beaked whale (6)	Unknown
1985	Canary Islands	Cuvier's beaked whale (12+), Gervais' beaked whale(1)	Naval maneuvers
1986	Canary Islands	Cuvier's beaked whale (5), Gervais' beaked whale (1), beaked whale sp. (1)	Unknown
1987	Canary Islands	Gervais' beaked whale(3)	Unknown
1987	Italy	Cuvier's beaked whale (2)	Unknown
1987	Suruga Bay, Japan	Cuvier's beaked whale (2)	US Fleet
1987	Canary Islands	Cuvier's beaked whale (2)	Unknown
1988	Canary Islands	Cuvier's beaked whale (3), Bottlenose whale (1), Pygmy sperm whale (2)	Naval maneuvers
1989	Sagami Bay, Japan	Cuvier's beaked whale (3)	US Fleet
1989	Canary Islands	Cuvier's beaked whale (15+), Gervais' beaked whale (3), Blainville's beaked whale (2)	Naval maneuvers
1990	Suruga Bay, Japan	Cuvier's beaked whale (6)	US Fleet

4.4.18

B-59

Table Continues...

Table Continued

Year	Location	Species (numbers)	Associated Activity
1991	Lesser Antilles	Cuvier's beaked whale (4)	Unknown
1991	Canary Islands	Cuvier's beaked whale (2)	Naval maneuvers
1993	Taiwan	Cuvier's beaked whale (2)	Unknown
1996	Greece	Cuvier's beaked whale (12)	Naval LFA Sonar trials
1994	Taiwan	Cuvier's beaked whale (2)	Unknown
1997	Greece	Cuvier's beaked whale (3)	Unknown
1997	Greece	Cuvier's beaked whale (9+)	Naval maneuvers
1998	Puerto Rico	Cuvier's beaked whale (5)	Unknown
1999	Virgin Islands	Cuvier's beaked whale (4)	Naval maneuvers
2000	Bahamas	Cuvier's beaked whale (9), Blainville's beaked whale (3), beaked whale spp (2), Minke whale (2), Atlantic spotted dolphin (1)	Naval mid-frequency sonar
2000	Galapagos	Cuvier's beaked whale (3)	Seismic research
2000	Madeira	Cuvier's beaked whale (3)	Naval mid-frequency sonar
2001	Solomon Islands	Cuvier's beaked whale (2)	Unknown
2002	Brazil	Humpback whale (8)	Seismic exploration
2002	Mexico	Cuvier's beaked whale (2)	Seismic research
2002	Canary Islands	Cuvier's beaked whale (9), Gervais' beaked whale (1), Blainville's beaked whale (1), beaked whale spp. (3)	Naval mid-frequency sonar
2003	Washington, US	Harbor porpoise (14), Dall's porpoise (1)	Naval mid-frequency sonar
2004	Canary Islands	Cuvier's beaked whale(4)	Naval maneuvers
2004	Hawaii, US	Melon-headed whale (~200)	Naval mid-frequency sonar
2005	North Carolina, US	Long-finned pilot whale (34), Dwarf sperm whale (2), Minke whale (1)	Naval maneuvers

4.4.18

It has to be noted, that so far as we are aware the Navy has never actually reported any marine mammal stranding incident that has occurred in the vicinity of its activities. Again, the Navy does not demonstrate its commitment to responsible environmental stewardship.

The DSEIS claims that SURTASS LFA sonar has not been implicated in any stranding event. This is not accurate. An LFA sonar system was implicated in the mass stranding of twelve Cuvier's beaked whales in 1996 in Greece though as the DSEIS states, the inner ears were not examined. This does not mean that LFA usage did not cause the animals to strand. The usage of LFA sonar has also been far more restricted than mid-frequency sonar for which there are more associated mass strandings events. Mid-frequency sonar was introduced in the 1960's and has been used the world over, whereas LFA sonar has only been used since the late 1980's and has been restricted in its area of usage since then. The DSEIS states that no Level "A" harassment incidents have been reported in the area of usage, however, it does not relate the effort undertaken to search for such incidents or mention reports of Level "B" harassment incidents. It must also be noted that the association between mid-frequency sonar usage and strandings was not realized until several decades after its introduction.

4.4.12

4.4.18

The DSEIS appears to be only concerned about impacts producing Level "A" harassment which it claims will be negligible. The impacts from behavioral alteration to individual animals are dismissed as inconsequential. Behavioral impacts can not only produce level "A" harassment,¹³ but impacts to individuals are significant especially for endangered populations, and can have population level consequences no matter what the status of the species.

4.3.17

The Low Frequency Sound Research Program (SRP) Phase II conducted by the Navy to determine LFA impacts on migrating whales found that when the source was located in the whales' migration path (approximately 1km from shore), gray whales avoided levels below 150 dB. The SRP Phase II results showed negligible avoidance by whales when the source was located over 2km from shore. From these results the Navy concluded no biologically significant response. Perhaps in actuality more sensitive individuals or mother-calf pairings tend to hug the coast during migration. For some groups, the most sensitive animals may be crucial to a group's survival as these may be the first individuals to become aware of predators or of dangerous situations. To lose sensitive animals or nursing mothers from a group could have population-level consequences.

4.3.20

4.3.30

4.3.35

¹³ Fernandez, A. et al. 2005. "Gas and fat embolic syndrome" involving a mass stranding of beaked whales (Family Ziphiidae) exposed to anthropogenic sonar signals. *Vet Pathology*. 42. Pages 446-457;

Jepson, P. D. et al. 2003. *Gas-bubble lesions in stranded cetaceans. Was sonar responsible for a spate of whale deaths after an Atlantic military exercise?* *Nature*. 425. Pages 575-576;

Masking

Masking occurs when meaningful sounds produced by marine animals are obscured or 'masked' by other sounds, usually anthropogenic in nature and often at or near the same frequency as the original sound. Masking is important because it can affect an animal's behavior and thus the animal's ability to feed, find mates, stay on a migration path, communicate, stay at or return to a favored feeding area, nurse, care for young, and catch prey and escape predators.

Throughout the document, the DSEIS claims that the effects of masking from SURTASS LFA sonar "*are not expected to be severe*" (page 4-21), or will be "*temporary...negligible and extremely unlikely*" (page 4-61), or "*of minimal significance*" (page 4-75). The DSEIS justifies these statements by saying that the average signal duration will be short (60-seconds), that the duty-cycle will be low (7.5%) and that the LFA bandwidth is only a fraction of an animal's hearing range.

While the average signal length is 60 seconds - which for an extremely loud noise is a very long time - each can be up to 90 seconds long and can occur as often as every six minutes. This also does not take into account reverberation which can significantly increase the duty cycles and could result in a near continuous signal. Even temporary masking can be significant as it can compromise an animal's ability to avoid predators, communicate, track and catch food, and avoid dangerous environments such as areas of high intensity noise.

4.3.39

Cumulative and Synergistic Effects

The magnitude of cumulative and synergistic effects of anthropogenic noise and the contribution from SURTASS LFA sonar are minimized in the DSEIS. Much is made of discussing other anthropogenic noise sources and citing the nonsensical statement in the International Council for the Exploration Report 2005 report that "shipping noise is projected to increase, where sonar is not." (page 4-61) The DSEIS alone is proposing a two-fold increase in LFA sonar use!

4.6.26

The DSEIS concludes its discussion on the cumulative effects of anthropogenic noise by stating that given all the existing ocean noise, the contribution from SURTASS LFA will be "extremely small." (page 4-63) This is irresponsible. Ocean noise levels are indeed increasing due to many causes, including shipping. This is no reason to justify adding even more.

4.6.19

The synergistic effect of operating up to four SURTASS LFA systems is not discussed in the DSEIS. LFA sonar travels for hundreds of miles before starting to attenuate and then can travel for thousands of miles. An analysis of the potential impacts from the operation of more than one system operating in the same geographical area at the same time should be included.

4.4.27

The DSEIS dismisses the overlapping of other ocean noise sources, including seismic noise in its discussion of cumulative impacts. It states that the noise from the SURTASS LFA systems are "*not expected to be close enough to these activities to impact them to any measurable degree.*"

4.6.7

(page 4-56) Given the distances that LFA sonar and seismic air gun noise can travel¹⁴ the chances of the noises overlapping is too great to be dismissed so readily. **4.6.27**

The cumulative effects of existing threats to marine mammals are not effectively addressed in the DSEIS. The document discusses whaling, bycatch, and ship strikes and states that the use of SURTASS LFA sonar will result in no lethal takes but does refer to the relationship to these other threats in this conclusion. The DSEIS also does not mention the potential impacts to marine mammals from climate change. **4.6.25**

4.6.28

3.0 Mitigations

The proposed mitigations in the DSEIS are trivial. The DSEIS mitigation measures include:

- Not ensonifying coastal areas within 22km or 46km of the shore (depending on the chosen Alternative) with over 180dB RL;
- Not ensonifying offshore biologically important areas with over 180dB RL during critical seasons;
- Minimizing exposure of marine mammals and sea turtles to levels below 180dB RL through monitoring and observation;
- Ensuring no known recreational or commercial dive sites are subject to levels greater than 145 dB RL.

The DSEIS states that mitigation measures to minimize impacts to fish would be “impractical” (page 2-11) because visual monitoring could only be conducted during the day and is unreliable, passive acoustic detection is infeasible, and active acoustics would give too many false alarms such that National Security would be affected! Fishers and fishery scientists use active acoustic devices to detect fish schools yet the Navy finds it unreliable. This needs further explanation. **5.2.10**
5.2.16

The discussion on the validity of the 180dB level chosen by the Navy as the threshold for impact has already been presented. To base all mitigation efforts on 180dB isopleths is worrisome. The DSEIS does not state at what distance from the source the 180dB RL isopleths will occur, but in the mitigations section repeatedly refers to the “mitigation zone”. Clarification of the distance from the source at which a RL of 180 dB is expected should be included. **4.3.15**

¹⁴ International Whaling Commission Scientific Committee (IWC/SC). 2004. Annex K: *Report of the Standing Working Group on Environmental Concerns*. Annual IWC meeting, Sorrento, Italy, 29 June–10 July 2004. Page 2.

Monitoring and Observation

The DSEIS describes how monitoring for marine mammal and sea turtles will be conducted through visual observation, passive acoustic monitoring and active acoustic monitoring. If a marine mammal or sea turtle is spotted outside the mitigation zone, then according to the DSEIS, the animal will be tracked using active acoustic monitoring until it enters the mitigation zone when the SURTASS LFA sonar transmissions will be delayed or suspended. If an animal is spotted within 2km and 45 degrees of the bow, SURTASS LFA transmissions will be immediately delayed or suspended. If an animal is spotted within the mitigation zone SURTASS LFA transmissions will be immediately delayed or suspended.

The visual monitoring mitigation measure will only be possible during daylight hours, yet the SURTASS LFA is due to operate during daylight hours and at nighttime. The SURTASS LFA should cease during hours of darkness when the chances of spotting a marine mammal or turtle approximate zero.

5.2.10

Additionally, whales are diving animals who can spend great lengths of time underwater. For beaked whales, who are particularly vulnerable to stranding, the probability of seeing a beaked whale by a trained observer, on a good day has been calculated at less than 2%¹⁵ and these whales can dive for periods up to 68 minutes.¹⁶

5.2.12

The DSEIS states that marine mammal biologists will train ship personnel on conducting at-sea visual monitoring. It does not state how much training these personnel will receive, how their level of expertise will be measured, the amount of refresher training that will be done, or if these ship personnel will have to perform other duties when they are conducting observations. The DSEIS also does not state how many trained marine mammal observers will be used at any one time or where they will be positioned on the ship, except at topside. To achieve any degree of effectiveness, spotters must be dedicated to the purpose of observing only and a vessel must contain a sufficient number to both relieve each other and to be staged at various locations around a ship.

5.2.9

The use of passive acoustic monitoring to listen for vocalizing marine mammals as a complementary detection method to visual observation is a good idea. However, to use the SURTASS array for this purpose would limit detections to those animals vocalizing within the bandwidth of the system. Most marine mammal species would therefore not be detected.

5.2.13

¹⁵ Barlow, J. 2004. *Presentation at the Beaked Whale Technical Workshop*, Baltimore, MD. April 13-16, 2004. The report of this meeting will be contained in Cox, T. M. et al. In Press. *Report of a workshop to understand the impacts of anthropogenic sound on beaked whales*;

H. Levine. (2004) *Active Sonar Waveform 1* (2004) (JASON Group Rep. JSR-03-200).

¹⁶ Baird, R. et al. 2005. *Diving Behavior of Cuvier's and Blainville's Beaked Whales: Implications for Mass-Strandings in Relation to High-Intensity Sonar*. The 16th Biennial conference on the Biology of Marine Mammals, San Diego, CA December 12-16, 2005. Abstract.

Additionally the protocol described in the DSEIS for reacting to a detected animal is based on a subjective and mission-impacting judgment call by the array technician who has to decide if the detected animal *might* be impacted by the SURTASS LFA. In all likelihood, such decisions are unlikely to be made in favor of the animal when the consequence is the shut down of operations and chance of incurring the disfavor of peers and superiors.

5.2.15

The active acoustic monitoring system described in the DSEIS is the HF/M3 sonar which is itself a high frequency noise source. The DSEIS describes how the HF/M3 will *start* at 180dB SL and then will be ramped up in 10dB increments for five minutes until full power is attained. The DSEIS does not state what the full power levels will be but merely states that RLs will not exceed 180dB and does not give distances from the HM/M3 source. A mitigation measure that adds more noise to the environment is illogical.

2.4.1

5.2.17

The DSEIS is severely flawed and should be withdrawn and re-written to incorporate the precautionary principle in line with sound scientific practice. The Animal Welfare Institute appreciates the opportunity to comment and looks forward to its comments being fully addressed.

Sincerely,



Cathy Liss
 President

From: "Escalante, Linda"
To: eisteam@mindspring.com
Subject: DSEIS for SURTASS LFA Sonar Comment Letter
Date: Feb 10, 2006 4:58 PM
Attachments: NRDC comments DSEIS - FINAL (2).pdf

Dear Mr. J.S. Johnson,

Enclosed please find a letter from Joel Reynolds, Senior Attorney at NRDC, commenting on the Draft Supplemental Environmental Impact Statement for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar.

Sincerely,

Linda Escalante
NRDC Ecosystems Program



NATURAL RESOURCES DEFENSE COUNCIL

Via Email and Overnight Mail

February 10, 2006

Mr. J. S. Johnson
 Attn: SURTASS LFA Sonar EIS Program Manager
 4100 Fairfax Drive, Suite 730
 Arlington, VA 22203

By email to: eisteam@mindspring.com

Re: Draft Supplemental Environmental Impact Statement for Surveillance
 Towed Array Sensor System Low Frequency Active (SURTASS LFA)
 Sonar

Dear Mr. Johnson:

On behalf of the Natural Resources Defense Council ("NRDC") and our more than 650,000 members, we are writing to submit comments on the Navy's Draft Supplemental Environmental Impact Statement for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar ("DSEIS"). See 70 Fed. Reg. 69526 (Nov. 16, 2005).¹ For the reasons discussed in detail below, we believe that the DSEIS fails to meet the environmental review standards prescribed by the National Environmental Policy Act ("NEPA"), 42 U.S.C. 4321 *et seq.*, and fails to meet the requirements imposed on the Navy in the case of Natural Resources Defense Council, Inc., et al. v. Evans, 279 F.Supp. 2d 1129 (N.D. Cal. 2003). In our view and for the reasons discussed in detail below, the document reflects a dismaying disdain for the court's concerns, for available protective measures, and for the wide range of impacts of LFA to marine life. Accordingly, we believe that the document must be thoroughly revised and reissued as a draft for further public review and comment.

¹ We submit this comment letter also on behalf of the Cetacean Society International, Humane Society of the United States, League for Coastal Protection, Ocean Futures Society, and Jean Michel Cousteau. NRDC is aware that comments are being submitted independently by a substantial number of government agencies, individual scientists, environmental organizations, and the public. The comments that follow do not constitute a waiver of any factual or legal issue raised by any of these organizations or individuals and not specifically discussed herein.

For ease of reference, we enclose with this letter two copies of a CD containing non-Navy reference materials cited herein. These materials are included for consideration by the Navy and should be a part of any administrative record created with respect to the Navy's decision to finalize this DSEIS or related documents. The administrative record should also include all documents that were considered by the Navy in its development and finalization of the 2001 FEIS, and all documents that were submitted to the court in NRDC v. Evans.

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LFA sonar systems generate intense noise capable of propagating across entire ocean basins. The court in NRDC v. Evans found it “indisputable that marine mammals, many of whom depend on sensitive hearing for essential activities like finding food and mates and avoiding predators, and some of whom are endangered species, will at a minimum be harassed by the extremely loud and far traveling LFA sonar.” Id. at 1188. Other marine species, including fish and sea turtles, have also been shown to be harmed by intense sonar. Understanding the great risks in allowing LFA training throughout the world’s oceans without sufficient environmental review and mitigation, the court held inadequate the Navy’s original EIS for this system and required that the Navy strengthen its mitigation and monitoring measures in order to protect marine wildlife.

4.6.4

Although the DSEIS has been prepared in response to the court’s concerns, it, in fact, responds very little, especially in its consideration and adoption of measures to protect marine life. The only new mitigation offered is the Navy’s proposal to keep received sound levels below 180 dB at one additional U.S. National Marine Sanctuary and one proposed U.S. National Marine Sanctuary – a measure that is laudable but that is just one of many steps that can and must be taken to reduce environmental impacts from the deployment of LFA. The Navy rejects each and every additional mitigation measure urged by the court. It flatly refuses to include an alternative that would restrict the Navy’s training to areas with reduced risk of harm to marine life, as required. Instead, the Navy resubmits the identical operational area map as previously proposed—literally referring to the map included in its original EIS—which opens more than 75% of the world’s oceans to training with LFA. It also rejects or simply fails to consider additional protections that the court found were feasible and necessary to ensure safe operation of LFA, such as extending coastal exclusion zones, employing shutdown procedures for fish, and using aerial surveys or observational vessels for missions close to shore.

1.2.4

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5.0.3

Moreover, the Navy proposes to retreat from the mitigation measures that it currently uses to protect marine life. In its operation of LFA today, the Navy may train with LFA only in a limited area of the western Pacific. It is required to respect a wide coastal exclusion zone of at least 30 nautical miles around coasts and islands (60 nautical miles or more in some cases), within which received sound pressure levels shall not exceed 180 dB. It must cease LFA transmissions if a marine mammal is detected within a buffer zone extending 1 kilometer further than the zone ensonified to 180 dB. And it cannot train with LFA at frequencies above 330 Hz, in order to prevent resonance-related injuries to marine mammals.

The DSEIS proposes to abandon or severely curtail each of these protections. Every one of its alternatives would allow the Navy to train with LFA throughout 75% the world’s oceans. It retreats from an expanded coastal exclusion zone, reverting to its originally-proposed (and rejected) zone of 12 nautical miles. It shrinks the safety zone around transmitting ships, removing three-quarters of the buffer zone required by NMFS. It eliminates the restriction imposed by NMFS to operate at less than 330 Hz. All of this is proposed along with a doubling of the number of LFA ships to be deployed and of the planned active transmissions per year, as compared with the Navy’s 2001 proposal. And

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2.5.2

1.3.4

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these choices are supported by a document that, in a number of critical respects, fails to take account of developments in the scientific literature since 2001, when the Navy's original EIS was released.

Given the escalating public and scientific concern about the dangers of intense ocean noise, as well as the clear holdings of the court concerning protective measures that are required to ensure the safe operation of LFA, the Navy's approach in this DSEIS is an unacceptable step backwards. We believe that the document must be thoroughly revised and reissued as a draft for further public review and comment.

I. BACKGROUND

A. The LFA System

LFA is a relatively new type of sonar technology that locates enemy vessels by bombarding the ocean with low-frequency sound waves. While passive sonar is designed to detect the sounds that other vessels produce, active systems such as LFA generate their own sound waves and then decipher the echo they receive from distant targets. The LFA system was conceived during the Cold War to address the threat of deep-sea Soviet submarines, exploiting the ability of intense low-frequency sound to cover vast areas of ocean and depending on the relatively uncluttered environment of deep water for its detection ability.

4.6.4

4.6.4

The intense, low-frequency signals produced by LFA have raised environmental concerns in the international scientific community in part because of "the extraordinary distance they propagate." (See "Statement of Concern" signed by internationally prominent scientists, enclosed on the CD submitted with this letter). The active component of LFA is an array of eighteen loudspeakers lowered several hundred feet from a ship's hull into the ocean; sounding in tandem, their signals combine a few hundred meters from the source, creating zones of focalized sound that can extend many hundreds of miles in all directions. 2001 FEIS at 2-3, 4.2-33. Each speaker has a maximum output of 215 dB, but for purposes of calculating the intensity of the signal beyond a few hundred meters, where the vast majority of environmental impacts are expected to occur, the system is understood to function as one enormous acoustic source, producing as much as 240 dB of sound. *Id.* at B-7.² Low-frequency sound waves travel very efficiently in seawater, and it is this property that accounts for its geographic reach.

For example, the Navy estimates that as far as 35 miles in all directions from the LFA source, marine mammals could be exposed to a received level of 165 dB — a level the Navy admits will cause a "significant change in biologically important behavior" in half

4.6.13

² The decibel scale is like the Richter scale: it expresses force in logarithmic terms, rising in increasing orders of magnitude from a baseline value. Each ten-decibel rise along the scale corresponds to a ten-fold increase in power; thus, a sound measuring 130 dB is considered ten times more intense than a 120 dB sound, a sound of 140 dB is 100 times more intense, and a sound of 150 dB is 1,000 times more intense.

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of the animals exposed. 67 Fed. Reg. 46712, 46761 (July 16, 2002). During one test of the LFA system, the Navy calculated sound intensity levels at approximately 140 dB (an intensity over 100 times greater than the level known to disrupt gray whales) more than 400 miles away.³ Indeed, an independent analysis of some of the Navy's own data found that, during trials off the coast of California in the mid-1990s, the LFA signal was clearly audible at sites across the North Pacific Ocean.

4.6.13

B. Impacts of High-Intensity Sonar

Scientists agree, and the publicly available scientific literature confirms, that the intense sound generated by military 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. Associated strandings have occurred in Greece, during the trial of a NATO sonar system; on the islands of Madeira and Porto Santo, during a NATO event involving subs and surface ships; in the U.S. Virgin Islands, during a training exercise for Navy battle groups; in the Bahamas, the Canaries, Japan, Hawaii, Alaska, and other spots around the world.⁴ On several occasions, bodies have been recovered in time to give evidence of acoustic trauma. In a 2004 symposium at the International Whaling Commission, more than 100 whale biologists concluded that the association between sonar and beaked whale deaths "is very convincing and appears overwhelming."⁵ In the United States, an expert report commissioned by the Navy said much the same thing.⁶

4.4.10

4.4.12

4.4.18

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 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, and detect and capture prey; 4.3.26
- avoidance behavior, which can lead to abandonment of habitat or migratory pathways; 4.3.30

³ Chief of Naval Operations, Environmental Assessment for Use of Surveillance Towed Array Sensor System Low Frequency Active in Connection with a Submarine Security and Technology Program Test [CNO Project K154-4] (July 1997).

⁴ A summary of the strandings record appears below at Section II(B)(2)(a) ("Strandings and Mortalities Associated with Naval Sonar").

⁵ International Whaling Commission, 2004 Report of the Scientific Committee, Annex K at § 6.4 (2004).

⁶ H. Levine, Active Sonar Waveform 1 (2004) (JASON Group Rep. JSR-03-200) (describing evidence of sonar causation as "completely convincing").

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- disruption of biologically important behaviors such as mating, feeding, nursing, or migration, or loss of efficiency in conducting those behaviors; 4 . 3 . 29
4 . 3 . 33
- aggressive (or agonistic) behavior, which can result in injury; 4 . 3 . 51
- masking of biologically meaningful sounds, such as the call of predators or potential mates; 4 . 3 . 30
4 . 3 . 51
- chronic stress, which can compromise viability, suppress the immune system, and lower the rate of reproduction; 4 . 3 . 52
- habituation, causing animals to remain near damaging levels of sound, or sensitization, exacerbating other behavioral effects; and 4 . 3 . 30
- declines in the availability and viability of prey species, such as fish and shrimp. 4 . 1 . 4

Over the past 20 years, a substantial literature has emerged documenting the range of effects of ocean noise on marine mammals.⁷

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.⁸ Sea turtles, most of which are considered threatened or endangered under federal law, have been shown to engage in escape behavior and to experience heightened stress in response to noise.⁹ 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.¹⁰ It is clear that intense sources of noise are capable of affecting a wide class of ocean life.

C. The Flawed FEIS and Final Rule

Despite the potential for LFA to harm whales, fish, and other marine life, the Navy has a long history of noncompliance with federal law with respect to its deployment.

Documents reveal that the Navy was aware of its obligations under NEPA as early as 1988, the year it committed itself to develop the LFA system, and under the MMPA and

⁷ For a review of research on behavioral and auditory impacts of undersea noise, see, e.g., 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); and P. Tyack, Behavioral Impacts of Sound on Marine Mammals, Presentation to the U.S. Marine Mammal Commission Advisory Committee on Acoustic Impacts on Marine Mammals (February 4, 2004); Whale and Dolphin Conservation Society, Oceans of Noise (2004).

⁸ See the discussion below, at section II(C)(1) (“Acoustic Impacts on Fish”).

⁹ See below at section II(D) (“Impacts on Sea Turtles”).

¹⁰ See below at section II(E) (“Species Excluded from Risk Analysis”).

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ESA no later than 1990.¹¹ Indeed, the Navy discussed these obligations in a series of internal meetings and communications, beginning in August 1988.¹² Yet, for the next eight years, from 1988 through 1996, the Navy conducted over twenty trials of LFA in marine habitat as rich and diverse as the southern California bight, the Mediterranean Sea, and coastal Nova Scotia without attempting to meet its responsibilities under these environmental statutes.

It was not until 1996, once the project came under public pressure from the environmental and the scientific communities, that the Navy agreed to prepare an environmental impact statement under NEPA, apply for a small take authorization under the MMPA, or consult with NMFS under ESA regarding its program. In 1999, the Navy applied to NMFS for a five-year small take authorization, under section 101(a)(5)(A) of the MMPA, for the taking of marine mammals incidental to the deployment of LFA throughout approximately 75% of the world's oceans. It simultaneously undertook steps to comply with NEPA by analyzing, in an EIS, the environmental effects of its proposed deployment, and released its Final Environmental Impact Statement for the LFA system in January 2001 ("2001 FEIS").

But the 2001 FEIS was sorely deficient. With respect to fish, the Navy deliberately ignored studies that undermined its conclusion that these species would not be significantly harmed. In its alternatives analysis, it provided only one alternative to unrestricted operation of the LFA system and did not evaluate a number of other measures pertaining to monitoring, duty cycle, and geographic avoidance that, for example, had been used or proposed in earlier LFA trials.

Despite these flaws, in July 2002 the Navy issued its Record of Decision, implementing the preferred alternative identified in the FEIS, which allowed deployment of the LFA system with limited geographic restrictions and monitoring. 67 Fed. Reg. 48145, 48153 (July 23, 2002). The Navy denied Plaintiffs' request for a supplemental EIS, refusing to consider significant new information arising out of the sonar-caused mass stranding of whales in the Bahamas in March 2000. *Id.* at 48150-52. And in the same month, NMFS published federal regulations issuing the requested small take authorization for LFA deployment over 75% of the world's oceans. 67 Fed. Reg. 46712 (July 16, 2002) ("Final Rule").

¹¹ Memo from Bill E. to Steve H. and John S., dated Jul. 27, 1988 re: Aug. 11, 1988 ONR sponsored meeting on marine mammals; memo from Bill E. to Steve Hollis, dated Aug. 26, 1988 re: ONR Aug. 11, 1988 Marine Mammal Meeting notes and recommendations; Talking points for CST/LFA/ONR discussion on marine mammals, Dec. 19, 1990 (all included in the administrative record of NRDC v. Evans, 279 F.Supp. 2d 1129 (N.D. Cal. 2003)).

¹² Memo from Bill E. to Steve Hollis, dated Aug. 26, 1988 re: ONR Aug. 11, 1988 Marine Mammal Meeting notes and recommendations; Talking points for CST/LFA/ONR discussion on marine mammals, Dec. 19, 1990 (included in the administrative record of NRDC v. Evans, 279 F.Supp. 2d 1129 (N.D. Cal. 2003)).

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One month later, NMFS issued an LOA approving the first year of LFA's deployment over 14 million square miles of the Pacific Ocean in five massive geographic "provinces." 67 Fed. Reg. 55818 (Aug. 30, 2002).

D. NRDC's Litigation and the Requirements Set Forth by the District Court

Recognizing the clear flaws in the Navy's 2001 FEIS and in NMFS's approval of the Navy's proposed plan of deployment, NRDC, together with the Humane Society of the United States, the League for Coastal Protection, Cetacean Society International, the Ocean Futures Society, and its founder Jean Michel Cousteau, filed suit in federal court in 2001, alleging multiple violations of ESA, NEPA, and the MMPA. We alleged that NMFS violated the MMPA by issuing a small take authorization which did not meet that statute's requirements; that NMFS and the Navy violated NEPA by finalizing an EIS that failed to analyze adequately the environmental impacts of LFA; and that NMFS and the Navy violated ESA by ignoring the best available science on the impacts of LFA on fish and by issuing inadequate (or no) incidental take statements.

On August 26, 2003, the District Court ("Court") ruled in favor of NRDC on summary judgment and found that defendants had violated multiple provisions of NEPA, the MMPA, and ESA. See Natural Resources Defense Council, Inc., et al. v. Evans, 279 F.Supp. 2d 1129 (N.D. Cal. 2003) ("District Court Opinion"). Among other things, the Court held:

- NMFS violated the MMPA by issuing a small take authorization that was not limited to a "specified geographic region" (id. at 1146-47);
- NMFS violated the MMPA by issuing a small take authorization authorizing take of more than "small numbers" of marine mammals, in some cases up to 12% each year of any species or stock (id. at 1152-53);
- NMFS violated the MMPA by issuing a small take authorization that failed to require adequate mitigation and monitoring of impacts to marine mammals (id. at 1163-64);
- NMFS and the Navy violated NEPA by failing to consider a full set of reasonable alternatives in their EIS (id. at 1166-67);
- NMFS and the Navy violated NEPA by failing to take a hard look at the impacts to fish species in their EIS, among other things, ignoring the only direct study of low-frequency sonar on fish (id. at 1171-72);
- NMFS violated ESA by failing to consider the "best available science," and the Navy violated ESA by withholding from NMFS the most relevant study on impacts to fish (id. at 1179-80);

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- NMFS violated ESA by failing to issue an incidental take statement in association with its May Biological Opinion (id. at 1184-85); and
- NMFS violated ESA by failing to specify the amount or extent of take for all species for which take was authorized in the incidental take statement accompanying its August Biological Opinion (id. at 1188).

Rather than enjoin the Navy's deployment of LFA outright, the Court requested that the parties negotiate a balanced agreement that would accommodate the Navy's interest in continued training with LFA and NRDC's interest in protecting global natural resources. In response, the parties negotiated an agreement that restricted the Navy's training to an area of the western Pacific, with exclusion zones for the protection of important marine habitat. The Court incorporated the terms of this agreement into a permanent injunction that remains in force today and governs the Navy's current use of LFA.

As a result of restrictions imposed by the Court's injunction and by NMFS, in its operation of LFA today the Navy is required to take significant steps to lessen the potential for harm. It may train with LFA only in a limited area of the western Pacific, not throughout the world's oceans as originally proposed. It is required to respect a wide coastal exclusion zone, of at least 30 nautical miles around coasts and islands, within which received sound pressure levels shall not exceed 180 dB. In the Philippine Sea, this coastal exclusion zone is expanded to 60 nautical miles or 30 nautical miles seaward of the 200 meter isobath, whichever is greater. In all areas, the Navy must cease LFA transmissions if a marine mammal is detected within a buffer zone extending 1 kilometer further than the zone ensonified to 180 dB. And the Navy cannot train with LFA at frequencies above 330 Hz, in order to prevent resonance-related injuries to marine mammals.

E. The 2004 National Defense Authorization Act and its consequences

In 2003, Congress amended the MMPA to alter requirements applicable to "military readiness activities," such as training with LFA. See Nat'l Defense Authorization Act for Fiscal Year 2004, Pub.L. No. 108-136, Sec. 319 (Nov. 24, 2003). The amendments affected three requirements relevant to the Navy's operation of LFA and to the Court's holdings with respect to those requirements.

First, the amended law clarified the standard for "harassment" of marine mammals pursuant to military readiness activities. 16 U.S.C. § 1362(18). Second, the amended law requires that a determination of "least practicable adverse impact" include, for military readiness activities, consideration of factors such as "personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity." 16 U.S.C. § 1371(a)(5)(A)(ii). Third, the amended law exempts military readiness activities from the general requirement that take permits be issued only for

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activities “within a specified geographic region” that affect “small numbers” of animals. 16 U.S.C. § 1371(a)(5)(F).

Based on these changes to the law, the Court amended its judgment to make clear that “Plaintiff’s claims based on the ‘small numbers’ and ‘specified geographic region’ provisions of the MMPA no longer constitute a basis for the October 14, 2003 permanent injunction, and are dismissed.” NRDC v. Evans, No. C-02-03805, Order Granting Defendants’ Rule 60(b) Motion at 2-3 (N.D. Cal. 2004). The Court declined, however, to vacate or amend any portion of its original Opinion. Id. It was not asked to disturb, and did not disturb, the Permanent Injunction.

Needless to say, these amendments to the MMPA do not undermine the Court’s holdings with respect to NEPA or the Endangered Species Act. It is also important to note that—contrary to the Navy’s assertions in the DSEIS—the amendments leave intact several of the Court’s holdings under the MMPA, including its holdings regarding additional required mitigation measures. Compare DSEIS at 1-15 fn. 4 with District Court Opinion at 1158-1164.

II. THE NAVY HAS FAILED TO COMPLY WITH THE NATIONAL ENVIRONMENTAL POLICY ACT AND HAS FAILED TO MEET THE REQUIREMENTS IMPOSED BY THE DISTRICT COURT

Enacted by Congress in 1969, 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 [NEPA].” 42 U.S.C. § 4332. As the Supreme Court explained,

NEPA’s instruction that all federal agencies comply with the impact statement requirement – and with all the requirements of § 102 – “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).

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 environmental impact statement. Steamboaters v. F.E.R.C., 759 F.2d 1382, 1392 (9th Cir. 1985) (emphasis in original). 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.

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§§ 1500.1(b), 1502.1; Baltimore Gas & Electric v. NRDC, 462 U.S. 87, 97 (1983). 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.

Here, the Navy has failed to cure the deficiencies in the 2001 FEIS identified by the Court with respect to required alternatives and mitigation and is deficient in the following ways.

1.2.4

A. Statement of Purpose and Need

It is a fundamental requirement of NEPA that agencies preparing an EIS specify their project's "purpose and need." 40 C.F.R. § 1502.13. Not any statement of purpose and need will suffice: "An agency cannot define its objectives in unreasonably narrow terms" so as to exclude consideration of reasonable alternatives. 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)). Instead, the statement must reflect the agency's core aim without foreclosing reasonable alternatives. Id.

Here, the Navy endeavors to fulfill its duty by referencing its interest in long-range detection of submarines (DSEIS at 1-2)—yet this simple, uncritical assertion is insufficient grounds, for decision-makers and private citizens alike, to discern whether LFA (or an alternative) actually meets the stated submarine threat, and, therefore, whether the environmental costs of the proposal are justified by its benefits. Thus, the EIS must go beyond identifying "need"; it must meaningfully address the long-term potential of the proposed project effectively to address that need.

1.1.3

B. Impacts on Marine Mammals

1. Thresholds of Injury, Hearing Loss, and Significant Behavioral Change

At the core of the Navy's impact assessment are the thresholds it has established for non-auditory physical injury, hearing loss, and significant behavioral change, the levels above which meaningful effects on marine mammals are expected to occur. For each threshold, however, the Navy fails to take account of significant new information that has emerged since January 2001, when its Final EIS was produced.

a. Injury Threshold

The Navy sets its threshold for injury at 180 dB re 1 μ Pa, such that exposure to a single, 100-second "ping" at that level or above is considered physically injurious. It bases this threshold, at least for non-auditory effects, on an internal white paper that the Navy prepared in 2002, which summarizes the results of tests on small terrestrial mammals that had been submerged just beneath the water's surface and

4.3.12

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exposed to low-frequency sound; and yet discounts the growing literature on acoustic injuries and mortalities in marine mammals. 4.3.12

The Navy's analysis underestimates the potential for injury in several ways. First, the DSEIS fails to take proper account of published research on bubble growth in marine mammals, which indicates the potential for injury and death at levels far lower than the Navy proposes.¹³ It also grossly mischaracterizes the support that the bubble growth theory has received in the scientific literature.¹⁴ Second, the DSEIS ignores the best available scientific evidence on exposure levels in sonar-related mass strandings, particularly that the whales beached in the Bahamas stranding were exposed to no more than 160-65 dB re 1 μ Pa of mid-frequency sonar for 30 seconds (well below the duration of a 100-second LFA "ping") and are likely to have been exposed to less.¹⁵ The Navy's attempt to discount the likelihood of strandings from use of the SURTASS LFA system fails to consider: the reported connection of other low-frequency sound sources to stranding events; the lack of any meaningful data on the potential for mortalities given the novelty of the system, its general operation in open ocean and remote locations, and relative ignorance of sound-related strandings before 2000; the consensus that 4.3.12
4.3.42

¹³ D.S. Houser, R. Howard, and S. Ridgway, Can Diving-Induced Tissue Nitrogen Supersaturation Increase the Chance of Acoustically Driven Bubble Growth in Marine Mammals? 213 *Journal of Theoretical Biology* 183, 190 (2001); L.A. Crum, M.R. Bailey, J. Guan, P.R. Hilmo, S.G. Kargl, T.J. Matula, and O.A. Sapozhnikov, Monitoring Bubble Growth in Supersaturated Blood and Tissue ex vivo and the Relevance to Marine Mammal Bioeffects, 6(3) *Acoustics Research Letters Online* 214 (2005). See also J.R. Potter, A Possible Mechanism for Acoustic Triggering of Decompression Sickness Symptoms in Deep-Diving Marine Mammals (paper presented at the IEEE International Symposium on Underwater Technology 2004, Taipei, Taiwan, April 2004).

¹⁴ See, e.g., id.; M.J. Moore and G.A. Early, Cumulative Sperm Whale Bone Damage and the Bends, 306 *Science* 2215 (2004); P.D. Jepson, R. Deaville, I.A.P. Patterson, A.M. Pocknell, H.M. Ross, J.R. Baker, F.E. Howie, R.J. Reid, A. Colloff, and A.A. Cunningham, Acute and Chronic Gas Bubble Lesions in Cetaceans Stranded in the United Kingdom, 42 *Veterinary Pathology* 291 (2005); A. Fernández, J.F. Edwards, F. Rodríguez, A. Espinosa de los Monteros, P. Herráez, P. Castro, J.R. Jaber, V. Martín, & 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); 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, & L. Benner, Report of a Workshop to Understand the Impacts of Anthropogenic Sound on Beaked Whales 2 (in press); 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). See also Letter from Dr. E.C.M. Parsons, George Mason University, to Joe Johnson, Navy (Feb. 10, 2006) (clarifying disagreement in Pathology: Whales, Sonar and Decompression Sickness, 428 *Nature* 1 (2004)).

¹⁵ See, e.g., International Whaling Commission, 2004 Report of the Scientific Committee, Annex K at § 6.3; 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).

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some of the pathologies seen in sonar-related strandings occurred at sea; and the requirements of NEPA to assess all “reasonably foreseeable” impacts. 42 C.F.R. § 1502.22.¹⁶ Third, the Navy unaccountably rules out the potential for mechanisms of resonance other than those affecting the lungs.¹⁷ Fourth, the Navy’s standard does not reflect the potential for other non-auditory physiological impacts, as from stress, on which new data on marine mammals and other species have emerged.¹⁸

4.3.12

b. Hearing Loss Threshold

The Navy sets its threshold for hearing loss, or “threshold shift” (“TS”), at 180 dB re 1 μ Pa for a single, 100-second “ping” of exposure. Its analysis—completely unchanged since the FEIS—is based on two arguments, one extrapolating from data on humans and other terrestrial mammals and the other relying on a limited set of data on marine mammals. Both arguments are flawed. First, in calculating a threshold for marine mammals based on human studies, the Navy both disregards new data on critical ratios and fails to account for expert criticism of the Navy’s approach made during the first take authorization process.¹⁹ Second, it has become clearer that the Navy has misapplied the hearing loss data taken directly from marine mammals, given its broad extrapolation from two species

4.3.26

¹⁶ See papers on bubble growth cited earlier in this section, particularly Cox et al., Report of a Workshop to Understand the Impact of Anthropogenic Sound; see also J.V. Carretta, K.A. Forney, M.M. Muto, J. Barlow, J. Baker, and M. Lowry, U.S. Pacific Marine Mammal Stock Assessments: 2003 at 147 (2004); B. Taylor, J. Barlow, R. Pitman, L. Balance, T. Klinger, D. DeMaster, J. Hildebrand, J. Urban, D. Palacios, and J. Mead, A Call for Research to Assess Risk of Acoustic Impact on Beaked Whale Populations (2004) (IWC Doc. SC/56/E36); M.H. Engel, M.C.C. Marcondes, C.C.A. Martins, F.O. Luna, R.P. Lima, and A. Campos, Are Seismic Surveys Responsible for Cetacean Strandings? An Unusual Mortality of Adult Humpback Whales in Abrolhos Bank, Northeastern Coast of Brazil (2004) (IWC Doc. SC/56/E28); J. Hildebrand, Impacts of Anthropogenic Sound on Cetaceans (2004) (IWC Doc. SC/56/E13); International Whaling Commission, 2004 Report of the Scientific Committee, Annex K at § 6 (2004).

¹⁷ See NMFS, Report of the Workshop on Acoustic Resonance as a Source of Tissue Trauma in Cetaceans (2002); Cox et al., Report of a Workshop to Understand the Impact of Anthropogenic Sound.

¹⁸ See, e.g., DEIS at 4.85 to 6 (citing several studies); 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); B. Luttbeg and J.L. Kerby, Are Scared Prey as Good as Dead? 20 TRENDS Ecol. Evol. 416 (2005); E.F. Chang and M.M. Merzenich, Environmental Noise Retards Auditory Cortical Development, 300 Science 498 (2003); 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).

¹⁹ B.L. Southall, Auditory Masking in Three Pinnipeds: Aerial Critical Ratios and Direct Critical Bandwidth Measurements, 114 J. Acoust. Soc. Am. 1660 (2003); B.L. Southall, Masking in Three Pinnipeds: Underwater, Low-Frequency Critical Ratios, 108 J. Acoust. Soc. Am. 1322 (2000); Letter from R.J. Schusterman, D. Kastak, B.L. Southall, and C.R. Kastak, University of California at Santa Cruz, to Donna Wieting, NMFS (May 2001); Correspondence between R. Gisiner, Office of Naval Research, and J.S. Johnson, Office of the Chief of Naval Operations (Aug. 6-9, 2001).

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whose auditory sensitivity at tested frequencies is poorer than that of other cetaceans, and its mistaken substitution in the Final EIS of 1-second exposure thresholds for the 100-second LFA signal.²⁰

4.3.26

c. Threshold for Significant Behavioral Change

The Navy has established a sliding scale for behavioral impacts, such that 50% of all marine mammals exposed to a single LFA transmission at 165 dB re 1 μ Pa are expected to undergo significant change in a biologically important activity, with the potential for impact rapidly increasing or decreasing as the received level departs from that mean. Unfortunately, the risk function devised by the Navy is at odds in several respects with recent developments in the literature.

4.3.55

First, the DSEIS fails to incorporate several recent studies on the effects of low-frequency sound on various marine mammal species, all of which demonstrate impacts in large whales at received levels lower than those meaningfully covered by the Navy's risk function.²¹ Second, the DSEIS' standard fails to take proper account of chronic impacts, from behavioral change as well as from certain non-auditory physiological impacts such as stress, which may occur at considerably lower levels than those that would induce the types of behavioral change studies by the Navy in its Scientific Research Program.²² In this regard, the Navy has failed to consider cumulative impacts on populations of animals exposed repeatedly to the LFA source over several seasons (cf. FEIS at 4.2-58), a scenario

4.3.55A

4.3.55B

²⁰ See, e.g., W.J. Richardson, C.R. Greene, Jr., C.I. Malme, and D.H. Thomson, Marine Mammals and Noise 209 (1995) (reporting auditory sensitivities). Compare FEIS at 1-27 and Navy, Draft Overseas Environmental Impact Statement/ Environmental Impact Statement: Undersea Warfare Training Range at 4.3-14 (2005) (producing risk function from beluga and bottlenose whale data). It should be noted that the function is somewhat arbitrarily drawn, and that dropping the line at least 5 dB lower would fit the underlying data just as well or better.

²¹ See, e.g., D.W. Weller, Y.V. Ivashchenko, G.A. Tsidulko, A.M. Burdin, & R.L. Brownell, Jr., Influence of Seismic Surveys on Western Grey Whales off Sakhalin Island, Russia in 2001 (2002) (IWC Doc. SC/54/BRG14); Independent Scientific Review Panel, Impacts of Sakhalin II Phase 2 on Western North Pacific Gray Whales and Related Biodiversity (2005); 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); P. Tyack (presentation at Mineals Management Service, Gulf of Mexico Region, Information Transfer Meeting, Kenner, La., Jan. 9-11, 2005).

²² See, e.g., F.H. Harrington and A.M. Veitch, Calving Success of Woodland Caribou Exposed to Low-Level Jet Fighter Overflights, 45 Arctic vol. 213 (1992); L. Bejder, Linking Short and Long-Term Effects of Nature-Based Tourism on Cetaceans (2005); P. Lercher, G.W. Evans, and M. Meis, Ambient Noise and Cognitive Processes among Primary Schoolchildren, 35 Environment and Behavior 725 (2003). It is not necessarily the case that animals exposed to harmful levels of sound will leave an area over time. J.A. Gill, K. Norris, and W.J. Sutherland, Why Behavioural Responses May Not Reflect the Population Consequences of Human Disturbance, 97 Biol. Conserv. 265 (2001); R.A. Stillman and J.D. Goss-Custard, Seasonal Changes in the Response of Oystercatchers *Haematopus ostralegus* to Human Disturbance, 33 J. Avian Biol. 358 (2002).

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that is only more likely to occur given the proposed doubling in LFA deployment. **4.3.55C**
Third, the DSEIS disregards recent evidence indicating the potential for masking to interfere with long-distance mating behavior in mysticetes such as the fin whale, again at received levels far lower than those effectively covered by the Navy's standard.²³ **4.3.55D**
Fourth, the Navy's standard is out of step with how the potential for behavioral impacts has been assessed in other contexts.²⁴ **4.3.55E**
Fifth, the DSEIS does not consider the impact that behavioral changes in prey species such as fish may have on marine mammal foraging.²⁵

2. Strandings and Mortalities Associated with Naval Sonar
 a. Summary of Strandings Data

Since the publication of the Navy's original FEIS in 2001, the association between military active sonar and whale mortalities has been strengthened and has dramatically increased as a subject of 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.

This quickening in interest was sparked by an event in March 2000, when 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 (AN/SQS-53C and AN/SQS-56) in those same channels.²⁶ 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 debilitating and potentially severe.²⁷ It is

²³ D.A. Croll, C.W. Clark, A. Acevedo, B. Tershy, S. Flores, J. Gedamke, and J. Urban, Only Male Fin Whales Sing Loud Songs, 417 *Nature* 809 (2002); International Whaling Commission, 2004 Report of the Scientific Committee, Annex K at § 6 (2004); 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); S.L. Nieukirk, K.M. Stafford, D.K. Mellinger, R.P. Dziak, and C.G. Fox, Low-Frequency Whale and Seismic Airgun Sounds Recorded in the Mid-Atlantic Ocean, 115 *J. Acoust. Soc. Am.* 1832 (2004); P. Tyack, Behavioral Impacts of Sound on Marine Mammals (2004) (presentation at the First Plenary of the Marine Mammal Commission Advisory Committee on Acoustic Impacts on Marine Mammals, Bethesda, Md., Feb. 4, 2004). See also S.C. Stearns and R. Hoekstra, Evolution: An Introduction (2000) (indicating that animals would not be expected to make calls louder than necessary to achieve their function).

²⁴ See, e.g., Letter from Rodney F. Weiher, NOAA, to Keith Jenkins, Naval Facilities Engineering Command Atlantic (Jan. 30, 2006).

²⁵ See, e.g., papers on catch rate reduction cited *infra* in the section on fish and fisheries impacts.

²⁶ Commerce and Navy, Joint Interim Report at iii, 16.

²⁷ Id.

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now accepted that these mortalities were caused, through an unknown mechanism, by the Navy's use of mid-frequency sonar.

The Bahamas event is one of numerous strandings coincident with military activities and active sonar that have now been documented:

(1) In January 2005, 34 whales of three species beached along the Outer Banks of North Carolina as the Navy conducted exercises offshore. A preliminary summary of NMFS's investigation of this stranding contains several findings suggesting the whales may have been injured by sonar. While a second, but still not final, summary released by the agency states that some of the lesions that had originally been observed, microemboli in the liver, "were not confirmed," it continues to note the presence of other lesions potentially indicative of sonar, such as hemorrhaging in the acoustic fats, and, indeed, finds that the number of animals exhibiting them have increased.²⁸ Both summaries rule out other potential causes of the strandings, including viral, bacterial, and protozoal infection, direct blunt trauma, and fishery interactions.²⁹ It has additionally been reported that the Navy may have been operating sonar as close as 50 nm to one of the stranding sites, about 90 nm south-southeast of Oregon Inlet.³⁰ This stranding has elicited great public concern and has generated considerable media attention to the harms caused by Navy sonar.³¹ **4.4.18**

(2) 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 (see below), systematic fat **4.4.18**

²⁸ NMFS, Preliminary Report on the Mass Stranding in North Carolina, January 15, 2005 and Updated Report on the January 14-15, 2005 Multi-Species Mass Stranding in North Carolina, enclosed in Letter from Michael J. Garcia, U.S. Attorney for the Southern District of New York, to Erin Tobin, Attorney, Meyer Glitzenstein & Crystal, at 2-3 (Jan. 17, 2006).

²⁹ Id.

³⁰ Kate Wilttrout, "Reports on Beached Whales Show Gap over Cause," Virginian-Pilot, Jan. 20, 2006; Marc Kaufman, "Whale Stranding in N.C. Followed Navy Sonar Use," Washington Post, Jan. 28, 2005.

³¹ See, e.g., Marc Kaufman, "Reference to Sonar Deleted in Whale-Beaching Report," Washington Post, Jan. 20, 2006; Rex Dalton, Panel Quits in Row over Sonar Damage, 439 Nature 376, 377 (2006); Gareth McGrath, "Public Comment Period Likely Over," Wilmington Star-News, Jan. 25, 2006; Editorial, "Science Not Spin," Charlotte News & Observer, Jan. 23, 2006; Bo Petersen, "Report on Whale Deaths Criticized," Charleston Post and Courier, Jan. 21, 2006; Wade Rawlins, "Sonar's Role in Beaching Uncertain," Charlotte News & Observer, Jan. 19, 2006; Kate Wilttrout, "Reports on Beached Whales Show Gap over Cause," Virginian-Pilot, Jan. 20, 2006. The Washington Post story was subsequently published by papers around the country, including the Los Angeles Times (California), the Fort Worth Star Telegram (Texas), and the Bremerton Sun (Washington).

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embolisms were found in these animals.³² The probability that the whales died at sea is extremely high.³³ 4 . 4 . 1 8

(3) Also in July 2004, a pod of melon-headed whales exhibited extraordinary behavior just off Kaua'i, Hawai'i, within range of Japanese and U.S. Navy ships participating in the biennial Rim of the Pacific (RIMPAC) tactical naval exercises there.³⁴ Two hundred of the normally deep-water whales crowded into shallow waters very near shore, an event that apparently had never before been seen in Kaua'i. According to a biologist observer associated with NMFS, the pod appeared stressed, and, in the ensuing chaos, one juvenile member of the pod stranded and died. After learning of this unusual whale behavior, the Navy temporarily restricted its active sonar operations in the area.³⁵ 4 . 4 . 1 8

(4) In June 2004, six beaked whales were found stranded along the Gulf of Alaska, on the state's southern coast. The strandings coincided with a U.S. naval exercise called Northern Edge.³⁶ 4 . 4 . 1 8

(5) In May 2003, the U.S. Navy vessel USS Shoup was conducting a mid-frequency sonar exercise while passing through Haro Strait, off the coast of Washington. 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.³⁷ 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 harbor porpoises 4 . 4 . 1 8

³² 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 Cetaean 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 Cetaean Society Conference, La Rochelle, France, April 2005).

³³ Id.

³⁴ Navy, Update on Melon-Headed Whales Stranded in Hawaii (2004) (presentation given at the Third Plenary of the Marine Mammal Commission Advisory Committee on Acoustic Impacts on Marine Mammals, San Francisco, 29 July 2004).

³⁵ This account incorporates details as reported by Jan TenBruggencate in Whale Dies After Pod Returns to Sea, Honolulu Advertiser, July 7, 2004. See also Marc Kaufman, Whales' Plight Revives Sonar Theory, Washington Post, July 11, 2004 at A1 (detailing incident).

³⁶ S.E. Moore and K.M. Stafford, Habitat Modeling, Ambient Noise Budgets, and Acoustic Detection of Cetaceans in the North Pacific and Gulf of Alaska sl. 27-28 (2005) (presentation given at ECOUS 2005, Office of Naval Research, 16-18 Mar. 2005).

³⁷ Christopher Dunagan, Navy Sonar Incident Alarms Experts, Bremerton Sun, May 8, 2003.

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fleeing the vessel in large numbers.³⁸ Eleven harbor porpoises—an abnormally high number given the average stranding rate of six per year—were found beached in the area of the exercise.³⁹ 4.4.18

(6) 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.⁴⁰ 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.⁴¹ 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.⁴² 4.4.18

(7) 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.”⁴³ 4.4.18

(8) 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.”⁴⁴ When NMFS asked the Navy for more information about its exercise, the Department's response was

³⁸ NMFS, Assessment of Acoustic Exposures at 6, 9.

³⁹ 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.

⁴⁰ 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.

⁴¹ 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.

⁴² 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.

⁴³ 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).

⁴⁴ 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).

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- to end the consultation that it had begun for the exercise under the Endangered Species Act.⁴⁵ 4 . 4 . 1 8
- (9) In January 1998, according to a NMFS biologist, a beaked whale “stranded suspiciously” at Vieques as naval exercises were set to commence offshore.⁴⁶ Another beaked whale stranded in the same area and under similar circumstances in May 2000.⁴⁷ 4 . 4 . 2 3
- (10) 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.⁴⁸ 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.⁴⁹ The following year saw nine additional Cuvier’s beaked whales strand off Greece, again coinciding with naval activity.⁵⁰ 4 . 4 . 1 2
- (11) Between 1985 and 1989, at least three separate mass strandings of beaked whales occurred in the Canary Islands, as reported in Nature.⁵¹ Thirteen beaked whales of two species were killed in the 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.⁵² An additional stranding of Cuvier’s beaked whales, also coinciding with a naval exercise, occurred in 1991.⁵³ It was reported that mass live strandings occurred each time exercises took place in the area.⁵⁴

⁴⁵ 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).

⁴⁶ Personal communication from Eric Hawk, NMFS, to Ken Hollingshead, NMFS (Feb. 12, 2002).

⁴⁷ Id.

⁴⁸ A. Frantzis, Does Acoustic Testing Strand Whales? 392 Nature 29 (1998).

⁴⁹ See SACLANT Undersea Research Center, Summary Record, La Spezia, Italy, 15-17 June 1998, SACLANTCEN Bioacoustics Panel, SACLANTCEN M-133 (1998).

⁵⁰ 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).

⁵¹ M. Simmonds and L.F. Lopez-Jurado, Whales and the Military, 337 Nature 448 (1991).

⁵² Id.

⁵³ 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).

⁵⁴ Simmonds and Lopez-Jurado, Whales and the Military, 337 Nature at 448.

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Some preliminary 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.⁵⁵ Indeed, it is not even certain that some beaked whales naturally strand in numbers.

4.4.23

But the full magnitude of sonar's effects on these species—or on other marine mammals—is not known. First, 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 Cuvier's 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.⁵⁶

4.4.21

Second, until recently, no one knew to look for a potential link between stranding events and nearby naval exercises. Now that such a link is strongly suspected, stranding incidents related to naval exercises are more likely to be recognized as such. This has been borne out by a recent re-examination of records of old strandings conducted by several prominent biologists. As reported by the Scientific Committee of the International Whaling Commission, the re-examination showed a concentration of mass beaked whale strandings along the Japanese coast near Yokosuka, one of the primary bases for U.S. naval activity in the western Pacific, with ten mass strandings reported since the late 1950s; an additional 64 beaked whales were reported to have stranded individually. By comparison, only two other possible mass strandings of beaked whales are known to have occurred over the rest of the entire Pacific coast of Japan. The authors concluded that a relationship between mass strandings and naval acoustics was "strongly suggest[ed]" by this record.⁵⁷

4.4.20

⁵⁵ 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).

⁵⁶ J.V. Carretta, K.A. Forney, M.M. Muto, J. Barlow, J. Baker, and M. Lowry, U.S. Pacific Marine Mammal Stock Assessments: 2003 at 147 (2004).

⁵⁷ 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 Doc. SC/56/E37). As in the case of many of the other incidents discussed above, most of the animals involved in these incidents over the years were observed to have stranded live.

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Furthermore, although the physical process linking sonar to strandings is not perfectly understood, the record indicates that debilitating, 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.”⁵⁸ It has been proposed that the panic led them to surface too rapidly or because it pushed them to dive before they could eliminate the nitrogen accumulated on previous descents, or because the sound itself precipitated the growth of nitrogen bubbles in the blood, which expanded to devastating effect. This finding has since been supported by follow-on papers, by published work in other fields, and by expert reviews.⁵⁹ 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 many of these animals.⁶⁰

4.3.42

That beaked whales are suffering injury in larger numbers than are turning up on shore would be consistent with one of the most disturbing findings from the Bahamas, the only stranding event for which baseline survey data are available. Since the Navy passed through in March 2000, the cohort of Cuvier’s beaked whales that had been photo-identified and recorded for years has virtually disappeared, leading researchers to conclude that nearly all of the animals died of physical injury or, at the very least, were driven to permanently abandon their habitat.⁶¹ Five years later, the species is slowly returning but sightings are still far below what they had been.⁶² Although not much is known about beaked whale ecology, the latest research suggests that some Cuvier’s whales might aggregate

4.4.18C

⁵⁸ 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.

⁵⁹ Cox et al., Report of a Workshop to Understand the Impacts of Anthropogenic Sound at 15-21, 23. For additional papers, see also the studies referenced at section II(B)(1)(a) (“Injury Threshold”).

⁶⁰ P.G.H. Evans and L.A. Miller, Concluding Remarks, in Proceedings of the Workshop on Active Sonar and Cetaceans 74 (2004); see also Cox et al., Report of a Workshop to Understand the Impacts of Anthropogenic Sound at 2. 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.

⁶¹ Personal communication with Ken Balcomb, Center for Whale Research, June 2005; K.C. Balcomb and D.E. Claridge, A Mass Stranding of Cetaceans Caused by Naval Sonar in the Bahamas, 8(2) *Bahamas Journal of Science* 1 (2001).

⁶² Personal communication with Ken Balcomb, Center for Whale Research, June 2005; International Whaling Commission, 2004 Report of the Scientific Committee, Annex K at § 6.3; Balcomb and Claridge, A Mass Stranding of Cetaceans.

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in small populations, taking up residence along the continental shelf.⁶³ Under the right conditions, even the transient sweep of a sonar vessel or other source could devastate a local population.⁶⁴ In the Bahamas, that is precisely what appears to have happened. 4.4.18C

It should be noted that beaked whales are not the only species vulnerable to these severe effects. As the IWC's Scientific Committee has noted, a variety of other cetaceans have shown signs of stranding or significant distress in response to active sonar use.⁶⁵ Some species, such as minke whales (Bahamas 2000) and pygmy sperm whales (Canary Islands 1988), are known to have stranded concurrent with beaked whales in two of the events described above; others, such as long-finned pilot whales and dwarf sperm whales (North Carolina 2005), melon-headed whales (Hawaii 2004), and harbor porpoises (Haro Strait 2003), appear to have stranded in sonar-associated events that did not involve beaked whales at all. It is not known which other species are most vulnerable to these effects, but concern has been raised about deep-diving whales in particular since these animals, in theory, would stand at greatest risk of injury from bubble growth.⁶⁶ Some recent anatomical studies of sperm whales and other species indicate that *in vivo* bubble formation is indeed possible in cetaceans other than beaked whales.⁶⁷ 4.4.24

b. The DSEIS' Analysis

In this light, the Navy's assessment of the risk of marine mammal injury and mortality from LFA use is seriously deficient. While some relevant papers appear in the bibliography, overall its analysis proceeds as though little has happened since the publication of the 2001 FEIS. Among the most significant errors:

⁶³ T. Wimmer and H. Whitehead, Movements and Distribution of Northern Bottlenose Whales, *Hyperoodon ampullatus*, on the Scotian Slope and in Adjacent Waters, 82 Canadian Journal of Zoology 1782 (2004); M.L. Dalebout, K.M. Robertson, A. Frantzis, D. Engelhaupt, A.A. Mignucci-Giannoni, R.J. Rosario-Delestre, and C. Scott Baker, Worldwide Structure of mtDNA Diversity among Cuvier's Beaked Whales (*Ziphius cavirostris*): Implications for Threatened Populations, 11 Molecular Ecology 3353 (2005).

⁶⁴ See, e.g., Letter from Hal Whitehead, Dalhousie University, to Donna Wieting, NMFS (May 2001), p. 2 (comments submitted to NMFS concerning its environmental review of the Navy's SURTASS LFA system); see also Dalebout et al., Worldwide Structure at 3354.

⁶⁵ International Whaling Commission, 2004 Report of the Scientific Committee, Annex K at § 6.3.

⁶⁶ D.S. Houser, R. Howard, and S. Ridgway, Can Diving-Induced Tissue Nitrogen Supersaturation, 213 Journal of Theoretical Biology at 183; J.R. Potter, A Possible Mechanism for Acoustic Triggering of Decompression Sickness Symptoms; L.A. Crum, M.R. Bailey, J. Guan, P.R. Hilmo, S.G. Kargl, T.J. Matula, and O.A. Sapozhnikov, Monitoring Bubble Growth, 6(3) Acoustics Research Letters Online at 214.

⁶⁷ Jepson et al., Gas-Bubble Lesions, 425 Nature at 575; Moore and Early, Cumulative Sperm Whale Bone Damage, 306 Science at 2215; Jepson et al., Acute and Chronic Gas Bubble Lesions, 42 Veterinary Pathology at 291.

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(1) The problems with the Navy's calculation of thresholds for injury and behavioral disturbance, discussed above in section II(B)(1), carry through to its analysis of the risk of injury and are incorporated here. 4.3.12

(2) The Navy wrongly dismisses mechanisms of sonar injury to marine mammals that would cause harm independent of stranding events. 3.4.42

First, the Navy portrays a leading theory about the mechanism of sonar-related injuries—the theory that whales suffer from bubble growth in organs that is similar to decompression sickness, or “the bends” in human divers—as a controversial hypothesis without much support among researchers. DSEIS at 4-31 to 32. 4.3.48

But the DSEIS fails to take proper account of published research on bubble growth. According to a series of published, peer-reviewed articles (based both on accepted theoretical methods and on experimental research), gas bubbles could be activated in supersaturated marine mammal tissue on brief exposure to sounds of 150 dB (RMS) re 1 μ Pa or lower and then grow significantly, causing injury, as the animal rises toward the surface.⁶⁸ That work is supported by a number of other studies, also published in leading, peer-reviewed journals, demonstrating through anatomical evidence that in vivo bubble growth can occur in a variety of marine mammal species, from sperm whales to beaked whales to Risso's dolphins.⁶⁹ And this is not even to mention the investigation of the 2002 Canary Islands strandings, whose findings concerning fat and gas emboli were recently published at length in another major journal.⁷⁰ The Navy cannot simply elide the numerous published, peer-reviewed papers—in dive behavior, veterinary pathology, and molecular biology—that support this theory, or disregard the recognition 4.3.42 4.3.47

⁶⁸ D.S. Houser, R. Howard, and S. Ridgway, Can Diving-Induced Tissue Nitrogen Supersaturation Increase the Chance of Acoustically Driven Bubble Growth in Marine Mammals? 213 *Journal of Theoretical Biology* 183, 190 (2001); L.A. Crum, M.R. Bailey, J. Guan, P.R. Hilmo, S.G. Kargl, T.J. Matula, and O.A. Sapozhnikov, Monitoring Bubble Growth in Supersaturated Blood and Tissue ex vivo and the Relevance to Marine Mammal Bioeffects, 6(3) *Acoustics Research Letters Online* 214 (2005) See also J.R. Potter, A Possible Mechanism for Acoustic Triggering of Decompression Sickness Symptoms in Deep-Diving Marine Mammals (paper presented at the IEEE International Symposium on Underwater Technology 2004, Taipei, Taiwan, April 2004).

⁶⁹ M.J. Moore and G.A. Early, Cumulative Sperm Whale Bone Damage and the Bends, 306 *Science* 2215 (2004); P.D. Jepson, R. Deaville, I.A.P. Patterson, A.M. Pocknell, H.M. Ross, J.R. Baker, F.E. Howie, R.J. Reid, A. Colloff, and A.A. Cunningham, Acute and Chronic Gas Bubble Lesions in Cetaceans Stranded in the United Kingdom, 42 *Veterinary Pathology* 291 (2005).

⁷⁰ A. Fernández, J.F. Edwards, F. Rodríguez, A. Espinosa de los Monteros, P. Herráez, P. Castro, J.R. Jaber, V. Martín, & 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).

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bubble growth has received from expert panels, such as the one convened last year by the Marine Mammal Commission to review sonar-related strandings.⁷¹ 4.3.42

In any case, the law requires agencies to evaluate all “reasonably foreseeable” impacts, which, by definition, includes “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.” 42 C.F.R. § 1502.22. The scientific literature supporting bubble growth rises far above this standard, and the Navy’s discounting of this theory in its analysis of injuries to marine mammals is arbitrary and capricious. 4.4.15

Second, the Navy’s analysis of injuries to whales leaves out a possibility that has been widely noted in the literature: i.e., that some of the observed injuries are a result of behavioral changes, such as rapid surfacing or premature diving, that sonar could induce in whales at sea. This mechanism of injury would also result in injury apart from strandings and should be considered. 4.3.33

These omissions result in an unwarranted discounting by the Navy of the strong possibility that sonar is causing severe injuries to whales at sea, whether or not those whales strand.

(3) The Navy wrongly dismisses the possibility that whales may be severely injured by sonar at great distances from the source. But from the few events that have been modeled, the 2000 Bahamas event and, to a lesser extent, the 1996 incident in Greece, it is evident that even mid-frequency sonar arrays, using sonar that propagates significantly less well than LFA, can induce strandings from tens of miles offshore and are likely to affect animals at tens of miles’ distance.⁷² To properly evaluate the potential impacts of LFA, the Navy must account for the reasonable possibility that injuries similar to those seen in the Bahamas, the Canaries, and other events may occur at great distances from LFA use. To do otherwise is to arbitrarily disregard the preponderance of the evidence in this field.

(4) In describing the 2000 Bahamas stranding event, the Navy places undue reliance on a list of “contributory factors” that it feels make a similar 4.4.16

⁷¹ 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, & L. Benner, Report of a Workshop to Understand the Impacts of Anthropogenic Sound on Beaked Whales 2 (in press) (noting particular plausibility of gas-bubble disease as one of 2 major findings of workshop).

⁷² Commerce and Navy, Joint Interim Report at 7-11; SACLANT Undersea Research Centre, Summary Record SACLANTCEN Bioacoustics Panel, La Spezia, Italy, 15-17 June 1998 at 2-6, 2-35 to 36 (1998).

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event unlikely to reoccur. DSEIS at 4-54. In the first place, however, the Navy provides no assurance that its LFA training sites won't exhibit all of the same environmental characteristics. Moreover, the general significance of those factors has been outstripped by events. There is no indication that a surface duct, one of the named contributing factors, occurred during the subsequent strandings in the Canary Islands or, indeed, during any of the beaked whale mortalities later reported by the IWC's Scientific Committee and others as being associated with sonar; and few other stranding incidents have involved sonar ships passing through a narrow channel with limited egress.⁷³ We do not doubt that certain factors, such as the use of sonar in channels, can increase the risk of harm; but it is abundantly evident from the literature that has emerged since the government's Bahamas report appeared in 2001 that strandings may well occur in their absence.

4.4.16

(5) The Navy has failed to consider most of the mass beaked whale strandings that have been identified for their association, or possible association, with sonar. See DSEIS at 4-53 to 54. Indeed, the only incidents that the authors appear to acknowledge are the 2000 strandings in the Bahamas, the 2002 strandings in the Canaries, and the 1996 strandings off Greece. Yet the list reported by the IWC's Scientific Committee and other expert bodies is far broader than the Navy's review would suggest, and should be included and considered in the final document.⁷⁴

4.4.18

(6) The Navy fails to account for the fact that some marine mammal species are especially vulnerable to acoustical injuries. For example, it does not give special consideration to minke whales, even though two minke whales stranded in the Bahamas event, another died in the 2005 North Carolina incident still under investigation, and at least one was observed to engage in dramatic "porpoising" behavior in reaction to sonar use in Haro Strait, Washington.⁷⁵ Nor does it properly consider harbor porpoises, which stranded at Haro Strait;⁷⁶ or pygmy sperm whales, which stranded along with two

4.4.24

⁷³ See, e.g., Fernández et al., 'Gas and Fat Embolic Syndrome', 42 Veterinary Pathology at 446-457; International Whaling Commission, 2004 Report of the Scientific Committee, Annex K at Tab. 1.

⁷⁴ See, e.g., International Whaling Commission, 2004 Report of the Scientific Committee, Annex K at Tab. 1; Brownell et al., Mass Strandings of Cuvier's Beaked Whales in Japan at Tab. 1; J. Hildebrand, Impacts of Anthropogenic Sound on Cetaceans Tab. 5 (2004) (IWC Doc. SC/56/E13); B. Taylor, J. Barlow, R. Pitman, L. Balance, T. Klinger, D. DeMaster, J. Hildebrand, J. Urban, D. Palacios, and J. Mead, A Call for Research to Assess Risk of Acoustic Impact on Beaked Whale Populations Tab. 1 (2004) (IWC Doc. SC/56/E36). See also the studies on individual strandings referenced in this section; and Jasny, Sounding the Depths II at Tab. 1-3.

⁷⁵ Commerce and Navy, Joint Interim Report at 1, 15-16 (Bahamas); M. Kaufman, "Whale Stranding in N.C. Followed Navy Sonar Use," Washington Post, Jan. 28, 2005, Sec. A (North Carolina); NMFS, Assessment of Acoustic Exposures at 9 (Washington).

⁷⁶ In dismissing the connection to harbor porpoises, the Navy argues that necropsies of animals stranded in association with sonar use in Haro Strait "found no evidence of acoustic trauma." DSEIS at 3.2-45. This

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species of beaked whales during naval exercises off the Canary Islands in November 1988;⁷⁷ or pilot whales and dwarf sperm whales, which stranded in the 2005 North Carolina incident;⁷⁸ or sperm whales and other deep-diving cetaceans, despite anatomical evidence of their susceptibility to bubble lesions and the concern raised by numbers of scientists that these animals stand at greatest risk of damage from bubble growth.⁷⁹ The potential for serious injury of these species is “reasonably foreseeable” and must be considered in the Navy’s evaluation of impacts. 42 C.F.R. § 1502.22.

4.4.24

(7) The Navy overestimates the importance of the fact that the long history of strandings associated with military sonar, discussed above, has usually implicated another type of sonar commonly employed by navies, known as mid-frequency sonar. DSEIS at 4-55. Mid-frequency sonar has been in widespread use for many decades and is used by navies around the globe. LFA, by contrast, is a new technology that was tested only in secret for many years, then deployed only in a limited areas of the Western Pacific. The Navy cannot properly rely on a lack of stranding reports for LFA to show anything but its fairly recent vintage and, to date, its tightly controlled usage.

4.4.14

(8) The Navy places far too much confidence in its assertion that its use of SURTASS LFA sonar in the last few years has not resulted in marine mammal strandings. DSEIS at 4-53. The Navy has been operating in portions of the Western Pacific at considerable distances (at least 30 to 60 nm) from shore, distant enough to limit observation of strandings and also distant enough that whales injured at sea might not strand. Most areas in which the Navy operates lack stranding networks or other means to detect and disseminate information about strandings. Moreover, as the Navy itself argues elsewhere in the document, stranding reports from the Western Pacific suffer from “regional language differences between conservation programs and publications, cultural preferences, and some inherent media restrictions.” DSEIS at 4-52. Even if the Navy could be confident that operations to date

4.4.15

statement is misleading. In fact, the NMFS investigation was inconclusive given the poor condition of the bodies and the failure to adequately preserve them for tissue analysis. NMFS, Preliminary Report: Multidisciplinary Investigation of Harbor Porpoises at 53-55 (conclusions unchanged in final report). In any case, as NMFS indicated in a further assessment, it is possible that behavioral reactions, rather than acoustic trauma, were responsible for the strandings. NMFS, Assessment of Acoustic Exposures at 10.

⁷⁷ V. Martín et al., Mass Strandings of Beaked Whales in the Canary Islands at 35.

⁷⁸ M. Kaufman, “Whale Stranding in N.C. Followed Navy Sonar Use,” Washington Post, Jan. 28, 2005, Sec. A.

⁷⁹ Moore and Early, Cumulative Sperm Whale Bone Damage, 306 Science at 2215; Jepson et al., Gas-Bubble Lesions, 425 Nature at 575; D.S. Houser, Can Diving-Induced Tissue Nitrogen Supersaturation, 213 Journal of Theoretical Biology at 183; J.R. Potter, A Possible Mechanism for Acoustic Triggering of Decompression Sickness Symptoms; International Whaling Commission, 2004 Report of the Scientific Committee, Annex K at § 6.3.

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had not caused whales to strand, it ignores the fact that these operations have been undertaken using protective measures that the Navy now proposes to abandon—including increased coastal exclusion zones, frequency restrictions, and a 360 degree buffer zone.

4.7.13
 2.5.1
 2.5.2

(9) The Navy attempts to discount the well-established link between sonar use and marine mammal strandings by pointing out (based on data compiled when acoustic impacts were not generally considered as a potential cause of strandings) that a majority of marine mammal strandings are related to natural causes. DSEIS at 4-55. This fact, however, does not lessen the Navy's burden to discuss and prevent marine mammal strandings that do relate to sonar.

4.4.26

(10) The Navy states, incorrectly, that "there are no new data that contradict any of the assumptions or conclusions in the FOEIS/FEIS." DSEIS at 4-30. To the contrary, and as referenced throughout this letter, new data exists inter alia linking whale strandings to naval sonar; linking non-stranding injuries in marine mammals to naval sonar; describing mechanisms of harm to marine mammals from sonar; showing unexpectedly high propagation of noise in shallow waters; finding that intense noise sources can mask whale calls over great distances, sometimes thousands of square kilometers; and revealing the difficulties of mitigating for noise impacts.

4.3.1

3. Modeling of Acoustic Impacts

It is impossible to comment fully on the Acoustic Integration Model ("AIM"), the program used by the Navy to calculate the system's impacts, because that model has not been released to the public. Indeed, disclosure of the model must occur for public comment to be meaningful under NEPA and the Administrative Procedure Act, and for guidelines adopted under the Data (or Information) Quality Act to be met. Nonetheless, based on the limited information contained in the DSEIS and related documents, a number of serious problems can be identified that result in underestimations of impacts.

4.4.2

4.4.3

First, the models used by the Navy in its applications for Letters of Authorization ("LOA") to assess its actual work in the Pacific, and in its Final EIS to estimate impacts in sample coastal areas, in large part assume a fairly even distribution of marine mammals across a wide area of ocean, failing to take the possibility that certain animals, like beaked whales and sperm whales, may be concentrated in particular habitat.⁸⁰ With regard to beaked whales, there is no indication that the

4.4.3a

⁸⁰ See, e.g., S.E. Moore, W.A. Watkins, M.A. Daher, J.R. Davies, M.E. Dahlheim, Blue Whale Habitat Associations in the Northwest Pacific: Analysis of Remotely-Sensed Data Using a Geographic Information System, 15 *Oceanography* 20 (2002); S. Ohsumi, Further Analysis of the Baird's Beaked Whale Stock in the Western North Pacific, 34 *Rep. Int'l Whaling Comm.* 587 (1984); C.H. Townsend, The Distribution of Certain Whales as Shown by Logbook Records of American Whaleships, 19(1) *Zoologica* 1 (1935).

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Navy has conducted research on habitat preferences around the Navy's operation area, as strongly recommended by NMFS in the 2001 Final Rule; and if it has conducted research, that information has not apparently been incorporated into its impact analysis or site planning, as NMFS called for. 67 Fed. Reg. 46782. Second, in the limited modeling we have before us, the Navy frequently assumes that populations of marine mammals are relatively unstructured, such that individual animals are improbably considered part of region-wide, basin-wide, or even world-wide stocks.⁸¹ Third, in general, the Navy's stock assessments in its LOA applications are based on incomplete and out-of-date information, leading to a significant underestimation of species abundance and therefore impacts.⁸² Fourth, the Navy incorrectly claims that significant impacts on stocks and populations, as modeled for its LOA applications, would necessarily occur at percentages lower than those assumed in the Navy's modeling of coastal areas and NMFS' Final Rule, even disregarding the underestimates of take resulting from the other errors described here.⁸³ Fifth, the Navy's approach to modeling behavioral impacts from multiple exposures is not conservative.⁸⁴

4 . 4 . 3b
 4 . 4 . 3c
 4 . 4 . 3d
 4 . 4 . 3d
 4 . 4 . 3e

C. Impacts on Fish and Fisheries

1. Acoustic Impacts on Fish

Though the architecture of their ears may differ, fish are equipped, like all vertebrates, with thousands of sensory hair cells that vibrate with sound; and a number of specialized organs like the abdominal sac, called a "swim bladder," that some species possess can boost hearing. Fish use sound in many of the ways that

⁸¹ Cf., e.g., M.L. Dalebout, K.M. Robertson, A. Frantzis, D. Engelhaupt, A.A. Mignucci-Giannoni, R.J. Rosario-Delestre, and C. Scott Baker, *Worldwide Structure of mtDNA Diversity among Cuvier's Beaked Whales (*Ziphius cavirostris*): Implications for Threatened Populations*, 11 *Molecular Ecology* 3353 (2005) (population structure in Ziphiids); W.F. Perrin, M.L.L. Dolar, M. Amano, and A. Hayano, *Cranial Sexual Dimorphism and Geographic Variation in Fraser's Dolphin, *Lagenodelphis hosei**, 19 *Marine Mammal Science* 484 (2003) (suggesting genetic differences among Fraser's dolphins off the Philippines and off Japan, as one example of differentiation among species in these two areas); H. Yoshida and H. Kato, *Phylogenetic Relationships of Bryde's Whales in the Western North Pacific and Adjacent Waters Inferred from Mitochondrial DNA Sequences*, 15 *Marine Mammal Science* 1269 (1999).

⁸² Cf., e.g., P. Rudolph and C. Smeenk, *Indo-West Pacific Marine Mammals*, in W.F. Perrin, B. Würsig, and J.G.M. Thewissen, *Encyclopedia of Marine Mammals* 617-25 (2002); E.C.M. Parsons, Review of the Navy's 2003 LOA Application for the SURTASS LFA System (2003).

⁸³ Compare SDEIS at 4-43 to 4-51 and 67 Fed. Reg. 46780.

⁸⁴ See, e.g., D. Kastak, B.L. Southall, R.J. Schusterman, C.R. Kastak, Underwater Temporary Threshold Shift in Pinnipeds: Effects of Noise Level and Duration, 118 *Journal of the Acoustical Society of America* 3154, 3161 (2005); Navy, Draft Overseas Environmental Impact Statement/ Environmental Impact Statement: Undersea Warfare Training Range (2005); Letter from P.J.O. Miller, Woods Hole Oceanographic Institution, to Donna Wieting, NMFS (May 31, 2001).

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marine mammals do: to communicate, defend territory, avoid predators, and, in some cases, locate prey.⁸⁵

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.”⁸⁶ Fish, unlike mammals, are thought to regenerate hair cells, but the pink snapper in those studies did not appear to recover within approximately two months after exposure, leading researchers to conclude that the damage was permanent.⁸⁷ 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.⁸⁸ As with marine mammals, sound has also been shown to induce temporary hearing loss. 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.⁸⁹ 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.⁹⁰

4.1.14

Nor is hearing loss the only effect that ocean noise can have on fish. 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.⁹¹

4.1.4

⁸⁵ See, e.g., A.N. Popper, Effects of Anthropogenic Sounds on Fishes, 28(10) *Fisheries* 26-27 (2003); M.C. Hastings & A.N. Popper, Effects of Sound on Fish 19 (2005) (Report to the California Department of Transportation, Contract No. 43A0139), p., 19; D.A. Croll, Marine Vertebrates and Low Frequency Sound—Technical Report for LFA EIS 1-90 (1999).

⁸⁶ 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).

⁸⁷ Id. at 641 (some fish in the experimental group sacrificed and examined 58 days after exposure).

⁸⁸ Id.

⁸⁹ 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 Biochemistry 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.

⁹⁰ See Popper, Effects of Anthropogenic Sounds at 29; McCauley et al., High Intensity Anthropogenic Sound Damages Fish Ears, at 641.

⁹¹ 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 DSEISmic Surveys: Analysis and

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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, an area larger than the state of Rhode Island; in another experiment, catch rates of rockfish were similarly shown to decline.⁹² Drops in catch rates in these experiments range from 40 to 80 percent.⁹³ 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.⁹⁴

4.1.17

Equally troubling are the high mortalities from noise exposure seen in developmental stages of fish. 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.⁹⁵ Increased mortality for fish eggs and larvae has been shown to occur at distances from an airgun source.⁹⁶ Also, larvae in at least some species are known to use sound in selecting and orienting toward settlement sites.⁹⁷ Acoustic disruption at that stage of development could have significant consequences.⁹⁸

4.1.17

2. The DSEIS' Analysis

Propagation of Air-Gun Signals, and Effects of Air-Gun Exposure on Humpback Whales, Sea Turtles, Fishes, and Squid 185 (2000) (airguns in general).

⁹² A. Engås, S. Løkkeborg, E. Ona, and A.V. Soldal, Effects of DSEISmic 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 DSEISmic Exploration with Airguns on Cod (*Gadus morhua*) Behaviour and Catch Rates, 196 *ICES Marine Science Symposium* 62-67 (1993).

⁹³ Id.

⁹⁴ 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 DSEISmic Surveys at 126-61.

⁹⁵ See, e.g., C. Booman, J. Dalen, H. Leivestad, A. Levsen, T. van der Meeren, and K. Toklum, Effector 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 DSEISmic 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 DSEISmic Prospecting on Fish Eggs on the Black Sea, 9 *Hydrobiology Journal* 45-48 (1973).

⁹⁶ Booman et al., Effector av luftkanonskyting på egg, larver og yngel at 1-83.

⁹⁷ S.D. Simpson, M. Meekan, J. Montgomery, R. McCauley, R., and A. Jeffs, Homeward Sound, 308 *Science* 221 (2005).

⁹⁸ Popper, Effects of Anthropogenic Sounds at 27.

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In the face of this substantial evidence of a range of impacts to fish from intense acoustic sources, the Navy nevertheless concludes that impacts to fish are likely to be “minimal to negligible since only an inconsequential portion of any fish stock would be present within the 180-dB sound field at any given time.” DSEIS at 4-21. Its analysis, however, fails to take into account several important points.

First, the Navy relies on three main studies in support of its conclusions about fish injuries: Popper in prep., examining rainbow trout exposed to LFA; Halvorsen in prep., examining catfish; and Wysocki in prep., examining fish behavior in both species. These studies are not yet published and are therefore not available for careful review, but the overview provided by the Navy shows 24 hours of significant hearing loss in catfish and rainbow trout after exposure to LFA. Id. at 4-15. Because fish use sound in many of the ways that marine mammals do—to communicate, defend territory, avoid predators, and, in some cases, locate prey—compromised hearing can have serious consequences for survival.⁹⁹ If a concentrated fish school were to suffer hearing loss for 24 hours, it might be vulnerable to predation and other threats that could have population-level effects.

Second, the Navy presumes an even distribution of fish when it states that it’s unlikely that any portion of a fish stock will be within the zone of greatest impact. But fish often aggregate into very dense schools, often located around areas of productivity.¹⁰⁰ Because the Navy has failed to identify any new offshore biologically important areas outside U.S. waters, it can make no assurances about use of LFA in important fish habitat, where significant effects might be felt to a stock.

Third, the Navy’s analysis of impacts to fish larvae and juvenile fish is inadequate. Despite the fact that some of the most significant effects from acoustical sources have been seen in fish eggs, larvae, and fry, all of the three studies conducted by the Navy, as best one can tell from the summary provided, tested LFA exclusively on adult fish. DSEIS at 4-13. Moreover, the Navy fails to discuss a recent work showing that fish larvae use noise for the selection of, and orientation to, suitable settlement sites.¹⁰¹ Disruption of such behavior could be quite harmful. The significant threat to young fish is highlighted by a recent study cited by the Navy that found mortality rates of 20-30 percent in juvenile herring exposed to naval sonar signals. DSEIS at 4-17.

⁹⁹ See, e.g., A.N. Popper, Effects of Anthropogenic Sounds on Fishes, 28(10) *Fisheries* 26-27 (2003); M.C. Hastings & A.N. Popper, Effects of Sound on Fish 19 (2005) (Report to the California Department of Transportation, Contract No. 43A0139), p., 19; D.A. Croll, Marine Vertebrates and Low Frequency Sound—Technical Report for LFA EIS 1-90 (1999).

¹⁰⁰ See page 9 of comments submitted on the DSEIS to the Navy from Dr. Linda Weilgart, dated on December 16, 2005.

¹⁰¹ S.D. Simpson et al., Homeward Sound, *Science* 308:221 (2005).

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Finally, the Navy's conclusion that commercial fish stocks and catches will not be affected by LFA simply does not follow from the studies it cites in support of this conclusion, which involved captive fish unable to display the type of behavioral response that might lead to reduced catch rates. DSEIS at 4-19 to 20. The studies of catch rates cited in the previous section, supra, provide better data on this point and suggest the opposite conclusion.

4.1.4

D. Impacts on Sea Turtles

Sea turtles, many of which are listed as endangered or threatened, appear to have their best sensitivity to sound in the frequency range employed by LFA. DSEIS at 4-26. 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 noise.¹⁰²

In its analysis of impacts to turtles, the Navy concludes that there is only a very small probability, "if any," that a sea turtle could be found inside the LFA mitigation zone during an LFA sonar transmission. DSEIS at 4-29. But the severe difficulties in effectively monitoring the mitigation zone for sea turtles, discussed infra, together with the Navy's failure to designate offshore biologically important areas for sea turtles (such as the Sargasso Sea gyre) and its failure to expand its coastal exclusion zone, belie this assurance. Moreover, the Navy's conclusion about impacts rests on an assumption of "even distribution" of populations through the pelagic zone, despite the fact that even the Navy recognizes that turtles clump into "hot spots." DSEIS at 4-29 to 30. Given these factors, a more rigorous analysis of potential impacts is necessary.

E. Species Excluded from Risk Analysis

The Navy eliminates invertebrates from its consideration, justifying this decision by stating that "they do not have delicate organs or tissues" and "there is no evidence of auditory capability in the frequency range used by SURTASS LFA." DSEIS at ES-7. This decision overlooks the growing evidence that invertebrates are vulnerable to impacts from acoustic sources. Marine mammal echolocation has been shown to directly injure invertebrates, raising the question of whether lower-frequency sources can do the same.¹⁰³ The only audiogram available for an invertebrate species (the American lobster) shows sensitivity to sounds below several hundred Hertz, in the frequency range of LFA.¹⁰⁴

3.2.5

3.2.6

3.2.7

¹⁰² National Research Council, The Decline of Sea Turtles: Causes and Prevention (1990).

¹⁰³ See K. Norris and B. Møhl, Can Odontocetes Debilitate Prey with Sound? 122 *The American Naturalist* 85 (1983).

¹⁰⁴ G.C. Offutt, Acoustic Stimulus Perception by the American Lobster, *Homarus americanus* (Decapoda), 26 *Experientia* 1276 (1970).

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Moreover, it has recently been observed that many species of invertebrates possess mechanosensors that bear resemblance to vertebrate ears, making it “important to examine the effect of anthropogenic sounds on a wider range of marine fauna.”¹⁰⁵ Impacts have already been observed in a number of species: giant squid, which twice now have stranded in numbers in the vicinity of airgun surveys; brown shrimp, whose growth and reproduction were retarded from being raised in a noisy environment; and snow crabs, which, in some preliminary research, showed signs of ovary and liver damage on exposure to airgun noise.¹⁰⁶ The proper approach under NEPA is to acknowledge the lack of necessary data and to either obtain it (if the cost of doing so is not exorbitant) or to conduct a risk assessment based on methods generally accepted by the scientific community. 42 C.F.R. § 1502.22.

3.2.5

F. 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. Thus, for example, it will be necessary to consider the impacts of the Navy’s training with LFA alongside those of existing naval activities, as well as those of industrial and commercial activities such as fishing, shipping, and geophysical research.

The DSEIS’s method for assessing cumulative impacts is deeply flawed. As it stands, the Navy does not consider cumulative impacts for any species other than marine mammals; and, as for marine mammals, it does little more than identify, in a summary way, some of the leading threats they face globally. DSEIS at 4-61 to 63. It does not attempt to examine any specific marine mammal population affected by LFA, so that, for example, one cannot ascertain what the combined effects of LFA use, ship-strikes, and

4.6.27

4.6.25

¹⁰⁵ A.N. Popper, Effects of Anthropogenic Sounds on Fishes, 28(10) *Fisheries* 24, 30 (Oct. 2003).

¹⁰⁶ A. Guerra, A.F. Gonzalez and F. Rocha, A Review of Records of Giant Squid in the North-Eastern Atlantic and Severe Injuries in Architeuthis dux Stranded after Acoustic Exploration (2004) (paper presented to the Annual Science Conference of the International Council for the Exploration of the Sea, Vigo, Spain, 22-25 Sept. 2004) (giant squid); J.P. Lagardère, Effect of Noise on Growth and Reproduction of Crangon crangon in Rearing Tanks, 71 *Marine Biology* 177 (1982) (brown shrimp); Fisheries and Oceans Canada, Potential Impacts of Seismic Energy on Snow Crab (2004) (Maritime Provinces Regional Habitat Status Report 2004/Draft) (snow crab). See also R.D. McCauley, J. Fewtrell, A.J. Duncan, C. Jenner, M.-N. Jenner, J.D. Penrose, R.I.T. Prince, A. Adhitya, J. Murdoch, & 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) (squid).

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fishing entanglements on threatened whale populations might be; nor does it contemplate that LFA activities might work synergistically with other threats to affect them.¹⁰⁷ 4.6.25

The Navy also seems to believe that it can satisfy the requirement to assess cumulative impacts by cataloging the ways in which impacts from LFA are small compared with the totality of threats faced by marine mammals and the totality of anthropogenic noise being generated in the oceans. DSEIS at 4-57 to 63. Not only is this approach factually insupportable given the lack of any quantitative assessment of long-term effects in the DSEIS—but it misapprehends the definition of “cumulative impact,” which, according to NEPA’s regulations, “can result from individually minor but collectively significant actions taking place over a period of time.” 42 C.F.R. § 1508.7. It cannot be reconciled, for example, with the Navy’s own account of the long-term effects of stress, a reasonably foreseeable impact that does not otherwise receive attention in the document. 4.6.14

In short, the Navy must (a) consider cumulative impacts on species other than marine mammals, such as fish and sea turtles, (b) evaluate the potential for cumulative impacts, (c) assess the potential for synergistic adverse effects, as from noise in combination with ship-strikes,¹⁰⁸ (d) properly assess the long-term cumulative impacts of the activities actually covered by the DSEIS, and (e), even if (contrary to reason) the Navy finds that the long-term impacts of the proposed use of LFA itself are likely to be small, consider whether other activities could combine with this use to produce a significant effect. 4.6.29
 4.6.25

G. Alternatives Analysis

At bottom, 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 requirement has been described in regulation as “the heart of the environmental impact statement.” *Id.* § 1502.14. 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.” *Id.* § 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 is significantly flawed. First, it fails to meaningfully consider focusing its training into areas of reduced risk. One of the central flaws of the Navy’s 2001 FEIS was its failure to consider concentrating training with 4.7.9

¹⁰⁷ For example, as discussed above, exposure to some manmade sounds may increase the risk of ship-strikes of the critically endangered right whale. See Nowacek *et al.*, Right Whales Ignore Ships, 271 Proceedings of the Royal Society of London, Part B: Biological Sciences at 227.

¹⁰⁸ The 2004 Report of the IWC’s Scientific Committee emphasizes the importance of evaluating the synergistic impacts of ocean noise and other stressors, such as toxins. IWC, 2004 Report of the IWC Scientific Committee, Annex K at § 6.4 and App. 2 (noting studies of terrestrial animals that demonstrate significant adverse synergistic effects).

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LFA into specific, low-impact areas, rather than spreading it throughout the globe. District Court Opinion at 1166. Instead of correcting this flaw, the Navy proposes only alternatives that would allow training with LFA throughout the same 75% of the world's oceans as proposed in the 2001 FEIS. None of the considered alternatives engages in the central and essential tasks of identifying potential areas of lesser harm and analyzing the impacts to the environment that would result from restricting all, or even a portion, of the Navy's planned training to those areas. The consideration of training in areas that present a reduced risk of harm to marine life is all the more critical since experts agree that proper siting and geographic mitigation are among the most effective ways to lessen harm from acoustical sources.¹⁰⁹

Second, it fails to meaningfully consider extending shutdown procedures to fish. The Court held the 2001 FEIS deficient because it failed to consider suspending LFA operations when schools of fish are detected within the LFA buffer zone. District Court Opinion at 1165-66. But the Navy's attempt to comply with the Court's directive here is grudging at best. Though it does include the extension of shutdown procedures to fish among its alternatives considered, it dismisses this alternative in one paragraph, with the core of its argument being that impacts to fish will be negligible and that "active acoustics would give so many false alarms that the impact on the effectiveness of the military readiness activity (and, hence impact on National Security) would be intolerably high." DSEIS at 2-11. 4.7.10

As further discussed in section II(C) ("Impacts to Fish and Fisheries"), supra, we disagree that impacts to fish will be negligible. Given the potential for serious harm to fish from exposure to LFA, and further given the Court's clear concern about reducing this potential, the Navy's dismissal of mitigation opportunities remains far too casual. The Navy offers only a conclusory statement that the use of active acoustics to detect fish would yield too many false alarms, without justifying this conclusion with any information that would allow the public, or the Court, to judge its reasonableness. 4.7.10

Third, it fails to propose additional OBIA's other than seven national marine sanctuaries within U.S. waters—five of which are already included, in the 2002 Final Rule, among areas where the Navy is required to limit received levels to below 180 dB. This is discussed further in section II(H) ("Mitigation Measures"). 4.7.18

Fourth, it fails to consider all reasonable alternatives for expanding coastal exclusion zones, instead limiting its analysis to the 12 nm and 25 nm scenarios. The Navy provides no explanation for its choice of 25 nm as the sole alternative coastal zone considered. Other alternatives that should have been considered include a dual-criteria alternative like 4.7.12

¹⁰⁹ See J. Barlow and R. Gisiner, Mitigation and Monitoring of Beaked Whales During Acoustic Events, *Journal of Cetacean Research and Management* (in press) (discussing the importance of geographic mitigation); IWC, 2004 Report of the IWC Scientific Committee, Annex K at § 6.4 (recommending steps to protect large whale critical habitat worldwide from noise impacts); 67 Fed. Reg. 46782.

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the one used in the Permanent Injunction (which sets a coastal exclusion zone in the Philippine Sea of 60 nautical miles or 30 nautical miles seaward of the 200 meter isobath, whichever is greater); zones greater than 25 nm and large enough to shield shelf and shelf-break species, but still narrow enough to permit training with LFA, like the zone of at least 60 nm now employed in the Philippine Sea; and an “inverse” coastal exclusion zone—perhaps called a coastal shelf exclusion zone—that puts the areas of highest impact to coastal species, as defined by the Navy’s coastal zone exclusion modeling, off-limits to training.

4.7.12

Fifth, it omits the reasonable alternatives of maintaining its current 330 Hz frequency restriction and its 360-degree, 1-km buffer zone. Each of these is discussed further below, in II(H) (“Mitigation Measures”). Both would avoid or minimize adverse impacts, have been shown to be practicable, and should have been considered.

4.7.11

The Navy’s failure to consider these reasonable alternatives to the proposed action, all of which would decrease harm from LFA and several of which were specifically ordered by the Court, is arbitrary and capricious.

H. Mitigation Measures

To comply with NEPA, an agency must discuss measures designed to mitigate its project’s impact on the environment. See 42 C.F.R. § 1502.14(f). When marine mammals are among the impacted species, an independent set of mitigation requirements applies through the MMPA. 16 U.S.C. § 1371(a)(5). There is a large and growing set of options for the mitigation of noise impacts to marine mammals and other marine life, several of which were urged upon the Navy by the Court. But the Navy fails to discuss or rejects most of the protective measures urged by the Court and by NMFS to safeguard marine life, retreating even from the mitigation measures under which the Navy has been operating for years. What few measures the Navy does embrace are fraught with difficulties and will not, realistically, protect marine life from LFA’s most intense and harmful noise levels.

The 2001 Final Rule, according to the Court, did not go far enough in imposing mitigation measures on the Navy’s use of LFA. The Court held “that defendants acted arbitrarily and capriciously in failing to (1) extend the coastal exclusion zones in all areas except for those few coastal areas where close to shore training is necessary, (2) use aerial surveys or observational vessels for LFA sonar missions operated close to shore, and (3) designate additional off-limit areas or seasons and OBIAAs.” District Court Opinion at 1164. Yet here, the Navy’s preferred alternative fails to adopt or severely shortchanges each of these mitigation measures, and also fails to consider additional mitigation measures that would mitigate LFA’s impact on marine species, including but not limited to the following.

1. The Navy fails to extend the coastal exclusion zone as required, instead responding to this holding by disputing its premise that greater coastal exclusion

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zones would be beneficial to marine species. DSEIS at ES-19, 4-75. But the Court has already held that that it was unlawful for NMFS and the Navy to reject increased coastal exclusion zones, and the Navy cannot reopen this debate. Even if it could, the Navy has failed to present sufficient modeling and analysis to show that its conclusion as to the merits of an expanded zone is correct. Its modeling fails to account for several factors that are key to showing that more harm to marine species will, indeed, occur with an exclusion zones of 25 nm, including but not limited to the following:

4.7.13

4.7.14

- The model fails to consider or account for the absolute number of animals affected within each of the three zones studied (shelf, shelf-break, and pelagic). Instead, for every species considered it assumes a normalized density of 4 animals per square nm in the species' prime habitat. DSEIS at 4-71. This methodology makes it very difficult to weigh the real-world impact of the two scenarios analyzed. The Navy concedes, for example, that increasing the coastal standoff zone decreases harm to marine animals closest to shore (i.e., shelf species). *Id.* at 4-75. If there are many more animals on the shelf than in the shelf-break or pelagic zones, any increased risk for pelagic and shelf-break species might be outweighed by the decreased risk for shelf species. The analysis does not provide sufficient information, however, to allow this comparison.
- Relatedly, the model fails to account for the absolute number of animals that will be exposed to the most dangerous levels of LFA sound. The central difference between the two alternatives is the location of the area of intense sound in relation to the shelf break. In comparing these alternatives, therefore, one crucial question is whether more or fewer marine animals are likely to be found within the area of most intense ensonification. This is a questions that the model never asks or answers, since it never compares abundances of shelf, shelf break, and pelagic species, as discussed in the previous bullet.
- The model likewise fails to account for the types of animals that will be exposed to the highest and most dangerous levels of LFA sound, treating all species as equivalently vulnerable to acoustical harms. In fact, we know that some species found along the coast are particularly vulnerable, such as harbor porpoises.¹¹⁰ Failure to take into account especially sensitive species and their likely habitats is a significant flaw.

4.7.14a

4.7.14b

4.7.14c

¹¹⁰ See, e.g., R.A. Kastelein, H.T. Rippe, N. Vaughan, N.M. Schooneman, W.C. Verboom, and D. de Haan, The Effects of Acoustic Alarms on the Behavior of Harbor Porpoises in a Floating Pen, 16 Marine Mammal Science 46 (2000); P.F. Olesiuk, L.M. Nichol, M.J. Sowden, and J.K.B. Ford, Effect of the Sound Generated by an Acoustic Harassment Device on the Relative Abundance of Harbor Porpoises in Retreat Passage, British Columbia, 18 Marine Mammal Science 843 (2002); J. Calambokidis, D.E. Bain, and S.D. Osmek, Marine Mammal Research and Mitigation in Conjunction with Air Gun Operation for the USGS 'SHIPS' Seismic Surveys in 1998 (1998) (report to Minerals Management Service); 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 10 (2005).

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- The model assumes that the propagation loss from the LFA source is spherical for the first 1,000 m from the source and cylindrical beyond that range. DSEIS at 4-67. Propagation loss in shallow coastal waters is not, however, necessarily spherical for that duration, and reverberations can play a significant role in increasing received levels.¹¹¹ Because coastal shelf widths vary greatly, both the 12 nm and the 25 nm coastal exclusion zones will sometimes permit LFA use in coastal waters less than 200 m deep—as the Navy itself acknowledges by including, in its model, a shelf break 80 nm off shore. Thus, the Navy should update its propagation loss model to account for shallow water propagation effects. 4.7.14d
- The model treats all three shelf-break scenarios (at 5 nm, at 15 nm, and at 80 nm from the shore) as equally likely to occur in LFA operational areas. The placement of the shelf break, however, has a significant effect on the harm to which species are exposed in each scenario analyzed. DSEIS at Table 4.7-7. Rather than assume an equal likelihood for each shelf-break type, the DSEIS should therefore make an estimate, based on best available science, as to the proportion in which these three types occur in LFA operational areas. 4.7.14e

Moreover, the DSEIS should have considered zone widths in addition to 12 and 25 nm and other reasonable alternatives for the coastal exclusion zone, as discussed further in section II(G) (“Alternatives Analysis”).

2. The Navy refuses to adopt small-craft pre-operational surveys for marine mammals in missions close to shore. The Court held that such surveys are necessary to protect marine life, but the Navy rejects this option and concludes, among other things, that such surveys are “not practicable” and “not effective.” DSEIS at 5-9. The Court’s direct conclusions to the contrary after review of the record, however, are dispositive of these issues. Evidence since the Court’s ruling in 2003 has only strengthened the justifications cited by the Court for requiring such surveys.¹¹² Moreover, even if the Court’s holding were not dispositive, the Navy’s analysis on these points is flawed. The Navy does not consider, for example, any of the following in its analysis:

- The possibility of using boats launched from shore, rather than from LFA ships (since only operations close to shore are at issue); 5.4.2
5.4.3
5.4.5
5.4.5a

¹¹¹ Tolstoy, M., Diebold, J.B., Webb, S.C., Bohnenstiehl, D.R., Chapp, E., Holmes, R.C. and Rawson, M. Broadband calibration of R/V Ewing seismic sources. 2004. *Geophysical Research Letters* 31 (L14310): 1-4; NMFS, Assessment of Acoustic Exposures.

¹¹² Evidence of coastal strandings due to Navy sonar use has mounted, as have studies showing the inefficacy of visual and other monitoring schemes related to safety zones. Recent research has shown 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 through visual monitoring. J. Barlow and R. Gisiner, Mitigation and Monitoring of Beaked Whales During Acoustic Events, *Journal of Cetacean Research and Management* (in press) (number cited is based on draft text). See also discussion of additional coastal strandings associated with Navy sonar since 2003, in section II(B)(2)(a) (“Summary of Strandings Data”).

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- The fact that any minor disturbance to marine mammals from small planes and small boats would be far outstripped by the risk of serious injury and death that might result if marine mammals and sea turtles remain undetected in the zone of highest impact when the LFA system is activated; 5.4.5b
- The possibility of using more than a single small boat, if a single small boat is insufficient to the task; 5.4.5c
- The fact that the effectiveness of any visual monitoring program, including the one embraced by the Navy, is diminished by high sea states, low visibility, and diving habits of whales—making additional mitigation more important, not less important. (The Navy fails to explain why, in these conditions, its proposed boat-based observers would be able to see cetaceans more effectively than aerial surveyors. The boat-based observers would be positioned at even greater distances from the animals than helicopter observers.); or 5.4.5d
- The comparative cost of operating LFA in a manner that exposes coastal marine mammals to a higher risk of stranding and other injuries. 5.4.5e

3. The Navy has done very little to respond to the Court’s holding with respect to additional OBIA’s. Recognizing the importance of shielding crucial offshore areas from exposure to LFA, the Court concluded that NMFS and the Navy had not done enough to identify such areas and to put them off-limits to LFA training. Though the Navy’s preferred alternative adds seven locations to the list of OBIA’s, five of these areas were already included, in the 2002 Final Rule, among places where the Navy is required to limit received levels to below 180 dB—and thus are not additional mitigations at all. Compare DSEIS Table 2-4 with 50 C.F.R. § 216.184(e)-(f). Moreover, every one of the seven areas is an existing or proposed National Marine Sanctuary within U.S. waters. DSEIS at 2-14, Table 2-4. No new OBIA outside U.S. waters is even considered in the DSEIS. Id. 4.7.18

For example, the DSEIS does not consider any of the areas specifically mentioned in the District Court Opinion as potential OBIA’s. It does not consider any marine protected areas (“MPAs”) established by countries other than the U.S., such as any of Canada’s nine existing MPAs with cetaceans, Australia’s 38 existing MPAs with cetaceans, or Brazil’s 16 existing MPAs with cetaceans¹¹³—or, indeed, any of the non-U.S. protected areas discussed in the recent and highly relevant assessment of this topic entitled Marine Protected Areas for Whales, Dolphins and Porpoises: A World Handbook for Cetacean Habitat Conservation.¹¹⁴ Nor does the DSEIS 4.7.19

¹¹³ E. Hoyt, “Marine Protected Areas for Whales, Dolphins and Porpoises: A World Handbook for Cetacean Conservation.” p.12 Table I.1 (2005).

¹¹⁴ E. Hoyt, “Marine Protected Areas for Whales, Dolphins and Porpoises: A World Handbook for Cetacean Conservation.” (2005). Also see the discussion of key omitted habitats and MPAs in the letter submitted to the Navy during this comment period by Dr. E.C.M. Parsons of George Mason University. He notes the omission of Xiamen Marine National Park and Conservation Area (Fujian Province), a nationally recognized protected area since 2000, designated specifically for cetaceans and located immediately

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consider any of the biologically significant, globally representative areas have already been compiled by the World Conservation Union (“IUCN”), in conjunction with the World Bank and Great Barrier Reef Marine Park Authority. See IUCN et al., A Global Representative System of Marine Protected Areas (1995). 4.7.19

Even the Navy’s consideration of waters along the U.S. coast is incomplete. Not mentioned, for example, are the Channel Islands National Marine Sanctuary off southern California, home to a tremendous diversity of marine species and a major gray whale migration path; or the gray whale migratory paths outside the Olympic Coast National Marine Sanctuary off the coast of Washington State, specifically discussed by the Court as a potential OBIA. District Court Opinion at 1163. 4.7.19

Because the Navy has done very minimal work to identify off-limit areas outside U.S. waters and has ignored clear candidates for the OBIA designation, it has failed to take on the burden of identifying additional OBIA’s, as required by the Court. Its failure to consider and adopt additional OBIA’s remains arbitrary and capricious. To begin with, we propose that during the SEIS process the regional and national priority areas implicated by the IUCN’s report and in Dr. Hoyt’s review of cetacean MPAs be reviewed. These areas include but are in no way limited to: the Channel Islands and Santa Barbara Channel (California); the Gulf of Alaska; the Hawaiian Islands; the Marshall Islands; the Great Barrier Reef (Australia); the Gulf of Carpentaria (Australia); the Yaeyama Archipelago (Japan); the Korea Strait; Bohai Bay (China); the Fernando de Noronha archipelago (Brazil); the Atol das Rocas (Brazil); archipelagos west of Iceland; the Milieuzone Noordzee (Netherlands); the Western Mediterranean North for Protection of International Waters for Cetaceans (France, Italy, Corsica); the Gulf of Gabes (Tunisia); the Gulf of Sirte (Libya); and the Aegean Sea (Greece, Turkey). Further recent work on offshore biodiversity and habitat preferences should also be considered and applied.¹¹⁵ 4.7.19

4. The Navy rejects NMFS’s 360-degree, one-kilometer buffer zone extending out from the 180 dB isopleth. See 50 C.F.R. Sec. 216.184(b). Without explanation or analysis, the Navy now proposes shutting down LFA transmissions only when species are sited within this zone and within 45 degrees of either side of the bow—effectively shrinking this buffer zone by 75%. DSEIS at Table 5-1. This proposal is somewhat 4.7.11

opposite Taiwan on the Chinese mainland; portions of the Sargasso Sea gyre, a crucial offshore habitat for juvenile and hatchling sea turtles; the Far Eastern Marine Nature Reserve (Zapovednik) in Pter the Great Bay, Sea of Japan; the Vostok Bay National Comprehensive Marine Sanctuary; the Siargao Island Protected Land and Seascape; the Batanes Island Protected Land and Seascape; the Calayan Island Protected Area; and the Sierra Madre Natural Park. The latter two are known to include breeding humpback whales in their waters, and Calayan Island is considered to be the most diverse cetacean habitat in the Philippines.

¹¹⁵ See, e.g., B. Worm, H.K. Lotze, and R.A. Myers, Predator Diversity Hotspots in the Open Ocean, 100 Proceedings of the National Academy of Sciences 9884 (2003); B. Worm, M. Sandow, A. Oschlies, H.K. Lotze, and R.A. Myers, Global Patterns of Predator Diversity in the Open Oceans, 309 *Science* 1365 (2005).

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baffling given the horizontally omnidirectional nature of the LFA signal and given the proven practicability of the more protective zone.

5. It also rejects the 330 Hz frequency restriction imposed by NMFS to protect marine mammals from resonance effects. The Navy now argues that there is no need to mitigate for resonance effects since an expert group, convened in 2002 by NMFS, rules out resonance effects as a likely problem. DSEIS at 2-9 to 2-10. In fact, that group did not rule out resonance, though it considered lung resonance in particular less promising than other pathologies such as bubble growth, and, in fact, called for further research on the subject—particularly on structures other than the lungs, which was the only structure it considered. NMFS, Report of the Workshop on Acoustic Resonance as a Source of Tissue Trauma in Cetaceans (2002). Meanwhile, an expert group convened more recently, by the Marine Mammal Commission, concluded that resonance remained a potential cause and made similar recommendations for further research. Cox et al., Report of a Workshop to Understand the Impacts of Anthropogenic Sound at 13, 22-23. Under NEPA, damage from resonance remains a “reasonably foreseeable” impact that must be considered in the Navy’s environmental review and mitigation. 42 C.F.R. § 1502.22. 4.7.11 2.5.2
6. The mitigation measures that remain are not well calculated to protect marine species from LFA. First, the coastal exclusion zone is relatively narrow and untied to the width of the continental shelf at any given location, leaving coastal species in many parts of the world vulnerable. Second, the efficacy of the safety zone in preventing injury is inherently tied to the ability of the Navy to monitor that zone; but the limits of visual and acoustical monitoring for marine mammals are well-established.¹¹⁶ These limits adhere even when the observers are marine biologists assigned only to the task of wildlife monitoring. Sighting rates will only decrease with non-biologist observers whose attention is divided between several mission tasks, so the Navy must provide more detail about the implementation of its visual monitoring program. Third, the Navy fails to explain how it will monitor the safety zone for sea turtles, which are small and which spend considerable time under water but do not vocalize. Fourth, in mitigating for human divers, the Navy applies a 40m coastal contour rule that is a gross oversimplification and fails to account for popular diving sites, like wrecks and reefs, that may be in water deeper than 40m. Fifth, the Navy’s proposal to resume sonar transmissions just 15 minutes after last sighting a whale in the safety zone is inappropriate given dive times of large whales and turtles; cetaceans can remain submerged for over an hour. 5.0.2 5.0.2a 5.0.2b 5.0.2c 5.0.2d 5.0.2e

¹¹⁶ See, e.g., J.W.W. Hain, S.L. Ellis, R.D. Kenney, and C.K. Slay, Sightability of Right Whales in Coastal Waters of the Southeastern United States with Implications for the Aerial Monitoring Program, in G.W. Garner, S.C. Amstrup, J.L. Laake, B.F.J. Manley, L.L. McDonald, and D.G. Robertson, Marine Mammal Survey and Assessment Methods 191 (1999); J. Barlow and R. Gisiner, Mitigation and Monitoring of Beaked Whales During Acoustic Events, Journal of Cetacean Research and Management (in press).

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7. Finally, the Navy simply fails to consider a broad range of mitigation measures available for the protection of marine life, including but not limited to ramp-up of the LFA source; use of third-party marine biologist visual observers; acoustic monitoring using the Navy's existing acoustic nodes and other external platforms; modification of the sonar signal characteristics;¹¹⁷ the avoidance of enclosed areas and coastal areas with complex, steep sea bed topography; use of lower power levels in conditions that may produce surface ducting and within certain geographic or other conditions, such as shallow marine embayments; wider safety zones; operational procedures in coastal areas to provide escape routes and avoid embayment of marine species; and, of course, meaningful geographic restrictions that would avoid biological hot-spots and focus training in areas of low risk.¹¹⁸

5.0.3
5.0.3a
5.0.3b
5.0.3c
5.0.3d
5.0.3e
5.0.3f
5.0.3g
5.0.3h
5.0.3i

I. Project Description and Meaningful Public Disclosure

Disclosure of the specific activities contemplated by the Navy is essential if the EIS 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]"). With regard to noise-producing activities, for example, the Navy must describe source levels, frequency ranges, duty cycles, and other technical parameters relevant to determining potential impacts on marine life.

1.3.1

The DSEIS provides some of this information, but it fails to disclose key data that the Navy presumably used in modeling acoustic impacts. Just as important, the Navy has not released or offered to release any of the modeling systems it used to calculate acoustic harassment and injury. These models 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. 42 C.F.R. §§ 1502.9(a), 1503.1(a) (NEPA); 5 U.S.C. § 706(2)(D) (APA). And guidelines adopted under the Data (or Information) Quality Act also require their disclosure. The Office of Management and Budget's

4.4.2

¹¹⁷ In Europe, the Norwegian and Dutch navies have begun to experiment with the characteristics of their mid-frequency systems, endeavoring to find an alternative that would prove less hazardous to beaked whales. J.J. Lok, Green Issues Loom Larger in Future Blue-Water Active Sonar Operations, *Jane's International Defense Review* 44-47 (Aug. 2004). In the United States, an expert panel, commissioned by the Office of Naval Research, advised the Navy to explore the use of complex waveforms that would retain Doppler sensitivity but produce lower peak amplitudes. Levine, Active Sonar Waveform at 27.

¹¹⁸ The Australian Navy, for example, goes much further than the Navy in its training protocols for sonar and, in doing so, demonstrates the practicability of these methods. When training with a mid-frequency sonar system, Australia requires seasonal and geographic restrictions on the use of the system at its highest power levels; use of lower power levels in conditions that may produce surface ducting and within certain geographic conditions such as shallow marine embayments; pre-operational and operational monitoring of a much larger safety zone (4000 yards) than the Navy considers; and mandatory shut-down of sonar transmissions if a whale is sighted within that safety zone. See Royal Australian Navy "Maritime Exercise Areas Environmental Management Plan," Procedure S-1 (June 9, 2004).

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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.¹¹⁹ We encourage the Navy to contact us immediately to discuss how to make this critical information available.

J. Scope of Review

In the 2001 FEIS, the Navy conducted its environmental analysis for the “extraterritorial” portion of the LFA program, that part which lies outside U.S. territorial waters, under the authority of Executive Order 12114 rather than under NEPA. DSEIS at ES-2. Nothing in the DSEIS suggests that the Navy has altered this decision. This position on the scope of review is inconsistent with the statute (see, e.g., Environmental Defense Fund v. Massey, 968 F.2d 528 (D.C. Cir. 1994) and NRDC v. Navy, No. CV-01-07781, 2002 WL 32095131 at *9-12 (C.D. Cal. Sept. 19, 2002)), and we urge the Navy to revisit it and to conduct a full NEPA analysis LFA training activities regardless of locale.

1.3.2

K. Compliance with Other Applicable Laws

The Navy has stated its intention to apply for an Incidental Harassment Authorization under the Marine Mammal Protection Act authorizing LFA use beginning in 2007, and to consult with NMFS regarding that action. NRDC will submit comments regarding the Navy’s MMPA and ESA compliance at the appropriate time. But other statutes and conventions also apply to the Navy’s proposal and include:

1. 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.”
2. 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

¹¹⁹ Navy, Ensuring the Quality of Information Disseminated to the Public by the Department of Defense: Policy and Procedural Guidance § 3.2.3.1 (Feb. 10, 2003). The Defense Department defines “influential” to mean “that the Component can reasonably determine that dissemination of the information will have or does have clear and substantial impact on important public policies or important private sector decisions”—which is clearly the case here, in the Navy’s first NEPA review of mid-frequency sonar exercises. See Ensuring the Quality of Information Disseminated to the Public by the Department of Defense: Definitions § 3 (Feb. 10, 2003).

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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).

3. 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).

4. The Marine Protection, Research and Sanctuaries Act, 33 U.S.C. § 1401 et seq., which has as its purpose 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). The Act 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).

5. 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 potentially affected by its activities.

6. The United Nations Convention on the Law of the Sea and other international conventions, treaties, and agreements that aim to reduce marine pollution from energy or noise.

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Operation of the LFA system cannot legally be undertaken without compliance with these laws.

L. Alternatives Analysis Under Section 102(2)(E) of NEPA

Above and beyond the EIS requirement, NEPA directs agencies to “study, develop, and describe appropriate alternatives” to any project that presents “unresolved conflicts concerning alternative uses of available resources.” 42 U.S.C. § 4332(2)(E). Courts have concluded that this duty is “both independent of, and broader than, the EIS requirement.” Bob Marshall Alliance v. Hodel, 852 F.2d 1223, 1229 (9th Cir. 1988), cert. denied, 109 S.Ct. 1340 (1989). Because its LFA proposal presents “unresolved conflicts” about the proper use of “available resources,” the Navy must explicitly address its separate and independent obligations under section 4332(2)(E).

M. Application of the DSEIS to the Navy’s next five-year small take permit

With this supplemental EIS, the Navy hopes not only to correct the deficiencies identified by the Court in the 2001 FEIS, but also to fulfill its NEPA requirement for an analysis of the environmental impacts of its second five years of LFA operation, from 2007 through 2012. DSEIS at ES-1. The Navy’s application for a new small take permit, however, is a separate final agency action from its original application and, absent the sort of tiering that has not been conducted here, it requires its own EIS. 42 U.S.C. § 4332.

1.3.3

This is especially true since the Navy proposes to alter both the scale and the nature of its operations with LFA under its next small take permit. It proposes doubling the number of ships and the hours of active transmission from the amounts proposed in the 2001 FEIS. DSEIS at 4-1 to 4-2. Moreover, it proposes equipping three of these ships with a different LFA system, called Compact LFA (“CLFA”), the characteristics of which are said to be “comparable to” existing LFA systems but which are not revealed in the DSEIS. DSEIS at 2-2. Some passages of the DSEIS indicate that CLFA systems may operate in somewhat higher frequencies than LFA systems. DSEIS at 2-9 (“the frequency requirements for the Compact LFA (CLFA) to be installed onboard the smaller VICTORIOUS Class [ship] are somewhat higher, but still below 500 Hz.”) The Navy’s brief explanation for its transition to CLFA suggests that it may be used in shallow littoral ocean regions more than is LFA. DSEIS at 2-2. Each of these differences would preclude application for a new small take permit without an independent analysis of the environmental effects of CLFA.

1.3.4

Even if combined analysis were acceptable, NEPA requires agencies to prepare a supplemental analysis, and release it for public comment, if “significant new circumstances or information relevant to environmental concerns” happen to emerge. 42 C.F.R. § 1502.9(c)(1)(ii). Given the pace of research into acoustical impacts on marine life, significant new information is almost certain to arise between now and the Navy’s application. Already much of the analysis in the 2001 FEIS—which has been

1.3.5

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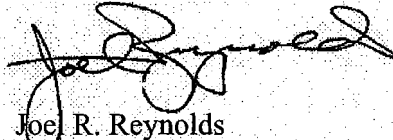
incorporated into the DSEIS—is simply outdated and should not be relied upon to judge impacts of a small take permit that will run through 2012. **1.3.5**

We therefore urge the Navy to complete a separate, comprehensive, and up-to-date analysis of the impacts of its application for a second small take permit, when and if the Navy applies for such a permit.

III. CONCLUSION

Given the escalating public and scientific concern about the impacts of sonar on marine life, the clear concerns of the Court with respect its deployment, and the failure of the Navy to adopt available protective measures, the Navy's approach in this DSEIS is an unacceptable step backwards. We believe that the document must be thoroughly revised and reissued as a draft for further public review and comment.

Very truly yours,



Joe R. Reynolds
Senior Attorney
Director, Marine Mammal Protection Project

Cc: Hon. Donald C. Winter (Navy)
Donna Wieting (NMFS)
Steve Leathery (NMFS)

Encl. (with hard copy only)

B-85

From: Taffy Lee Williams
To: eisteam@mindspring.com
Subject: Comments SURTASS LFA SONAR
Date: Feb 10, 2006 10:01 PM

February 2, 2006

Mr. J. S. Johnson
Attn SURTASS LFA Sonar EIS Program Manager
4100 Fairfax Drive, Ste 730
Arlington, VA 22203.
eisteam@mindspring.com

Re: Draft Supplemental Environmental Impact Statement for
Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) SONAR

Dear Mr. Johnson:

On behalf of the members of the New York Whale and Dolphin Action league I submit these comments in response to the Draft Supplemental Environmental Impact Statement (DSEIS) issued in November, 2005, by the Department of the Navy in accordance with Chief of Naval Operations Instruction 5090.1B pursuant to Executive Order 12114 and National Environmental Policy Act Section 102(2)(C). Please add these comments to the record.

Our organization stands in opposition to the testing or use of this underwater surveillance system as an environmentally destructive and unnecessary technology. The Navy's plan to double its current sonar capability and to patrol 75% of the world's oceans represents a conscious reckless choice to ignore widely-accepted scientific data showing SURTASS LFA SONAR's potential for irrevocable harm and the collapse of many populations of species inhabiting the world's marine ecosystems. It is our belief that the use of high intensity low frequency active sonars such as the SURTASS LFA SONAR system will violate and dismiss the rules of the National Environmental Policy Act (NEPA), the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), the Coastal Zone Management Act (CZMA) and a number of international treaties and laws.

1.1.6

The levels of LFA Sonar's sound intensity at maximum use (235+ decibels) have been compared to a Saturn rocket at liftoff. High intensity sonar was in use during numerous documented mass marine mammal stranding events. A partial list of these sonar-related cetacean mortality events follows:

3.1.1

- Bahamas, March, 2000, 16 whales;
- Canary Islands, September, 2002, 18 whales;
- Puget Sound, May 2003, 10 porpoises, (and harassment of an endangered orca pod);
- North Carolina, January, 2005, 34 whales.

4.4.18

Any reasonable person would agree that the mass mortalities concurrent with the use of high intensity sonar is only a fraction of the real toll on cetaceans and marine life, as only those that made it to the shore could be counted.

Effects on marine mammals from high intensity military sonar are known to be severe. These include hearing organ damage, air/breathing passage hemorrhaging, cranial hemorrhages (often called "brain explosions"). However, there is growing evidence that the technology may be just as deadly to fish.

Thanks to the diligent work of scientists aware of the growing problems caused by man-made acoustic assaults on the marine environment, studies are

being carried out to accurately assess the damage to the swim bladders, the fundamental auditory instrument in fish. Fish, like whales and dolphins, are critically dependent on sound for survival in the water, to avoid predators, find food, communicate and reproduce. One study found levels of noise enough far below those planned for use in SURTASS LFA SONAR caused permanent damage in some species of fish. It was found that moderate noise can temporarily deafen and alter the behavior of fish. One group of scientists found a 40 to 80% decline in catch rates for haddock and cod in an area where low frequency air-gun blasts for underwater surveying, which have a similar decibel intensity level as the proposed system. Other fish with known adverse effects after exposure to high intensity sound pressure waves are pink snapper, zebrafish, herring, and Atlantic salmon.

4.1.8
4.1.17

A number of studies have shown high mortality after noise exposure in developmental stages of fish. Intense sound has been shown to kill eggs, larvae and small fry, and can disrupt and impede growth, which can cause premature fatality. At a distance of 2-3 miles from the source, some 50% of yolk sac larvae were killed during intense noise exposure.

4.1.17
4.2.1

The Navy has not proven this system will not cause widespread mortality to other fragile populations of species such as endangered sea turtles, pinnipeds, or even sea birds.

3.2.2

While these studies have illuminated a much broader problem with high intensity sound, there are hundreds of species of fish valuable to both commercial fisheries and the complex marine ecosystems that have not been studied which will assuredly become victims of this gross negligence by the US Navy. The US Navy maintains that no significant adverse environmental or economic effects will occur with the use of this sonar. Many fishing/marine-based communities likely to be impacted by the Navy's plans consider a possible 80% drop in catch rates the end of their well-being and livelihoods; how can this be insignificant? One out of every six US jobs are marine-related. The Navy should be acting as a vehement protector of the marine environment and its resources, not the greatest threat to its existence.

4.1.4

The Navy's proposed mitigation plans are inadequate and will not work. One cannot visually monitor for whales from dusk to dawn beyond close range (less than 1 km) and passive sonar receptors will not pick up whales in the area that are not vocalizing. However, due to the nature of sound transmission underwater, LFA SONAR's low frequency sonar signals will travel hundreds of miles from its source with little attenuation. has the potential to travel hundreds of miles from its source with little attenuation. Aside from this, the mitigation plans offered do nothing to protect commercial fisheries, important breeding grounds or other endangered or depleted sea organisms.

5.2.10
5.2.14

How does the Navy explain away these violations of NEPA, the ESA, the CZMA and the MMPA? Why does the Navy dismiss powerful new passive sonar systems, with their promising, less or non-invasive technologies?

The SDEIS does nothing to show LFAS will not create irrevocable harm to the marine environment. It also shows no plans to implement the recommendations of the federal court (that compelled the creation of this document) for exclusion zones, increased monitoring and shut down for whales and fish, and training areas that are less likely to impact marine life.

1.2.4
4.7.13
4.7.23

The SDEIS only adds to the burden the Navy has to prove the validity of employing SURTASS LFA SONAR for any reason simply because it evades addressing the enormous destructive element of the technology. LFAS is another weapon symptomatic of military devices laden with "overkill" power whose potential for disaster is repeatedly, persistently ignored.

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How will the Navy react to the concerns voiced in the comments submitted during this period? Will it continue to forge ahead, risking the populations of the hundreds of species that have not been studied for a supposed ability to withstand sound pressure waves tens of thousands of times more powerful than a rocket at takeoff? Will these marine organisms become mere "collateral damage" in the Navy's unbending fervor to blast the oceans with the dreaded acoustic pounding despite violating every protective law and ignoring broad scientific consensus of severe environmental harm?

Growing international concerns against high intensity military sonar is being highlighted in the documents of important agencies. In October of 2004 the European Union's Parliament passed a non-bind resolution urging its member states to institute a moratorium on the use of low frequency active sonar until an assessment of its worldwide cumulative environmental impacts on whales, dolphins, fish and other marine life is completed. Similarly, an ACCOBAMS (Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic Area) resolution adopted in 2004 addressed man-made ocean noise, which included naval sonar, with guidelines for its use. The 3rd IUCN-World Conservation Union Congress of 2004 passed a resolution encouraging governments to reduce undersea noise, restrict military active sonar training to low-risk areas and develop regulatory standards for international application. The 2004 Scientific Committee of the International Whaling Commission's 2004 Report to its 57-member body noted compelling evidence that military sonar had particularly affected rare deep-diving beaked whaled, driving them to frequent beachings and death. They claimed that the weight of accumulated evidence associated high intensity military sonar with otherwise atypical mass beaked whale strandings.

4.6.1

For many years the Navy has sought the freedom to ensonify the oceans of the world with this deadly-force sonar, both mid and low-frequency and has acted with blind indifference toward the environmental effects it may have. This is unacceptable and irresponsible behavior. The SDEIS does nothing to remedy the potential for disaster both for marine organisms and local marine-based economies, is inadequate and should be withdrawn. In the final analysis, the real question is: who or what can stop the US Navy from the use of high intensity sonar, from its planned LFAS deployment? If, through the government processes set it place herein, elected officials, government regulators, the federal courts and the concerned citizens of this country will not or can not, the answer is: only the Navy itself. This bodes poorly for the future of marine life.

Sincerely,

Taffy Lee Williams, Director

cc: Senator Hillary Clinton
 Senator Charles Schumer
 Representative Nita Lowey

Taffy Lee Williams
 New York Whale and Dolphin Action League

From: jean public
To: eisteam@mindspring.com
Subject: public comment on federal register of 11/16/05 vol 70 #220 pg 69526
Date: Nov 16, 2005 12:55 PM

fr doc 05 22709
towed array sensor system of u.s. navy which will kill
whales and marine life

i am opposed to any operation of the u.s. navy that
kills whales and other marine life. it is clear that
noise from navy operations causes massive hemorrhages
in marine life and consequent washing up on beaches of
dead marine life.

i am opposed to the u.s. navy causing this
environmental chaos. protecting ourselves, when we
have ruined our land, is no advance for the u.s.

b. sachau

From: Kay
To: EIS Team
Subject: Re: Comments on SURTASS LFA
Date: Jan 14, 2006 4:52 PM

Dear EIS Team:
As you have requested, I have reformatted my email and resent it. If this also has problems please let me know, and I will try something else.
Thank You,
Kay Stewart
1/14/06

December 3, 2005

SURTASS LFA Sonar EIS Program Manager,
4100 Fairfax Drive, Ste 730,
Arlington, VA 22203.

Comment # 1
Re: Supplemental Environmental Impact Statement for
Further Deployment of SURTASS LFA and
Issuance of Rules from NMFS regarding 2007-2012

To Whom It May Concern:

This letter provides my preliminary comments to the SEIS for SURTASS LFA, most of which I presented verbally at the public hearing held at the USS Midway in San Diego today. The SEIS is very long and complex, and I have not yet had time to completely read it, much less study it, but because the time frame for response is so short, and I have other responsibilities, I will send this comment letter now. If I have time for further reading and find additional issues, I may submit a second comment which will be titled "Comment # 2."

1. Judge LaPorte of the 9th Circuit Court found that the FEIS revealed many shortcomings and many authoritative commentators to the DEIS (incorporated in the FEIS) did, too. The SEIS responds to some of those concerns, but not to all of them. I provide two such instances:

1A. Competent specialists in ocean acoustics criticized the DEIS models of attenuation and distribution of the sound, in particular, noting that a much louder received level of sound was likely to be dispersed over a much larger area than modeled. Yet, as of this reading I have not found anything in the SEIS to suggest the impacts described assume anything other than the simplistic model of sound spreading that finds under certain oceanic conditions, a Source Level of 230-220 dB will attenuate to 180 dB at a distance of 1-2 km.

4.3.16

Further, as of this reading, I have found no new scientific research to support the contention that 180 dB Received Level is the threshold of permanent threshold shift or behavioral shifts or other kinds of damage to cetaceans or sea turtles, yet it continues to be used as the basis for all the models for monitoring and mitigation. This is also, not necessarily coincidentally, the limits of the capability of a human being with binoculars to observe most large marine animals.

4.3.9

Without being cynical, I wish to point out that if the intention of the monitoring and mitigation protocols are to protect the marine animals from harm, it would be very important to confirm that 180 dB is in fact the critical threshold, and that the sound spreading model is correct. If it is not, then the existing monitoring and mitigation protocols would need to be adapted to the appropriate distance.

4.2.7

1B. The SEIS points out we lack of knowledge about impacts of loud low-frequency sound on sea turtles. I understand the great difficulty in marine research, so I am not faulting the Navy nor the EIS Team for this lack. I am pointing out that the fact that all sea turtles are pelagic and thus at risk, and that they are not easily spotted, thus at further risk, means that the monitoring and mitigation as described is probably inadequate to the task of keeping "takes" below any known level. I think honesty where ignorance exists is a best path, instead of, as is done in the SEIS, glossing over shortcomings and saying the monitoring and mitigation program will achieve the objectives desired.

4.2.7

2. The Mitigation measures described in Chapter 5 are inadequate in my opinion, in at least the following regards, and probably more that I am not competent to analyze at this time:

5.0.1

2A. Despite extensive discussion of the locations of many key populations of marine animals in the open oceans (that is, beyond the 12 km coastal zone that is to be routinely excluded), only a few will actually be sheltered in offshore biologically important areas that have been proposed as exclusions. Others that seem worthy of such protection would be any areas where mass strandings have been reported after either SURTASS LFA operations or midfrequency sonar operations, such as the Canary Islands, the Gulf of California (very important for the Olive Ridley turtle as well as many species of whales), parts of the Mediterranean Sea, and the Bahamas. I do not know if the US can make regulations for our operations in the waters of other nations, but if so, I would like to see this happen.

Perhaps the Navy is concerned that excluding too many such areas would provide havens for enemy submarines. If so, I would like to see a discussion of war strategy that might deal with this concern so those who are concerned about natural resources could understand the tradeoffs. The public deserves this as full information on which to base decisions.

5.0.1

2B. Despite about 40 pages of research on fish in Chapter 3, a significant amount of which shows fish respond to sound in the low frequency range and which also shows a paucity of research on impacts of very high dB sound, the SEIS proposes no monitoring nor mitigation for protecting oceanic fish stocks. I know that the take associated with LFA SURTASS is a microscopic drop in the bucket compared to the harvest of fish for consumption, but I believe the opportunity to monitor impacts of loud anthropogenic sound on these stocks may return to our nation as valuable data with which to evaluate the impacts "we" (the modern world) may be causing with other very

4.1.2

loud sounds in our subsurface geotechnical surveys or other very loud activities to fish populations. Since SURTASS LFA is already burdened with monitoring other at-risk species, I would encourage this function too if possible.

3. I find it disturbing that the principal means of actively monitoring for the presence of large marine animals is a device developed by the same company that produced the DEIS, FEIS, and SEIS for SURTASS LFA. The device may in fact work beautifully, but the risk of biased reporting and the undeniable conflict of interest is disturbing. Our nation is dealing with too much of this right now. I think to support the contention that this device is achieving the intended purpose, an independent assessment of the use, applicability, and effectiveness of this equipment is called for.

2.4.2

4. I wonder if the SEIS in its choice of words in some discussions is attempting to suggest that LFA is less than onerous, with the covert purposes of making the public/the reader/the citizen have a sense of comfort with the technology. For instance, in writing about turtles on the Atlantic

seaboard, it describes them as living in "coastal habitats flooded with noise" and surviving with "high levels of noise." A close reading shows the decibels noted in this discussion were between 60 and 75 dB, which although being well above a quiet ocean of 40 dB, is but a trillionth the sound levels with which LFA (and some mid-frequency sonar sources) "flood" the oceans. Another example of what appears to be an attempt at suasion occurred at the hearing today when Mr. Joe Johnson, of the EIS Team, described the LFA speakers as producing a sound "very much like a humpback whale." I don't believe that a humpback whale produces a 220-230 dB sound in multi-phasic low frequency pulses of 20-30/minute over a period of time as long as ten minutes, does it? I wonder if the team underrates the audience that is reading and paying attention to this issue. I find I usually feel a bit hostile if I think I am being patronized or manipulated, and suggest that those preparing these documents and staffing these hearings understand that their job is to communicate facts, not opinions.

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5.2.6

6. I know that the process of trying to understand the impacts to ocean life of this important defensive technology adds significant costs to its deployment. I also appreciate that the reason why the Navy has been given this responsibility is because it was called upon to conduct the process called upon by NEPA, MMPA, and ESA when people observed sea lions fleeing from the ocean during its early secret testing off the central California Coastline. No other anthropogenic sound source has been caught on the hook of the law, and because of that, SURTASS LFA is carrying a huge burden to help us all understand what is happening to our seas as we deploy ever-louder machinery. As a tax-payer and a citizen, I think it is worth every cent if it results in our being able to protect our natural resources from harm.

Sincerely,

Kay Stewart

Cc: Congresswoman Susan Davis, Senator Barbara Boxer, Senator Dianne Feinstein, Earth Island Institute

----- Original Message -----

From: EIS Team

To: Kay

Sent: Friday, January 13, 2006 8:19 AM

Subject: Re: Comments on SURTASS LFA

Ms. Stewart,

For an unknown reason, we are unable to fully view your comments, it seems as though the pages have been cut off. Your comments print out the same way. Since your comments are important and they are a part of our record, would it be possible for you to resend your comments.

Thank you for your help.

Sincerely,
The EIS Team

-----Original Message-----

From: Kay
Sent: Dec 3, 2005 7:54 PM
To: eisteam@mindspring.com
Subject: Comments on SURTASS LFA

December 3, 2005

SURTASS LFA Sonar EIS Program Manager,
4100 Fairfax Drive, Ste 730,
Arlington, VA 22203.

Comment # 1

Re: Supplemental Environmental Impact Statement for
Further Deployment of SURTAF LFA and
Issuance of Rules from NMFS regarding 2007-2012

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B-89

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Cc: Congresswoman Susan Davis, Senator Barbara Boxer, Senator Dianne Feinstein, Earth Island Institute

SURTASS LFA Sonar Draft Supplemental EIS
Public Hearing
Attendee Comment Sheet
Honolulu, HI December 5, 2005

Please print your comment:

The obvious discrepancy between proven hearing damage to humans and protective equipments at far lower decibles than ocean test with rebound potentials and no parameter of "expendable damage" if used to detect ~~the~~ ^{FB} "objects". ^{ILLEGIBLE} ~~the~~ ^{ILLEGIBLE} I had papers from medical journals which show "sain" @ 140. Ocean life forms have no hands to put over ears to decrease damage this is danger with permanence, research and honestly we have noise pollution laws... just because humans "might" miss damage is not acceptable evidence based data of the INTELLIGENT species we can be.

4.3.19

(Optional)
NAME: Karen Boyle RN
ADDRESS:

THANK YOU FOR YOUR COMMENTS

Please see the Website: www.surtass-lfa-cis.com

SURTASS LFA Sonar Draft Supplemental EIS
Public Hearing
Attendee Comment Sheet
Honolulu, HI December 5, 2005

Please print your comment:

Being a member of the medical field where is your evidence-based data of benefit?

1.3.6

Even chemotherapy has "toxicity parameters" shown at which point they stop.

Where is the behavior of such mysterious, transmitter tagged, multiple endangered species of "norms" to scientifically default by not-able-to-track being EQUATED to safety when damaged animals have been found. Medicine errs on the side of caution. And the military says MISSING IN ACTION = alive and well.

(Optional)
NAME:

ADDRESS:

Karen Boyle RN

THANK YOU FOR YOUR COMMENTS

Please see the Website: www.surtass-lfa-eis.com

B-91

NOU KE AKUA KE AUPUNI O HAWAI`I



ALI`I MANA`O NUI LANNY SINKIN

Lanny Sinkin
Attorney at Law

Ali`i Mana`o Nui
Kingdom of Hawai`i

December 4, 2005

**STATEMENT TO PUBLIC HEARING
ON
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
FOR DEPLOYMENT OF LOW FREQUENCY ACTIVE SONAR
DECEMBER 5, 2005 HONOLULU, HAWAI`I**

STATEMENT FROM THE KINGDOM OF HAWAI`I

Aloha, my name is Lanny Sinkin.

I am an attorney within the United States who has filed numerous law suits challenging various aspects of the Navy's program to deploy low frequency active sonar. I have had the pleasure of coordinating many of the presentations here tonight.

I am mystified that the Navy did not see fit to send me a copy of the Draft Supplemental Environmental Impact Statement. Obviously I am an interested party and under the guidelines for circulation of draft environmental impact statements should have been sent a copy.

I am here tonight in my capacity as Ali`i Mana`o Nui, which means Chief Advocate and Spiritual Advisor, to Ali`i Nui Mo`i, which means King, Edmund Keli`i Silva Junior. The King has authorized me to present his views to this hearing regarding the deployment of low frequency active sonar in the waters off the Islands of Hawai`i.

In my capacity as Ali'i Mana'o Nui, I am here to express the King's displeasure with the intent of the United States Navy to deploy low frequency active sonar in Kingdom waters.

As you may know, the Kingdom of Hawai'i existed as an independent nation prior to the overthrow of its government by agents of the United States government. The history of this event is detailed in a resolution apologizing to the Hawaiian people passed in 1993 by the United States Congress and signed by then President William Jefferson Clinton.

While the United Nations called for the United States to decolonize the Hawaiian Islands and the Apology Resolution acknowledged that the Hawaiian people never relinquished their sovereignty, the United States remains as an occupying power.

King Silva is now in the process of restoring the Kingdom government and reclaiming the Islands as an independent nation. He is visiting with the people to determine their views on current problems and solutions, engaging in dialogue with foreign countries regarding renewed recognition, and gathering the key members of his initial government. If you are interested in further information about what is happening in the restoration process, we invite you to visit the web site at www.KingdomofHawaii.org.

The King is aware that the Navy violated numerous United States laws by selecting, researching, designing, and testing the low frequency sonar system without preparing an environmental impact statement, seeking permits under the Marine Mammal Protection Act, or consulting regarding the potential impacts on endangered and threatened species.

Even though the Navy finally began to comply with United States laws, the determination to deploy the technology had already become a fixed decision. During the period prior to the initiation of the environmental impact statement, the Navy spent more than \$100 million preparing to deploy low frequency active sonar. That huge investment unquestionably created a bias toward deployment and made an objective evaluation of the risks involved highly unlikely. As various witnesses have testified tonight, the potential for bias and lack of objectivity became a reality in the environmental impact statement process.

While those are all internal matters for the United States to deal with, that reality infects everything to do with the deployment of this technology.

King Silva's obligations are to the Kingdom.

Just as the Kingdom overthrown by the United States was a non-aligned nation, the restored Kingdom is a non-aligned nation and intends to remain so. As such, the Kingdom has no quarrel with any other nation and does not intend to be drawn into such disputes within the human family. Instead, the Kingdom will offer its services and expertise in dispute resolution to heal the many disputes that divide the family.

The Armageddonists in charge of United State foreign policy and the Jihaddists pursuing their own ultimate victory scenario are engaged in the first phase of a great holy war into which they hope to draw the entire world. The Celestial Council of the Kingdom offers its services in finding other pathways for the human family.

The King is aware that some planners within the Pentagon view Hawai`i as a forward base for a planned confrontation with China. The King rejects any attempt to include Hawai`i in such a plan.

As a non-aligned nation, the Kingdom does not need the protection of any nation, including the United States. There is, therefore, no need for the deployment of low frequency active sonar in Kingdom waters. As United States military bases are phased out of the restored Kingdom, there will be no reason for any other nation to view the Kingdom as a potential or actual adversary.

The King is also responsible for ensuring the viability, diversity, and general health of the marine community that provides sustenance to the Kingdom. He is fully aware of the dangers presented by the introduction of low frequency sonar into the marine environment. He cannot permit such a technology to be used in Kingdom waters.

In the ancient spiritual traditions of Hawai`i, ocean life is our ancestors. The whale, shark, turtle, and other sea beings are considered amakua. They are not to be subject to harassment or torment by human technology.

Once the government is fully in place, the King will issue a proclamation banning the use of all military sonars, whether low, mid, or high frequency, within the Exclusive Economic Zone of the Kingdom that includes the entire Hawaiian Archipelago and waters extending out 200 miles from that Archipelago.

The United States chose to make Hawai`i a part of its nation over the objections of the vast majority of Hawaiians, as expressed in the petition signed opposing annexation. That unilateral decision by the United States has been a disaster for the Hawaiian people.

Now the time has come to put right what is wrong. Ho`oponopono is the Hawaiian term for that process. The King sent a letter to President Bush offering friendship and forgiveness.

An agreement, before the King issues his proclamation, by the United States Navy not to deploy low frequency active sonar within the Exclusive Economic Zone of the Kingdom would be a welcome step in the ho`oponopono process.

Imua!

STATEMENT TO PUBLIC HEARING
ON
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
FOR DEPLOYMENT OF LOW FREQUENCY ACTIVE SONAR
DECEMBER 5, 2005 HONOLULU, HAWAII

THE 180 DECIBEL EXPOSURE LEVEL AND MILITARY LEGISLATION

The Navy decided to pursue LFAS because low frequency sound travels great distances in water. A broadcast can be heard on the other side of the world. This characteristic of low frequency broadcasts means that the Navy can detect a potentially hostile submarine prior to the submarine being within range to cause harm.

This same characteristic makes the potential impacts of low frequency broadcasts on marine life very extensive. The impacts of low frequency active sonar on cetaceans range from annoyance to physical injury and death. The level of impact is determined by the source level, the distance from the source, and the sensitivity of the species.

Prior to the Navy's decision to pursue deployment of SURTASS LFAS, the leading literature regarding impacts of low frequency sound on cetaceans stated that initial impacts began at 120 decibels. At that level, gray whales avoided a stationary low frequency source. 4.4.7

To operate at the levels the Navy considers to be effective, low frequency sonar needs to broadcast at levels higher than 200 decibels. With a source level that high, 120 decibel sound will reach hundreds of miles from the source. That sound has the potential to disrupt biologically significant behaviors, such as mating, feeding, and migrating. 4.3.23
4.6.13
4.6.3

There is simply no means for the Navy to monitor impacts at such a distance.

So the Navy has attempted to redefine the science of sonar impacts and avoid responsibility for impacts outside the range of its monitoring capability.

To achieve this purpose, the Navy has limited its responsibility to avoiding exposure levels of 180 decibels or above. This level is admitted to cause physical injury. Whatever impacts take place beyond the 180 decibel exposure region are assumed to be acceptable. The disruption of biologically significant behaviors, which can threaten the continued existence of endangered species, is not the Navy's concern.

To further define away the problems created by low frequency broadcasts, the Navy convinced Congress to change the definition of harassment forbidden by law and provide legal exceptions for whatever the military terms as readiness exercises. These changes in the law had no rationale, other than to permit the military to engage in damaging the marine environment in the name of national security. One goal of the changes was to get the military out from under the injunction preventing full deployment of LFAS secured by the Natural Resources Defense Council. 1.2.1

B-93

A government that exempts the military from the laws applicable to all other citizens can reasonably be characterized as a military government.

Submitted by
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STATEMENT TO PUBLIC HEARING
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DECEMBER 5, 2005 HONOLULU, HAWAII

LFAS: THE REAL ISSUE

The Navy ignores the real environmental issue raised by the plan to deploy low frequency active sonar. The real environmental issue is:

Given the current stresses on the ocean environment and the life within that environment caused by such sources as climate change, collapsing fish populations from over fishing, pollution from previous human dumping and from daily additions of human waste and runoff, should humans be introducing additional stresses into the marine environment?

The Navy omits this central issue to focus only on how much noise from LFAS can exposed marine life stand. This issue is dealt with as if low frequency active sonar is the only stressor to be considered.

Besides ignoring the real issue, the Navy approach is based on the assumption that humans can determine when and how marine life is affected by low frequency active sonar broadcasts.

The relationship between acoustics and biology in the marine environment is incredibly complex. Human tools for assessing that relationship are fairly crude. The limited studies done by the Navy omit numerous species and possible pathways for impacts. The level of knowledge from these studies is similarly limited.

While the Navy talks about long term monitoring, the Navy has no real idea how that would be done or how they would attribute a long term change, such as population decline, to a particular cause, such as LFAS noise. Given the lack of objectivity in the Navy's approach to date, we can be assured that any long term changes detected will be attributed to anything but the use of LFAS.

5.3.1

The real public policy issue is that human introduced noise in the oceans dramatically increased over the past decades. Even without extensive studies, we know that such noise is harmful to ocean life. Given the numerous stressors currently impacting the oceans, the immediate goal should be reduction of human introduced noise in the ocean environment, not introducing new noise from testing and deployment of LFAS.

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THE FUNDING OF ACOUSTIC RESEARCH

The Office of Naval Research is the source for almost all acoustic research funding in the United States. This funding monopoly creates a fundamental conflict of interest.

The Navy selected low frequency active sonar as a technology capable of detecting new, quieter submarines. The Navy proceeded to conduct research, design systems, fabricate systems, and test systems without complying with any of the major environmental laws applicable to such a decision.

Only after the Natural Resources Defense Council sent a letter detailing the numerous laws being violated with the implicit threat of litigation did the Navy agree to prepare an environmental impact statement and seek the permits required for harassing marine life and threatening endangered species.

By that time, however, the Navy had spent more than \$100 million on the LFAS system.

In the ensuing years, the Navy faced serious challenges from environmental scientists and attorneys. The Navy continued to prepare to deploy the technology and spent more than \$200 million more preparing to do so.

To answer the challenges, the Office of Naval Research funded various studies of the potential impact of LFAS on a limited selection of marine life. The Navy decided what would be studied. The Navy selected the scientists who would do the studies. The Navy paid the scientists to conduct the studies.

Scientists who wish to conduct research on acoustic impacts know that the Navy is their only funding source. While most such scientists are dedicated and honest, they cannot help but be influenced by the sole source for funding their research. Their inclination will be to more quickly dismiss evidence that would argue against deployment of the technology. They will likely fail to pursue lines of investigation that might lead to a conclusion that deployment would be too dangerous.

The evidence that such influence took place is found throughout the LFAS process over the past ten years. Why did the scientists not pursue the information from those who concluded that the Humpback Whales had left the test area off Hawai'i in 1998? Why did the scientists not pursue the information about the snorkler suffering physical and mental injuries from an LFAS broadcast? Why did the scientists not pursue the information about a huge drop in dolphin birth rates following the 1998 tests?

These decision all demonstrate that the scientists at least avoided pursuing lines of inquiry that might provide evidence of significant adverse impacts from deployment. Such decisions are what one would expect from a scientific community totally dependent on the funding provided by the client who had already demonstrated a determination to deploy the technology.

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THE 1998 TESTS IN HAWAII

In the Spring of 1998, the Navy came to the Island of Hawai'i to test its low frequency active sonar on Humpback Whales during their mating and birthing season. The National Marine Fisheries Service (NMFS) issued a permit for these tests containing various provisions, including provisions requiring suspension of the testing, if certain impacts appeared. One such condition required suspension if there was an unusual absence of animals observed.

Shortly after the broadcasts began, boat captains reported the number of whales in the test area dropped rapidly. As the testing continued, whale watch boat captains reported a complete absence of whales from the test area. A helicopter pilot and shore observers began reporting the same disappearance of whales from the test area. The test area is a primary birthing and breeding area for the Humpback Whales.

People on the island sent these reports and other observations of unusual marine activity to the National Marine Fisheries Service and the Navy calling for suspension of the tests.

NMFS refused to suspend the tests.

The Hawai'i County Green Party then filed suit to stop the testing. In support of its motion for a preliminary injunction, the Green Party filed numerous declarations from the captains, the helicopter pilot, and the shore observers. These observers had an accumulated history of more than 100 years of observing the whales in Hawaiian waters. The whale watch boat captains in particular made their living by taking people out to see whales. During the testing period, they were issuing refunds or coupons good for another trip because they did not find any whales where they normally would be found.

In response, the Navy filed declarations from its contract scientists characterizing the observations filed by the Green Party as "anecdotal" and, therefore, not credible evidence of an abnormal absence of whales.

The scientists relied, instead, on the observations from the boats involved in the tests and shore observers working for the Navy to argue that there was no abnormal absence of whales. The boat and shore based observers had numerous tasks to perform beyond noting the presence of whales, such as monitoring the behavior of whales exposed to broadcasts and determining whether mother/calf pairs were within the broadcast area.

The Navy also used the observation results of an independent scientist conducting aerial surveys of whales to argue that the whales did not leave the test area. The Navy

characterized the results of this survey as demonstrating an abundance of whales in the test area.

Prior to a ruling on the injunction, the Navy ended the testing and convinced the court to declare the suit to be moot.

As it turned out, the scientist conducting the aerial survey found an abundance of whales **outside** the test area. His survey did not pass over the test area and produced no data on the number of whales in that area. The Navy had misrepresented the nature of his data to the court.

Essentially, the Navy had available to it two data sets: the observations by those who filed declarations in the law suit and the observations of their hired personnel.

At no time during or after the suit did the Navy or its hired scientists make any effort to contact those filing the declarations regarding an absence of whales to further document their observations.

If the broadcasts in 1998 were indeed tests being conducted as part of a scientific experiment, then the data set available from the non-Navy observers would at least be a matter of interest and further study, rather than dismissed as “anecdotal” with no effort made to gather further information.

The Navy, including Dr. Robert Gisiner, head of the Office of Naval Research, acknowledges that, if an animal targeted for a broadcast is engaged in a biological significant activity, such as breeding, feeding, or migrating, then the animal is likely to continue the activity, even to the point of suffering physical harm before demonstrating aversion.

For whales to abandon a primary breeding and birthing area during their breeding and birthing season in response to an LFAS broadcast would, therefore, be a very significant event.

The broadcasts in 1998 resulted in exposure levels in the 135 to 140 decibel range. These exposure levels are well below what would be expected from a fully operational LFAS system broadcast. If the whales fled the test area at these levels, the potential impact of a fully operational system would appear to be seriously adverse to the cetaceans.

The failure to pursue additional information from the outside sources is evidence of a study biased toward supporting the Navy intention to deploy the technology. The avoidance of a data set that suggested the technology had serious adverse impacts is simply corrupt science.

STATEMENT TO PUBLIC HEARING
ON
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
FOR DEPLOYMENT OF LOW FREQUENCY ACTIVE SONAR
DECEMBER 5, 2005 HONOLULU, HAWAII

LFAS AND DISINFORMATION

On May 11, 2001, the Honolulu Advertiser ran an opinion editorial by Joe Johnson titled "Navy's sonar program is safe." Mr. Johnson was and is the United States Navy's environmental impact manager for the Low Frequency Active Sonar (LFAS) program.

By May of 2001, opposition from within the scientific community and the public to deployment of LFAS had grown significantly. In response, Mr. Johnson resorted to false statements and disinformation to defend deployment.

In 1998, the Navy came to the Island of Hawai'i to conduct tests of the low frequency active sonar system. Almost as soon as the testing began, whale watch captains and other observers reported the Humpback Whales to be leaving the test area. As the testing continued, the reports multiplied that the whales had abandoned the testing area, a prime mating and birthing area. The Navy and National Marine Fisheries Service received these reports. Declarations from numerous observers are part of the court records in the litigation filed challenging the testing.

In his editorial, Mr. Johnson claimed that the Humpback Whales did not leave the LFA test area during the 1998 LFA testing. He stated that the presence of whales in the testing area was "validated by aerial surveys conducted by a research scientist from the University of Hawaii."

The scientist referred to is Dr. Joseph Mobley. His surveys in 1998 followed a random grid generated to ensure objectivity. Dr. Mobley acknowledged that his 1998 grid did not take him over the LFA test area and that he had no data on the presence or absence of whales in that area. While Dr. Mobley found an abundance of whales **outside** the testing area, his survey provided no information on whales within the testing area. Mr. Johnson falsely characterized Dr. Mobley's survey data to give the impression that the whales did not leave the testing area.

Mr. Johnson stated in his editorial that "Allegations regarding incidents in Greece and the Bahamas implicate mid-frequency sonar and not LFA."

The event in the Bahamas did reveal that mid-frequency sonar kills whales. The event in Greece also involved the killing of whales. The NATO investigative report stated that the sonars broadcasting off Greece sent out signals at 600 Hertz. Everyone, even Mr. Johnson, agrees that signals below 1000 Hertz are considered low frequency.

NATO never treated the event as anything other than a broadcast of low frequency sonar. The NATO report on the event contains extensive discussion about LFA, including one chapter provided by the U.S. Navy's chief researcher into LFA.

Even the draft Supplemental Environmental Impact Statement contains the following description of the event:

NATO was conducting Shallow Water Acoustic Classification exercises, using low- and mid-frequency sonar The frequencies of the sources were between 450 and 3,300 Hz.

Obviously the event in Greece did implicate low frequency active sonar contrary to Mr. Johnson's statement.

Mr. Johnson further stated in his editorial that, during the period of whale killings in Greece, "the only LFA sonar ship was in the Pacific Ocean conducting passive-only operations." The United States Navy's only sonar ship was in the Pacific. The LFA broadcasts in Greece did not come from the United States LFA ship. They came from another LFA broadcast ship participating in the NATO exercise. Mr. Johnson deliberately misled the public by stating that there was only one such ship in the world.

Obviously, the Grecian whale killings implicated LFA and equally obvious Mr. Johnson knew better when he wrote his editorial. Combining the Greece and Bahamas events in one sentence and characterizing both as mid-frequency and the false statement that only the U.S. Navy has an LFA broadcasting ship were deliberate attempts to hide the truth.

Mr. Johnson's editorial claimed that the scientific team conducting the LFA research off Hawai'i in 1998 "did investigate" the claim of "injury to a snorkler" from an LFA broadcast. He further claimed that "the local National Marine Fisheries Service representative and the UH scientist assisted the Navy team."

Once again, Mr. Johnson fabricated reality. Naturalist Chris Reid is the injured snorkler. At no time after learning of Ms. Reid's extensive physiological and psychological injuries from an LFA broadcast did anyone from the Navy, NMFS, UH, or anywhere else contact Ms. Reid or the doctor who examined her subsequent to the broadcast. What kind of "investigation" of injury makes no effort to confirm the injury or examine potential pathways for the injury to have taken place? What kind of scientific study assumes away the possibility of injury when the evidence of injury is available and not explained by any other source?

The answer to those questions is obvious. There was no real "investigation" and the science being conducted served the interests of deployment by avoiding evidence of adverse impacts.

We understand why Mr. Johnson felt the need to deceive the public and dismiss all criticisms. His job is to manage the EIS process to a conclusion that LFAS deployment

will not cause harm to the environment or humans. Without the freedom to be objective, he is forced into the same hole the Navy dug when they spent \$100 million dollars preparing to deploy LFAS before they began to assess the environmental impacts. With a huge investment and careers on the line, people are prone to bend the rules, shade the truth, or even simply lie.

The whales and other marine life along with humans in the waters will ultimately pay the price if the false process is not stopped.

TO COMMITTEE
SURTASS-LFA
5-DECEMBER-2005

STATEMENT TO PUBLIC HEARING
ON
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
FOR DEPLOYMENT OF LOW FREQUENCY ACTIVE SONAR
DECEMBER 5, 2005 HONOLULU, HAWAII

CHRIS REID AND LFAS EXPOSURE IMPACTS

Chris Reid is a naturalist on the Island of Hawai'i, who has studied dolphins for many years.

Ms. Reid entered an ocean bay to observe a dolphin pod during the testing of SURTASS LFAS off the Island of Hawai'i in 1998.

While she observed the pod, a broadcast of the LFAS system took place.

Ms. Reid remained in the water for an extended period watching the dolphins responding to the broadcast by backing up towards the shore, lifting their heads out of the water, and vocalizing extensively.

When Ms. Reid emerged from the water, she experienced serious physiological effects from the broadcast. She could not walk a straight line, she had trouble focusing, and otherwise experience disorientation.

Shortly afterwards, a doctor examined Ms. Reid and documented her condition.

Over the next two years, Ms. Reid experienced great difficulty in maintaining her mental focus. She also experienced bouts of depression, which she had never experienced before.

Numerous healers on the island worked with her to repair the damage. After two years, she appeared to have fully recovered.

The Navy knew of this event from various sources, including a report at the time of the event and declarations filed by Ms. Reid and her doctor during litigation challenging the testing.

The Navy never sent a doctor to examine Ms. Reid and never made any attempt to contact the doctor who examined Ms. Reid after the exposure.

3.3.7

The only response came from the scientists conducting the tests. They filed a declaration acknowledging the LFAS broadcast. Based on the source level of the broadcast and their distance from the bay where Ms. Reid observed the dolphins, the scientists concluded that she was exposed to levels no greater than 125 db, which they considered incapable of causing the physiological effects suffered by Ms. Reid.

PAIN is considered 140.
disorientation / agitation is self determined 4.3.19
by stimulus and impacted by ↑ decibel
starting at 80 decibel.

B-98

The response to this event is not science. A true scientist would have found the experience of Ms. Reid a matter of great interest. Given that the Navy conducted almost all LFAS tests involving human subjects on experienced Navy divers, Ms. Reid's experience provided a possible insight into potential effects on people who were not under the Navy's control, highly trained to withstand adverse conditions, and in peak physical condition.

Given that Ms. Reid's exposure took place in a bay, where the LFAS broadcast would bounce off the ocean bottom and the sides of the bay, the potential for magnifying effects would also be a source of study.

A true scientist would have arranged for a doctor to examine Ms. Reid, interview the doctor who examined her, and otherwise pursued further data regarding her exposure.

Instead the scientists paid by the Navy to supposedly seek data on the potential impacts of LFAS simply calculated an exposure level based on open water, found that level to be below the 145 decibel level the Navy seeks to implement for human exposure, and did nothing further.

Again, this is not science. This is research conducted to support a pre-determined outcome.

Ms. Reid's observations of dolphin response to the LFAS broadcast also provided an opportunity to open new lines of research. Supposedly dolphins could not hear the broadcast at low frequency. If they were in fact responding to the broadcast and cannot hear at those frequencies, then the response probably came from a physiological detection of the vibrations, i.e. the dolphins felt the broadcast they could not hear. Questions about tissue resonance at low frequency may be implicated.

As with any other data not supporting deployment, the Navy made no effort to pursue Ms. Reid's observations of dolphin response.

Read by: Karen Boyle

COMMENT: As a member of the medical field the lack of caution in the face of "lethal potential side effect" and lack of aggressive curiosity to find "normals before" and "track for length of disturbance" is disturbing in the lack of respect for life.

Whales and ocean life do not have the "otic" equipment, the ear protectors, etc of humans.

We have laws about noise pollution where humans hear it, the sound wave and decibel theory persist in relevance. Please do research and prove safety by evidence.

From: Russell Wray
 To: Joe Johnson
 Subject: request extension of public comment period for SEIS on SURTASS LFA Sonar
 Date: Dec 9, 2005 11:57 AM
 Citizens Opposing Active Sonar Threats
 COAST

December 9, 2005

Mr. Joe Johnson
 SURTASS LFA Sonar EIS Program Manager
 U.S. Department of the Navy
 4100 Fairfax Drive
 Suite 730
 Arlington, VA 22203

Dear Mr. Johnson:

This is in regards to the public comment period on the Draft Supplemental Environmental Impact Statement for SURTASS LFA Sonar. COAST believes that it is appropriate that the public comment period on the SEIS be extended. As the Navy is surely aware, the deployment of LFA sonar is widely opposed not only by much of the American public, but also by people from around the world, due to threats it poses to marine mammals, fish, and other ocean life. It is an issue of great concern to a great many people. The current deadline for public comments does not allow the public adequate time for comment for several reasons.

As has been previously pointed out to the Navy by others, the timing of the public comment period falls into the busiest and most hectic time of the year, during the holiday season. The Navy could not have chosen a better deadline if its goal was to make it difficult for the public to express their concerns.

To make matters more difficult, the public comment period on the SEIS for SURTASS LFA Sonar is the same as the public comment period for the DEIS on the Navy's proposed Undersea Warfare Training Range, which also involves the use of high-intensity active sonars that have been associated with the worldwide mass strandings, injuries, and deaths of whales, dolphins and porpoises. Both the SEIS and the DEIS are long and technical documents. It is not realistic to assume that the time allotted for public comment allows for a careful review and preparation of comments on either document. To expect concerned individuals, organizations, and governmental agencies to be able to carefully review both documents and then prepare comments on them is totally unrealistic.

The Democratic principles upon which this nation was founded are threatened when government does not allow for, or reduces the opportunities for the public to have genuine input into governmental policies which will impact their environment and their lives. As was mentioned above, a great many people in both the general public and in the scientific community believe the Navy's planned deployment of LFA sonar may severely impact the health of marine life and the oceans, and therefore our lives as well. In the interest of maintaining the democratic process, COAST requests that the deadline for the public comment period on the SEIS for SURTASS LFA Sonar be extended by a minimum of 60 days. Thank you for your consideration of this request.

Sincerely,
 Russell Wray

Cc: Hon. Gordon England, Secretary of the Navy
 Steve Leathery, NMFS
 Donna Wieting, NMFS
 Kathleen Leyden, Maine Coastal Program
 Todd Burrowes, Maine Coastal Program
 Senator Olympia Snowe
 Senator Susan Collins
 Representative Michael Michaud
 Representative Tom Allen

9 December 2005

Joe Johnson
4100 Fairfax Drive
Suite 730
Arlington, VA 22203

Dear Mr. Johnson,
I have been against high-power sonar systems being used by the Navy since I first read about it. I feel it is detrimental to marine life. I believe strongly that marine life "animals" (mammals) etc. have sensitive ears. The sonar sounds are screeching sounds to their ears. How do I know this?

Take for example animals such as dogs. Especially during July 4th and New Years, when fire works are used a lot, dogs are shut up in bath rooms to avoid the noise or are given pills to curb their hearing.

Most recently, since sonar systems was started, the news media have reported of many whales that are found beached on land - possibly to get away from the sonar noise. Sharks are also coming near our shores and we have had many incidents of sharks attacking our swimmers and surfers. Many persons have died or have lost a leg,

3.2.9

an arm or other parts of their body,
I implore upon those who are in the
sonar program to stop using this
inhuman method which is detrimental
to marine life.

Sincerely,
Pansy K. Ails

12-1-05

SURTASS
SUPPLEMENTAL EIS

WE ALL WANT NAVAL PROTECTION
BUT NOT AT THIS PRICE.

WHILE THE WORLD STILL CONTAINS
MAMMALS UNABLE TO LEAVE
THEIR MARINE ENVIRONMENT
LET'S NOT BLAST THEM WITH
SONAR.

TO SAY IT WILL NOT BE USED
WITHIN A MILE OF SUCH
HEARING SENSITIVE ANIMALS
IS LAUGHABLE SINCE YOU
HAVE STATED THE SONAR
TRAVELS MORE THAN 100 MILES.

JUST SAY NO TO SURTASS.

Vern Weiss

From: Taffy Lee Williams
To: eisteam@mindspring.com
Cc: [REDACTED]
Subject: COMMENT PERIOD
Date: Dec 12, 2005 7:59 PM

eisteam and
Joe S. Johnson
SURTASS LFA Sonar EIS Program Manager
U.S. Department of the Navy
4100 Fairfax Drive
Suite 730
Arlington, VA 22203

Dear EISTEAM,

I am writing to ask that you please extend the deadline for comments on the Draft SEIS for SURTASS LFA. Because of the extensive reading involved I need more time to review the extensive information and other documents relating to the system.

I would appreciate a little more time in order that I can make a competent and substantial comment.

Thank you very much.

Taffy Williams
Westchester Community College
Environmental Club

Joe Johnson
4100 Fairfax Drive
Suite 730
Arlington, VA 22203

Re: Navy Sonar

It is very sad what the Navy is doing - to knowingly assault marine life with the sonar. Imagine what the animals are feeling: pain, disorientation, nowhere to escape, no way to protect themselves.

How sad that the Navy has such disregard for the environment. Do we have to wait till every whale, dolphin, shark, every living marine creature is destroyed?

Stop this insanity! Stop before it's too late! Otherwise, you'll have to answer to future generations what a whale was, who destroyed them and why (?).

Aloha,



Peggy Kala Hubacker

B-102

From: Lindy Weilgart
To: eisteam@mindspring.com
Subject: DSEIS comments on SURTASS LFA sonar
C Dec 19, 2005 6:23 PM
Attachments: DSEIS LFA comments.doc

Dear SURTASS LFA sonar EIS Program Manager:

Please find attached my comments on the DSEIS for SURTASS LFA sonar. I have been active in the undersea noise issue since 1993. My expertise is in the field of whale bioacoustics, which I have studied for 20+ years. My M.Sc., Ph.D., and post-doctoral studies were all related to whale vocalizations. I have participated in numerous meetings, scientific reviews, and panels on the underwater noise issue, and was an alternate on the Marine Mammal Commission's Advisory Committee on Acoustic Impacts on Marine Mammals, as well as a member of the Mitigation and Management subcommittee and the Science Synthesis subcommittee.

Please accept my contribution to the public comment process and kindly confirm receipt of my comments.
Thank you for this opportunity for input.

Sincerely,

Linda S. Weilgart, Ph.D.

Research Associate and Assistant Professor
Department of Biology
Dalhousie University
Halifax, Nova Scotia B3H 4J1 Canada

E-mail:

Lindy Weilgart, Ph.D.
Research Associate and Assistant Professor
Department of Biology
Dalhousie University
Halifax, Nova Scotia B3H 4J1 Canada

E-mail:

Comments on DSEIS of SURTASS LFA sonar
Dec. 16, 2005
Linda Weilgart, Ph.D.

Is the 180 dB isopleth distance given anywhere in this DSEIS? I didn't see it anywhere, and it seems like it would be very important for the reader to know how far from the source 180 dB can be heard. **4.3.15**

The determination of the 180 dB impact level is not supported by field research. Indeed, gray whales avoided much lower LFA levels (around 130 dB) while migrating (SRP results). The fact that offshore gray whales did not avoid such lower levels can mean that less sensitive or more marginal (sub-optimal) animals migrate offshore. This scenario is supported by the fact that mothers and calves tend to migrate inshore. Downplaying this impact because offshore animals behaved differently would be only one way to interpret these results and would be scientifically invalid. Is this result a consequence of the inshore vs. offshore environment or because of the different age/sex classes or sensitivity levels of animals in either environment or some other interpretation? The answers to these questions remain unknown. **4.3.10**

This DSEIS does not seem to recognize that behavioral reactions can produce Level A harassment, as has been indicated by beaked whale reactions to sonar. It is not yet known whether a non-auditory or a behavioral reaction or something else causes the growth of bubbles in beaked whale tissues during a noise event. It certainly has been postulated that these bubbles, and the decompression sickness that results, occur as a result of a behavioral reaction (surfacing too quickly, staying at depth too long, etc.) (e.g. Cox et al. In press). The best estimate of the average level the Bahamas whales received before stranding and dying is on the order of 130 dB (Hildebrand and Balcomb 2004). How then can 180 dB be used as the threshold for impact, even Level A harassment? Why is there no threshold given for behavioral impacts (Level B harassment)? **4.3.42**

145 dB for diving and recreational sites acknowledges a risk to humans. It is unreasonable to conclude that humans are more sensitive than marine mammals to underwater noise. It would make sense to use this level for marine mammals as well. In fact, NATO uses a 145 dB impact level to denote harassment of marine mammals. **4.3.5**

The long wavelengths used by LFA mean that only larger targets can be detected. Small submarines, for instance, would escape detection. How would this deficiency be overcome or why is it not considered a deficiency? **2.1.5**

I strongly question the assumption that invertebrates are not considered because they have no delicate organs or tissues whose acoustic impedance is significantly different from water and because there is no evidence of auditory capability in the frequency range used by LFA. Given the recent research and observations concerning squid and snow crabs, I find such statements unsupportable. Not much is known about hearing in most invertebrates but our knowledge is evolving rapidly. For instance, not too long ago squid were thought to be deaf. Fish and some invertebrates have a lateral line (or equivalent) system which detects water movement and could also conceivably detect sound or particle motion. Both squid (McCauley et al. 2000; MacKenzie 2004; Guerra 2004) and snow crabs (DFO 2004) appear to show reactions to seismic noise which is predominantly low in frequency. While it is unknown which characteristics of the noise they are reacting to, it seems irresponsibly premature to conclude that these characteristics are ones not shared by LFA sonar. **3.2.5**

24 hrs. of compromised hearing in catfish and some rainbow trout is not trivial and could have survival consequences (Popper 2003). **4.1.6**

A 180 dB level should never be considered highly conservative, even for fish. **4.3.13**

- The idea that a ship moving in two dimensional space and animals moving in three dimensional space will not coincide very often is correct if one is considering collisions but is absurd when considering noise impacts. Noise impacts do occur in three-dimensional space even though the ship stays at the surface. 4.0.6
- There is no consideration of the potentially dire nature of behavioral effects at lower sound levels. Population-level effects of masking or stress are ignored, for instance. If only one LFA system is operating in the Pacific at one time and marine life is behaviorally impacted at levels of 120 dB or so (as indicated by previous research on gray whales and LFA or other noise sources)(e.g. Richardson et al. 1995), then the area impacted is around 3.9 million sq. km. (Johnson 2003) 4.3.23
- Why is the area of impact at the 120 dB RL not even given in this DSEIS? Since many marine animals react to noise at this average RL, it seems imperative that this isopleth be stated. So, yes, many animals would indeed be impacted over a large amount of time, not the <0.2 animals per year per vessel as estimated for leatherbacks, for instance. Also, it is misleading to use low numbers impacted like this when we are talking about a highly endangered population. Because of the myriad of previous threats to leatherbacks, their numbers are dwindling. This should mean we treat the few remaining animals with more caution, not less, and not downplay the severity that only a few individuals may be impacted. Moreover, there is an assumption that LFA would be the only noise or other threat to these animals, rather than a serious analysis of the cumulative and synergistic effects. Using such figures as 0.2 animals per year per vessel also ignores the fact that animals are generally clumped in distribution, so that if a concentration of animals is impacted, the population could suffer. 4.3.22
- I believe the Beaked Whale Workshop (Cox et al. In press) concluded that resonance was considered less likely than some non-auditory effects but still was an open question. None of the workshop participants were willing to rule out resonance as a possible mechanism for noise-induced strandings. Considering the huge unknowns in this area, I think it premature to exclude any such effects. Why are resonance effects in fish not addressed here, if marine mammal air spaces are thought too large? Low frequency sounds certainly caused swim bladder rupture in fish in studies by Turnpenny et al. (1994). Even though there is some criticism of the study, it is impossible to rule out these effects entirely, especially for all species, at all depths, at all life stages, in all water temperatures, etc. etc. 4.3.53
- I disagree that it is difficult to identify areas particularly devoid of marine life. It is true that sometimes these areas have simply not been surveyed adequately, but a good first indication of primary productivity, and thus often marine mammal abundance, can be obtained from color scanner satellite photographs of the ocean. These areas can subsequently be surveyed, visually and especially acoustically, to determine marine mammal abundance. 4.1.8
- I am not aware of a situation where the Navy has willingly and of its own initiative changed its preferred mission area because of marine mammal impact concerns. 2.5.4
- I don't agree that active acoustics would be unable to detect fish schools reliably. This is a standard measure of fish abundance, and if active acoustics were so unreliable, it is hard to understand why fishers and fisheries scientists use them successfully. 2.5.5
- Pre-operational small boat or aerial surveys are given very short shrift. The arguments against them do not seem compelling. What about large boat surveys? Why is this not considered as an option? 5.2.16
- The problem with strandings is not one of "public perception"; it is one of scientific facts. It is phenomenally condescending, not to mention inaccurate, to maintain otherwise. An LFA-like system has indeed been linked to a stranding in Greece (Frantzis 1998), and LFA sonar use has been much more limited than mid-frequency sonar use. LFA first emerged in the late 1980's whereas powerful mid-frequency sonars appeared in the early 1960's (Friedman 1989). The fact 5.4.3
- 4.4.13
4.4.18
4.4.14
4.4.12

that more strandings haven't been linked to LFA sonar may merely be because its use has been more restricted. 4.4.14

To argue that LFA sonar does not add appreciably to ocean noise beggars belief. If areas of 3.9 million sq. km over which LFA floods to levels of 120 dB do not give you a sense of the addition of noise, nothing will. This argument attempts to use the logic that each one source of noise pollution is small (as is each power plant emission compared to all power plants' emissions)—logic that is particularly inappropriate in the case of LFA sonar. To illustrate this further, the DSEIS states that "fisheries contribute less than 1% of the U.S. economic activity". So, closing down U.S. fisheries would constitute a "negligible impact" using the same logic as the DSEIS uses regarding marine mammal impacts, yet I think there would be a substantial outcry if the U.S. fishing industry were eliminated, especially in coastal communities. 4.6.13

I don't know why noise from sonar is not projected to increase. The louder the oceans get from use of sonar (and other noise sources), the louder the sonars need to become to maintain a loud enough echo that can be heard above the din. Other nations will be using LFA-like systems and these systems may need to compete with each other to be heard. That sonar compares favorably with shipping in terms of contribution to overall noise budget is not very relevant. The question should be "which noise sources are the most damaging to marine mammals?" The fact remains that shipping noise has not yet been linked with any marine mammal death, whereas sonar has, even LFA-like sonar. 4.6.11

There is a huge logical leap made when a study that examined only obvious physical effects from LFA on two fish species is used to conclude that LFA will not impact fish populations and thus not recreational or commercial fishing. This study examined nothing of the sort. If a concentrated fish school were to suffer temporary hearing loss for 24 hrs., it is quite possible population effects would result. The fish school would be vulnerable to predation, would perhaps be unable to communicate, and thus mate or stay in contact with each other, etc. The effects of masking, stress, avoidance of important areas associated with past painful noise events—all these effects are swept under the rug. 4.1.6

When the DSEIS states that LFA sonar is not likely to be close enough to other noise-producing activities like oceanographic research or oil and gas exploration to interfere with them, it implies that areas devoid of human-made noise will be harder and harder to find. If noise activities space themselves from each other, there will be less overlap yet fewer undisturbed areas. Moreover, it ignores the scale of the area affected by LFA. How are you going to ensure that noise from LFA and seismic surveys don't overlap with each other if one significantly raises noise levels over 3.9 million sq. km. and the other is heard over 3,000 km (seismic)? 4.6.8

To say that there have been no *reported* Level A harassment takes or strandings in the northwestern Pacific Ocean associated with LFA [emphasis mine], is not saying much. How extensive was the monitoring for these sorts of takes? During the research projects on marine mammals I imagine the monitoring was good, but otherwise, I doubt much was done. You can't see if you don't look. It took scientists 40 years to finally discover a link between mid-frequency sonars and strandings. The reason for this is that many strandings are missed, noise events are missed, and there are not often marine mammal scientists present to document these connections adequately. However, I do believe there were strandings in the area that may or may not have been related to LFA sonar. And now the number of days active per mission has more than doubled from the original EIS, as have the days of active operations. 5.2.5

If LFA were operated at a good distance beyond the shelf, it would affect far fewer marine mammals and marine mammal species. Marine mammals concentrate at the shelf break, and thus the stand-off distance should be related to the shelf break and not the coast. The shelf break could be very close to the coast or extend very far out from land. This is the relevant feature that needs to be used to determine safer distances from marine mammal concentrations. To say that there is a greater risk to marine mammals with greater coastal standoff distance 4.7.15

because the affected marine area is greater, is disingenuous. While we may be concerned with reducing the affected area, we should be more concerned with reducing the number of animals ensonified. 4.7.15

Estimating SPLs during or prior to transmissions is usually too inaccurate. Why can't they be actually measured? Time and time again estimations have provided very unwelcome surprises in that levels are found higher than predicted. They can also be lower than predicted, though there is less danger in mistakes in this direction. 5.1.2

The use of passive acoustic monitoring is a very good idea, but using the SURTASS array, which is presumably just tuned to low frequencies, is a big mistake. Most marine mammal species could thus not be detected. While it could be argued that those marine mammals which themselves use low frequencies are most at risk of being affected by LFA and thus should be the focus of monitoring, this is not necessarily the case. Marine mammals can likely sense low frequencies in other ways than through the ear (e.g. by vibrations of the skin or the lungs). Thus, audiograms or presumed audiograms are not the most reliable measure of which species might be affected. 5.2.13
4.3.41

Using HF/M3 sonar is also ill-advised, as some marine mammals may be affected by this noise as well. Again, audiograms, even for those handful of species for whom we have them, do not tell the whole story. Sound perception can occur through various means, not necessarily just the ear. Also, animals may detect the sound "envelope" without actually hearing the whole sound. We are simply not yet at the stage where we can definitively say which marine animals can detect which sounds, especially in regard to the great whales, whose hearing has never been tested. To illustrate this point, HF/M3 sonar first used a frequency thought to be above gray whale hearing detection. Later, gray whales were shown to respond to it after all. We cannot afford to keep making mistakes like this. Mitigation should not add yet more noise to the original noise-producing activity. Moreover, the effectiveness of HF/M3 to reliably detect marine mammals or turtles without many false positives has not been demonstrated. 5.2.17

I understood the law as requiring that not only should the effect on the stock of any marine mammal from significant change in a biologically important behavior be minimal, but that natural behavior patterns cannot be disrupted to a point where patterns are abandoned or significantly altered in *individual* animals. This is not reflected in ES-18 under Alternative 1. That auditory masking from LFA is not continuous may be true, but reverberations from the ocean floor can make signals (such as pings given every 24 s) all but continuous, as shown by analysis of the Bahamas stranding (Hildebrand and Balcomb 2004). The same has been found to be true for such noise events as seismic surveys. Masking is not just restricted to the duration of the signal; rather, reverberation effects draw out the duration of the masking considerably. If the LFA signal can be over 1.5 mins. long in duration and the time between transmissions could be as little as 6 mins., then, including reverberations, the noise could be nearly continuous. 1.2.2
4.7.24
4.3.39

I disagree that Alternative 2 would only slightly decrease the potential for impacts to marine mammals from LFA. Depending on how many and which of these biologically important areas are excluded from LFA transmissions, concentrations of marine animals of many different species could be better protected. It would not offer perfect protection, but could be a significant improvement. 4.7.22

It is profoundly disturbing that the Navy has not yet undertaken and published an analysis of stranding data as related to naval maneuvers around the world. Why this hasn't been done yet is hard to fathom and would certainly have been an important contribution to this DSEIS. 4.4.9

To say that "Cudahy and Ellison (2002) provide the empirical and documentary evidence that resonance and/or tissue damage from LFA transmissions are unlikely to occur in marine mammals under 190 dB for the frequency range 330-500 Hz" and thus "the previous interim operational frequency restriction is not required," (p. 2-10) is highly premature and overstating the 2.5.2

certainty of the science. Remember that resonance is something that can cause a glass to explode, a bridge to collapse, and a swim bladder to rupture. Even supposing we could say that such resonance effects are indeed unlikely, should we be risking rupturing air sacs in marine mammals found undetected within 1 km of the sound source (and there will surely always be some)? We need to balance likelihood with the severity of the effect, should it occur. But the science of resonance effects in mammals underwater is still a very preliminary field. How does resonance change with the animal's depth, for instance? Dolphin lungs are meant to collapse with pressure as they dive—how does this change the size of other air sacs and thus, their resonance frequencies?

4.3.12
2.5.2

Section 2.7, p. 2-15. There are several problems with the characterization of the Oxford process. Firstly, the process was agreed to be confidential at this stage, so that it is highly inappropriate to be referring to it in this public document. Secondly, the planning document is not detailed, as maintained, but is a general overview of potentially useful future research in this area. Thirdly, the Oxford process has not restricted itself to *experimental tests* of, among other things, the effects of LF sonar on deep-diving marine mammals, but rather takes a broader view of studies that may inform on this topic such as retrospective studies, modelling, necropsies, studies of the natural behavior of wild animals, etc.

2.7.1

Passive acoustic monitoring using bottom-mounted hydrophones is very worthwhile, but how much of this research has been published or made available to the public?

The final proposed research topic (long-term cumulative effects on a stock of marine mammals regularly exposed to LFA) is very worthwhile and important. However, how are the studies going to separate out impacts from other noise or environmental threats or oceanographic and ecosystem changes? If the study is inconclusive because other factors could have caused a change in population, then not much will have been gained.

2.7.2

It is inconceivable that this DSEIS has handily dismissed cephalopods and decapods from consideration as potentially affected organisms. To say that "we may cautiously suggest that [there would be no lasting impact on these animals unless they were only tens of meters from the source]", is anything but cautious. It is a wild guess—one that moreover is contradicted by recent scientific knowledge. McCauley et al. (2000) show impacts from seismic noise on squid. Not only did squid react to the noise (release ink), but they sought an acoustic shadow at the water's surface. This is quite a sophisticated response, meaning that squid could evaluate acoustic gradients and find the acoustic minimum, which is more than most fish seem to manage. Guerra et al. (2004) also noted the occurrence of several squid (sometimes live) strandings over several years coincident with seismic surveys. A total of nine giant squid has stranded coincident with seismic surveys in 2001 and again in 2003 (MacKenzie 2004). Squid showed signs of ascending from depth too quickly. The squid showed no surface damage but all had internal injuries, some of them massive (disintegrated muscles, unrecognizable organs). All the squid had badly damaged ears. Research on the effects of seismic on snow crabs (DFO 2004) also showed that some organs and ovaries of animals exposed to seismic were bruised and hemorrhaging compared to controls, ovaries were abnormal, there were changes in some organs consistent with a response to stress, embryo development appeared delayed, larvae were slightly smaller, and there were indications of greater leg loss. For the most part, the independent scientific experts on the peer-review panel of this study were concerned that the studies indicated unexpectedly severe effects from seismic noise, which could have conservation implications. Also, sound exposure in tanks may cause physiological changes in brown shrimp that increase mortality and reduce reproduction. A modest increase in continuous background noise caused an increase in metabolic rate leading to significant reduction in growth and reproduction over three months (Lagardère 1982; Régnault and Lagardère 1983). Seismic noise is predominantly low frequency, and some of the surveys mentioned above were relatively low in intensity. All this evidence should be enough to warrant the inclusion of at least decapods and cephalopods in this DSEIS as potentially affected species.

3.2.7
3.2.5

3.2.5
4.0.8

3.2.7

- The rationale that seabirds “can rapidly disperse to other areas if disturbed” is troubling. Would this not count as an impact, particularly for endangered seabirds? To further complicate the matter, research on birds shows that those individuals that have least energy reserves or no alternative habitat cannot afford to repeatedly flee from disturbance but must remain and continue feeding, even if this places them in increased danger. Indeed, disturbance studies show that the weaker the response, the more serious may be the impact on the population (Gill et al. 2001; Stillman and Goss-Custard 2002). So, no, birds can’t always “rapidly disperse to other areas if disturbed”. They are there for a reason, and that reason is likely not to be arbitrary. **3.2.2**
- I question the assumption that odontocetes are less likely to be affected by exposure to LF sounds than mysticetes. While odontocetes do specialize more on the mid- to high frequencies, there are other aspects about odontocetes that may make them more vulnerable to noise than mysticetes. For one, the deep divers are all odontocetes, and deep divers are thought more vulnerable to noise (Houser et al. 2001). Also, odontocetes more frequently mass strand, and beaked whales have been shown to be especially sensitive to noise. In short, I believe there are reasons why both mysticetes and odontocetes could be vulnerable to LFA noise exposure. It is premature to say which group is more likely to be affected. **4.3.43**
- I would imagine there are important migratory corridors for leatherback turtles not just in the Pacific, but the Atlantic as well. **3.2.10**
- The latest worldwide sperm whale estimates have not been cited (Whitehead 2002—not the same as the following Whitehead (2002)). Estimates of worldwide sperm whale numbers over 1 million are invalid. Also, Whitehead (2002) is not the first person to have realized that the sperm whale is the largest odontocete. I think even Linnaeus might have scooped him on that one! **3.2.12**
- When first introducing the beaked whales, the DSEIS should state that the reason Ziphiidae are not listed under MMPA, ESA, or IUCN, is because they are data deficient. Thus, they may be endangered, but not enough is known to say. **3.2.13**
- The Gully population of Northern bottlenose whales has been assessed by COSEWIC (the official Canadian independent panel of scientific experts) as endangered. It is not mentioned in the DSEIS that the Gully population is resident year-round. Instead, there is reference to migrations in the DSEIS, which is inaccurate for this discrete, non-migratory population. Winn et al. (1970) is based on one encounter and is not considered well-documented. It has been largely superseded by the research mentioned subsequently and thus should be deleted. **3.2.14**
- I am not sure why maximum SLs of the individual marine mammal species’ vocalizations are constantly listed in Section 3. This implies that somehow natural sounds can be equated with human-made sounds. On pp. ES-15 and 4-63, the same is done, listing human-made and then natural sounds under a discussion of potential cumulative impacts of four LFA systems in operation simultaneously. To mention “whale vocalizations” as some of these cumulative impacts in this context is highly misleading and inappropriate. Marine mammals have, to some degree, presumably adapted over evolutionary time to natural noise sources, whereas human-made noise is a comparatively new addition to their environment. It is scientifically invalid to compare the two. To compare human-made noise sources with the marine mammals’ own vocalizations is particularly deceptive. Surely marine mammals distinguish the two and modify their behavior accordingly (by avoiding accidental ensonification of each other to dangerous levels unless they use their sounds as a weapon occasionally, by spacing themselves when vocalizing loudly, etc.). **4.3.4**
4.6.16
- My general impression of Section 3 is that it is shoddily put together, often inaccurate, and not well-referenced (not the most appropriate references are used). Ex.: p. 3.2-73 “Audiograms for Risso’s dolphins indicate their hearing SLs equal to or less than approximately 125 dB in frequencies ranging from 1.6-110 kHz.” I assume RLs are meant here? **3.2.15**

- Canada is not mentioned in the text (p. 3.3-9) as allowing aboriginal whaling, though it does. It is stated in tables, however. 3.3.5
- I am unclear why bycatch is listed under socioeconomic impacts of LFA. LFA can certainly potentially affect the health of fish populations, and thus fisheries, but how does LFA impact bycatch specifically? I can easily believe that masking from LFA can prevent or hinder marine mammals from detecting fishing gear and thus contribute to bycatch, but this argument is not made in the DSEIS and the rationale should be made more explicit. Otherwise, the bycatch section can be misread as a ploy to downplay the impacts LFA could cause, by pointing the finger at bycatch instead. Again, this logic would entirely miss the point of cumulative or synergistic impacts. 3.3.6
4.6.20
- I disagree with the contention that LFA would not affect whale watching unless LFA were nearby. What if whale stocks suffer a slow decline or vacate certain areas due to intermittent or persistent, moderate noise levels from LFA? Even one very unpleasant noise event could cause animals to leave the area permanently because of the negative association with the noise event. Again, LFA produces high noise levels over smaller areas but moderate noise levels over huge areas. 3.3.4
- I don't understand the logic behind "Many [recreational activities] would not be affected by LFA because... they do not involve the use or creation of underwater sound." So only serious consideration needs to be extended to other noise producers, so that LFA not interfere with *their* noise?? Recreational boaters, divers, swimmers, and snorkelers will likely have a different opinion. Many will not be in favor of any degradation of the marine environment through LFA noise, as one of the reasons they enjoy the ocean is because of its marine inhabitants. 3.3.7
- Why are costs to only whale watching listed in Sec. 3.3.2? Many of these same costs (trash, ship strikes, pollution from boats) apply to all ships at sea, including military vessels. The fact that there are several reports of ship strikes on whales from whale watching vessels must surely be a function of reporting. How many cargo or military ships studiously monitor the number of whales they've struck? They probably wouldn't even notice. "Trampling coastal areas" or "the effects of petroleum products on the environment when you drive or fly to the [whale watching] site" are ludicrous arguments and a clear double standard. What about tourism in general? Does the Navy never drive or fly its sailors anywhere? This sort of obvious bias does nothing to raise this document's stature or credibility. 3.3.1
4.6.23
- Non-auditory injury can conceivably occur below 180 dB RL, in contrast to what is implied on p. 4-2. Moreover, not only resonance but effects such as static diffusion fall under this category. 4.0.3
- Does injury have to be permanent to fall under Level A harassment? If a deep gash is caused in a marine mammal from some ship strike, for instance, which limits and impedes their daily function, yet this heals over time, is this considered an injury? If so, why isn't TTS considered injury?
- The developmental effects of growing up in a noisy environment are not addressed in this DEIS. Experiments with young rats show brain development suffers under even moderate noise conditions (Chang and Merzenich 2003). Chronic noise increases the risk of cardiovascular disease in humans (Willich et al. 2005). Yet the focus is almost exclusively on PTS and TTS. 4.3.54
- I am surprised that there should be less definitive data on fish/shark/turtle stock distributions in the open ocean than on some cetacean stock distributions. This is given as the reason why it is not feasible to estimate the proportion of a stock that could be co-located with an LFA transmission. Perhaps we should wait until there are better data on such stock distributions, allowing us a better indication of potential population impacts? 4.2.2
4.1.20
- Are the recent studies on fish undertaken by the Navy peer-reviewed? 4.1.1

The DSEIS states that for fish exposed to intense noise “there was no damage to [non-auditory] tissues either at the gross or cellular levels.” But there was for snow crabs (see above). Several tissues were affected both at the gross and cellular levels.

4.0.8

It is false that there has been no evidence of hearing loss associated with sensory hair cell loss in fish and that such a connection is “only conjecture”. The very reason why McCauley et al. (2003) examined pink snapper hair cells in the ears is because the fish were not showing the stereotypical reaction to seismic noise that they had previously. They “fed and appeared to behave normally” because they were *captive*. Whether they would have survived in the wild is another question. I don’t know that the ability to “depart the immediate sound field” would have helped the pink snapper avoid ear damage. In the case of LFA, they would have been presented with a fairly complex sound field and may have had difficulty finding a way to escape. Further, they may not be able to swim fast enough, especially if there is some confusion as to where they should swim to lessen the noise exposure. I disagree that the exposures from LFA would necessarily be shorter than what the pink snapper experienced. There were very few seismic “shots” at high intensity in this study—the vast majority were much lower exposure levels. A key question is how the LFA-equipped ship would move. Would it be in a straight line, with a consistent heading? Or rather in a non-transiting mode, circling an area, or doubling back over its track at some times?

4.1.14

The DSEIS makes a very important point: noise exposure may not just affect hearing thresholds but the way that fish resolve signals from one another (e.g. temporal resolution). Also, it notes “...it is difficult to extrapolate among species with regard to the effects of intense sounds.”

The apparent “freezing” response of the catfish during exposure to LFA noise is a behavior that could affect their survivability in the wild. It is difficult to conclude that lower exposure levels would have produced less of a response—they might have produced the same behavior pattern. Results often turn out to be counter-intuitive, such as when longer duration exposures produced less hearing loss in the rainbow trout or the fact that there was more hair cell damage with increasing time after the acoustic insult (as in the McCauley et al. (2003) study). The seasonal variation in hearing loss is also reason for caution. Would the same results of the recent LFA exposure study apply at other water temperatures? Could there be more hearing loss? Was stress measured, particularly in light of the recent study by Wysocki et al. (2005) on ship noise?

4.1.7

Mortality rates of 20-30% in herring exposed to sonar signals are not inconsiderable. There is no RL indicated but rather a SL of 189 dB. Is this another typo? Again, was stress measured?

4.1.15

On the one hand, the DSEIS urges caution in extrapolating between species, yet summarily concludes that there will be negligible impact on fish from LFA exposure. Again, behavioral changes or stress are all but ignored.

4.1.11

The Gausland (2003) document should be ignored. Its statistics are entirely invalid. It uses the same data as Engås et al. (1996) [not 1995 as is stated in the citation and in the references—again, shoddiness], yet splits them up for no valid reason, and then notes they are no longer statistically significant. Anytime you split the data up, you will lose statistical power, so it is no surprise that this sort of manipulation will result in insignificant results. This in no way invalidates the Engås et al. (1996) study, and moreover, is an incorrect use of the data. To say that the variation Engås et al. (1996) noted is within normal fishing season variation is neither here nor there. The fact is that the variation occurred under a systematic study and was related to when seismic exposure was present compared with when not. The results were dramatic, obvious, and large scale. That there is variation in catch rates over several fishing seasons is well-known (however, the Engås et al (1996) study occurred over one fishing season, not over many). What happens when there are low catch rates due to oceanographic factors and then seismic exposure reduces them even further? These are the sorts of synergistic or cumulative impacts that can

4.1.9

cause tremendous damage to fish populations. This argument offers no valid rationale for criticizing the Engås et al. (1996) study. Quite the contrary, it provides more reason for caution.

The Wardle et al. (2001) study did indeed show some indications of change in the long-term day-to-night movements of pollock. A clear and repeated C-start reaction was also present in some fish, which could cause stress and otherwise affect survivability. The fact that fish did not seem to leave with exposure to seismic noise is hardly surprising. These are reef fish that are very tied to their home territory, as the authors also note in their paper. There are many documented cases of animals staying near damaging noise, even to the point of injury (NMFS 1996), so as not to lose feeding or breeding opportunities, a situation that may have occurred had the fishes' territories been abandoned.

4.1.10

The DSEIS does not make clear that noise does not need to be the same frequency as the signal of interest to mask it. At low and very high frequencies, a noise can mask a much wider range of frequencies (Richardson et al. 1995). This would apply to LFA, as a low frequency signal.

4.3.38

Why is there no discussion of recent work on fish larvae showing they use noise for the selection of, and orientation to, suitable settlement sites (Simpson et al. 2005)? Disruption of such behavior would again most likely have population consequences.

4.1.16

It is not possible to conclude that LFA impacts on fish would be negligible because only an inconsequential portion of any fish stock would be present within the 180 dB sound field at any given time. Firstly, I see no evidence that makes a compelling case for 180 dB being a "highly conservative" figure. Mortality rates of 20-30% at 189 dB, and yet 180 dB is highly conservative for fish? I don't think this would pass muster for being called "conservative" by any means. Allowances must be made for sublethal, more subtle, or long-term effects. Delayed development hasn't been adequately studied, nor non-immediate mortality through injury or overstimulation of neuroendocrine systems. Secondly, what is the support for the conclusion that only inconsequential portions of a fish stock would be affected? Fish are clumped and would be concentrated around areas of productivity. As such, one broadcast could affect large numbers of several species of fish at once. And what about the effects on fish eggs, larvae, or fry? Studies such as Kostyuchenko (1973), Dalen and Knutsen (1987), and Booman et al. (1996) show increased mortality with seismic exposure of fish eggs, larvae, and fry compared with controls. One spawning aggregation ensoufied could have population consequences. Even a 5% loss at critical stages of development and metamorphosis could impact recruitment into a fishery and thus affect the population.

4.1.17

Again, to say that the percent of fish catch potentially affected by LFA would be negligible compared to fish harvested commercially and recreationally in the region is hardly the point and is a truly bizarre comparison. Is the Navy going to demand that commercial and recreational fisheries be stopped in areas of LFA broadcasts? If not, then isn't the effect going to cumulative or worse, synergistic? Has the Navy noticed that most worldwide fisheries are not exactly doing well? That it is not hyperbole to say that many fisheries are in a state of crisis? I would certainly hope that LFA broadcasts wouldn't have the same degree of usually devastating effects on the fisheries that outright harvest or bycatch has. This statement does not comfort me in the least, nor is it at all relevant. Each source of impact on the environment may be less than some other (or by itself, not as serious), but that does not mean that each does not degrade the environment in some additive way, and thus should be ignored.

4.1.19

4.5.1

This DSEIS repeatedly urges caution when extrapolating between fish species or between fish and sharks, for instance, but then goes on to do just that. It also argues that the LFA signal is too different from LF sounds made by struggling fish to be attractive to sharks, yet has no problem with equating natural sounds, even marine mammal vocalizations, to man-made noise. For instance, in its discussion of the potential cumulative effects of several LFA systems operating simulataneously, "whale vocalizations" are considered an additive impact together with LFA noise! The DSEIS makes the assumption that it is the pulsed nature of the playback sounds that

4.1.12

caused sharks to withdraw. Since LFA is not pulsed, it argues, sharks would not withdraw from LFA. Yet these pulsed sounds were usually attractive and only caused withdrawal at higher, but still very modest, received levels of 111 dB. Thus, one could just as easily conclude that it may be the higher sound level, not the pulsed nature, that causes shark withdrawal.

Conjectures about the potential disruption of shark migration are made that are wholly unsubstantiated. Basically, we have no idea what the impact of LFA would be on shark migration, and this fact must be honestly acknowledged without the fabrication of fairy tales.

4.1.18

Why is the lack of scientific data on sea turtle PTS a valid rationale for concluding LFA will not cause PTS in sea turtles? Usually, this dearth of information should argue for precaution, not the opposite!

4.2.3

Ducting, or SOFAR channels, does/do exist in temperate regions and are usually at a depth of about 1,000 m, within leatherback turtle diving range. In cold water regions, SOFAR channels are closer to the surface. This discussion of transmission distances due to temperature zones is incomplete, facile, and misleading.

4.2.4

While LFA and seismic air gun signals do differ, they share many characteristics, such as having their greatest energy in the low frequencies and being very loud. Until we know which characteristics of the noise turtles are reacting to, I do not believe it is valid to dismiss impacts on turtles from seismic exposure, simply on the grounds that the signals differ in some of their characteristics (but not others). In the absence of good studies on turtles exposed to LFA, the "red flags" raised from results from seismic noise should be taken seriously. This is termed "precaution". What about the orientation of females toward nesting beaches to lay their eggs? Wouldn't they use LF surf noise? Anecdotal information suggests that the acoustic signature of a turtles' natal beach might serve as a cue for nesting returns. It is not hard to imagine the population implications of disrupting such behavior. Also, LF sound transmissions seemed to cause increased surfacing behavior, which could place turtles at greater risk from vessel collisions and more vulnerable to natural predators (O'Hara and Wilcox 1990; Lenhardt 1994). While some of these references are cited in the DSEIS, I would like to see a more serious discussion of these results.

4.2.5

The calculation of the area ensounded should state which RL is being used. I don't believe visual or active acoustic monitoring will produce a high detection rate for sea turtles. This is a rather bold assumption that needs testing. Such a statement is meaningless, otherwise.

4.2.6

How does a marine mammal's adaptation to pressure changes due to diving equate with being able to tolerate pressure changes from noise? One important difference apparent immediately is that when diving, an animal is able to control the pressure it is exposed to (by ascending or descending). When confronted with a sudden noise, however, it is not in a position to so easily control the pressure it experiences. This is again an area of wild speculation. On the one hand, the DSEIS states that the marine mammal lung is reinforced with extensive connective tissue, while on the other, it notes that alveoli collapse at depth. Thus, the story is quite complex, and it is likely that lung volume changes with depth, making it harder to predict whether resonance effects can occur or not for a particular wavelength. We really don't know how lung structures behave during the course of a dive for the vast majority of marine mammal species.

4.3.45

The major criticism of Jepson et al. (2003) is that beaked whales could not develop the levels of supersaturation necessary to produce decompression sickness. What Piantadosi and Thalmann (2004) seem unaware of, is that supersaturation levels of 300% and beyond are indeed quite plausible, and that several species, including beaked whales, do indeed perform a series of repeated dives to depth, such that supersaturation levels can occur (Houser et al. 2001). I believe that Crum has since modified his contention that RL of over 190 dB would need to occur for bubble growth to proceed. Again, with high levels of supersaturation, RLs could be

substantially lower for this effect to occur. Moreover, a related phenomenon known as “static diffusion” has been proposed for lower RLs. This section of the DSEIS seems outdated. 4.0.3

I can see no justification for concluding that the potential effects on the stock of any marine mammal from behavioral change or auditory masking would be minimal. Based on what evidence? The Scientific Research Program was extremely limited in scope, studying four species of whales for periods of weeks to a month or so. Even then, significant results of avoidance or behavioral or vocal change were noted, yet these are dismissed. Moreover, no studies have been conducted on marine mammals using the full operational SL. Why is the published study (Miller et al. 2000) on humpbacks lengthening their song due to LFA broadcasts not mentioned? 4.3.30

Why, in the risk analysis/sensitivity flowchart, is there no mention of the no action alternative. What if the risks are too great? Is there never the possibility of concluding that this technology must be abandoned? 4.4.8

There are no confidence limits on any of the numbers of individuals of each species in the area nor on the number of animals in the stock. These are generally highly inaccurate estimates, so using only one number to denote them is very misleading and gives no sense of the potential range of percentage of animals affected. The identification of stocks is also very inexact and prone to many errors unless genetic analyses have conclusively ascertained whether populations are interbreeding or not. What does “% affected < 180 dB” mean? What is the minimum RL considered to affect an animal behaviorally? This information is vital to have to be able to evaluate these numbers adequately. Based on our best knowledge from past research, an appropriate minimum RL for behavioral effects would be 120 dB (though behavioral effects have occurred considerably below these RLs). As the 120 dB isopleth extends out to 1,111 km, the percentage of animals affected would be much greater than given here. Again, it is very telling that nowhere in this DSEIS is the range of area affected to RLs of 120 dB ever given. 4.4.4

I am at a loss as to why a paragraph is written about how a change in species composition in an area can change the species composition of strandings as well. What does this have to do with sonar-related strandings? The fact that strandings can occur from “natural” causes needs to be stated, but there should be an attendant discussion of how acoustically-induced strandings display characteristics peculiar to this cause of stranding, such as mixed species composition, the frequent presence of beaked whales, individuals spread out over tens of kilometers of coastline, etc. etc. The examples of stranding events classified as “natural” (Tasmania, Florida Panhandle) may have had noise as at least a contributing factor. They are not “open and shut” cases. 4.4.7

Why is there no mention that Cuvier’s mass strandings were almost unheard of before the 1960’s when powerful sonars began to be deployed (Friedman 1989)? 4.4.25

These are not “strandings *potentially* related to anthropogenic sound”; they ARE related to human-made noise. Moreover, it is telling that there are 33 other stranding events linked to noise that are assiduously NOT mentioned here. 4.4.19

It is a misconception that inner ear trauma is required to establish a link between a stranding and an acoustic event. Whales may strand due to panic, if close to shore and especially when, in effect, herded toward the shore by noise (as drive fisheries have done purposely for decades). Under this scenario, there would be no trauma other than that of the stranding. That inner ears were not examined in the Greek stranding should not mean that thus no association between this stranding and NATO’s LFA can be made. The co-occurrence between the ship’s movements and the timing and locations of the strandings is very compelling indeed. I would encourage the Navy to include a figure detailing this event, with timing and locations of each stranded animal together with the ship’s movements, in their FSEIS. 4.4.11

To say that the hemorrhaging in the Bahamas stranded animals could have been caused by factors other than acoustic trauma is not consistent with the paragraph which follows cited from the Interim Report on the stranding (“all evidence points to acoustic or impulse trauma” of which the naval sonars “are the most plausible source”). Interestingly, the DSEIS does not mention what these so-called “other factors” might be. Whale vocalizations, perhaps? That re-floated animals apparently did not re-strand, does not mean that they lived. Some re-stranded repeatedly immediately after being re-floated, but then, once guided into deep water, ultimately did not return. The re-floated animals were never seen again, though these animals were a part of a well-studied resident population. Balcomb and Claridge (2001) maintain that most, if not all, of these animals died or abandoned their home area. It is impossible to say whether the various oceanographic factors, the bathymetry, etc. were all necessary to produce this stranding. They may or may not have contributed, and this may or may not have been an unusual confluence of conditions. The evidence seems to point toward such noise-induced strandings not being as rare as once thought.

4.4.18a

It is truly astounding that the Canary Islands stranding of 2002 is given such short shrift. Not only have three peer-reviewed articles appeared in highly respected journals about this stranding, but preliminary results were published in the European Cetacean Society’s Newsletter (Special Issue). Where are the Jepson et al. (2003), Jepson et al. (2005) and Fernandez et al. (2005) articles? It is entirely inadequate and moreover outrageous to merely state that “efforts to study the whale specimens from this incident continue and a report has not yet been published.” Where is the final report from the Bahamas stranding, even though the stranding occurred *five* years ago? Where is even one peer-reviewed paper from the Bahamas stranding (aside from Balcomb and Claridge 2001)? Results from the Navy studies on fish are cited and described without being published yet, but a double standard exists for the Canary Islands stranding apparently.

4.4.18

It is the height of absurdity to mention pinniped stranding events, even though there has not been a single pinniped stranding that has been linked to noise, yet not include a table of all Cuvier’s beaked whale mass strandings historically worldwide that have been associated with noise events (there have been about 27). Such tables have appeared in the IWC’s 2004 Report of the Scientific Committee, the ICES report (cited in this DSEIS), and other publications. Cuvier’s beaked whales have been called “canaries in the coal mine” for acoustic events, yet the focus here is on pinnipeds. What is the Navy trying so studiously to hide?

There is no discussion of the possibility of synergistic effects from several LFA systems working concurrently and with overlapping areas of impact. What if the ensuing sound field is so complex that marine mammals would not know how to escape it (supposing they could otherwise)? Simply using an additive approach (adding the potential impacts from each of the sources) would not address this issue.

4.4.27

Why is whale watching’s impact on whales being evaluated here? I thought this DSEIS was for LFA sonar. This sort of finger-pointing is not helpful, especially since all these impacts are likely cumulative. How can it be concluded that LFA has so far not harmed whale watching when LFA operations to date have been restricted to around Taiwan, an area not known for its vibrant and profitable whale watching industry?

3.3.2

The Au and Green (2000) study may have concluded that the humpback’s auditory system would not be seriously affected by boat noise, yet this study did show disturbance of the whales from boats. Why was this not mentioned?

4.6.18

While masking is certainly a very widespread potential impact of human-made noise, it is not the only impact. Stress, increased aggression, and effects on the ecosystem are some other widespread potential impacts.

4.3.51

I didn't realize that a discussion of cumulative impacts should consist of finger-pointing, i.e. concluding that other noise sources or threats are worse. These noise sources and threats will all be occurring *together*, so that the entire threats marine mammals are faced with need to be evaluated in concert. I don't see this being done here. This sort of treatment makes a mockery of the intent of the "cumulative effects" section.

The effects of reverberation are not addressed in this DSEIS, and how reverberation can increase the effective duty cycle in terms of masking and other impacts. 4.3.39

It is impossible to conclude, as the ICES report does, that "sonar is not a major current threat to marine mammal populations generally." I am not aware of a single study that has examined the impact of sonar on marine mammal populations generally. I am aware of one well-studied population that seems to have suffered adverse population-level effects from a single sonar transit, however (Balcomb and Claridge 2001). This population appears to have been eliminated from the area, through death or displacement. 4.6.10

Both bycatch and ship strikes could increase due to noise impacts if marine mammals can no longer hear approaching ships or other threats like fishing gear. Todd et al. (1996) found that more humpback whales were entrapped in fishing gear in an area where underwater explosions were taking place, apparently causing hearing impairment. Such impairment seems likely to have caused whales to blunder into nets, based on the unusual entrapment patterns observed (repeat entrapments, unusual age classes entrapped, etc.). Similarly, whales killed by collisions with high-speed ferries showed hearing impairment when later necropsied (Andre et al. 1997). These are all examples of synergistic effects, effects that are greater than the sum of their parts. 4.6.20

Ship strikes are not just a function of ship speed, as many small sailing vessels strike whales. A ship speed of 10-12 kts could easily result in a ship strike. 4.6.21

The geographic restriction imposed by the 145 dB RL exposure criterion for known commercial and recreational dive sites does nothing to support the conclusion that LFA sonar contributions to oceanic ambient noise are small and incremental. This is a bizarre statement and total non-sequitur. The 145 dB criterion will be used in a tiny fraction of the ocean, since it only applies to known dive sites. 4.6.22

It is not sufficiently protective to merely agree to expose Offshore Biologically Important Areas to less than 180 dB. This is still a very high level, and there is literally a complete absence of information on what the long-term impacts of such exposures on the behavior and population health of any marine animal might be. 4.6.24

It is not enough to have marine mammal biologists qualified in conducting at-sea visual monitoring for marine mammals train and qualify ship personnel to conduct the visual monitoring. The marine mammal biologists should be conducting the visual monitoring themselves. This is not information that can simply be transmitted—experience is required. 5.2.7

The Officer in Command is only alerted to marine mammal vocalizations (detected through passive acoustic monitoring) IF "the sound is *estimated* to be from a marine mammal that *may potentially be affected*" by LFA sonar. This needs more clarification, as this leaves considerable leeway for the Navy to a) incorrectly estimate the species and to b) make the determination that it will not be affected. Based on what? 5.2.15

What exactly is the full power of the HF/M3 sonar if it is ramped up *starting* at 180 dB?? Why is this SL not given? Why is there no indication of the error rates in the detection of various species by HF/M3? How many animals of which species escape detection? How many false positives? Why is the HF/M3 ramped up, but not LFA? What are the mitigation measures for HF/M3 exposure? Does the Navy see any conflict between adding yet more noise in the name of mitigating for noise? 2.4.1

LFA broadcasts are resumed only 15 mins. after there is no more visual or HF/M3 contact with the marine mammal? This presumes the HF/M3 system is highly successful at detecting marine mammals and turtles, since 15 mins. is the *minimum* time many marine mammals stay underwater, thus avoiding visual detection.

So, when the DSEIS cites the Au and Green (2000) study under "cumulative impacts", there is no mention of behavioral impacts from small boat noise. Yet under the mitigation section, when surveys by small boats are considered, it cites the same study and mentions, for the first time, the behavioral impacts on whales from small boats! Suddenly, when it serves their interest, the Navy is highly concerned about the impacts of small boats and the additional noise animals would be subjected to! This, from a noise source which would blanket 3.9 million sq. km of ocean with levels known to cause whale avoidance! The shameless bias apparent here is astounding.

4.6.17

There is absolutely no basis for concluding that LFA does not "reduce the productive capacity of any fish stock". It is an entirely plausible effect, especially given the increased mortality on fish eggs, larvae, and fry found with exposure to seismic noise.

4.1.17

I wonder what an EIS for an atomic bomb would like, if prepared by the Navy. I'm sure impacts would be deemed negligible for that as well.

The bottom line is that LFA broadcasts have an enormous and unprecedented potential area of impact. The long-term population consequences of the lower intensity noise levels heard over these huge areas has not been examined in any marine species. This all adds up to taking a gamble of vast proportions with our marine environment. Therefore, the "No Action" alternative should be pursued. Only if the No Action alternative is impossible should Alternative 4 be chosen. This DSEIS has contributed no new information which would warrant modification of the conclusion that LFA is indeed a threat to the marine environment.

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From: Piedad Guzman
To: eisteam@mindspring.com
Subject: Ocean Life
Date: Dec 21, 2005 10:32 AM

Dear whom it concern:

Ocean life is important for the life cycle and whales have an important role in it. We should have more time so people can express their opinions before any action against ocean life is done.

There is no question that the deployment of SURTASS LFA Sonar is of immense controversy in the public realm, where almost monthly we are seeing news of new strandings of cetaceans around the world that coincide with naval maneuvers and exercises. Scientific information continues to be limited, despite additional attention to the problem.

Furthermore, we believe additional information would be useful both for the Navy and for the public in preparing comments, including:

The US National Marine Fisheries Service is conducting studies on the stranding of a number of different cetacean species that have occurred along the coast of North Carolina coincidental to Navy activities offshore. The results of these studies may significantly change the claims of the SEIS for potential impacts on marine mammals. Therefore, delay of the comment deadline until this information is available is important.

While we appreciate that the Navy has prepared a Supplemental EIS to address some issues and update their information, we still find the review of some such information superficial and based on inadequate data, particularly the analysis of impacts on marine mammals and fish stocks. For example, by focusing on two freshwater species (trout and catfish) under experimental laboratory conditions, the Navy continues to trivialize the science of biological impacts of underwater noise and ignore recent studies in situ suggesting severe impacts on fisheries from sources of ocean noise, including low

4.1.3

frequency sources.

The SEIS still does not address the use of SURTASS LFA during conditions "in armed conflict or direct combat support operations, nor during periods of heightened threat conditions". We are deeply concerned, not only about the potential adverse environmental impacts of deployment of SURTASS LFA, but also of the provocative nature of the use of SURTASS LFA in waters throughout the world.

1.1.4

5.0.1

The nations, within whose boundaries the Navy proposes to ensonify thousands of square miles of oceans, are nominally at peace with the US. What is the effect of our "exercises" offshore on these nations? So far, the United Nations and the European Parliament have expressed deep concerns with the potential impacts of ocean noise on marine life.

Thank you for your consideration of our request for a delay in the comment period for the DSEIS for SURTASS LFA. Please enter these comments into the Record of the comment period.

Sincerely,

Piedad Guzman

B-112

From: Craig Williams
To: eisteam@mindspring.com
Subject: Navy Sonar Testing
Date: Dec 23, 2005 3:05 PM

Dear Sir; I am very much against this practice. I have been a sales representative for various acoustical products and systems for over 20 years and know of the harm to all mammals-marine, etc.- that noise in high or low frequencies can cause. Here in Hawaii we are very much dependent on our marine life as a source of tourist dollars as well as the enjoyment and lively hood of the local residents. Anything that could negatively impact our ocean resources is not welcome and should be banned until definitive facts are produced through further unbiased, scientific research. Sincerely, Craig Williams

From: Jeanne Wheeler
To: eisteam@mindspring.com
Subject: Re: comments on Draft EIS for SURTASS-LFA
Date: Dec 27, 2005 3:23 AM

Dear Folks: Thank you for extending the comment period on the Draft EIS for 45 days - I will send mine by the new deadline then.... Aloha - Sincerely, Jeanne Wheeler

B-113

RE: SURTASS

I-015

Supplemental EIS

to Joe Johnson - I disagree with the navy's planned sonar program due to the damage caused to marine mammals and potentially all ocean inhabitants. Your assertion that the technology is safe for animals as close as a mile from operation defies credibility, as you also mention its impact 100 miles away. The Navy doesn't need to escalate its intrusion on sea life.

Please reject implementing SURTASS.

MARC CRONIN

1/18/06

RE: SURTASS LFA Sonar
 To: Joseph S. Johnson Testing

PLEASE Stop Sonar testing
 Until you can revise it so it is
 not harmful to whales and dolphins
 and who knows what else !!!

I think the range in which you think
 the whales are safe is too small. There
 have been several reports of beached
 whales and dolphins with bleeding ears.

What about swimmers, snorkelers, divers,
 children, dogs ?? ^{and} Other sea life and coral
 reefs. What else is the sonar harming?

I'm all for national security, but there
 has to be a better way to use the sonar
 without harming "nearby" or "out of range"
 animals. PLEASE try to make it better
 so we don't destroy the balance of nature
 & the ecosystems of the oceans. Please do
 more testing on harmful effects & →
 revise the sonar.

Thank you
for
accepting public comments.

Debbie Friedman
&
Paul
Kelley
KABA

From:
To: eisteam@mindspring.com
Cc:
Subject: for EIS Program Manager
Date: Jan 25, 2006 2:28 PM
To whom it may concern.

Please add my comments to the record.

As a teacher, ocean lover and one who deeply appreciates wildlife, I am writing today to share my disapproval with the deployment of LFA Sonar. It is common knowledge that what we do affects all things. In the proposal to increase the number of naval vessels with LFA Sonar from 2 to 4 vessels, we must take into account the affect this will have on those whose only home is the ocean. With our awareness of the sonar's impact on marine mammals (destroying their ear canals, leading to death), we must do everything we can to protect them, not increase our harm to them. Please revisit and accept the measures urged by the district court to PROTECT WHALES, FISH AND OTHER MARINE LIFE. They are our kin. I want my children and grandchildren to see whales in their lifetime...should you continue allowing sonar to disrupt the seas, generations to come may only know these beautiful giants in stories. 1.1.6

Thank you.

Jodi Levine
San Juan Capistrano, CA 92693

B-115

From:
To: eisteam@mindspring.com
Cc:
Subject: RE: SEIS on LFA Sonar
Date: Jan 25, 2006 3:04 PM

Dear Sirs,

I ask that my comments be added to the record. And I ask that I be kept informed on the future of this SEIS.

I oppose deployment of LFA Sonar. You have no right to harm all the whales and other underwater creatures with that noise.

No vessels at all, not an increase to 4 naval vessels with LFA Sonar operating all around the world, in "the Pacific, Atlantic, and Indian Oceans, and the Mediterranean Sea." The 1.1.6

US Marine Mammal Commission states that LFA Sonar has the potential to impact virtually ALL marine mammal species in the world! And no "compact" LFA Sonar system may be used in "shallow littoral ocean regions," essentially to support seaward invasions of other countries.

LFA sonar, like other intense military sonar systems, can kill whales. That is simply unacceptable. You have no right to harm the whales. We want the whales to be protected, not harmed. At peak power, the LFA Sonar system sends out pulses of sound underwater the equivalent of standing five feet away from the Saturn rocket on liftoff. A number of incidents of whales becoming stranded and dying have occurred around the world linked with the use 3.1.1

of very loud military sonars. Expert scientists believe LFA Sonar may have more lethal impact over longer distances due to the nature of low frequency sound transmission underwater. The Navy claims the problem of whale strandings is one of "public perception." WRONG!!!!!!!!!!!!!!!!!!!!!! It's your perception that has a problem. How would you like to have such a loud blast in your ears? 4.4.13

The SEIS mitigation for whales and dolphins is unacceptably paltry. As mitigation, the Navy promises only to turn off LFA Sonar if they spot or detect whales in a very small area around the ships. Since the impacts of underwater sound (both to do physical harm to whales and also to disrupt and harass whales' and dolphins' own communication, feeding, and orientation) cover enormous distances, these mitigation measures are too paltry to protect the health of whales and dolphins and are unacceptable and will not be accepted. You simply do not care, but we do. Human-caused background noise in the oceans is increasing 4.7.7

The SEIS rejects nearly all of the measures urged by the District Court to protect whales, fish, and other marine life. The federal court that struck down the Navy's earlier EIS wrote: "endangered species, including whales, listed salmon and sea turtles, 1.2.4

will be in LFA Sonar's path. There is little margin for error without threatening their survival." The court therefore urged the Navy to consider protective measures such as wide coastal exclusion zones, more effective surveys for whales before sonar exercises, shut-down procedures for fish, and the use of training areas that present less risk to marine life. The Navy's SEIS rejects each of these ideas. That is unacceptable. 4.7.13

The SEIS is inadequate in discussing impacts on fish and fishermen. We know that sound can do great harm to fish stocks -- some of us suspect the adverse impacts of military sonars on fish may be greater than the impacts on whales and dolphins. But the Navy's SEIS dismisses such concerns and provides no mitigation. The Navy's research on fish impacts involved exposing rainbow trout and channel catfish, two freshwater species, to three bursts of sound 4.1.4

of 108 seconds duration in aquariums -- the sound used was considerably lower than peak LFA Sonar noise. The Navy claims that mitigating the LFA Sonar system for fish is "impractical." Too bad. The reality is that using LFA sonar is 4.1.5

impractical and must not be done.

The SEIS only deals with peacetime activity. During periods of "armed conflict or direct combat support operations, (or) during periods of heightened threat conditions," the Navy will operate LFA Sonar without any limitations or mitigation whatsoever. You must not do that. It is not okay to use LFA sonar at all.

1.1.4

The bottom line is, we really have no enemies and you don't need LFA Sonar at all.

Pat Rasmussen

From: Dulanie Ellis
To: eisteam@mindspring.com
Subject: SURTASS LFA
Date: Jan 26, 2006 12:50 AM
Attachments: Sonar-Navy ltr.doc

Mr. Johnson:
Attached please find my letter to you which I would like included in
the Record of the Decision.
Dulanie Ellis

Dulanie Ellis-La Barre

January 24, 2006

Mr. Keith Jenkins
Naval Facilities Engineering Command Atlantic (Code EV21KJ)

70 Federal Register 62101-62103
Please include these comments for the Record of the Decision

Dear Mr. Jenkins:

Many years ago I attended a presentation by the Scripps Institute on low-frequency active sonar (LFA), and I've been following the issue of the Navy's desire to use LFA ever since. At that time there was an effort to set up sonar testing facilities at Monterey Bay (CA) and Hawaii, in the deep water trenches.

While I can fully appreciate the military's desire to be on top of the latest technology regarding protection of the United States and its citizens, **I am adamantly opposed to the use of LFA.** Some of my objections are as follow:

1. We humans have an arrogant habit of thinking that because we have made some observations of phenomenon, that we "know" enough to ensure a positive outcome from our endeavors. I'm sure the soldiers who were handed sunglasses to watch the atomic bomb explode at White Sands were convinced they were safe. I know that my grandfather, who covered the Hiroshima bomb for the Los Angeles Times, thought he was safe to enter the city a week later to view the devastation. He died early, from leukemia, of course. The absence of evidence does not equal the absence of harm. We do not know near enough about the many thousands of oceanic species to have any idea what this kind of assault will do to the inhabitants or the ecosystem.
2. I understand that the sonar buoys themselves are made of several toxic materials, but that only the lead is being measured, not the copper, lithium, arsenic or other materials. When these are unleashed, or lost, or abandoned, their contents will break down in the salt water and leech onto the ocean floor and with ocean currents."Safe and acceptable exposure levels" ring a little hollow after our experience with the nuclear industry and the current cancer rates. 4.0.9
3. The sonar blasts are measured in an individual "hit" methodology, which skew the stress threshold or "recovery" data. The synergistic effect of multiple blasts will have unknown (and quite possibly lethal) consequences to not one but many species. For example, the scientific community assured us of the effects of "a" pesticide, but failed to take into account the synergistic effect that multiple agricultural chemicals would have, reacting together in a chemical soup that had effects exponentially higher and more intense than any of the individual chemicals by themselves. 4.4.27
4.1.15

Find another way. Do not endanger the species of the ocean with your quest for safety.

B-117

From: scott sinclair
To: eisteam@mindspring.com
Subject: SEIS LFA
Date: Jan 26, 2006 6:59 PM

GO NAVY! After reviewing the SEIS, I find that I have no problem at all with deployment of the SURTASS LFA system on an ocean basin wide scope. With the threat of non nuclear (aka deisel powered) submarines quite real in these unstable times I see the deployment of SURTASS LFA as a vital element in the protection of the USA and it's assets.

I do, however firmly believe that ongoing research in the mid and high frequency systems needs to continue forward as well, and that once a suitable replacement system has been developed over time, that the LFA would gradually be phased out.

Thanks you for this chance to comment

Sincerely,

Scott Sinclair

Off-Highway Solutions

From:
To: eisteam@mindspring.com
Subject: LFAS DEPLOYMENT COMMENTS.WPS
Date: Jan 27, 2006 2:47 PM
Attachments: LFAS deployment comments[1].wps

From:

To: eisteam@mindspring.com

Subject: Re: LFAS DEPLOYMENT COMMENTS.WPS

Date: Jan 27, 2006 5:12 PM

Hello. Please give me a fax number and I will transmit my comments in that form now, and I will send them by e-mail and snail mail asap. Jay

From:
To: eisteam@mindspring.com
Cc:
Subject: Emailing: SDEIS comments
Date: Jan 28, 2006 6:19 PM
Attachments: SDEIS comments.doc
Your files are attached and ready to send with this message.

Comments on Proposed
US Navy Low Frequency Active Sonar Deployment

1-26-2006

These are my comments on the DSEIS created for proposed deployment of the United States Navy SURTASS Low Frequency Active Sonar system. They are in addition to the comments I provided for the Draft and Final LFAS EIS/EIR.

The new LFAS DSEIS states in section 1-16 under the heading Adequacy of Scientific Information on Human Divers, *"There have been no significant changes to the knowledge or understanding for potential effects of LF sound on humans in water. The information in Subchapter 1.4.1 of the FOEIS/EIS remains valid, and the contents are incorporated by reference."*

The only reason the Navy can say there is no new information on the impact of high dB sound on divers is because they refused to conduct tests on recreation divers that exposed them to the lowest frequencies at the highest power levels LFAS will produce. And even though the Navy may say there have been no significant changes in the knowledge of the effects of sound on humans, by reference, there have been notable changes in the understanding of the effects of sound on marine mammals recently. Specifically, there was a stranding incident of marine mammals in the Bahamas that scientists estimated the received levels that caused the incident. The received level (RL) was estimated at 130dB. (Balcomb, Hildebrand 2004) If a RL of 130dB caused stranding and death of marine mammals, then it should be clear the proposed 145dB RL **estimate** for "known" recreational dive sites places SCUBA divers, snorkelers and swimmers at risk of severe negative reactions, if not fatality. **Question #1:** Why does the Navy feel they can ensonify humans at a level almost 20 times greater than what caused the stranding and death of marine mammals in the Bahamas incident?

4 . 5 . 4

I believe the current efforts to transmit sound through Earth's oceans for every conceivable military or "scientific research" experiment or system can be understood better if we examine a statement made by several well known oceanographic acoustic researchers in the October 2005 "Premier Edition" of the Acoustical Society of Americas new publication "Acoustics Today." The article is titled **Acoustic Remote Sensing of Ocean Gyres**. (Walter Munk, Peter Worcester and Robert Spindel) In large italicized print on page 14 it states "***It is inconceivable to us that oceanographers (and other marine mammals) should not take advantage of the fact the ocean is transparent to sound.***" The article also concludes with the same statement.

To me, this shows complete insensitivity and lack of respect for all the creatures, known and unknown, that live in Earth's oceans and rely on sound as a means of communicating, finding or stunning prey and navigating, but don't reside on terra firma. And now that a few Homo Sapiens have found it possible to transmit sound across ocean basins for military and "oceanographic research" purposes, we should enthusiastically do so because humans are marine mammals akin to the countless species that reside there.

It seems ironic and pathetic Homo Sapiens "higher intelligence" believes we slithered

out of the primordial soup eons ago, and now that we've become smart enough to use Earth's oceans in a manner similar to the "lower life forms" that inhabit said ocean, we must now deploy a military sonar system to theoretically protect one group of humans from another group of humans. Somewhere the idea of "higher intelligence" and "lower life forms" has been flip-flopped in my opinion.

In theory I do agree with the statement regarding the kinship between Homo Sapiens and marine mammals. Therefore, in my opinion, when the acoustic R/V Cory Chouest was transmitting LFAS during the "classified" Magellan 2 Sea Trials conducted between June 20 and September 30, 1994 off central California's coastline, and SCUBA divers exited the water over 150 miles from the source and complained of new weird low frequency sounds that not only distracted our attention, but at times caused distinct lung vibration, the creators and proponents of the transmissions should have considered the information we provided as "coming from the horse's mouth", so to speak.

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The Navy's conclusion is completely impossible as my video camera system has been tested by a respected independent acoustics researcher and found to be accurate. And furthermore, the tapes I have made underwater show divers clearly pointing to our ears or lungs in response to each pulse of sound. Several times I layed the camera on the bottom and swam into the field of view. I then made a clenched fist with every pulse I heard.

I never supplied the Navy with a copy of my original tape because they never asked. They may have obtained a copy from the Naval Postgraduate School or another source, but the data they received may have been altered before the Navy acoustician made his determination my tapes were "inconclusive."

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In the same DSEIS section, the Navy states: "***Based on the evidence provided by the diver, his complaint involved sound in the 30 - 43Hz range. He stated that he heard and recorded LF sounds (on an underwater video recorder) on nine separate dates (from August 1994 through November 1995) in the vicinity of Point Lobos State Park (south of Carmel, CA). He further stated that analysis of the tapes showed smooth coherent energy at 38Hz. The diver could have heard sounds from the SURTASS LFA Sonar because it was operating in the area in August 1994. However, his recorded evidence is inconsistent with any sounds that the SURTASS LFA sonar could produce.***

The lowest source transmission frequency of SURTASS LFA sonar during the period was 160Hz.”

Once again, I point out that your own Naval Postgraduate Schools acoustics **Professor James Miller** stated clearly the possible sources of the noises we divers were complaining about. **His conclusions were based on the tape I provided.** In fact, he stated he had “Made 20 copies of the tape and used it for his students exam.” I was pleased to help the Naval Postgraduate School when they seemed to be without any data regarding the sounds divers were hearing during the Magellan 2 Sea Trials.

It is currently hypothesized marine mammals are suffering from a form of the “bends” when exposed to moderate levels of military sonar. The “bends”, or decompression sickness, is a serious, life threatening condition SCUBA divers suffer from when they surface too quickly after supersaturating their blood while breathing compressed air at depth. If the bubbles being found in marine mammals bloodstreams and tissues are formed when exposed to military sonar, either by scaring the animal into surfacing faster than they do normally, or by actually acoustically exciting the tissues and dispersing the air in the animals lungs into their bloodstream, then it can be postulated that SCUBA divers exposed to 145dB sound waves from LFAS transmissions will be potential victims of the same fate marine mammals exposed to naval sonar in recent years have succumbed to. All it takes for a SCUBA diver to get decompression sickness is to be forced to the surface after breathing compressed air from a depth greater than 30 ft, faster than the known and approved rate of ascension. The reason we have to come up slowly is to allow the gases our blood has absorbed at depth and higher ambient pressure to escape through our lungs during the normal breathing SCUBA divers do when underwater. Personally, I feel marine mammals lungs are being vibrated physically and air is transferred to the blood stream in this fashion. The impedance mismatch between air and water causes airspaces to vibrate at the received frequency. The data published in the Draft LFA EIS/EIR suggests SCUBA divers lungs might resonate when exposed to different frequencies of LFAS transmissions at different depths. **Question #2:** If that is the case, should SCUBA divers spend time at depth and attempt to calculate what frequency we are being exposed to and at what depth our lungs might resonate?

4.5.5

Question #3: How will we be able to figure out if the 145dB RL transmissions will rupture our lungs or ears? I’d like to say we might “Live and learn,” but that may be wishful thinking! **Question #4:** If SCUBA divers are underwater on the bottom and LFAS transmissions begin, (Please answer either A, B or C.)

4.5.6

(A) We should remain at depth consuming our remaining air supply and hope the transmissions stop so we can ascend without the possibility of lung resonance.

4.5.7

(B) We should immediately make a mad dash to the surface through a layer of potential resonance and head for a recompression chamber.

(C) We should allow ourselves to be exposed to LFAS of unknown RL, continue our dive and hope we are not injured.

Question #5: If the Divers Alert Network (DAN), the insurance agency who transports SCUBA divers to hospitals in dive emergencies, becomes involved with the Navy and informs divers where and when US Navy LFAS will be operational and the potential risks involved with exposure, do you expect we will exhibit an avoidance reaction and not enter the water?

4.5.8

Question #6: Would the element of military surprise be lost if our Navy/DAN tells us, and the world, when and where U.S. Navy sonar assets are deployed?

4.5.9

Question #7: If marine mammals are first exposed to potentially injurious dB levels

when they are at depth, could they make the complicated acoustic resonance calculations that may save their lives? Since that data isn't available to them, it appears they are simple dashing to the surface through the depth where their lungs and other airspaces resonate and cause injury or death.

If marine mammals are assaulted with dangerously high dB sound waves loud enough to rupture their lungs, the result would be either blood or water filling their lungs. The air in their lungs would then be purged during their death. This would produce negative buoyancy and the deceased animal would sink to the bottom. Hence, we may not be seeing the actual results of Naval sonar, the dead marine life near the transmit vessel, and within sight of the marine mammal observers, sinks beyond detection. And since it is the airspaces within marine mammals and schools of fish that actually cause a return signal to be received by the LFAS transmit vessels passive acoustic array, when their airspaces are violated and they no longer contain air, there will be no further returns from what the Navy sonar development contractor describes as "clutter and target like objects" in an article titled "Low Frequency, High Power Density Active Sonar" by Ronald P. White, (Manager, Active Sonar Programs, Sanders, Inc. Sea Technology magazine. May 1996) The article states, *"Since 1991, Sanders, a Lockheed Martin company, has been the prime contractor for the LFA transmit subsystem (LTS). The largest, highest power, lowest frequency system built to date, LTS weighs 72 tons, including 36 long tons of array hardware..."* *"From May through October 1993, the SURTASS/LTS system underwent technical evaluation at sea. The LTS accumulated greater than 7,500 transmit hours, equivalent to more than 35,000 mission hours of high power, trouble-free operation without a single active projector failure."* In the same article it states, *"One of the biggest obstacles to active processing is the abundance of clutter returns from target-like objects in shallow water that can overwhelm the operator with false target indications. Until recently, it was not possible to accomplish this sorting reliably. That is, algorithmic approaches had not been developed for achieving consistent performance independent of the environment. To alleviate this active system drawback, Sanders has been engaged in R&D of active classification algorithms in the areas of low-frequency active, mid-frequency active, explosives and optical sensors in cooperation with U.S. Navy customers. The company has processed more than 10,000 echoes from submarines, schools of fish, wrecks, surface ships, and seamounts collected from a number of different deep and shallow water environments."* In a personal conversation with the articles author, Ronald White, he admitted that whales and other marine mammals also produced the same "clutter or false returns" as schools of fish.

It should be noted that the above referenced article clearly states the latest LFAS transmit system is **"The highest power, lowest frequency"** system built to date. Because the same R/V Cory Chouest conducted the well known Heard Island Feasibility Test (HIFT) back in 1991 that transmitted a 57Hz tone from the Southern Indian Ocean to receivers near Monterey, CA in the Pacific and in the Atlantic near Bermuda, it is clear the LFAS transmit system onboard the Cory Chouest during the 1994 Magellan 2 Sea Trials was capable of producing sounds of a lower frequency and at a higher power than the vessel was capable of during HIFT. **Question #8:** Why does the Final OEIS/EIR state in Section 2.1.1 "The source frequency is between 100 and 500Hz (The LFA system's physical design does not allow for transmissions below 100Hz)?? This directly contradicts the article in Sea Technology and the transmissions from the HIFT. **Question**

#9: Does the U.S. Navy SURTASS LFAS system have the ability to transmit below 100Hz? **Question #10:** Is the Navy calling transmissions below 100Hz something else like Extreme Low Frequency Active Sonar? **Question #11:** Do any Navy sonar transducers have the capability to transmit below 100Hz? **Question #12:** Does the Navy use them, and when? The SDEIS states the LFAS sound field will never be more intense than the transmit level of 1 LFA projector. (215dB) **Question #13:** Why then does the Navy need an array of 18 transmitters? **Question #14:** Would the received level of the LFAS array be the same at a range of 100 miles if there was only one transducer operating, not 18?

2.1.2
2.1.1
2.1.3
2.1.1
2.1.4

The opening Abstract and **Section 4 of the DSEIS states, "The R/V Cory Chouest and the USNS Impeccable are the only vessels equipped with a SURTASS LFA sonar system."**

There is contradictory information currently available that indicates there are already 5 US Navy SWATH vessels outfitted and deployed with LFA sonar plus the R/V Cory Chouest. Jane's Warships page 844 states under the heading **Victorious Class: Ocean Surveillance Ships (AGOS)**

2.1.6

The Victorious T-AGOS 19
The Able T-AGOS 20
The Effective T-AGOS 21
The Loyal T-AGOS 22

The data shows they were all built and deployed prior to July 1, **1993**. The information states the sonar onboard as "UQQ2 SURTASS and LFA; towed array; passive/active surveillance." It also states, "**The Low Frequency Active component produces both mono and bistatic performance against submerged diesel submarines in shallow water.**"

The newer T-AGOS 23 Impeccable is also spoken of, and it is confirmed the vessel will carry LFA sonar as the SEIS states.

Question #15: Have any Victorious Class SWATH vessels been built and already deployed with LFA Sonar as Jane's suggests?

2.1.6

Question #16: Does the Navy plan to develop any different LFA sonar transmit platforms such as deploying it on the new Sea Shadow SWATH vessels?

2.1.7

In Technical Report #3 which focuses on LFAS impacts on humans, and was created as part of the Final OEIS/EIR, there is information that clearly indicates there have been no tests done in the lowest frequency band at the highest RL SCUBA divers will be exposed to by LFAS. Page 11 of Tech Report #3 says, "***Although there were no differences in the reported level of aversion between the different signals presented (pure tone, 30Hz hyperbolic sweeps up and down) there were significant differences in aversion ratings among the frequencies tested. Results showed that aversion to LFS varied according to a 'V' shaped function between 100 and 500Hz, with the most and least aversive frequencies occurring at 100Hz and 250Hz, respectively (Fothergill et al., 1998A).*** The effect of duration of the LFS exposures on aversion was tested with the most aversive frequency (100Hz) at a SPL of 136dB (Sims et al., 1997). The duration of the sound exposure lasted between 7 and 28 s with at least a 50% duty cycle between consecutive sound exposures." The test done on volunteer Navy recreational divers then said, "The increase in sound duration from 7 to 28s did not significantly affect the aversion ratings

which were midway between “Very Slight” and “Slight”. It concluded with, “However, one of the 26 subjects tested did repeatedly provide an aversion rating greater than “Very Severe” for some of the sound exposures. These data suggest that 100Hz LFS is well tolerated at an SPL of 136dB for up to 28s in the majority of individuals (Sims et al., 1998B).

It is clear the Navy has not conducted any tests on non-military recreational or commercial divers that includes a RL of 145dB for 100 seconds at the most aversive frequency LFAS is supposedly capable of transmitting, 100Hz.

It is my belief the Navy cannot proceed as planned. The inadequacies I mention above would seem to only allow a maximum RL of 136dB at “known dive sites” which equates to a 9dB reduction from the planned RL of 145dB in near shore waters where most, but not all diving and snorkeling occurs. I’d sure hate to be a Abalone snorkeler looking for a nice quiet place to hunt these tasty mollusks only to be blasted with RL’s higher than 145dB because he/she was in an area not on the list of “known dive sites”. I think the potential for disaster is very real for unknowing snorkelers as well as SCUBA divers. If a snorkeler descends to depth and is suddenly assaulted by an unknown manmade sonar transmission at 145 or even 136dB and their lungs start vibrating, they would immediately bolt to the surface as they only have that one breath of air. Similar to what marine mammals may be doing when they surface too quickly and suffer air in their bloodstreams/organs when exposed to sonar technologies.

In the Final OEIS/EIR, the Navy has summarily dismissed these same assertions on the grounds they conducted tests on trained Navy SCUBA divers. In the document titled “Exposure Guidelines for Navy Divers Exposed to Low-Frequency Sonar”, (Pestorous, Curly, May 14, 1996) there were Navy divers exposed to LF sound up to a level of 160dB at a frequency of 160Hz.

This test was designed to develop exposure guidelines for U.S. Navy divers, not recreational divers who are not part of the military by either induction or volunteering. As such, any use of this data by the Navy to help establish exposure guidelines for recreational or commercial divers is completely inappropriate and invalid.

The above referenced experiment had its first section titled “The Larger Problem”. These problems were listed as,

Community Noise,

1. Non-military divers and swimmers
2. Marine mammals and other marine fauna
3. Political/socio-economic issues
4. Legal/Liability issues.

The test also included what was described as a ”Symptomatic event” that involved a 32 year old male experienced Navy diver. He was exposed to 160dB for 15 minutes at 60 FSW. At about 12 minutes experienced dizziness, somnolence, inability to concentrate, and residual tingling in arms for -20 minutes. He received immediate medical attention but relapsed after 1 hour and was transported to Tindal AFB hospital for observation. Recovered overnight but relapsed on his drive home. Was eventually returned to diving status. Retired voluntarily with no medical disability. As recently as 1996, complained of

irritability and minor memory dysfunction. Subsequently suffered a “seizure.” Now being treated with anti-depressant and anti-seizure drugs.

Clearly this incident shows very negative reactions when humans are exposed to levels of 160dB. **Question #17:** If trained, informed Navy qualified divers can’t stand LFS for even 15 minutes at 160dB, why does the Navy feel they can expose marine life to a level 100’s or thousands of times more powerful than that? In my opinion common sense would dictate marine mammals not be exposed to any levels higher than what has been shown by your own data to cause extreme negative reactions in humans. And because the testing done on volunteer recreational Navy divers showed negative reactions at 136dB after just 28 seconds, it is my opinion the Navy cannot subject all the marine life / mammals to a level higher than 136dB. And furthermore, the Bahamas incident showed a RL of 130dB to cause stranding and death of marine mammals, the RL for marine life and divers must be kept well below that level. Even the 130dB level is 1000 times more powerful than levels shown to cause SCUBA divers to react to LFS within the LFAS frequency band. Tech Report #3 says on page 9, ***“If it can be inferred that the minimum auditory threshold is the point at which human behavior may be altered by the presence of LFS, then these results suggest that SCUBA divers will first detect and possibly react to LFS (within the frequency range 100 - 500Hz) at SPLs between 84 and 100dB.”***

4.0.4

The same document referred to earlier, “Exposure Guidelines for Navy Divers Exposed to Low-Frequency Active Sonar“, has a section clearly stating the guidance developed is not appropriate for recreational divers. Under the heading **Exposure Guidance and the Diver** it says the test applies to **“All divers meetings medical qualifications for Navy diving.”** Some of the symptoms the Navy divers reported were: **“Vibrations, numbness, vertigo, imbalance, motion sickness, dizziness and abdominal/chest sensations.”** It also says, **“Psychological considerations: possibility of adverse reaction by uninformed diver.”**

Question #18: If Divers Alert Network (DAN) doesn’t manage to contact all divers that happen to be in the water when the Navy ensonifies them with LFAS, will the Navy claim it’s DANs fault for failure to notify? **Question #19:** Or will the Navy take full legal responsibility for any negative reactions they cause from their planned LFAS transmissions?

Conclusion and request for “No Action”

In conclusion, I must request with the strongest language possible the Navy take the “No Action” option regarding deployment of the Low Frequency Active Sonar system.

This conclusion is based on the fact recent stranding incidents and deaths of Marine Mammals appear to have occurred when the unfortunate beings were exposed to military sonar at levels well below the planned SCUBA diver RL of 145dB. (i.e. Bahamas stranding and death at 136dB)

The Navy has not conducted any research on the impact of 145dB, 100Hz sound exposure on recreational divers. For that matter, they have not conducted this experiment on Navy divers either according to available information. The test done on the Navy qualified divers may have subjected the divers to a higher RL of 160dB, but not at the

“most aversive” frequency of 100Hz.

When divers in the Monterey area complained about new weird sounds while diving and recorded the offending sounds, the Navy dismissed the incident by saying my data is inaccurate. That still doesn't explain the fact SCUBA divers were screaming about and reporting high intensity low frequency sounds when diving. It seems no matter what data is presented, the Navy will try and deny responsibility instead of using it's assets to locate and inform the public what's going on. You have proven through your actions you intend to avoid all responsibility for the negative reactions you cause.

In my own case, as a PADI Divemaster you have forced me to abandon the thing I loved most in my existence. After being subjected to the Magellan 2 Sea Trials high db LF sounds in the Monterey area, I actually heard and recorded the transmissions while diving in Fiji. The Navy assertion the LFAS system isn't the main source of sound in any ocean basin is laughable. Your transmissions are easily heard for thousands of miles. We divers can't even hear the shipping lanes just 15 miles offshore. If we could, we would probably be informing Sanctuary officials of the sounds. If LFAS is to operate over ten times closer to shore than Magellan was to Monterey, the potential negative impacts should be obvious. I also have been exposed to the Navy 3kHz “standard” sonar implicated in recent marine mammal strandings when diving in Hawaii. The divers with me said they thought “*either their ears were ringing, or they were going crazy.*” This type of Naval sonar didn't produce lung vibration, but it certainly ruined a great dive. I haven't been diving since 1998. It's a clear avoidance reaction to being exposed to Naval sonar. I had hoped to buy a dive shop somewhere in the tropics and live a divers life for my remaining years on Earth, but with your LFAS system and other sonar technologies roaming the planet and ensonifying divers in all ocean basins, fulfilling my dream is now not feasible.

And the fact remains the Navy has already built and deployed several SWATH LFAS transmit vessels back in the early 1990's according to available public information.

In the article I referenced at the beginning of my comments, **Acoustic Remote Sensing of Ocean Gyres**, there is a statement in the Acknowledgements section that says, “Munk (Walter) subsequently briefed Vice President Gore on ATOC.” (The Scripps Acoustic Thermometry of Ocean Climate test that transmitted LF sound on ocean basin scales) “When Munk encountered Vice President Gore on a number of occasions following the briefing, the Vice President referred to Munk as the *Whale Killer*.”

I can say from my own experience, the U.S. Navy, it's contractors and the organizations involved with developing, testing and deploying high power density active sound transmission systems are the destroyers of worlds. What's next, sound controlled autonomous underwater nuclear weapons? And oh, by the way, why don't you shut off the communication system that sends low frequency sounds to our submarine fleet. Its characteristics are almost identical to your LFAS system. Its encrypted information is being transmitted into the public domain and I fear the encryption codes will be stolen or sold to your adversaries.

In is my opinion the Navy should not expose civilian recreational divers or commercial divers to a RL of LFAS that will cause distraction or disruption of their dive. In Technical Report #3 it states divers may first react to sound in the LF band at a level between 84 and 100dB. I believe that to be true, so therefore subjecting divers to sounds beyond 100dB may cause serious life threatening problems and subject the Navy to potential litigation. Remember, a RL of 130dB caused death of marine mammals in the

Bahamas incident. I also believe there will be a noticeable negative impact to the entire dive industry if LFAS is deployed as planned in Alternative #1.

In advance, thank you for answering these question in the Final LFAS SOEIS. And thanks for the extra 45 days to comment on this global scale proposal.

Yours truly,

Jay R. Murray

From:

To: eisteam@mindspring.com

Subject: Re: LFAS DEPLOYMENT COMMENTS.WPS

Date: Feb 8, 2006 5:37 PM

Greetings. Did you receive my comments by fax? Thanks, Jay Murray

B-124

From:

To: eisteam@mindspring.com

Subject: Re: LFAS DEPLOYMENT COMMENTS.WPS

Date: Feb 9, 2006 10:59 AM

Hello. Yes, there were 9 pages with 19 questions I'd like answered. Thanks, Jay

Comments on Proposed
US Navy Low Frequency Active Sonar Deployment

1-26-2006

These are my comments on the DSEIS created for proposed deployment of the United States Navy SURTASS Low Frequency Active Sonar system. They are in addition to the comments I provided for the Draft and Final LFAS EIS/EIR.

The new LFAS DSEIS states in section 1-16 under the heading Adequacy of Scientific Information on Human Divers, *"There have been no significant changes to the knowledge or understanding for potential effects of LF sound on humans in water. The information in Subchapter 1.4.1 of the FOEIS/EIS remains valid, and the contents are incorporated by reference."*

The only reason the Navy can say there is no new information on the impact of high dB sound on divers is because they refused to conduct tests on recreation divers that exposed them to the lowest frequencies at the highest power levels LFAS will produce. And even though the Navy may say there have been no significant changes in the knowledge of the effects of sound on humans, by reference, there have been notable changes in the understanding of the effects of sound on marine mammals recently. Specifically, there was a stranding incident of marine mammals in the Bahamas that scientists estimated the received levels that caused the incident. The received level (RL) was estimated at 130dB. (Balcomb, Hildebrand 2004) If a RL of 130dB caused stranding and death of marine mammals, then it should be clear the proposed 145dB RL estimate for "known" recreational dive sites places SCUBA divers, snorkelers and swimmers at risk of severe negative reactions, if not fatality. **Question #1:** Why does the Navy feel they can ensonify humans at a level almost 20 times greater than what caused the stranding and death of marine mammals in the Bahamas incident?

I believe the current efforts to transmit sound through Earths oceans for every conceivable military or "scientific research" experiment or system can be understood better if we examine a statement made by several well known oceanographic acoustic researchers in the October 2005 "Premier Edition" of the Acoustical Society of America

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To me, this shows complete insensitivity and lack of respect for all the creatures, known and unknown, that live in Earth's oceans and rely on sound as a means of communicating, finding or stunning prey and navigating, but don't reside on terra firma. And now that a few Homo Sapiens have found it possible to transmit sound across ocean basins for military and "oceanographic research" purposes, we should enthusiastically do so because

humans are marine mammals akin to the countless species that reside there.

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(south of Carmel, CA). He further stated that analysis of the tapes showed smooth coherent energy at 38Hz. The diver could have heard sounds from the SURTASS LFA Sonar because it was operating in the area in August 1994. However, his recorded evidence is inconsistent with any sounds that the SURTASS LFA sonar could produce. The lowest source transmission frequency of SURTASS LFA sonar during the period was 160Hz."

Once again, I point out that your own Naval Postgraduate Schools acoustics Professor James Miller stated clearly the possible sources of the noises we divers were complaining about. His conclusions were based on the tape I provided. In fact, he stated he had "Made 20 copies of the tape and used it for his students exam." I was pleased to help the Naval Postgraduate School when they seemed to be without any data regarding the sounds divers were hearing during the Magellan 2 Sea Trials.

It is currently hypothesized marine mammals are suffering from a form of the "bends" when exposed to moderate levels of military sonar. The "bends", or decompression sickness, is a serious, life threatening condition SCUBA divers suffer from when they surface too quickly after supersaturating their blood while breathing compressed air at depth. If the bubbles being found in marine mammals bloodstreams and tissues are formed when exposed to military sonar, either by scaring the animal into surfacing faster than they do normally, or by actually acoustically exciting the tissues and dispersing the air in the animals lungs into their bloodstream, then it can be postulated that SCUBA divers exposed to 145dB sound waves from LFAS transmissions will be potential victims of the same fate marine mammals exposed to naval sonar in recent years have succumbed to. All it takes for a SCUBA diver to get decompression sickness is to be forced to the surface after breathing compressed air from a depth greater than 30 ft, faster than the known and approved rate of ascension. The reason we have to come up slowly is to allow the gases our blood has absorbed at depth and higher ambient pressure to escape through our lungs during the normal breathing SCUBA divers do when underwater. Personally, I feel marine mammals lungs are being vibrated physically and air is transferred to the blood stream in this fashion. The impedance mismatch between air and water causes airspaces to vibrate at the received frequency. The data published in the Draft LFA EIS/EIR suggests SCUBA divers lungs might resonate when exposed to different frequencies of LFAS transmissions at different depths. Question #2: If that is the case, should SCUBA divers spend time at depth and attempt to calculate what frequency we are being exposed to and at what depth our lungs might resonate?

Question #3: How will we be able to figure out if the 145dB RL transmissions will rupture our lungs or ears? I'd like to say we might "Live and learn," but that may be wishful thinking! Question #4: If SCUBA divers are underwater on the bottom and LFAS transmissions begin, (Please answer either A, B or C.)

(A) We should remain at depth consuming our remaining air supply and hope the transmissions stop so we can ascend without the possibility of lung resonance.

(B) We should immediately make a mad dash to the surface through a layer of potential resonance and head for a recompression chamber.

(C) We should allow ourselves to be exposed to LFAS of unknown RL, continue our dive and hope we are not injured.

Question #5: If the Divers Alert Network (DAN), the insurance agency who transports

SCUBA divers to hospitals in dive emergencies, becomes involved with the Navy and informs divers where and when US Navy LFAS will be operational and the potential risks involved with exposure, do you expect we will exhibit an avoidance reaction and not enter the water? **Question #6:** Would the element of military surprise be lost if our Navy/DAN tells us, and the world, when and where U.S. Navy sonar assets are deployed?

Question #7: If marine mammals are first exposed to potentially injurious dB levels when they are at depth, could they make the complicated acoustic resonance calculations that may save their lives? Since that data isn't available to them, it appears they are simply dashing to the surface through the depth where their lungs and other airspaces resonate and cause injury or death.

If marine mammals are assaulted with dangerously high dB sound waves loud enough to rupture their lungs, the result would be either blood or water filling their lungs. The air in their lungs would then be purged during their death. This would produce negative buoyancy and the deceased animal would sink to the bottom. Hence, we may not be seeing the actual results of Naval sonar, the dead marine life near the transmit vessel, and within sight of the marine mammal observers, sinks beyond detection. And since it is the airspaces within marine mammals and schools of fish that actually cause a return signal to be received by the LFAS transmit vessels passive acoustic array, when their airspaces are violated and they no longer contain air, there will be no further returns from what the Navy sonar development contractor describes as "clutter and target like objects" in an article titled "Low Frequency, High Power Density Active Sonar" by Ronald P. White, (Manager, Active Sonar Programs, Sanders, Inc. Sea Technology magazine. May 1996) The article states, *"Since 1991, Sanders, a Lockheed Martin company, has been the prime contractor for the LFA transmit subsystem (LTS). The largest, highest power, lowest frequency system built to date, LTS weighs 72 tons, including 36 long tons of array hardware..."* *"From May through October 1993, the SURTASS/LTS system underwent technical evaluation at sea. The LTS accumulated greater than 7,500 transmit hours, equivalent to more than 35,000 mission hours of high power, trouble-free operation without a single active projector failure."* In the same article it states, *"One of the biggest obstacles to active processing is the abundance of clutter returns from target-like objects in shallow water that can overwhelm the operator with false target indications. Until recently, it was not possible to accomplish this sorting reliably. That is, algorithmic approaches had not been developed for achieving consistent performance independent of the environment. To alleviate this active system drawback, Sanders has been engaged in R&D of active classification algorithms in the areas of low-frequency active, mid-frequency active, explosives and optical sensors in cooperation with U.S. Navy customers. The company has processed more than 10,000 echoes from submarines, schools of fish, wrecks, surface ships, and seamounts collected from a number of different deep and shallow water environments."* In a personal conversation with the articles author, Ronald White, he admitted that whales and other marine mammals also produced the same "clutter or false returns" as schools of fish.

It should be noted that the above referenced article clearly states the latest LFAS transmit system is **"The highest power, lowest frequency"** system built to date. Because the same R/V Cory Chouest conducted the well known Heard Island Feasibility

B-127

Test (HIFT) back in 1991 that transmitted a 57Hz tone from the Southern Indian Ocean to receivers near Monterey, CA in the Pacific and in the Atlantic near Bermuda, it is clear the LFAS transmit system onboard the Cory Chouest during the 1994 Magellan 2 Sea Trials was capable of producing sounds of a lower frequency and at a higher power than the vessel was capable of during HIFT. **Question #8:** Why does the Final OEIS/EIR state in Section 2.1.1 “The source frequency is between 100 and 500Hz (The LFA system’s physical design does not allow for transmissions below 100Hz)??” This directly contradicts the article in Sea Technology and the transmissions from the HIFT. **Question #9:** Does the U.S. Navy SURTASS LFAS system have the ability to transmit below 100Hz? **Question #10:** Is the Navy calling transmissions below 100Hz something else like Extreme Low Frequency Active Sonar? **Question #11:** Do any Navy sonar transducers have the capability to transmit below 100Hz? **Question #12:** Does the Navy use them, and when? The SDEIS states the LFAS sound field will never be more intense than the transmit level of 1 LFA projector. (215dB) **Question #13:** Why then does the Navy need an array of 18 transmitters? **Question #14:** Would the received level of the LFAS array be the same at a range of 100 miles if there was only one transducer operating, not 18?

The opening Abstract and **Section 4 of the DSEIS states, “The R/V Cory Chouest and the USNS Impeccable are the only vessels equipped with a SURTASS LFA sonar system.”**

There is contradictory information currently available that indicates there are already 5 US Navy SWATH vessels outfitted and deployed with LFA sonar plus the R/V Cory Chouest. Jane’s Warships page 844 states under the heading **Victorious Class: Ocean Surveillance Ships (AGOS)**

The Victorious	T-AGOS 19
The Able	T-AGOS 20
The Effective	T-AGOS 21
The Loyal	T-AGOS 22

The data shows they were all built and deployed prior to July 1, **1993**. The information states the sonar onboard as “UQQ2 SURTASS and LFA; towed array; passive/active surveillance.” It also states, **“The Low Frequency Active component produces both mono and bistatic performance against submerged diesel submarines in shallow water.”**

The newer T-AGOS 23 Impeccable is also spoken of, and it is confirmed the vessel will carry LFA sonar as the SEIS states.

Question #15: Have any Victorious Class SWATH vessels been built and already deployed with LFA Sonar as Jane’s suggests?

Question #16: Does the Navy plan to develop any different LFA sonar transmit platforms such as deploying it on the new Sea Shadow SWATH vessels?

In Technical Report #3 which focuses on LFAS impacts on humans, and was created as part of the Final OEIS/EIR, there is information that clearly indicates there have been no tests done in the lowest frequency band at the highest RL SCUBA divers will be exposed to by LFAS. Page 11 of Tech Report #3 says, **“Although there were no differences in**

the reported level of aversion between the different signals presented (pure tone, 30Hz hyperbolic sweeps up and down) there were significant differences in aversion ratings among the frequencies tested. Results showed that aversion to LFS varied according to a 'V' shaped function between 100 and 500Hz, with the most and least aversive frequencies occurring at 100Hz and 250Hz, respectively (Fothergill et al., 1998A). The effect of duration of the LFS exposures on aversion was tested with the most aversive frequency (100Hz) at a SPL of 136dB (Sims et al., 1997). The duration of the sound exposure lasted between 7 and 28 s with at least a 50% duty cycle between consecutive sound exposures." The test done on volunteer Navy recreational divers then said, "The increase in sound duration from 7 to 28s did not significantly affect the aversion ratings which were midway between "Very Slight" and "Slight". It concluded with, "However, one of the 26 subjects tested did repeatedly provide an aversion rating greater than "Very Severe" for some of the sound exposures. These data suggest that 100Hz LFS is well tolerated at an SPL of 136dB for up to 28s in the majority of individuals (Sims et al., 1998B).

It is clear the Navy has not conducted any tests on non-military recreational or commercial divers that includes a RL of 145dB for 100 seconds at the most aversive frequency LFAS is supposedly capable of transmitting, 100Hz.

It is my belief the Navy cannot proceed as planned. The inadequacies I mention above would seem to only allow a maximum RL of 136dB at "known dive sites" which equates to a 9dB reduction from the planned RL of 145dB in near shore waters where most, but not all diving and snorkeling occurs. I'd sure hate to be a Abalone snorkeler looking for a nice quiet place to hunt these tasty mollusks only to be blasted with RL's higher than 145dB because he/she was in an area not on the list of "known dive sites". I think the potential for disaster is very real for unknowing snorkelers as well as SCUBA divers. If a snorkeler descends to depth and is suddenly assaulted by an unknown manmade sonar transmission at 145 or even 136dB and their lungs start vibrating, they would immediately bolt to the surface as they only have that one breath of air. Similar to what marine mammals may be doing when they surface too quickly and suffer air in their bloodstreams/organs when exposed to sonar technologies.

In the Final OEIS/EIR, the Navy has summarily dismissed these same assertions on the grounds they conducted tests on trained Navy SCUBA divers. In the document titled "Exposure Guidelines for Navy Divers Exposed to Low-Frequency Sonar", (Pestorous, Curly, May 14, 1996) there were Navy divers exposed to LF sound up to a level of 160dB at a frequency of 160Hz.

This test was designed to develop exposure guidelines for U.S. Navy divers, not recreational divers who are not part of the military by either induction or volunteering. As such, any use of this data by the Navy to help establish exposure guidelines for recreational or commercial divers is completely inappropriate and invalid.

The above referenced experiment had its first section titled "**The Larger Problem**". These problems were listed as, **Community Noise,**

1. Non-military divers and swimmers
2. Marine mammals and other marine fauna
3. Political/socio-economic issues
4. Legal/Liability issues.

The test also included what was described as a "Symptomatic event" that involved a 32 year old male experienced Navy diver. He was exposed to 160dB for 15 minutes at 60 FSW. At about 12 minutes experienced dizziness, somnolence, inability to concentrate, and residual tingling in arms for -20 minutes. He received immediate medical attention but relapsed after 1 hour and was transported to Tindal AFB hospital for observation. Recovered overnight but relapsed on his drive home. Was eventually returned to diving status. Retired voluntarily with no medical disability. As recently as 1996, complained of irritability and minor memory dysfunction. Subsequently suffered a "seizure." Now being treated with anti-depressant and anti-seizure drugs.

Clearly this incident shows very negative reactions when humans are exposed to levels of 160dB. **Question #17:** If trained, informed Navy qualified divers can't stand LFS for even 15 minutes at 160dB, why does the Navy feel they can expose marine life to a level 100's or thousands of times more powerful than that? In my opinion common sense would dictate marine mammals not be exposed to any levels higher than what has been shown by your own data to cause extreme negative reactions in humans. And because the testing done on volunteer recreational Navy divers showed negative reactions at 136dB after just 28 seconds, it is my opinion the Navy cannot subject all the marine life / mammals to a level higher than 136dB. And furthermore, the Bahamas incident showed a RL of 130dB to cause stranding and death of marine mammals, the RL for marine life and divers must be kept well below that level. Even the 130dB level is 1000 times more powerful than levels shown to cause SCUBA divers to react to LFS within the LFAS frequency band. Tech Report #3 says on page 9, "*If it can be inferred that the minimum auditory threshold is the point at which human behavior may be altered by the presence of LFS, then these results suggest that SCUBA divers will first detect and possibly react to LFS (within the frequency range 100 - 500Hz) at SPLs between 84 and 100dB.*"

The same document referred to earlier, "Exposure Guidelines for Navy Divers Exposed to Low-Frequency Active Sonar", has a section clearly stating the guidance developed is not appropriate for recreational divers. Under the heading **Exposure Guidance and the Diver** it says the test applies to "**All divers meetings medical qualifications for Navy diving.**" Some of the symptoms the Navy divers reported were: "**Vibrations, numbness, vertigo, imbalance, motion sickness, dizziness and abdominal/chest sensations.**" It also says, "**Psychological considerations: possibility of adverse reaction by uninformed diver.**"

Question #18: If Divers Alert Network (DAN) doesn't manage to contact all divers that happen to be in the water when the Navy ensonifies them with LFAS, will the Navy claim it's DANs fault for failure to notify? **Question #19:** Or will the Navy take full legal responsibility for any negative reactions they cause from their planned LFAS transmissions?

Conclusion and request for “No Action”

In conclusion, I must request with the strongest language possible the Navy take the “No Action” option regarding deployment of the Low Frequency Active Sonar system.

This conclusion is based on the fact recent stranding incidents and deaths of Marine Mammals appear to have occurred when the unfortunate beings were exposed to military sonar at levels well below the planned SCUBA diver RL of 145dB. (i.e. Bahamas stranding and death at an estimated RL of 130dB)

The Navy has not conducted any research on the impact of 145dB, 100Hz sound exposure on recreational divers. For that matter, they have not conducted this experiment on Navy divers either according to available information. The test done on the Navy qualified divers may have subjected the divers to a higher RL of 160dB, but not at the “most aversive” frequency of 100Hz.

When divers in the Monterey area complained about new weird sounds while diving and recorded the offending sounds, the Navy dismissed the incident by saying my data is inaccurate. That still doesn't explain the fact SCUBA divers were screaming about and reporting high intensity low frequency sounds when diving. It seems no matter what data is presented, the Navy will try and deny responsibility instead of using it's assets to locate and inform the public what's going on. You have proven through your actions you intend to avoid all responsibility for the negative reactions you cause.

In my own case, as a PADI Divemaster you have forced me to abandon the thing I loved most in my existence. After being subjected to the Magellan 2 Sea Trials high db LF sounds in the Monterey area, I actually heard and recorded the transmissions while diving in Fiji. The Navy assertion the LFAS system isn't the main source of sound in any ocean basin is laughable. Your transmissions are easily heard for thousands of miles. We divers can't even hear the shipping lanes just 15 miles offshore. If we could, we would probably be informing Sanctuary officials of the sounds. If LFAS is to operate over ten times closer to shore than Magellan was to Monterey, the potential negative impacts should be obvious. I also have been exposed to the Navy 3kHz “standard” sonar implicated in recent marine mammal strandings when diving in Hawaii. The divers with me said they thought “*either their ears were ringing, or they were going crazy.*” This type of Naval sonar didn't produce lung vibration, but it certainly ruined a great dive. I haven't been diving since 1998. It's a clear avoidance reaction to being exposed to Naval sonar. I had hoped to buy a dive shop somewhere in the tropics and live a divers life for my remaining years on Earth, but with your LFAS system and other sonar technologies roaming the planet and ensonifying divers in all ocean basins, fulfilling my dream is now not feasible.

And the fact remains the Navy has already built and deployed several SWATH LFAS transmit vessels back in the early 1990's according to available public information.

In the article I referenced at the beginning of my comments, Acoustic Remote Sensing of Ocean Gyres, there is a statement in the Acknowledgements section that says, “Munk (Walter) subsequently briefed Vice President Gore on ATOC.” (The Scripps Acoustic Thermometry of Ocean Climate test that transmitted LF sound on ocean basin scales) “When Munk encountered Vice President Gore on a number of occasions following the

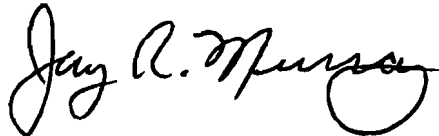
briefing, the Vice President referred to Munk as the *Whale Killer*.”

I can say from my own experience, the U.S. Navy, it's contractors and the organizations involved with developing, testing and deploying high power density active sound transmission systems are the destroyers of worlds. What's next, sound controlled autonomous underwater nuclear weapons? And oh, by the way, why don't you shut off the communication system that sends low frequency sounds to our submarine fleet. Its characteristics are almost identical to your LFAS system. Its encrypted information is being transmitted into the public domain and I fear the encryption codes will be stolen or sold to your adversaries.

In is my opinion the Navy should not expose civilian recreational divers or commercial divers to a RL of LFAS that will cause distraction or disruption of their dive. In Technical Report #3 it states divers may first react to sound in the LF band at a level between 84 and 100dB. I believe that to be true, so therefore subjecting divers to sounds beyond 100dB may cause serious life threatening problems and subject the Navy to potential litigation. Remember, a RL of 130dB caused death of marine mammals in the Bahamas incident. I also believe there will be a noticeable negative impact to the entire dive industry if LFAS is deployed as planned in Alternative #1.

In advance, thank you for answering these question in the Final LFAS SOEIS. And thanks for the extra 45 days to comment on this global scale proposal.

Yours truly,

A handwritten signature in black ink that reads "Jay R. Murray". The signature is written in a cursive style with a large, looping "M" and a long horizontal stroke at the end.

Jay R. Murray

John Ellenby

Mr. Joe Johnson
4100 Fairfax Drive
Suite 730
Arlington, VA 22203

Wednesday, January 25, 2006

Dear Mr. Johnson,

Ref: Federal register number 70 FR 68443

I am very disturbed to hear that despite solid evidence of massive harm to marine life and potential harm to divers in the water that the Navy is proceeding to deploy very powerful and harmful sonar.

I hope very much that the very capable scientists at the Office of Naval Research and elsewhere in the Navy will be engaged and allowed time to improve means for quietly locating submarines: stealthy tracking of one's opponent often being a superior war-fighting tactic and certainly less destructive and disruptive of those making peaceful use of the world's oceans.

Please include my letter in the Record of the Decision.

Thank you



John Ellenby

B-130

From: Lucy Marcus
To: eisteam@mindspring.com
Subject: LFA Sonar Comment
Date: Jan 29, 2006 9:09 PM

I do not believe LFA sonar is safe to use in any oceans as it has been shown to harm cetaceans, and potentially other marine wildlife. With reports of mass strandings and ruptured ear drums in various animals in testing areas, LFA sonar use should not be continued.

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Lucy Marcus, Masters of Applied Science
School of Marine Biology and Aquaculture

.....

From:

To: eisteam@mindspring.com

Subject: Dear Mr. Johnson:

Date: Jan 30, 2006 9:44 PM

I am feeling heartsick for the sea mammals' increasing contact with "humankind" pollution. I am especially concerned about the impact of noise pollution on their capacity to echonavigate. I am opposed to increasing the number of U.S. Navy ships equipped with low-frequency active sonar. I request that my concerns be made part of the "Record of Decision."

Sincerely,
Sylvia Ruth Gray

B-131

From:

To: eisteam@mindspring.com

Subject: PLEASE: NO NAVY WHALE Killing SONAR

Date: Feb 3, 2006 1:53 AM

We now have proof that sonar testing is extremely damaging--after the recently beached whales after the sonar testing. How many more aquatic species have to die before we stop the unnecessary horrific sonar testing? Please stop the testing immediately.

Thank you for considering my views,

Marilyn Jasper

--

From:

To: eisteam@mindspring.com

Subject: against sonar

Date: Feb 4, 2006 1:46 PM

Hello,

I am against the Navy's use of sonar because of its detrimental affects on whales.

Thank you,

Jeff McMillan

From:
To: eisteam@mindspring.com
Subject: Comment: SURTASS LFA Sonar EIS
Date: Feb 4, 2006 10:56 PM
FOR SURTASS LFA SONAR EIS PROGRAM MANAGER

COMMENTS ON DRAFT NAVY ENVIRONMENTAL IMPACT STATEMENT ON DEPLOYMENT OF LFA SONAR

Sirs/Mesdames:

Please add my comments to the official SEIS record. I have reviewed .http://www.surtass-lfa-eis.com/

The SEIS is wholly inadequate. I find it a tendentious, self-serving embarrassment to the method and the science. It is a farrago of deficiencies. Please correct the following:

The U.S. Navy apparently rejects most of the District Court's recommendations to protect marine life. These recommendations have scientific and operational merit. The Navy's groundless rejection does not.

5.4.2

The Navy does not accept what scientists and fishermen are coming to understand: that military sonars affect not only cetaceans but also a vast array of fish and other sea life. The Navy fails to offer means of mitigating the real impacts on fish and fishermen.

4.1.3

4.1.4

SEIS mitigation for cetaceans is insufficient. Underwater noise affects whales, dolphins and fish over much longer distances than the small area around ships. Moreover, the anthropogenic noise background in the oceans is increasing, thus adding to a cumulative, total impact. The SEIS skirts this conclusion.

5.0.1

LFA sonar can kill sea life. Loud military sonars are implicated in many whale strandings worldwide. Deaths result. The problem of whale strandings is not one of "public perception" but is real. Expert scientists have concluded that LFA sonar can be lethal over long distances. The SEIS dodges the severity of this impact.

4.4.11

4.4.12

Deployment of LFA sonar will affect sea life literally around the globe, owing to increased deployment of sonar-bearing ships and increased numbers of them. The SEIS does not take this awful scale of the problem into proper account.

4.6.15

Most important: During "armed conflict" or "heightened threat conditions", the Navy intends to place no restrictions or mitigation whatever on LFA sonar. Because we are currently in a "war" that appears to have no end in sight and, in fact, that "war" has been defined as virtually endless by the Administration itself (a conflict alleged to be a global tussle with something called "evil", which humanity's religious and psychological record shows is eternal or at least extremely durable and tenacious, and because "peacetime" is something that apparently will never again exist, at least under this Administration's rules, the SEIS is, by definition, a document dealing with a non-existent and unlikely-to-happen set of conditions. It is therefor nul and void and without purpose or merit on its very face.

1.1.4

Please register my firm opposition to deployment of this lethal and costly technology (which by the way has little or no military application to "the war on terror" or to our alleged adversaries who

I-027

currently are scattered criminal bands of opportunistic, land-based gangs and mobs with no ships or even boats let alone advanced submersibles which LFA sonar is alleged to detect and combat).

-- Edward A. Mainland

B-133

From: Gordana Leonard
To: eisteam@mindspring.com
Cc:

Subject: A Response to the SURTASS LFA Sonar EIS
Date: Feb 6, 2006 12:04 AM
To: SURTASS LFAS E.I.S. Program Manager

Aloha from the Big Island of Hawaii!

First of all, I am asking that my oppinion/words be added to the record, almost disbelieving that the LFAS deployment issue has re-emerged and that, expecially considering the volume of the EIS, we have only until February 10th to respond!

In my oppinion, Navy's current SEIS proposes SURTASS Low Frequency Active Sonar deployment , which, in view of previous data and court ruling, now verges on criminal, perhaps on a **planetary** scale.

Not only is the current proposal making a mockery of the Federal Court's ruling which struck down the earlier EIS, said that "**endangered species, including whales, listed salmon and sea turtles, will be in LFA Sonar's path. There is little margin for error without threatening their survival**" and **recommended considerable and serious protective measures**, but it is doubling the number of ships, 1.1.6
vastly publicly expanding the theater of operation, adding a new type of broadcasting system for shallow 1.1.7
waters and insulting the intelligence of any whom they would like to believe that their intended mitigating
measures are adequate.

I OPPOSE DEPLOYMENT OF LFA SONAR, especially as currently considered by the Navy.

According to the *US Marine Mammal Commission*, **LFA Sonar has the potential to impact virtually ALL marine mammal species in the world!** 4.3.6

The probable impact of the use of the newly added "compact" LFA Sonar system in "shallow littoral ocean regions", and operations in "the Pacific, Atlantic, and Indian Oceans, and the Mediterranean Sea" to 1.1.7
support seaward invasions of other countries, is debilitation, maiming and death of mammal species which
previously *might* have been only marginally affected because of the originally intended smaller area of
operations and only deep-sea deployment!!!

LFA sonar, like other intense military sonar systems, CAN KILL WHALES. Contrary to the **UNSUBSTANTIATED Navy claims** that the problem of whale strandings is one of "public perception," 4.4.13
eminent scientists believe that a number of incidents of whales becoming stranded and dying, many of
them horribly, have occurred around the world **due to** the use of loud military sonars. Because of the
nature of *low frequency* sound transmission under water, *LFA* Sonar may have *even more* lethal impact
over longer distances.

Navy's proposed mitigation measures are laughable, and would *at best* protect the life and health of some 4.7.7
whales and dolphins, while probably not at all sparing the "lesser", yet perhaps more endangered -- like
monk seals, marine mammals within the LFA's affective range.

I intend to say nothing about the likely LFAS effect on fishermen and their families, trusting that enough of 4.1.4
them will scream loudly enough before the February 10th response deadline for the Navy to hear that it

must go back to the drawing board and return with an EIS that is not a dishonorable document, and to propose equipment, methodologies, activities, theater of operations and necessary mitigating measures which shame neither the U.S Navy nor the United States of America .

Sincerely,

Gordana Leonard

Mr. Joe Johnson
4100 Fairfax Drive Suite 730
Arlington, VA 22203

As an American citizen of some 58 years I am deeply concerned about the increasing number of ships that are being equipped with LFA sonar for the deployment of the U.S. Navy's Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar program. It has been consistently demonstrated and shown that increasing the number of ships will only increase ocean noise pollution, putting marine life at further risk. I am including the federal register number (70 FR 68443) for your records and further request that these comments be included as part of the "Record of the Decision." I will also be sending you a hard copy of this request.

1.1.6

Robert C Schmidt

Jan. 29, 2006

Robert C Schmidt
1/29/06

ATTITUDE

The longer I live, the more I realize the impact of attitude on life.

Attitude, to me, is more important than facts.

It is more important than the past, than education, than money,
than circumstances, than failures, than successes,
than what other people think or say or do.

It is more important than appearance, giftedness or skill,
it will make or break a company, a church and a home.

The remarkable thing is that we have a choice everyday
regarding the attitude we will embrace for that day.

We cannot change the inevitable.

The only thing we can do is play on the one string we have,
and that is our ATTITUDE.

I AM convinced that life is 10% what happens to me and 90%
how I react to it. And so it is with you.

We are in charge of our ATTITUDES!!

I LOVE YOU

You are in my thoughts and prayers this day.

A little act of love, a few words, simple respect
and quiet prayer has the power and potential
to change a person's life.

Let us learn to give love generously, to express
love honestly and to receive love graciously.

The condition of the world may very well be the sum
total of the love and hatred that exists in it.

I AM expressing my love for you
to help change the balance to a more loving world.

Feb. 1, 2006

SURTASS LFA Sonar EIS Program Manager
4100 Fairfax Drive, Suite 730
Arlington, VA 22203

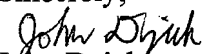
To whom it may concern:

I urge the Navy to stop the further deployment of low-frequency active sonar, or at least to adopt much stronger mitigation measures, because of the documented harmful effects of active sonar on whales. Whales are some of the most beautiful and fascinating forms of wildlife, and as a member of the public I urge you to protect them.

Please add these comments to the record.

Thank you!

Sincerely,


John Dziak

From: Janice Petta
Sent: Feb 6, 2006 11:36 AM
To: eisteam@mindspring.com
Subject: LFA Sonar

Gentlemen:

I'm writing to voice my opposition to the deployment of LFA Sonar. Since the US Marine Mammal Commission states that this sonar has the potential to harm and possibly kill marine mammal species throughout the world and our own federal court has stated that endangered species will be in LFA Sonar's path, I am compelled to write. It is an outrage that our government ignores everything except its own needs. We live in a world where every life form depends on each other to survive. Where will this all end, with a dead Earth? Please stop the murder of innocent life.

Please add my comments to the records, and please reconsider your plan to deploy LFA Sonar.

Thank you.

Sincerely,

Janice Petta

B-136

From: Sean White
To: eisteam@mindspring.com
Subject: sonar testing
Date: Feb 6, 2006 6:03 PM
to whom it may concern-

we are all on this planet together - including all the animals and fish. if we hurt one part of this system, we hurt ourselves in one way or another. mother earth has already started to warm and increase her storms and quakes - we must act together now if we are to save ourselves and the planet. please do not help to hurt the whales and dolphins which are already suffering from pollution by adding to it with noise pollution. these sonar tests will affect many animals and this is not right and not clever. these highly intelligent creatures should not be made to suffer, please stop the testing now.

love and light,

sean white

Manor School

Feb. 6, 2006

Mr. Joe Johnson
LFA Program Manager
4100 Fairfax Dr., Suite 730
Arlington, Virginia 22203

Dear Mr. Johnson,

My class and I are very concerned about the safety, health and welfare of the animals who live in the oceans. We read the enclosed brochures and wanted you to be aware of the many people who want the use of LFA sonar to stop. Please count our heartfelt opinions in when making decisions that affect everyone's right to a healthy planet.

Sincerely,
Laura Dax Honda
teacher



Low Frequency Active Sonar: The Threat to Whales and all Marine Life

In July 2002, the National Marine Fisheries Service (NMFS) gave an authorization to the U.S. Navy that will allow the use of an extremely loud active sonar system to detect enemy submarines. This permission exempts the Navy from the Marine Mammal Protection Act through a series of "letters of authorization" for "small take" and threatens the health of ocean life all over the world. This sonar system is called Surveillance Towed Array Sensor System Low Frequency Active Sonar — or LFA Sonar.

What is Low Frequency Active Sonar or LFA Sonar?

LFA Sonar is an underwater system that the U.S. Navy spent over \$375 million tax dollars creating. It is designed to detect "quiet" submarines by emitting an extremely loud low frequency noise into the ocean, and then listening for echoes. This is one of the loudest noises humans have ever made, and it is powerful enough to kill marine mammals and other forms of marine life!

Why is LFA Sonar so destructive to marine life?

For many forms of marine life, the ocean is an acoustic environment rather than a visual one. Marine life relies on sound the same way terrestrial life relies on vision. Powerful underwater sounds cause damage to their hearing systems, which can result in disorientation; disconnection from school, pod or community; internal bleeding; ruptured tissues; and deafness. With impaired hearing, a marine mammal has difficulty navigating, feeding, communicating and breeding. Damage can be severe enough to kill, because a deaf whale is a dead whale!

When and where does the Navy plan to use this technology?

Now that the Navy has permission from the NMFS, it can begin immediate use of LFA Sonar. The Navy plans to deploy LFA Sonar in over 80% of the world's oceans. However, during times of war, conflict or "heightened alert" LFA Sonar can be used anytime anywhere, including coastal waters.

Is LFA Sonar necessary for national defense?

No. The Navy has at least two passive sonar systems that are not harmful to marine wildlife (testimony by Admiral Fages in Congress, June 2002). They do not need LFA Sonar—which even illuminates our boats as targets. What is necessary for national defense is a healthy, living aquatic ecosystem.

What is being done to stop the Navy from deploying LFA Sonar?

SeafLOW, along with the Natural Resources Defense Council (NRDC), Earth Island Institute, Humane Society of the United States and other organizations who oppose LFA Sonar, are working to lobby congressional decision-makers, launch educational campaigns and create grassroots movements all over the country. The NRDC filed two lawsuits in August 2002, to block the Navy from deploying this destructive technology.

What is SeafLOW? SeafLOW is an environmental organization based in Marin County, CA, which is dedicated to protecting ocean habitats. SeafLOW has joined forces with Earth Island Institute, a San Francisco nonprofit that oversees over thirty environmental projects worldwide, to help organize a grassroots campaign and coalition-building to stop LFA Sonar. To learn more about SeafLOW, please visit our web site: www.seafLOW.org



WHAT YOU CAN DO

Help create a tidal wave of support to stop the assault on marine mammals by Military Active Sonar.

• **Contact your members of Congress.** Urge them to halt LFA funding and put a moratorium on the deployment of all new active sonars, and encourage their support for the development of alternative and more benign technologies.

• **Contact city, county and state officials.** Ask them to pass local resolutions opposing military active sonar; urge them to join the European Union Parliament, the International Whaling Commission, the World Conservation Union (IUCN) and other world leaders in passing resolutions against the deployment of military active sonar.

• **Write letters to the editor.** Call radio shows. Tell your friends in other districts and states about this issue. Spread the word across the globe.

• **Create community gatherings.** Seaflow can support your event with videos, CDs, literature and other educational material covering the many aspects of the Ocean Noise issue.

• **Join our email alert list by registering at www.seaflow.org.** Our website has articles, interviews and links to important resources.

• **Join the Seaflow community.** Attend our regular meetings and volunteer your talents and time to create positive change. Call 415-229-9366.

• **Support Seaflow's critical work to protect marine life.** Send a tax-deductible donation to Seaflow, 1062 Fort Cronkhite, Sausalito, California 94965, or donate online at www.seaflow.org. As stewards for ocean life, let us work together to permanently stop active sonar.

ABOUT SEAFLOW

We hold that:

The health of all living things is interdependent – whatever affects the ocean environment affects all living things.

Protecting our environment and keeping the Earth's living systems in balance is critical to national security and global stability.

Opening our hearts to the suffering of other creatures connects us to our global community and inspires us to action.

Seaflow is organizing coalitions for national and international campaigns, as well as coordinating and participating in professional conferences, public hearings and community events. We provide subject matter experts for TV, radio and print media, and presenters for public events.

Seaflow is an educational nonprofit organization building an international movement dedicated to protecting whales, dolphins and all marine life from active sonars and other lethal ocean noise pollution. Seaflow draws on science, creative action, the arts and community for inspired participation to safeguard the web of life.



1062 Fort Cronkhite, Sausalito, CA 94965
(415)229-9366 fax (415)229-9340

email: info@seaflow.org

web: www.seaflow.org

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IS THIS THE FACE OF AN ENEMY?



MILITARY ACTIVE SONAR

IS KILLING OCEAN LIFE

IN THE NAME OF

NATIONAL SECURITY

cover photo: James Gritz Photography

THE U.S. NAVY IS DESTROYING OCEAN HABITAT BY USING NEW ACTIVE SONAR TECHNOLOGIES, GENERATING NOISES THAT CAN BE HEARD FOR OVER 1000 MILES AND CAN MAIM OR KILL FISH, WHALES AND DOLPHINS AT CLOSER RANGES.

DEADLY FORCE:

MILITARY ACTIVE SONARS ARE KILLING OCEAN ANIMALS

A Low Frequency Active (LFA) SONAR system can broadcast noise into thousands of square miles of ocean.

PAINFULLY POWERFUL PULSES

Mid-range communication sonar destroys ears and body tissues of marine animals at close distances, harassing and aggravating them at intermediate ranges. Some military active sonar is loud enough to harm human divers at 60 miles and pollute thousands of square miles of ocean with disturbing noise, compromising the habitat of untold sea creatures.

SAFER ALTERNATIVES EXIST

With a disregard for the biological evidence, the U.S. Navy is deploying a whole new generation of sonar systems, putting the marine animals of the Earth in great peril. While these technologies are "state of the art," in most cases safer technologies exist that are equally effective and much less dangerous.

MARINE ANIMALS RELY ON SOUND

Sunlight does not penetrate much below 100 feet in ocean water, so the ocean is not a visual environment. Many fish and crustaceans rely on sound to "see"—to find their food, entice their mates, raise offspring, sense predators, and synchronize with their schools.

By polluting this acoustic habitat with loud noise, we put the life of all of these animals—and our own food supply—at risk.

A DEAF DOLPHIN IS A DEAD DOLPHIN

Marine mammals navigate, communicate and hunt using sound. Large whales navigate across the oceans using low frequency echolocation; dolphins use high frequency sonar to sense and herd their prey; and humpback whales sing complex songs to establish their relationship with their pods.

If these creatures are partially or completely deafened by active sonar, they will die.

ANIMAL BEACHINGS HAVE BEEN CONNECTED TO NAVY ACTIVE SONAR



Canary Islands: In October 2002, 18 stranded beaked whales were linked to U.S. Navy and NATO maneuvers—as were a total of 21 whale strandings in 1985, 1988 and 1999 (*Nature*, 1991, 2002). **The Bahamas:** In March 2000, about a dozen beaked whales stranded on various beaches after U.S. Navy exercises (*San Francisco Chronicle*, 3/22/2000). **Luarca, Spain:** Three Giant Squid (a rare and mysterious creature 60 feet long and weighing over 2000 lbs.) washed up immediately following Navy active sonar exercises. **Mediterranean Sea near Greece:** In 1996, 12 Cuvier beaked whales and 200 dolphins exposed to NATO sonar were found stranded (*Nature*, 1996). Even in light of this irrefutable evidence, Navy officials have denied a connection with active sonar. *They continue to say their active sonar systems are safe for marine life. Shall we continue to take them at their word?*

Mr. Joe Johnson
400 Fairfax Dr. Suite 730
Arlington, Virginia 2203

Dear Mr. Johnson,

I am a fourth grader at Manor school. I write to you because I know you are the manager of the Navy's LFA sonar. It kills whales, dolphins, porpoises, and other forms of marine life! Put yourself in their position. You may already know this, but sound travels much farther and faster in water than in air. It is devastating to them! I hope you change your mind about the sonar.

Sincerely,
Trent

Mr. Joe Johnson
4100 Fairfax Dr. Suite 730
Arlington, Virginia 22203

Dear Mr. Johnson,

Hi, I'm a fourth grader at Manor School. In my class we are reading about the Low Frequency Active sonar you are using to locate enemy submarines. I know that you are the manager of the U.S. navy and I ask you to please use something different that will not hurt our marine mammals.

We love marine mammals and we hope you do too.

Sincerely,

April

April

Mr. Joe Johnson
 4100 Fairfax Dr. suite 730
 Arlington, Virginia 22203

Dear Mr. Johnson,

I am a fourth grader at Manor school. My class has been reading about LFA sonar. We are big fans of nature and animals and when you set off a sonar it disrupts the underwater nature and habitats for marine mammals. Just think if you were a whale or dolphin, would you like a never ending sound where you live? So please, please do not use LFA sonar, and besides there are other SAFE ideas that do not hurt animals under water.

Sincerely,
 Julia
 Julia

P.S. Thank you for taking your time reading my letter.

February 7, 2006

Mr. Joe Johnson
4100 Fairfax Dr. Suite 730
Arlington, Virginia 22203

Dear Mr. Johnson,

I am in fourth grade at Manor school in Fairfax, California. The LFA sonar the Navy is using is affecting undersea wildlife. Marine mammals use echolocation to "see", find food, detect predators, and many more reasons. But Low Frequency active sonar is damaging their flesh and making them deaf. This extremely loud noise cannot be evaded by the whales making them beach themselves. I think the Navy should stop using LFA sonar for the sake of the whales. Try using different methods of scanning so marine mammals do not become endangered animals. Thank you.

Sincerely,
Max

February 7, 2006

Mr. Joe Johnson
 4100 Fairfax Dr suit 730
 Arlington, Virginia 22203

Dear Mr. Johnson

I am a fourth grader from Fairfax California and I love dolphins and whales. I am writing to you because I know you are the Manager of the U.S. Navy's LFS sonar. I think my opinion must be counted in your decision. Instead of LFA please use safe alternatives that **don't** hurt living things. I love marine mammals and want them to live forever.

Sincerely,

Selena
 Selena

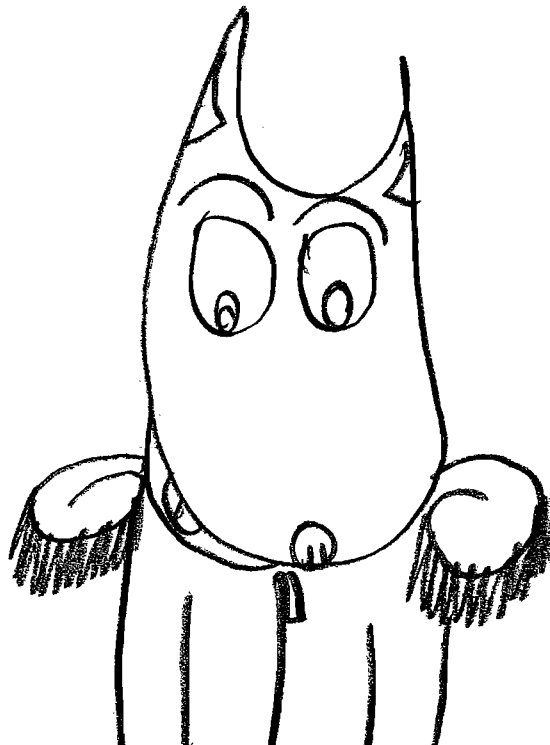
Mr. Joe Johnson
4100 Fairfax Dr. Suite 730
Arlington, Virginia
22203

February 7, 2006

Dear Mr. Joe Johnson,

I am a fourth grader from Fairfax
California and I love dolphins and whales.
I am writing this letter because
you are hurting the animals with
sound waves that make the animals hurt
or they die. How would you like it
if you heard a loud noise every
day?

From, Taylor



460 Fairfax Dr. Suite 730
Arlington, Virginia 22203 I-040

2/7/2006

Dear Mr. Johnson,

I am a fourth grader at Manor School in Fairfax, California. Our class was reading about the LFA sonar and I thought what would it feel like if you were a dolphin or a whale. What would it feel like when that noise went off.

I firmly believe that using the LFA sonar is really, really bad for the animals in the ocean.

Thank you for your time and patience, I really appreciate it.

Your turly
Emma
Emma

B-142

Mr. Joe Johnson
4100 Fairfax Dr. suite 730-03
Arlington, Virginia 22203

February 7, 2006

Dear Mr. Johnson,

My name is Ari. I'm a fourth-grader at Manor School. (Don't stop reading just because I'm a kid. This is a letter about some thing that really concerns me.) I know you are the manager of the U.S. navy's LFA sonars. The other thing I know is that you must ~~can't~~ consider everyone's opinion in your decision. (That includes me. I think the navy shouldn't use LFA sonar. I mean, there's a ton of alternatives to LFA I have already thought of! So please think about this really hard, because without marine mammals, there could be some problems. Plus, lots of people like them.

Sincerely,
Ari

February 7, 2006

Dear Mr. Joe Johnson,

I am a fourth grader in Fairfax California. I think and a lot of other people think that you should not use LFA Sonar. It kills dolphins, fish, and whales. You could get a scanning device and see if the enemy is there. It could say if the enemy is there or if a fish or something is there. Please Please stop using LFA Sonar.

Yours truly,
Charlotte

p.s. Happy Valentines day!!!

February 7, 2005

Mr. Joe Johnson
4100 Fairfax Dr. Suite 73
Arlington, Virginia 22203

Dear Mr. Joe Johnson,

I'm a fourth grader. Would you please not use the LFA sonar, because I love dolphins and whales, and my class read a book about it and it is killing marine life.

Sincerely,
Louise

Feb. 7, 2006

Mr. Joe Johnson
4100 Fairfax Dr. Suite 737
Arlington, Virginia 22202

Dear Mr. Johnson,
I am a fourth grader from Fairfax
I love whales and dolphins. Do
you know that you are killing
them with LFA? Please do not use
it. My opinion will change some-
thing hopefully. Please stop, our marine
mammals are dying. Pretend you
are one of them.

Sincerely,
Salem

B-144

Mr. Joe Johnson
4100 Fairfax Dr.
Suite 730 Arlington, Virginia
22203

Dear Mr. Johnson,

I am a fourth grade student at Manor School and I think that the Navy should not use LFA Sonar because it hurts the dolphins and whales. I hope the navy stops using it because its hurting fish and we eat fish. Soon, if it goes on, the dolphins and whales will become endangered.

Sincerely,
Sara

February 7, 2008

Mr. Joe Johnson
4100 Fairfax Dr. suite 730
Arlington, Virginia 22203

Dear Mr. Joe Johnson,

I'm a fourth grade student at
manor school and im writing this
letter because I want you to stop
using LFA sonar because it hurts
and kills marine animals.

So please, please stop using
LFA sonar please.

Sincerely,
Christian
Christian.

February 7 2006

Mr. Joe Johnson
4100 Fairfax Dr. Suite 730
Arling, Virginia 22203

Dear Mr Johnson

I am in forth
grade. My class just read a book.
It is called Deadly force Military
Active sonars are killing ocean
animals. I really love dolphins and dolphir
are one of ocean animals that
are dying. If you don't know what
it feel's like just go in the ocean and
then listen and probley you will change
your mind.

sincerely,
Diana

February 7, 2000

Mr. Joe Johnson
 4100 Fairfax Dr Suite 700
 Arlington Virginia 22033

Dear Mr. Johnson,
 I'm a fourth grader at Manor
 My class has read an article about
 how bad it is to the environment
 We know that you can decide against it.
 Please consider the whales and dolphins
 that share the earth with us.

Sincerely,
 Martin
 Martin

Dear Mr. Johnson
400 Fairfax Dr. suite 730
Arlington, Virginia 22203

February 7, 2006

Dear Mr. Johnson.

I am a Fourth grader from Fairfax
California, and I love dolphins and
whales. Put yourself in whales shoes and
see if you like it. I am writing to
you because you're the manager of the ^{LFA} sonar.
Thank you for listening to my letter.

Sincerely
Olivia P.
Olivia P.

February 7, 2006

Mr. Joe Johnson,
 4100 Fairfax Drive Suite 730
 Arlington, Virginia 22203

Dear Mr. Johnson:
 I am a fourth grader in Fairfax.
 I love dolphins and whales. I feel
 verry sad about the dolphins and
 whales, the US Navy's LFA has been
 killing them and other marine
 mammals. In October 2002 18 stranded
 beaked whales died from navy LFA
 sonar. In the mediterranean sea near
 Greece in 1996 12 Cuvier beaked whales
 and 200 dolphins wer exposed to
 Nato sonar and died. Please have
 the navy stop using LFA sonar.

Sincerely,
 Aaron

MR. JOE JOHNSON
 4100 FORTAX DR. SUITE 730 ARLINGTON VA VIRGINIA
~~22203~~ 22203

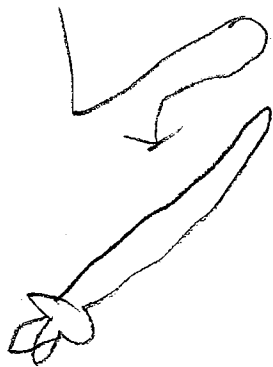
PS,
 please
 send a note
 either to

Dear Mr. JOHNSON
 Please HELP US Help The Green
 Willed life some will HAVE Willed life
 animals so they won't get EXTINCT.
 Sincerely JACK

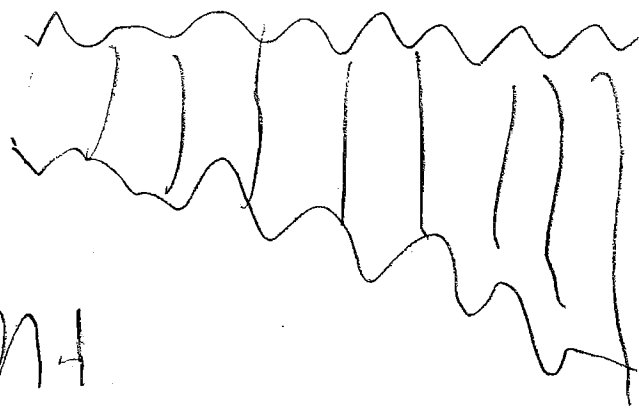
Please read

THE LAST SONAR

TO PIEDO



had BOOM!



Then

From: Arianna Husband
To: eisteam@mindspring.com
Subject: STOP Low Frequency Sonar - Practice human awareness to protect marine life
Date: Feb 7, 2006 1:46 PM

Joseph S. Johnson
Surtass Lfa Sonar Eis Program Manager
US Navy
4100 Fairfax Dr. Suite 730
Arlington, VA 22203

RE: LFA Sonar Surtass SEIS

Dear Program Manager Joe Johnson,

We know that marine biologists and whale biologists and many others have proven that this low frequency noise kills whales, dolphins and all other forms of sea animals, including the fish that we eat!!! We are concerned for our marine mammals and fish and particularly for our food chain. We notice that our fish **4 . 1 . 4** supplies are being effected.

Please place my comments on the record.

I oppose any expansion of the LFA Surtass program and I know that there are alternative ways to protect our waters from invasion from foreign enemies. I demand that you switch gears and explore healthy alternatives to this deadly technology.

Sincerely,

Arianna S Husband

B-148

From: Wendy Klein
To: eisteam@mindspring.com
Subject: LFA Sonar Surtass SEIS
Date: Feb 7, 2006 2:09 PM

Dear Joe Johnson,

Please place my comments on the record.

I oppose any expansion of the LFA Surtass program. I know that there are alternative ways to protect our waters from invasion from foreign enemies and demand that you switch gears and explore healthy alternatives to this deadly technology.

Sincerely,

Wendy Klein

From: mila maas
To: eisteam@mindspring.com
Subject: LFA Sonar Surtass SEIS
Date: Feb 7, 2006 2:16 PM

To:
Joseph S. Johnson
Surtass Lfa Sonar Eis Program Manager
US Navy
4100 Fairfax Dr. Suite 730
Arlington, VA 22203

RE: LFA Sonar Surtass SEIS

Dear Program Manager Joe Johnson,

We know that marine biologists and whale biologists and many others have proven that this low frequency noise kills whales, dolphins and all other forms of sea animals, including the fish that we eat!!! We are concerned for our marine mammals and fish and particularly for our food chain. We notice that our fish **4.1.4** supplies are being effected.

Please place my comments on the record.

I oppose any expansion of the LFA Surtass program and I know that there are alternative ways to protect our waters from invasion from foreign enemies. I demand that you switch gears and explore healthy alternatives to this deadly technology.

Sincerely,

Mila Maas
Sausalito, CA

B-149

From:

To: eisteam@mindspring.com

Subject: SEIS comments

Date: Feb 7, 2006 4:01 PM

To:

Joseph S. Johnson

Surtass Lfa Sonar Eis Program Manager

US Navy

4100 Fairfax Dr. Suite 730

Arlington, VA 22203

RE: LFA Sonar Surtass SEIS

Dear Program Manager Joe Johnson,

We know that marine biologists and whale biologists and many others have proven that this low frequency noise kills whales, dolphins and all other forms of sea animals, including the fish that we eat!!! We are concerned for our marine mammals and fish and particularly for our food chain. We notice that our fish **4 . 1 . 4** supplies are being effected.

Please place my comments on the record.

I oppose any expansion of the LFA Surtass program and I know that there are alternative ways to protect our waters from invasion from foreign enemies. I demand that you switch gears and explore healthy alternatives to this deadly technology.

Sincerely,

Rev. Merrie B Wardell

From: Max Dashu
To: eisteam@mindspring.com
Subject: Stop the sonar
Date: Feb 7, 2006 10:33 PM

To:
Joseph S. Johnson
Surtass Lfa Sonar Eis Program Manager
US Navy
4100 Fairfax Dr. Suite 730
Arlington, VA 22203

RE: LFA Sonar Surtass SEIS

Dear Program Manager Joe Johnson,

Marine biologists and whale biologists have proven that the sonar kills whales, dolphins and all other forms of sea animals, including the fish that we eat!!! We are concerned for our marine mammals and fish and particularly for our food chain. We notice that our fish supplies are being affected.

4.1.4

Please place my comments on the record.

I oppose any expansion of the LFA Surtass program and I know that there are alternative ways to protect our waters from invasion from foreign enemies. I demand that you switch gears and explore healthy alternatives to this deadly technology.

Sincerely,

Max Dashu
Oakland, CA

B-150

To Whom it May Concern -

I am writing to express my opposition to the deployment of Low Frequency Active Sonar in oceans around the world by the US Navy.

The new Supplemental Environmental Impact Statement does not adequately address the substantial problem of damage to whales, dolphins and fish caused by this unbearably loud propagation of sound. Whale + dolphin beachings have been associated with this practice and at the very least communication and feeding behavior is greatly disturbed. Human-caused noise in the ocean is an increasing problem worldwide - this program would add the equivalent of mega-cannon fire on top of it all.

More must be done to insure that zones of deployment be free of whales and as much other life as possible, as the courts already instructed in reviewing the original EIS.

The Navy must recognize that its practices are causing enormous suffering to marine life and alter its procedures to mitigate these effects to the greatest extent possible. If mitigation is not feasible, the project should be shut down. Please add my comments to the record.

Sincerely,

Deane M. Plaister

Deane Plaister

From: Chris Parsons
To: eisteam@mindspring.com
Subject: SURTASS LFA DEIS Comments
Date: Feb 8, 2006 10:57 AM
Attachments: LFA Parsons comments.doc

Mr. J. S. Johnson
Attn: SURTASS LFA Sonar EIS Program Manager
4100 Fairfax Drive, Suite 730
Arlington, VA 22203

By email to: eisteam@mindspring.com

Re: Draft Supplemental Environmental Impact Statement for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar

Dear Mr. Johnson:

Attached are my comments on the Navy's Draft Supplemental Environmental Impact Statement for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar (DEIS). See 70 Fed. Reg. 69526 (Nov. 16, 2005).

Yours sincerely,

Prof. E.C.M. Parsons
Department of Environmental Science & Policy
George Mason University, VA

B-151



Department of Environmental Science & Policy
George Mason University
4400 University Dr. MSN 5F2
Fairfax, VA 22030

February 10, 2006

Mr. J. S. Johnson
Attn: SURTASS LFA Sonar EIS Program Manager
4100 Fairfax Drive, Suite 730
Arlington, VA 22203

By email to: eisteam@mindspring.com

Re: Draft Supplemental Environmental Impact Statement for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar

Dear Mr. Johnson:

I write to comment on the Navy's Draft Supplemental Environmental Impact Statement for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar ("DEIS"). See 70 Fed. Reg. 69526 (Nov. 16, 2005). As a whale and dolphin researcher who has examined the problem of acoustic impacts to marine mammals, I am concerned that the Navy has systematically underestimated impacts from its proposed worldwide deployment of LFA and has failed to put into place sufficient mitigation measures to lessen these impacts.

I. The Navy's Analysis of Impacts of the Proposed Action

I have the following concerns about and comments on the analysis presented in Chapter 4 of the DEIS, assessing the impacts of the Navy's proposed action and alternatives.

The Navy proposes employing four LFA systems worldwide. As an initial matter, it should be noted that Dr. John Hildebrand, in a presentation to the International Whaling Commission Scientific Committee, concluded that two LFA systems would input as

4.6.5

much sound energy into the oceans as all of the supertankers in the world. Four systems would presumably input twice as much.

A. Analysis of Permanent Threshold Shift/ Temporary Threshold Shift (PTS/TTS)

The “safe” level of sound exposure for cetaceans appears to be primarily based upon extrapolations of responses by trained marine mammals, in particular reported hearing sensitivities and observed onset of TTS, to exposures to man made sounds, conducted in a captive, experimental environment.¹ However, the applicability of such captive studies to cetaceans in the wild is highly debatable, with several peer-reviewed empirical studies so far showing a significant discontinuity between predicted sensitivities to sound and actual observed reactions by animals. For example, when studies on the hearing abilities of captive beluga whales (*Delphinapterus leucas*) were used to calculate the distance at which the whales could detect shipping traffic, a distance of 20 km was estimated, but observations of wild animals showed that beluga whales were detecting vessels at distances of well more than 80 km and were actively avoiding shipping at distances up to three times farther away than the captive studies would have estimated.² Another study documented common dolphins (*Delphinus delphis*) fleeing high intensity sound sources despite the received levels of sound being orders of magnitude (48dB) quieter than captive animal studies predicted would cause an effect.³ Part of the problem may be the high levels of background noise to which cetaceans in captive facilities are exposed, that may lead to hearing impairment, and even deafness,⁴ in the captive animals.

4.3.25

Although the above studies do not document responses to sonar, they nonetheless demonstrate how behavioral responses from conditioned, captive animals may not match those of wild animals. As an analogy, one might compare the muted responses to loud noises of a trained police dog, or mounted police horse, to the much more significant responses of a mustang in the wild or a coyote/wolf.

4.3.25

There are many flaws in the Navy’s attempt to determine the likelihood of producing temporary or permanent hearing damage (threshold shifts: TTS and PTS respectively) based on captive cetaceans. For example, to date there is only information on the hearing abilities of eleven species of cetacean, and even data for these species is limited, often based on only one, two or a small number of individual animals.⁵ Because there could be considerable individual variety in hearing abilities of cetaceans, particularly if there are differences according to sex and age,⁶ such a small sample size may lead to incorrect assumptions about hearing abilities and, thus, incorrect extrapolations of safe levels. For example, using hearing sensitivity data based on a study of one or two older male animals to extrapolate potential hearing damage caused by a sound source would seriously underestimate the sensitivity of free living cetaceans to the sound source.

4.3.25

¹ For example, this was the method used in QinetiQ, (2002).

² Findley *et al.*, (1990).

³ Gould and Fish, (1998); Gould and Fish (1999).

⁴ Ridgeway and Carder, (1997).

⁵ Nachtigall *et al.*, (2000).

⁶ Typically, males and older animals are more likely to lose hearing ability (Ridgeway and Carder, 1997).

The studies on hearing sensitivity also often use animals that have been in captivity for long periods of time. The captive environment is a particularly noisy one, and many of the subject animals have been exposed repeatedly to high levels of noise during sound-related experiments. Some medical treatments animals receive in the captive environment may also lead to hearing loss.⁷ Unsurprisingly, several captive animals have been found with impaired hearing.⁸ Thus the use of captive animals, who may have already suffered some PTS, would give flawed data.

Bearing this in mind, it is perhaps not surprising that there is growing evidence of wild cetaceans showing adverse reactions to sounds at received levels that captive-animal studies deem would not cause any impact for the species concerned.⁹

Another concern arises from the fact that hearing sensitivity tests frequently use pure tones (i.e. sounds of just one frequency), a type of sound animals would not encounter in the wild. It is possible that cetaceans have greater sensitivity to sounds which are biologically relevant, i.e. sounds which they are adapted to hear.¹⁰ This may have implications for some sound types, such as LFA, that sound very similar to the sounds produced by cetaceans.

4.3.25

For cetacean species whose hearing sensitivities are unknown, extrapolations are made using other species, perhaps adjusted according to the known frequencies of vocalisations produced by particular species of concern. Such extrapolations again are problematic as animals may have excellent hearing capabilities outside the ranges in which they produce vocalisations. For example, a rehabilitated gray whale calf was discovered to have hearing capabilities in frequencies much higher than had, based on vocalisation data, previously been assumed.¹¹

4.3.23

4.3.26

In short, there are many flaws in current methods estimating potential source levels that could cause TTS and PTS in cetaceans. It is also known that chronic exposure to noise can cause TTS and PTS at lower received levels of sound, but there has been no research into this chronic effect. Any TTS or PTS would impact cetacean health, as it could severely compromise abilities to communicate, forage and navigate. In fact, PTS could effectively be lethal, as it would leave animals “blind” in their acoustic environment.

4.3.25

B. Behavioral responses

To date, the Navy has not conducted any study to determine whether exposure to sound causes biologically significant effects. The exposure studies conducted have looked only at short term responses, during a short exposure at levels (on average 120 dB received levels) much lower than LFA source levels. Studies to discover impacts to health, reproduction and survival, as the result of behavioural changes, require research projects

4.3.29

⁷ Finneran *et al.*, (2005)

⁸ Ridgway and Carder, (1997); Brill *et al.*, (2001); Finneran *et al.*, (2005)

⁹ Findley *et al.*, (1990); Gould and Fish (1998); Gould and Fish (1999); Stone, (1998); Koschinski *et al.*, (2003).

¹⁰ International Whaling Commission, (2004).

¹¹ Ridgway and Carder, (2001).

that are long-term, even lasting decades.¹² For example, recent research has shown reduced calf and female reproductive success in Australian bottlenose dolphins – i.e. a biologically significant effect- as the result of disturbance.¹³ However, these effects were only noted as the result of a long-term, multiple year study, with observed short term behavioral effects of the animals being relatively subtle.¹⁴

4.3.29

It is also important to note that although cetaceans may not produce an observable reaction, or may exhibit only minor behavioral changes, this does not mean that there is no biologically significant impact. Peer-reviewed scientific studies have shown that when disturbed, animals that have fed adequately and are in good health may be the only animals that show an observable behavioral reaction, whereas animals that are ill-fed or otherwise not at full fitness may not show a reaction at all.¹⁵ The implication is that animals that are better fed, or in better condition, can stop feeding sooner and move farther from habitats than animals that are in marginal condition.¹⁶ Thus there is need to consider the animals that are at greatest risk, rather than the animals that show the greatest reaction, when evaluating human disturbance, *i.e.*, less response to anthropogenic activities does not necessarily mean less impact on animals.¹⁷ Dismissing minor or subtle behavioral reactions as being biologically insignificant, and likewise taking no observable reaction as constituting no effect, “can lead to misinterpretation of research findings with unintended and potentially dire consequences for wildlife communities.”¹⁸

4.3.29

A recently published, peer-reviewed paper on the effects of pressure on the nervous systems of whales highlights how the effects of pressure may lead to more severe behavioral effects than previously thought.¹⁹ The paper suggests that the effects of pressure on the central nervous systems of diving cetaceans may result in “hyperexcitability”²⁰ of the nervous system, and that “*the repetitive high intensity noise produced by sonar pinging may [cause more nerve cell stimulation] under high-pressure conditions than on the surface.*”²¹ In turn, the increased nervous stimulation may result in “*secondary responses that may impair orientation, or maintenance of the regular diving response of the cetaceans.*”²² Thus, exposure to sonar or other high intensity noise sources while a cetacean is submerged, particularly if a great depth, may

4.3.2

*give rise to an enhanced startle response leading to disturbance in normal behavior. A severe startle response, possibly involving fear or panic, may cause stranding as a flight response.*²³

¹² Corkeron, (2004); Bejder and Samuels (2004); Orams, (2004).

¹³ Bejder, (2005).

¹⁴ Bejder, (2005).

¹⁵ Beale and Monaghan, (2004).

¹⁶ *Ibid.*

¹⁷ *Ibid.*

¹⁸ Bejder, 2005, abstract.

¹⁹ Talpalar and Grossman (2002).

²⁰ Talpalar and Grossman (2002). p. 136.

²¹ *Ibid.*, p. 137.

²² *Ibid.*, p. 137.

²³ *Ibid.*, p. 137.

Thus, after being exposed to sonar, a cetacean's panicked flee to the surface, and subsequent stranding, could then lead to conditions which lead to decompression sickness in the cetaceans, but the sonar exposure plus the effects of depth-induced pressure on the nervous system may actually enhance and exaggerate the behavioral reactions of cetaceans to noise.

2.5.2
4.3.12
4.0.3
4.3.1

C. Bubble lesions

The Navy attempts to discredit the bubble lesion theory but exaggerates the extent to which that theory is controversial. The Navy cites Piantadosi and Thalmann (2004), which criticized Jespson et al. (2003) with respect to the bubble lesion theory. Their criticism was primarily on the grounds that the bends causes different types of lesions in humans, and not bubbles in the liver as observed stranded beaked whales.²⁴ In particular, critics of the beaked whale strandings studies have noted that in decompression sickness, "*chronic lesions are found only in the long bones and central nervous system*".²⁵ However, in response, the veterinarians, pathologists and whale biologists who investigated the Canary Islands beaked whales stated that they did not investigate bone tissue, and only investigated the central nervous system in two animals, so they could not say that there were no such lesions in these tissues of the whales, but they noted "*acute, systemic and widely disseminated lesions consistent with, but not diagnostic of [decompression sickness]*".²⁶ They further refuted the comments of Piantadosi and Thalmann, (2004) by stating that large numbers of gas bubbles liver vessels and other lesions observed have, indeed, been reported as a symptom of the bends in humans.²⁷

4.3.48

D. Masking

The Navy's statement that there has been no change in knowledge on masking since its last EIS is incorrect. A study published in 2004 noted significant masking of whale calls as the result of noise produced by seismic surveys as much as 3000 miles or more from their source.²⁸ Guidelines for seismic surveys suggest that whales are safe from impacts just a short distance away from the sound source (500m, according to UK governmental guidelines). Yet the above study stated that occasionally "*the array [being monitored] recorded airguns from more than one location, masking cetacean sounds and on four occasions making the spectrogram impossible to use*".²⁹ Moreover, the researchers noted that "[whale] calls are produced in the summer months but are obscured by airguns."³⁰ Masking of whale calls at such large distances as the result of a high intensity sound source shows, at the very least, that masking may be a serious issue that could have effects substantial distances from the sound source.

4.3.36

²⁴ Piantadosi and Thalmann, (2004).

²⁵ Page 1 in *ibid*.

²⁶ Page 1 in Fernández *et al.*, (2004).

²⁷ For example see Francis and Mitchell, (2003).

²⁸ Nieuwkerk *et al.* (2004).

²⁹ *Ibid*.

³⁰ *Ibid*.

E. Chronic noise and stress

The issue of chronic exposure to noise and the effects of stress, which in turn may have biologically significant effects on cetaceans, has not been considered. Prolonged exposure to high levels of noise can result in stress and debilitation. For example, researchers have reported increases in activity of adrenal and defense-related endocrine glands in relation to noise exposure.³¹ Several marine species (including both fish and shrimp) have displayed reduced growth and reproductive success when exposed to chronic noise levels 20 to 30 dB above background levels.³² Thus, noise stress effects could impact cetacean prey species. With respect to cetaceans themselves, it has been suggested that prolonged exposure to high levels of noise, and the resultant chronic activation of hormonal complexes from the stress entailed, could lead to reduced cetacean health^{33,34}. Acute or chronic stress in cetaceans can ultimately lead to premature mortality.³⁵ There is growing concern that disturbance-related stress can lead to decreases in cetacean reproduction, immune system suppression, and, ultimately, to increased rates of mortality.³⁶ The issue of noise-induced stress is highlighted by the National Research Council (2005) in a report quoted by the Navy elsewhere in the EIS. This issue should be addressed by the Navy.

4.6.3

4.1.16

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4.3.55b

F. Miscellaneous

The use of MacLeod et al. (2005) as an example of natural caused strandings (p.53) is incorrect. The paper refers to an increase in warm waters species strandings reported in the UK as the result of a shift in species distribution (i.e. the species is occurring in greater numbers and so stranding numbers are increasing). The paper does not suggest that global warming causes an increased cetaceans stranding rate, as is the inference.

4.4.25

II. **The Navy's Analysis of Mitigation Measures**

I have the following concerns about and comments on the analysis presented in Chapter 5 of the DEIS, assessing mitigation measures to lessen harm from the Navy's use of LFA.

A. Sea Turtles

It is unclear how, exactly, the Navy intends to monitor for sea turtles. These (except for the leatherback) would be significantly smaller than cetaceans, with much less of a visual cue when surfacing (typically only nostrils are raised above water) as compared to cetaceans, which may splash and present a large silhouette (enhanced by dorsal fins in those species that have them). Turtles are typically single animals, whereas dolphins are found in groups, again reducing the likelihood of spotting a turtle. Also, turtles typically

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³¹ Welch and Welch, (1970).

³² Banner and Hyatt, (1973); Lagadere, (1982).

³³ Seyle, (1973); Thomson and Geraci, (1986); St Aubin and Geraci, (1988).

³⁴ Specific stress related ailments in mammals can include nutritional problems, stomach ulceration, arteriosclerosis, reproductive failure and suppression of the immune system (Brodie and Hanson, 1960; Radcliffe *et al.*, 1969; Moberg, 1985; Cohn, 1991; Smith and Boyd, 1991).

³⁵ Small and DeMaster, (1995).

³⁶ Orams, (2004).

spend longer under water – dolphins may surface every three or four minutes when traveling, whereas turtles will be underwater more like 30 to 40 minutes. Therefore the likelihood of visually detecting a swimming sea turtle is very, very low – probably less likely than detecting even a cryptic marine mammal species such as a beaked whale. Turtle hatchlings may be only a few inches across, making their detection in open water virtually impossible.

Turtles don't vocalize (except for a few grunts when exerting themselves, i.e. crawling up a nesting beach or mating), making passive acoustic detection impossible.

The size of sea turtles also makes active acoustic detection impossible, since the wavelength of pulse needed to detect them would have to be smaller than the turtle, with shorter wavelengths having very reduced distances. Even adult green, loggerhead or Ridley's turtles would have to be virtually next to the sonar source to be detected.

B. Recreational dive sites

The 40m coastal contour rule of thumb for dive sites is a gross oversimplification. Does this include all shallow offshore areas, or merely a thin strip around the coastline? What about barrier reefs, islands, and wrecks in waters deeper than 40m, but accessible to divers? Has the Navy produced a map providing inventories of dive sites? If so, the map should be made available so that the public can comment on its completeness. Are areas avoided based on the location of resorts or dive shops? Has any effort been made to determine where diving companies and boat tours take their divers? There are many offshore reefs, wreck sites and open water dive sights used by divers (e.g. Midway waters, offshore seamounts off the Philippines, etc.), yet there seems to be no information on how the Navy has determined which areas not to ensonify.

5.0.2d
5.1.4

With respect to not injuring commercial divers, again there is no information on which areas are to be avoided or safety radii. Oil rigs, wreck salvage sites, archaeological sites, and marine protected areas/reserves are areas where there are likely to be commercial divers in the water for periods of time, and at a minimum such areas should be mapped and exclusion zones demarked. In particular, commercial divers may be working in offshore areas outside the "40m contour" evoked by the Navy, and may be diving to greatly deeper depths, particularly if using helium breathing mixtures.

5.1.4

Many areas in Philippine, Indonesian and Japanese waters have divers who use compressed air or scuba gear, or even free diving, as a fishing method (especially for shellfish, including pearl oysters, and for aquarium fish species). At the very least, coastal waters and reef areas around these countries should be exposed to no more than 145dB. Again, there is no indication that the Navy has considered this type of fishing or areas where it is conducted.

Such measures are all the more necessary given that tests on trained, pre-warned Navy personnel exposed to LFA noise resulted in various effects, including "panic," in tested divers. If commercial and, particularly, recreational divers without much experience or

any forewarning are exposed to LFA sources, they may likewise display panic behaviors and may rush to the surface. This could lead to physical injury or even death as the result of the bends. This risk is increased by the well-documented effects of increased levels of dissolved nitrogen in the blood: All divers breathing compressed air suffer various degrees of “nitrogen narcosis,” which, in a nutshell, makes divers more likely to engage in impulsive or panicked behavior. Divers in the LFA operational areas may also have less immediate access to hyperbaric facilities, thereby making even minor “bends” effects potentially serious and life threatening.

4.0.4

The potential for human injury and/or death of recreational and commercial divers is a significant issue and there is no evidence that the Navy has fully considered this issue.

5.3.2

C. Biologically Important Areas

The Navy has not done sufficient work to identify offshore biologically important areas and to place these areas off-limits to LFA use. The statement that the majority of biologically important areas for marine mammals and turtles are in the coastal zone is incorrect. While coastal waters may be important for some species (e.g. coastal bottlenose dolphins), or some periods of life history (e.g. haul out sites for pinnipeds), the large majority of biologically important areas for marine mammals are in non-coastal waters, e.g. continental shelf edges, seamounts, oceanic divergences and non-coastal upwellings.

4.7.20

The Navy itself notes that many turtle species are pelagic (p. 3.2-20) and that biologically important areas may include offshore areas, e.g. the center of gyres. The most well known of such areas would be the Sargasso Sea, a crucial offshore habitat for juvenile and hatchling sea turtles. Yet the Navy fails to include such areas in its list of OBIA's.

4.7.18

It also fails to include many recognized marine protected areas and sanctuaries on that list. For example, does the Navy intend to include in its list of excluded areas the Xiamen Marine National Park and Conservation Area (Fujian Province) – a nationally recognized protected area since 2000, designated specifically for cetaceans, located immediately opposite Taiwan on the Chinese mainland?

4.7.20

There are also several marine protected areas on the south coast of Russia, abutting the Sea of Japan, which should be included. The most notable is the Far Eastern Marine Nature Reserve (Zapovednik) in Peter the Great Bay, Sea of Japan. This protected area was designated in 1978 and encompasses 630 km² (243mi²) of sea area (see 10 on accompanying maps). Near this is the much smaller Vostok Bay National Comprehensive Marine Sanctuary (18km² or 7mi² of sea area; see 21 on attached map).

4.7.20

Likewise, off the coast of the Philippines the Siargao Island Protected Land and Seascape (see 32 on map) abuts the current LFA use area. This MPA is 1077 mi² (2789 km²) and includes coastal areas and marine waters.

4.7.20

Batanes Island Protected Land and Seascape (824 mi² or 2135km²; 28 on map), Calayan Island Protected Area (225mi² or 583 km²; 29 on map) and Sierra Madre Natural Park (1233 mi² or 3195 km²; 30 on map) are all protected areas which encompass both a terrestrial and a marine area. The latter two are known to include breeding humpback whales in their waters, and Calayan Island is considered to be the most diverse cetacean habitat in the Philippines (Hoyt, 2005). These three MPAs lie between the north of the Philippines and the south of Taiwan, and so are adjacent to, or possibly overlap, the current LFA use area.

4.7.20

The Navy should highlight these and other areas and factor their boundaries into its exclusion zones. Given the Navy's proposal to expand its LFA operations to include a large portion of the world's oceans, similar analyses of sanctuary areas should be undertaken for other operational arenas.

D. Visual monitoring

The Navy states that visual monitoring can continue past sunset if LFA operations extend past sunset. Visual monitoring during such periods would be essentially useless. The likelihood of spotting a cetacean at sea would be negligible. Even light intensifying goggles and other state-of-the-art equipment would be ineffective on board a vessel with as many lights as a naval vessel (the operators would just see a green haze). Visual monitoring should not begin until after sunrise and should cease before sunset – and LFA should not be used when there is low likelihood that cetaceans in an area would be sighted.

5.2.11

The Navy should provide further detail on the mechanics of its visual monitoring program, since the success of such programs depends greatly on the details of their implementation. For example, how many observers does the Navy plan to use? Line transect surveys use two or three observers.³⁷ Other studies suggest that up to 5 observers are required for effective surveys³⁸ (typically these observers operate in shifts of 2 hours or so to avoid observer fatigue) with “big eye” binoculars. This only detects animals immediately in front of a vessel, in an arc about 95 degrees wide in front of the vessel (n.b. 100% sighting rates are only likely on the trackline, the area immediately in front of a vessel). To ensure a 360 degree sighting radius, there should be at least 8 observers at any moment (10 or 12 if the vessel is long to cover the lateral portion, i.e. sides, of the vessel), with at least one alternating crew to avoid observer fatigue (so from 16 to 24 observers should be required).

5.2.8

The probability that animals are sighted and recognized is massively affected by sea state. Many researchers do not even bother surveying in sea states above 3, as the proportion as animals missed will be so great. Will LFA use be stopped in sea states greater than 4 because the likelihood of sighting animals is massively reduced?

5.2.8

³⁷ For example Wade and Gerrodette 1993, Barlow 1995, Jefferson 1996, Aragonés *et al.* 1997, Jefferson, 2000.

³⁸ Aguilari de Soto *et al.*, (2003).

The probability that animals are sighted and recognized is also massively affected by observer experience. Recognizing this fact, the UK seismic survey guidelines include an experience requirement for areas of known cetacean abundance. The importance of using experienced observers can be illustrated by research conducted by the UK government: for government monitored seismic surveys conducted between 1998 and 2000, compliance with all aspects of the seismic survey guidelines were found to be poorer when non-dedicated, inexperienced observers were used.³⁹

Finally, what does the actual training and qualification process for visual observers entail? The Navy must do more than show a slide show and video and give observers an identification guide, leaving observers after such minimal training with no oversight or calibration by experienced researchers and no actual experience. There should be a clear requirement for at least several years of field experience for all observers.

5.2.8

As noted above, any technique would be useless for sighting turtles.

E. Passive sonar monitoring

Passive acoustic monitoring does have the ability to detect some cetacean species, but not species whose vocalisations are unstudied or that rarely vocalise (i.e. beaked whales⁴⁰). Passive acoustic monitoring as a method to determine cetacean presence or absence also assumes that cetaceans will be vocalising continuously, which is not the case⁴¹. For example, one study of common dolphins showed that although vocalisation rates were high at night, rates decreased for portions of the day, meaning that “acoustic detection probability is reduced.”⁴² With respect to sperm whales, a species that is unlikely to be spotted in short-duration visual surveys due to its long dive times, the ability to detect these animals is greatly diminished if they vocalise only for a portion of their dive and are quiet while diving/surfacing or at depth. In fact, research has shown that sperm whales may sometimes cease vocalising when exposed to loud noise sources, exacerbating the difficulty of detecting them during sonar exercises.⁴³

5.2.14

Use of active sonar may also significantly decrease the likelihood of detecting cetaceans passively, even if they are in the area. For example, during the 1991 field test of the ATOC low frequency noise system on Heard Island, in the Antarctic, while this low frequency sound source was operating⁴⁴ there were no acoustic detections of long-finned pilot whales or sperm whales in a 70km by 70km area of ocean,^{45,46} even though prior to the operation of the system, cetaceans were acoustically detected nearly a quarter of the time⁴⁷.

5.2.14

³⁹ Stone (2003).

⁴⁰ Frankel (2002)

⁴¹ The variability of production of cetacean calls is noted as a problem and drawback for this method of cetacean detection on pages 307 and 308 of Gordon and Tyack (2002).

⁴² Gould (2000), p. 244.

⁴³ Bowles *et al.* (1994)

⁴⁴ 209-219 dB re 1 μ Pa v centered on 57Hz.

⁴⁵ Over a period of 1939 minutes (i.e. over 30 hours).

⁴⁶ Bowles *et al.*, (1994)

⁴⁷ Over a period of 1181 minutes (i.e. nearly 20 hours).

F. Active sonar monitoring

The Navy must provide more detail concerning this system in order to allow the public to comment on it meaningfully. For example, how large does the marine mammal/turtle need to be before it can be detected by the system? What range do the active beams have? 5.2.21

Resumption of sonar operation after 15 minutes since the last sighting is inappropriate; even the JNCC seismic survey guidelines have a 30 minute duration before restarting airguns. Cetaceans can remain submerged for over an hour⁴⁸. A 15 minute observation period, indeed several of these periods, could easily be within the duration of one sperm whale or beaked whale dive, so the chances of animals being observed at the surface is low.⁴⁹ Arguably, this is particularly an issue for beaked whales, which have been shown to be sensitive to sonar noise. 5.0.2e

G. 180dB safety zone

The 180 dB zone of impact is based on models extrapolating hearing abilities and thresholds of captive animals. The 180dB zones of safety were also calculated based on the likelihood of producing temporary or permanent hearing damage (threshold shifts: TTS and PTS respectively) in captive cetaceans. There are significant flaws, however, in the Navy's analysis of TTS and PTS, discussed in greater detail at Section I.A, *supra*. Using such data is problematic because studies have shown that wild animals have better hearing capabilities than captive animals,^{50,51} and that captive animal data is inappropriate for predicting behavioural responses in wild animals to noise disturbance. Thus, relying on this data to set a safety zone of 180dB is inappropriate and not precautionary. Zones of disturbance based on published, peer-reviewed, empirical observations of reactions by wild animals would be preferred. 4.3.25

For example, peer reviewed, empirical data on common dolphins shows disturbance reactions (level B takes) at received levels of approximately 133dB.⁵² Thus it should be assumed that an area within which cetaceans would be exposed to noise at levels of 133dB or above would cause disturbance, as a precautionary measure.

The use of a 180 dB safe exposure limit is particularly worrisome when one considers that during the 2000 Bahamas incident, beaked whales stranded as the result of exposure to sonar sound levels much lower than this "safe" level: "*The sound exposure levels*" 4.0.3

⁴⁸ Kooyman (2002) and Stewart (2002).

⁴⁹ Watkins *et al.* (1993); Hooker and Baird (1999); Forney (2002).

⁵⁰ For example when studies on the hearing abilities of captive beluga whales were used to calculate the distance at which the whales could detect shipping traffic, a distance of 20 kilometers was estimated. However, observations on wild animals showed that beluga whales were detecting vessels at distances of well over 80 kilometers, and were actively avoiding shipping at distances up to three times farther away than the captive studies would have estimated (Findley *et al.*, 1990).

⁵¹ A recent study on harbour porpoise responses to play backs of low frequency sounds produced during wind farm operation noted that the distance between the porpoises and sound source significantly increased, and the porpoises increased their rate of echolocation, even though, according to captive animals studies, the porpoises shouldn't have been able to detect these low frequency sounds (Koschinski, *et al.*, 2003).

⁵² Gould and Fish, (1998).

*modeled ... at positions of beaked whale sightings...in the Bahamas do not exceed 160-170 dB re 1µPa @ 1m for 10-30 sec.”*⁵³

The observation that the Bahamas strandings seem to have occurred as a result of received sound levels much lower than would cause threshold shift suggests that strandings, and thus biologically significant effects effecting survival, are caused by factors triggered at much lower received sound levels than those that trigger threshold shifts or “injury” as defined by the Navy. For example, behavioral changes that cause rapid surfacing, which may then bring about decompression sickness, which in turn leads to pathological changes that injure, disable or kill cetaceans.⁵⁴

4.3.1

For these reasons, using the probability of a cetacean suffering TTS or PTS as the only measure by which noise can cause biologically significant or health threatening effects is very dangerous. Certainly, with respect to sonar related impacts, behavioural or physiological changes may lead to stranding and ultimately mortality, which can occur at levels much lower than those which might cause acoustic trauma.

4.3.29

One important indictment against the appropriateness of the 180dB safe level comes from the UK military. In the EIS for the Royal Navy’s SONAR 2087 low frequency sonar system (which has a source level approximately 10dB quieter than the US LFA SURTASS system), PTS was predicted to occur 6.6km from the source.⁵⁵ The UK EIS predicted, moreover, that TTS could occur up to 71km away.⁵⁶ Thus, the current safety radius of the louder and potentially more injurious LFA SURTASS system is clearly inappropriate.

4.3.24

It is unclear from the document whether the Navy plans to employ a static radius of impact. Static radii of impact assume that sound diminishes equally around the sonar array and there is no effect of weather conditions, water temperature, water depth, salinity or any other factor that might possibly increase the distance at which disturbing levels of sound could travel from the source. However, the acoustic properties of water can change dramatically according to temperature, salinity and other factors, such as the depth of the survey area.⁵⁷ Therefore, it is suggested that detailed studies be conducted to calculate levels of received noise at various distances from the source, measuring the effects of oceanographic factors, ultimately to determine impact zones that can be varied according to oceanographic conditions, or a precautionary zone that takes into account the oceanographic conditions that utilise a worse case scenario and conditions that result in the maximum transmission of sound.

5.1.3

H. Small boat and aerial surveying

Although surveying in a small powerboat at high speed (I assume the boat will be traveling at 20 knots or more) would probably be effective, it is interesting to note that

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⁵³ International Whaling Commission, (2004a), p. 7.

⁵⁴ International Whaling Commission, (2005a).

⁵⁵ QinetiQ (2002).

⁵⁶ *Ibid.*

⁵⁷ For example: Tolstoy *et al.*, (2004).

the Navy cites a paper reporting that whales may dive and be impossible to spot if approached by a vessel at speed. Assumedly the vessel employing LFA will be traveling at speed, so surely this implies that whales may dive and not be sighted by the deploying vessel? If visual observations from a fast vessel are sufficient for cetacean detection, as the Navy posits, then a smaller (and therefore quieter) vessel traveling at speed would presumably also be useful.

5.4.6

Likewise, the Navy states that the behavior of animals, high sea states and poor visibility all make it unlikely for aerial surveys to spot cetaceans from helicopters, but fails to explain why, in these conditions, its proposed boat-based observers would be able to see cetaceans. The boat-based observers would be positioned at even greater distances from the animals than helicopter observers.

5.4.7

III. Conclusion

For all of these reasons, I am concerned that the Navy has systematically underestimated impacts from its proposed worldwide deployment of LFA and has failed to put into place sufficient mitigation measures to lessen these impacts, and I urge you to take these points into consideration as you reevaluate the DEIS.

Thank you for your time and attention.

Very truly yours,



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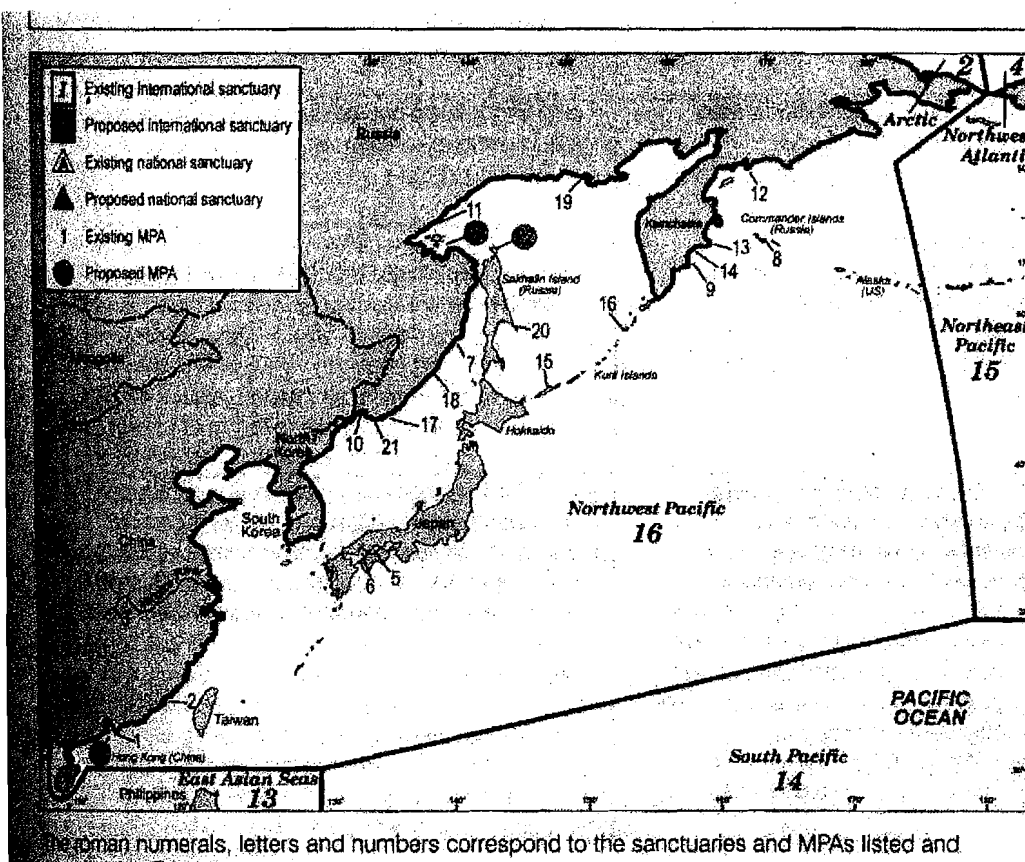
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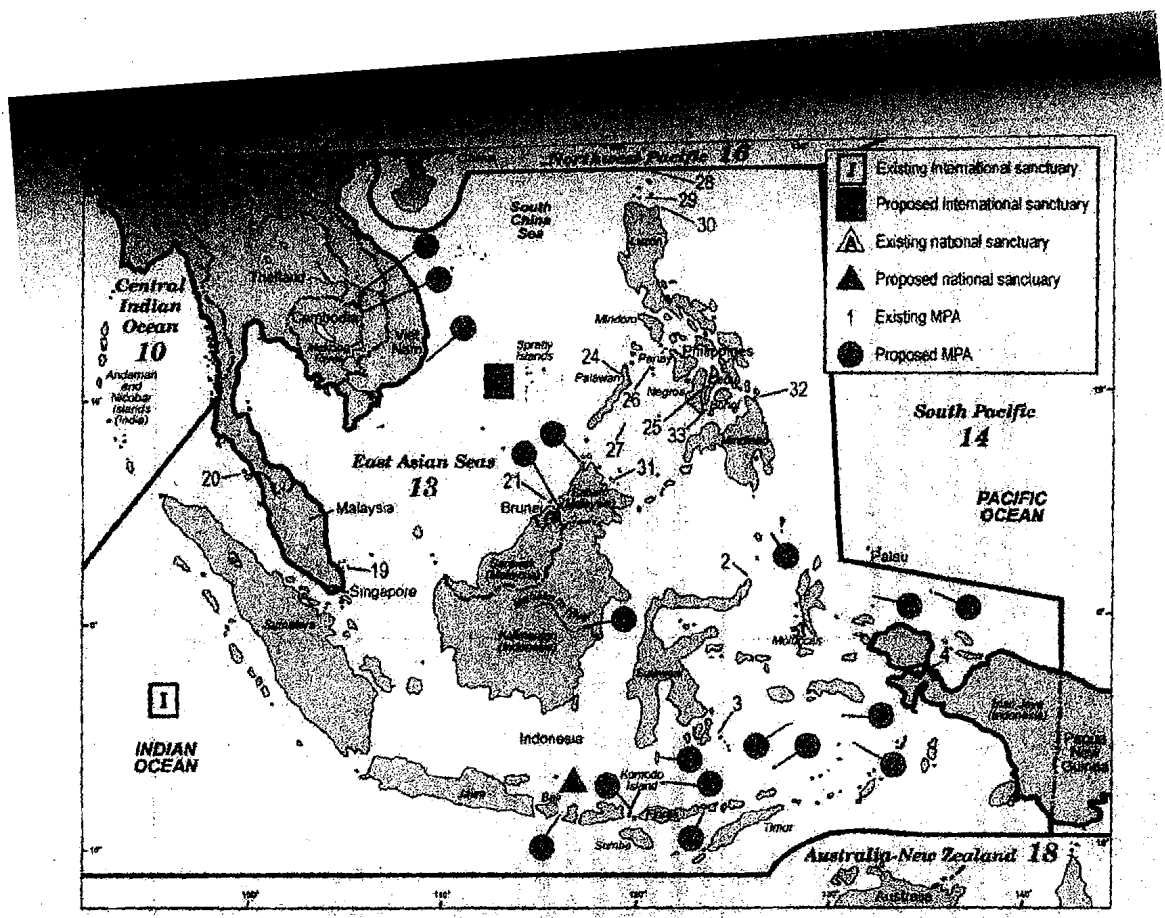
MPAs encompassing cetaceans in the LFA area (from Hoyt, 2005)

B-159



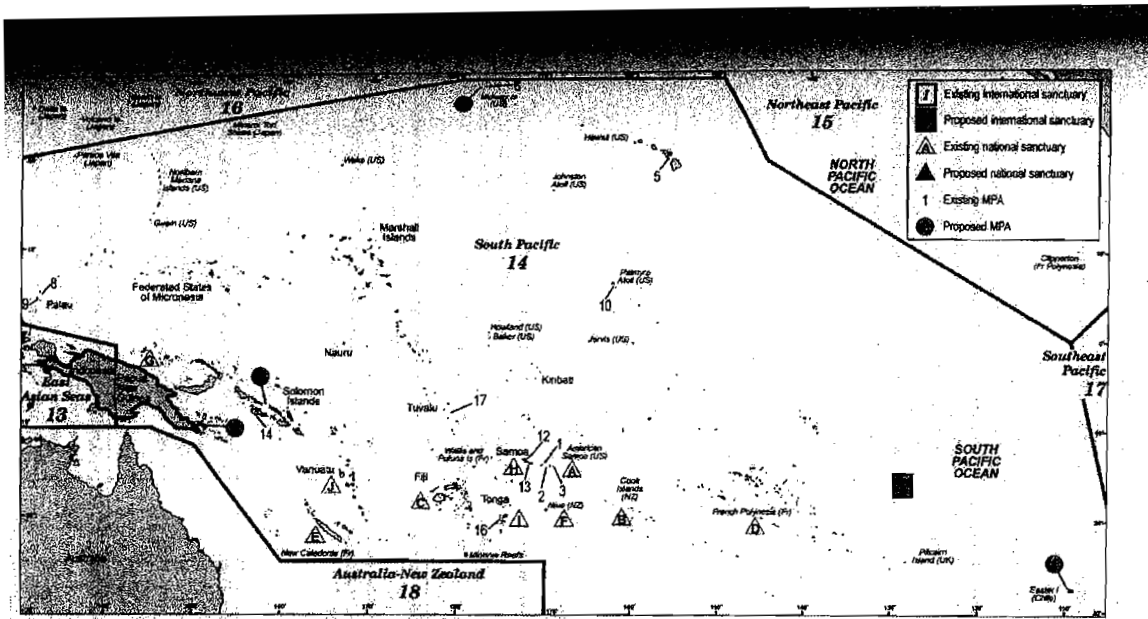
Roman numerals, letters and numbers correspond to the sanctuaries and MPAs listed and

B-160



The roman numerals, letters and numbers correspond to the sanctuaries and MPAs listed and described in Table 5.17.

Figure 5.21 Map of Marine Region 13: East Asian Seas MPAs and sanctuaries



The roman numerals, letters and numbers correspond to the sanctuaries and MPAs listed and described in Table 5.18.

Figure 5.22 Map of Marine Region 14: South Pacific MPAs and sanctuaries

From: Doug Grunther
To: eisteam@mindspring.com
Subject: Whales, Dolphins
Date: Feb 8, 2006 12:28 PM

Dear Sir/Madam,

I am writing to let you know how concerned I am about the noise pollution that is disorienting and killing whales and dolphins. Our planet needs these intelligent life forms as part of the food chain and from the research I've done it seems very plausible that we can balance the expanding needs of humans with the environmental needs of these magnificent animals.

Thank you,

Doug Grunther
Host
The Woodstock Roundtable
WDST-FM
Woodstock, NY 12498

B-161

From: Wendy Botwin
To: eisteam@mindspring.com
Subject: LFA Sonar issue
Date: Feb 10, 2006 11:58 AM

Hi,

I am writing to oppose the deployment of LFA Sonar which can kill whales and other animals. The SEIS mitigation for whales and dolphins is unacceptable and rejects nearly all of the measures urged by district court to protect whales, fish, and other marine life and is also inadequate in discussing the impacts on fish. Thank you, Wendy Botwin Oakland, CA

Dear Mr. Johnson,

I am concerned that expansion of the LFA SURTASS program will seriously compromise the global ocean environment, adding to a troubling trend in the runaway growth of ocean noise pollution.

I feel that the LFA-SURTASS program should not be extended globally until we know more about the effects of low frequency noise on migration, navigation and communication adaptations of marine mammals.

Jana Lewis

4 Feb. 06

Dear Mr. Johnson,

I am deeply concerned that the expansion of the LFA-SURTASS program will seriously compromise the global ocean environment, adding to a troubling trend in the runaway growth of ocean noise pollution. This program should not be extended globally until we know more!

Sincerely,
Ashley Eagle-Gibbs

2/6/06

Dear Mr. Johnson,

I am deeply concerned that the expansion of the LFA-SURTASS program will seriously compromise the global environment - in the ocean, adding to a troubling trend in the runaway growth of ocean noise pollution.

This program should not be extended globally until we know more about the effects. Sincerely,
Wesley Easte

Wesley Easte

Dear Mr. Johnson,

2/5/06

I am extremely concerned about the proposed expansion of the use of the LFA-SURTASS program from its currently limited use in the Pacific ocean to global ocean deployment. This is an issue which I follow carefully — and there is much evidence that sonar noises have serious (and even lethal) effects on whales, dolphins, fish and even coral reefs. We should put our efforts into creating quieter & safer alternatives before we expand use of this technology.

Sincerely—
Rona Weintroub, MA

Dear Mr. Johnson,

I am concerned that the expansion
of the LFA - SURFAS Program will
contribute to global ocean environment
+ growth ^{add to} of ocean noise pollution.

I feel that the LFA - SURFAS Program
should not be extended globally until
we learn more about the effects of LF noise
on migration, navigation & communication
of fish & marine mammals
Thank you
Gail Hueley

2/7/06

DEAR MR. Johnson,

Please do whatever you can to STOP the expansion of LFA-SURTA. This program is detrimental to the ecology of our oceans and is an unethical stance against our global environment. Please help stop the expansion of noise pollution!

Sincerely, Kathleen Eople

6 Feb 06

Dear Mr. Johnson

please note that as the great-great-grandson of a New England whaling Captain, I am not in favor of any expansion of noise pollution in the ocean.

We humans do not own the seas, they are the domain of the natural creature who live there

Thankyou, Thomas Gibbs

6 FEB 2004

DEAR MR. JOHNSON;

I WRITE REGARDING THE PLANNED EXPANSION
 OF THE LFA - SURPASS PROGRAM. THIS PROGRAM
 CONCERNS ME & MANY IN MY COMMUNITY GREATLY
 AT THIS TIME, WE DO NOT HAVE ENOUGH INFORMAT-
 ION ON THE SHORT TERM (OR LONGER TERM) EFFECTS
 OF LFA - SURPASS ON THE MIGRATION, NAVIGATION,
 & COMMUNICATION ADAPTATIONS OF ALL MARINE
 LIFE, INCLUDING FISH, SHELLS, MARINE MAMMALS
 & CORAL REEFS. THANK YOU FOR SERIOUS CONSIDERATION

(Handwritten signature/initials)

2/7/06

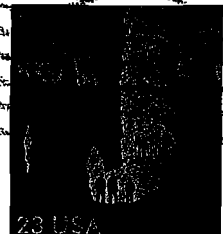
Mr. Johnson:

It is unconscionable to persist in the plans to ~~expand~~ expand the LFA SURTASS program globally, without understanding the deleterious effects this will have on the whales, dolphins, fish, sharks and other marine life. Millions of people depend on marine life for the health of their local economies, and until we know more it should be untailed.

Sincerely,
Janet Goldman

ATTN: SURTASS LFA
SONAR & IS Program
MANAGER

DEAR
MR.
JOHNSON



23 USA
Carlsbad Caverns National Park, NM

We cannot expand
the SURTASS program
until we fully
understand the
implications & consequences
of THE NOISE POLLUTION
it creates in our

Joe Johnson
4100 FAIRFAX DR.
Ste 730

ARLINGTON VA

22203

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22203
ARLINGTON VA

2.6.06

MR JOHANSON,

EXPANSION OF THE LFA-SUTLASS PROGRAM
COMPROMISES THE OCEAN ENVIRONMENT
WITH NOISE POLLUTION.

THIS PROGRAM SHOULD NOT BE EXTENDED
GLOBALLY UNTIL WE UNDERSTAND ITS
IMPACT ON FISH AND SEA MAMMALS

THANK YOU



From: Cheryl Magill
To: eisteam@mindspring.com
Cc:
Subject: Comments DSEIS SURTASS LFAS - 18 page(s)
Date: Feb 10, 2006 10:15 PM
Attachments: [2ee6476.jpg](#) [ed4e557.pdf](#)
<<http://groups.yahoo.com/group/stoplfas/>>
stop lf as logo

Comments submitted by Cheryl A. Magill, Coordinator of the Stop LFAS
Worldwide Network
Sent via USPS and E-mail to SURTASS LFA PROGRAM MANAGER on 02-10-2006
re: Draft Supplemental Environmental Impact Statement for the Navy's
SURTASS Low Frequency Active Sonar

This is a summary presentation in PDF format using no color - only
Black & White created from a copy of the original. All pages.

A copy in full color has been mailed to you.

Please contact me if you have any difficulty with documents being transferred.

Thanks.

Cheryl A. Magill
Coordinator
Stop LFAS Worldwide Network



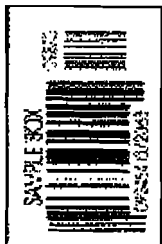
COMMENTS

on the Draft Supplemental Environmental Impact Statement for SURTASS Low Frequency Active Sonar

SURTASS LFA Sonar
EIS Program Manager
4100 Fairfax Drive, Ste 730
Arlington, VA 22203

eisteam@mindspring.com

Comments submitted on Feb. 10, 2006
by both e-mail and US Postal Service.



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COMMENTS on the Draft Supplemental
Environmental Impact Statement
by
SURTASS
Low Frequency Active Sonar

STOP
LFA

SURTASS LFA Sonar
EIS Program Manager
4100 Fairfax Drive, Ste 730
Arlington, VA 22203

CAUTION
WATER
NEEDS

February 10, 2006

Empowered by Planetwide Games Comic Book Creator

①
Cameron
02-10-2006

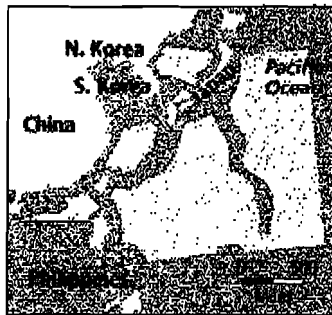
This is NOT what the NAVY Agreed to.

The US Navy agreed to limit its use of SURTASS LFA to a specific geographic area. Now, they propose to have a ship in every quadrant of the globe reverberating these gruesome tones.

DANGEROUS WAVES

The U.S. Navy has agreed to reduce its use of a new kind of sonar. The agreement settles a lawsuit by environmental groups concerned that the sonar would harm marine mammals.

Area sonar still used



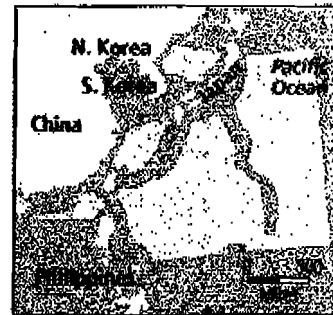
Double Double Trouble

This map was

DANGEROUS WAVES

The U.S. Navy has agreed to reduce its use of a new kind of sonar. The agreement settles a lawsuit by environmental groups concerned that the sonar would harm marine mammals.

Area sonar still used



What the US Navy seems to have a problem with is an interesting concept called "a democracy." Under such a system, people can tell their Navy to act in a humane and in a precautionary manner towards marine life; especially threatened species which convey a sacred trust. And the Navy, upon being so instructed, in "a democracy" would actually cooperate. Instead, our Navy's policy is to negotiate an agreement in court and then do everything possible to destroy that agreement. Now the game has escalated. The US Navy wants to use up to four ships; all deploying a sound which can be entirely deadly.

U.S. agrees to limit sonar use

By Owen Powell
The Daily Telegraph

the eastern seaboard of Asia.
In November 2000, 16 states and re-

are a final settlement. The agreement
apparently largely mirrors the restrictions

DANGEROUS WAVES

The U.S. Navy has agreed to reduce its use of a new kind of sonar. The agreement settles a lawsuit by environmental groups concerned that the sonar would harm marine mammals.

Area sonar still used



Source: Natural Resources Defense Council
SEATTLE POST-INTELLIGENCER

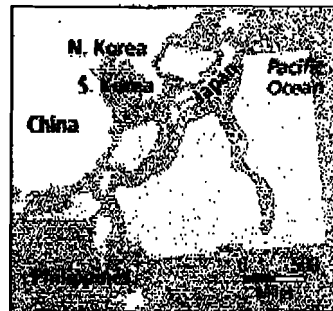
Now the US Navy wants 4 ships blasting noise

W N E S

DANGEROUS WAVES

The U.S. Navy has agreed to reduce its use of a new kind of sonar. The agreement settles a lawsuit by environmental groups concerned that the sonar would harm marine mammals.

Area sonar still used



Source: Natural Resources Defense Council
SEATTLE POST-INTELLIGENCER

B-169

②
APM
02-10-2006

February 10, 2006

The SURTASS LFA Sonar Web Site and Additional Supplementals

I sense there's a duality in presentation formats here. Officially, you've got a document which is a supplemental draft to the EIS for SURTASS LFA Sonar. But almost everyone and his Aunt Susan is getting documentation from the web site as a download. That's highly inappropriate because the documentation is 1) misleading 2) incomplete.

Here's what's misleading. You've got lots of distractions like video displays and information which is there for everyone to see but is not part of the official package. The thing is, it's there. So I thought I'd be diligent and try to check it out.

What a mistake that was!

I watched these poor people - gullible as all get-out - walk into that dive tank and they let you ensonify them! And I became a witness to it. I do not want to be responsible for looking at and witnessing that type of event.

Your previous divers haven't had it so good. Am I wrong? Sleeplessness, vertigo, antidepressants. And without warning, you parade these people in front of us like it's back to Bikini Atoll - (a film footage made with active nuclear debris back "before they knew it could harm you.")

I notice that my comments tend to lecture the US Navy about courtesy. Well, here's another example when you could warn someone that they're about to see live persons acoustically roasted. Those of us who don't so much appreciate live frying of any species in the water might not like seeing this type of event.

So if you've got other stuff on that web site that I might have otherwise taken advantage of, don't even think of telling me to go back there.

The other reason why the US Navy's presentation is incomplete is because of this whole thing about downloading the reports. The original EIS had several supplemental/preliminary technical reports which were circulated with it in hard copy. To the best of my knowledge, those have never once not ever been digitized. So you really have not put the complete kit and caboodle up there for all to see. What's more, the received level discussions about divers seemed to be inconsistent with what I recall there being in your original complete set of documentation. I'd hoped to dig out that extra booklet that came with the original EIS... and of course, it's not on line so only a few people would have that integral supplement to the original report. But I recall glancing at this in Technical Report #3. In this manner it seems to me that there are contradictions within the draft supplement report regarding how much sonar a real man can take. Perhaps you have a complete set of documents available and you could just look it up?

③

CRM
02-10-2006

Of course, to address the comments I've just entered here, you'll have to address the fact that most of the public has not had complete documentation available to them in composing their comments. So you really have not satisfied environmental requirements in my opinion.

There was a news article published November 15, 2002 by the Associated Press. Here's how the headline read, "*The U.S. Navy has agreed to scale back the testing of a new sonar system designed to detect enemy submarines.*" Perhaps a more accurate report from this news publishing group would have been to say, "*The U.S. Navy entered into an agreement in federal court today which they have no intention of upholding. Within three years the Navy will seek global deployment for the SURTASS LFA Sonar system and will seek to employ it as a tool of aggression in the comparatively shallow littorals of coastal nations.*"

Speaking from a viewpoint of sales strategies, you might have had more of a strategic marketing plan and sales pitch working for you if you'd stuck with the defensive posture. Now, you've got to unload this whole global bully position on the boys and girls back home who tender to wonder why their schools are under-funded.

I know the Navy, NMFS and chief executives received detailed comments from Attorney Lanny Sinkin in 1998, and 2000 when humans sued in federal court about this system only being tested in time of peace and not tested under warfare conditions. Mr. Sinkin made that point again when he sued on behalf of the Cetacean Community. Quoting from right up front at <http://cetaceancommunity.com> that web site:

Attorney Lanny Sinkin argued before Judges Hug, Alarcon and Fletcher on behalf of the dolphins, whales and porpoises regarding the government's failure to provide an EIS for SURTASS LFA Sonar under threat and warfare conditions.

I'm fairly sure, without riddling through all the court documentation that the NRDC Coalition likely succeeded in raising the same point. Could there be a finer demonstration of selective listening? You've ignored everyone who has said this in the most formal of settings. There's a resplendently documented history of the US Navy ignoring this point – and that's just tallying-up the court records. It doesn't even touch on the many comments you've received on it in the past.

But now I begin to see myself doing this same dance again. The Navy invites comments on the big underwater boom box so as to posture itself as if being in compliance with NEPA regulations and then just blows off anything they don't want to hear. The same comment has been made over and over again for the past eight years. This is omitted information. It is omitted to the point of being beyond obvious. Such intentional omissions were certainly of serious concern when the Navy was painting a picture of the watery deep filled with silent submarines. But now that the positioning has altered and you guys are seeking to utilize an aggressive acoustic weapon. Boy howdy... !!! You

B-170

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cam
02-10-2006

better find a way to include this data; (preferably without going out and attacking someone!)

More Navy Denial

Shakespeare said something like "*Me thinks he doth protest too much.*"

Do you know how shabby it looks when you fail to act responsibly as a Navy? It's just bad form. If Navy's were elected, you'd be pressing palms in a quick-enough hurry. You do have a public perception problem as regards SURTASS LFA Sonar. One reason for this could be your constant state of deniability. Fess up to killing marine life. Confession could be a refreshing change for the spirit of America.

It's embarrassing running a worldwide network when our own Navy won't cooperate on the Low Frequency Active Sonar issue. European nations have banned the use of this technology and they're also admonishing member nations like the UK which have an extraordinary number of dolphin deaths. The United Nations has spoken out against the use of LFAS. I figure it's a race against the clock for Joe Johnson and his team as global expectations for planetary concerns begin to revolve around living healthy oceans and this goal becomes more the focus of the political lime light. One is given reason to ponder that the most aggressive acoustic weapon is one which kills the hope of abundance that these teaming oceans once offered to our grandparents. On a comparative time scale, many of the Cetacea who live in the water now were born to comparatively quiet waters. We share in common a knowledge that their acoustic world is changing.

I remember the California Coastal Commission SURTASS LFAS Workshop back in 1999. Dr. Peter Tyack was there and he told us all that at a point about half-way towards the middle of the Pacific Ocean, noise from Highway 5 and the railroad tracks could be heard underwater. I doubt very seriously that many people are aware of how these routine sounds carry such vast distances out to sea. How much greater would be the public's failure to appreciate the potential impact from acoustic weapons in shallow coastal waters?

Clearly, the EIS team has a time advantage if they can slide this one past the American people before the potential for devastation is commonly known.

Have there been any studies of ground reverberations as compared to the behaviors of nesting shore birds? Have there been any studies on received levels to coastal inhabitants who live on or within liquefaction prone soils? Has any geologic report identifying undermining potential for coastal headlands been created? Are there any base line studies whatsoever of soils which frequently absorb water penetrations such as coastal salt marshes, lagoons, sloughs and estuaries? I looked, but I didn't see them mentioned.

Can this noise kill frogs?

⑤
CAM
02-10-2006

Frogs aren't doing so well these days. I'd really like to save a few frogs for future generations, providing - of course - it doesn't interfere with our nation's security.

I don't think you've identified any serious baseline studies which studies land-based habitats such as I've identified above. Your secret is out. You don't care so much what it is that dies, just so long as you can have your rock-'em sock'em blaster tones emanating from SURTASS LFA Sonar devices. You haven't even identified the habitats much less the species which would be inundated by the sound in the vast global arena which you are seeking. The truth is, you haven't done the work to study the problem. You just deny it will be a problem and let the chips fall where they may. And that is why you have a big PUBLIC RELATIONS problem. It's of your own making.

Allow me to remind you of another example, which I recently presented at the so-called "hearing" in San Diego on the USS Midway. You held a public hearing which was totally inaccessible except to the most ardent and determined obstacle jumpers! Talk about making your own soup and then stewing in it. That fiasco you held can't possibly be construed as meeting the Americans with Disabilities Act. I had to remove my shoes, hold onto a ladder with a sore hand and also make my way into the bowels of the ship while holding up my dress and clinging to brochures. You do have a PR problem called, "Not caring."

I went to great lengths to participate in a process that didn't even provide the most basic considerations.

Thank goodness a representative from NMFS was there to say, "Try not to fall in that hole."

Always grateful for such encouragements as these, I will add that Mr. Hollingshead told me that he wasn't to blame for the choice of venue. So who was? Whose wise-guy idea was it to make people climb up and down and jump through hoops?

If this is part of your public outreach program, you'd better consult with wiser heads and seek a higher spiritual guidance on matters related to not treating nice ladies in radiant blue dresses unkindly. I attended such a function at my own expense to participate in a forum process expecting a measure of amenability and function ability to be associated with the setting.

And I'm not done describing this.

I will include a photo of my very nice gown, which was similar to ones I saw ladies wearing as they prepared to attend a function on the top deck of the ship. And then I will include a description of all the many disappointments this participation in the Navy's process evoked. So much for the protection of our national security if you can't protect the simple courtesies of polite exchange! On this point I livid. And offended. I expected better consideration. I will include an account of event which I shared with the network.

⑥ *Call*
62-10-2006

In short follow-up, I will add that your meeting in Hawai'i offended people too. The King of Hawai'i has issued a summary of that hearing in which he says,

"The meeting was held in the back room of a poorly lit hallway, through a maze of corridors on the University of Hawai'i campus, where attendees had to pay \$3.00 for parking."

Hey, Déjà vu! We had to pay for parking too.

(Have we stopped inviting poor people to public hearings?)

"The only visible sign that was posted directing people to the meeting was an 8 X 10 inch, handwritten poster that was tacked up hastily in two darkened hallways, with one indicating that persons should head down the hallway in BOTH directions in order to access the meeting room."

Déjà vu again!

Except, I tried to hold up a sign with the name of the organization I coordinate. As you will see described in the supplemental description, incorporated here by reference; that action nearly got me thrown off the ship by an employee of the museum. (Note: the presentation piece which I had prepared for my speech was not used for this reason.) So much for freedom of speech!

Did I mention I was livid? Oh yes. I see I did. Let's just mention it again.

A Decade of Strandings from Low Frequency Active Sonar

I shared comments with the US Navy just over a week ago regarding a proposed sonar testing range on the East Coast. The escalation of projects all adding noise to the water is also escalating the amount of time and attention it takes to even keep up with you guys. This is 2006 - so it's been a decade of watching whales strand. The USS Alliance, a NATO ship, was one of many ships which would experience a "coincidental" whale stranding when in 1996 they experimented with Low Frequency Active Sonar.

The Navy has ignored comments made by PhDs and environmental groups for ten years. And that couldn't have been easy with so many strandings! Frankly, I'd rather see more whales in the future and fewer Navy hearings about these damaging acoustic programs.

I have sincerely appreciated the opportunity to address these concerns and acoustic issues. Please include this communication as part of the public record.

Thank you!



Cheryl A. Magill

Coordinator

Stop LFAS Worldwide Network

⑦

02-10-2006
CMM

Today on the USS Midway

Composed and Circulated 12/03/2006 with typos which have been corrected. (I had a sore finger.)

Today we had Hearing for the Daft SEIS for SURTASS LFA Sonar. "An executive summary."

The parking was \$7 to get in and you had to go through the parking lot to get inside.

The museum was \$15 if you wanted to go in there, for an adult. When I announced I wasn't there for the museum and intended to go in without paying, I stirred up some trouble.

I was, after explanation, escorted through the historic museum to a ladder/stairway or gang plank. And yes, they made me walk the gang plank.

Ken Hollingshead of NMFS was at the ladder which lead to the ward room below. I was wearing a long gown which was nuclear blue and radiated, thus complimenting the affair with my presence.

I stood and chatted with Ken Hollingshead when a security guard - actually a museum employee - told me I had to put away my "protest sign" or I'd be escorted off the ship by the harbor master or some such officianado.

He gave me this order twice. My "protest sign" was a

He gave me this order twice. My "protest sign" was a teaching tool made out of a tongue depressor with a small fan-sized stop sign attached, weighing a little more than a post card. I was issued a "last warning" to put away this sign or else I was told I'd be physically removed from the ship.

Ken Hollingshead did try to straighten the guy out, telling him this was a public meeting and that my participation should be welcomed. I volunteered to pull the letters "STOP" off the sign and just hold up the LFAS letters thus indicating to people where the hearing was. I thereupon was informed that this was my final last warning and that I'd better stop giving this fellow a hard time. I turned to Ken Hollingshead and said,

"Are you getting this?"

Later, I did my best to describe this event in the hearing.

I think someone had been injured earlier in the day, a woman with heels; and I was urged to take mine off while descending into the nether reaches towards the otherwise inaccessible ward room.

I also tried to describe the lack of accessibility when speaking to the public record.

Scattered among the museum pieces there had been two small signs pointing in this general direction for the hearing. But there was no free access without escort through the locked gate surrounding the

B-172

8

Cam
02-10-2006

ladder descending downward.

Joe Johnson agreed to give everyone there extra speaking time. I was one of three speakers. Cara with the NRDC spoke as did a nice gal from San Diego who had a background as a biologist.

People drifted in during the hearing but initially, it began with only 13 people in the room.

Joe Johnson introduced Pat Seidel of the US Navy, Ken Hollingshead of NMFS, Chris Clark of Cornell, and Mr. Clay Spikes of Marine Acoustics. There was a court recorder who later admitted that she had difficulty hearing in the loud room. There was a lot of clanking noise in the background.

Mr. Johnson spoke for 20 minutes. He said the SEIS sought to address legislative changes to be codified.

He said the new report incorporated new harassment definitions.

He said there were 4 ships seeking sonar upgrades in the initial EIS and it was scaled back to two back a few years ago. But now it was up to four again.

They were seeking a new five year ruling.

Mr. Johnson said the seventh fleet "loves LFA" and they've never ever had a stranding over these past years. He cited comments from VADM J. Geenert in Nov. 2005.

As for whales avoiding noise, these were called "measured responses" to mitigation experiments on migrating gray whales, according to Mr. Johnson.

Some further comments were offered about Arthur N. Popper, Phd. of the U. of Maryland and his recent experiments.

Mr. Johnson further stated that inspiration for the HF/M3 was inspired by a California Coastal Commissioner.

The importance of off-shore biological important areas was significant to the SEIS he said.

And then the three members of the public spoke.

As a conclusion, Mr. Johnson said that all the comments would be addressed in the FEIS.

I was again harassed on my exit from the ship by the same security person; a museum employee, who insisted I was giving him a hard time. He refused to give me his name but again threatened to have me tossed off the ship. He did this in front of the NRDC attorney. Everyone was very nice to this highly contentious individual who wore a moustache and described himself as "pro-military."

The next hearing is in a couple of days in Honolulu.

9

CAM
02-10-2006

Follow-up posting to TODAY ON THE USS MIDWAY

As I mentioned earlier, the hearing last Saturday began with Joe Johnson speaking to only a dozen people.

Mr. Johnson did mention that the request for an extended comment period had been received. It was suggested that they were considering a 60 day extension.

Attorney Cara Horowitz of the NRDC confirmed during her speaking time that an extension had been requested by that organization.

All three speakers made reference to the fact that they saw no need for speed and that a longer comment period was deemed to be necessary.

Because there may be a delay in the public record being made available to us; I thought I'd mention a few of my own comments at the hearing.

As Mr. Johnson announced that I would be the next speaker, he also asked if I could introduce our organization.

Now... I'm going to admit that the fish usually gets larger each time I re-tell a fishing tale; so I hope I don't exaggerate only to discover that the record after the fact will prove that it was less interesting than I imagined it to be. But here goes:

I believe I said I'd be happy to introduce the Stop LFAS Worldwide Network, and then explained that ours was a network of individuals concerned about the environmental impact of SURTASS LFA Sonar.

(Paraphrasing)

"We are not incorporated. We've been maintaining a free & open door information exchange since 1998 and among those who were part of the network there were members of the US Navy, Navy families, and NATO; although they tended not to contribute so much as to lurk and eavesdrop."

I thanked the small but auspicious group of persons gathered and went on to describe how difficult it was to gain access to the Ward Room on the USS Midway in my long gown. Please see my previous message about having to walk down a steep ladder or gang plank. I pointed out that a person seeking to attend the event in a wheel chair would not be able to do so. I mentioned how I'd been asked to remove my shoes "like at the airport" and tried to address this in context with

10

CAM
02-10-2006

NEPA compliance as best I could reckon such should be accessible. The difficulties I had in getting to the hearing became much of the focus for my talk. I won't repeat them here but want to mention the stuff I left out of that previous email.

In order to understand this dress, you have to understand that it's comprised of swimsuit material. And sequins. Lots of sparkling sequins which fan out below the knee much like a mermaid tail. And a train.

(Paraphrasing)

"Our last SURTASS LFA EIS event was catered. The hotel brought out a canvas-covered cart of cookies and juice drinks to the sidewalk because many of those protesting were valued guests of the hotel. They had little sprinkles for ice cream too. And I had no indication that this event would be any less formal than that one... so you see, this gown is deemed to be appropriate to the occasion. Plus I wanted to make a splash."

No one laughed. Talk about a tough room!

So we all drank in that little extra moment of silence together.

I brought up the fact that the former FEIS failed to recognize my comments about Time Reversed Mirroring or Time Reversed Acoustics. Because I hadn't seen the SEIS, I didn't know if the US Navy or Marine Acoustics had made a conscientious effort to address Time Reversed Acoustic applications in their Environmental Impact Statement. But, with emphasis, I wanted it addressed. And I even repeated this so the emphasis would be emphasized.

I also tried to address a lack of base line studies regarding lagoons and salt marshes and other in-land critical habitats where noise pollution could be occurring.

And of course, I mentioned how only a couple of libraries could locate the disks sent to them. And their lack of view screens accessible to the public. I also mentioned that my computer was old and sadly running slower and slower these days; thus making digital viewing and downloads a problem.

About HF/M3, I added; maybe I hadn't seen the new LFA SEIS; but I knew a little something about the high frequency contraptions being introduced, because our organization had sued both Dr. Tyack and Dr. Stein.

11

CM
02-10-2006

That was about it.

I will see if I can make further comment about the third speaker by clearing it with her first.

Thanks for now.

Cheryl

Follow-up posting as of 12-06-2006

Please incorporate these field notes into the official record along with other comments in this communication. 02-10-2006/cam

B-174

12-
CAM
02-10-2006



MARINE ACOUSTICS, INC.
*Technical Superiority in the Ocean Environment
and Information Technology*

FROM: The EIS Team

TO: Cheryl Magill

ORGANIZATION: Stop LEAS Worldwide Network

FAX: _____

PHONE: _____

Number of Pages: 2 (Including Cover Page)

Comments:

THIS MESSAGE IS INTENDED ONLY FOR THE USE OF THE INDIVIDUAL OR ENTITY TO WHICH IT IS ADDRESSED AND MAY CONTAIN INFORMATION THAT IS PRIVILEGED, CONFIDENTIAL, AND EXEMPT FROM DISCLOSURE UNDER APPLICABLE LAW. IF THE READER OF THIS MESSAGE IS NOT THE INTENDED RECIPIENT, OR THE EMPLOYEE OR AGENT RESPONSIBLE FOR DELIVERING THE MESSAGE TO THE INTENDED RECIPIENT, YOU ARE HEREBY NOTIFIED THAT ANY DISSEMINATION, DISTRIBUTION OR COPYING OF THIS COMMUNICATION IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS COMMUNICATION IN ERROR, PLEASE NOTIFY US IMMEDIATELY BY TELEPHONE AND RETURN THE ORIGINAL MESSAGE TO US AT THE ABOVE ADDRESS VIA THE U. S. POSTAL SERVICE. THANK YOU.

13

CAH
02-10-2006

Cheryl A. Magill
Coordinator
Stop LFAS Worldwide Network
Santa Clara, California 95051

Marine Acoustics, Inc.

November 29, 2005

Ms. Magill,

We received your fax and appreciate your interest in the Public Hearings. We have sent you a hard copy of the SURTASS LFA DRAFT SEIS which includes the Executive Summary. If you have not yet received it, please e-mail us at gisteam@mindspring.com and we will put a new copy in the mail as soon as possible. The SURTASS LFA DRAFT SEIS, including the Executive Summary, is available at <http://www.surtass-lfa-eis.com/>.

In regards to your questions about the rooms and access during the Public Hearings, the rooms are small enough to not require a microphone. Each room should hold approximately 40 people. There will be a stenographer present at each Hearing. Audio equipment and Internet access will not be available. The rooms are available half an hour before the Hearing.

Sincerely,

The EIS Team

B-175

14

Cam
02-10-2006



According to a Wall Street Journal article published Friday, January 20, 2006; Page A09 -- a court order has revealed omissions concerning the stranding report of 37 whales on the North Carolina Coast.

"She also noted that one of the injuries -- air bubbles in the liver of a pilot whale -- had been reported in mass strandings in the Bahamas and Canary Islands associated with sonar activity."

The article gives various rationales as to why these comments were later omitted. In summary, the report was deemed to be more "spin" than "science."

Tainted Reporting

*CSM
02-10-2006*

Scientists suspect sonar gives whales 'the bends'

Scientists suspect that the use of sonar by the military and other agencies is causing whales to suffer from decompression sickness, also known as 'the bends'. The theory is based on the fact that whales are mammals and need to come up to the surface to breathe. When they are forced to stay underwater for long periods of time, they can get the bends, which is a painful condition that can be fatal.

The theory is based on the fact that whales are mammals and need to come up to the surface to breathe. When they are forced to stay underwater for long periods of time, they can get the bends, which is a painful condition that can be fatal.

Most important, she said, was the conclusion after further analysis that the presence of air bubbles in one animal's liver had not been conclusively confirmed. Air bubbles were found in the organs of several whales that stranded in the Canary Islands after a sonar exercise, leading some researchers to conclude that the animals swam to the surface too rapidly and suffered a version of the bends. If air bubbles were present in the whales that beached in North Carolina, it could suggest that sonar caused their stranding, as well.

Most important, she said, was the conclusion after further analysis that the presence of air bubbles in one animal's liver had not been conclusively confirmed. Air bubbles were found in the organs of several whales that stranded in the Canary Islands after a sonar exercise, leading some researchers to conclude that the animals swam to the surface too rapidly and suffered a version of the bends. If air bubbles were present in the whales that beached in North Carolina, it could suggest that sonar caused their stranding, as well.

**- Washington Post Article
Friday, January 20, 2006; Page A09**

B-176

The Stop LFAS Worldwide Network

Preserve the acoustic habitat. Stop the use of LFAS.

Cheryl A. Magill

Coordinator

1556 Halford Avenue, #322
Santa Clara, CA 95051
USA

Voice/Fax: (408) 316-9716

Website: <http://listen.to/lfas> (Viewpoints)

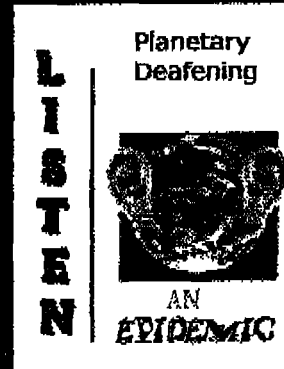
CetaceanCommunity.com

E-mail: Cheryl@CetaceanCommunity.com

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CEM
02-10-2006

COMING NEXT ISSUE



From: dee lundy
To: eisteam@mindspring.com
Subject: STOP SEIS
Date: Feb 11, 2006 10:39 PM

This world has been touched by many unclean hands. The waterworld is a vast place that houses many ancient creatures. The navy must stop these harmful effects upon our oldest living earth dwellers. Stop SEIS!!!!

B-177

Dear Mr. Johnson:

7 February 2006

Even a limited-area military sonar testing program has troubling impacts on ocean life — further expansion of LFA-SURTASS will have devastating impacts on increased areas of the world's oceans.

The state of the science on the impacts of even the current limited program in no way or form supports expanded programs affecting even larger areas of the world's oceans!

Robert E. Crabil

APPENDIX C

PUBLIC HEARINGS

WASHINGTON, D.C.

DECEMBER 1, 2005

1 - - - - - X
 2 IN RE: SURTASS LFA Sonar :
 3 Draft Supplementation EIS :
 4 Public Hearings. :
 5 - - - - - X

6 Washington, DC
 7 Thursday, December 1, 2005
 8 PUBLIC HEARING

9 at 701 Pennsylvania Avenue, NW, Washington, D.C.,
 10 before Kim Brantley of Capital Reporting, a Notary
 11 Public in and for the District of Columbia,
 12 beginning at 9:00 a.m., when were present on
 13 behalf of the respective parties:

14
 15
 16
 17
 18
 19
 20
 21
 22

□

1 On behalf of SURTASS LFA EIS PM:
 JOSEPH S. JOHNSON, Chief Engineer (Moderator)
 2
 3 On behalf of the U.S. Navy:
 CAPTAIN CRAIG SELBREDE, Head of The Undersea
 Surveillance Branch of the Chief of Naval
 4 Operations
 5 On behalf of National Marine Fisheries Service:
 JOLIE HARRISON

6 On behalf of Cornell University:
7 CHRISTOPHER CLARK, PhD

8 ALSO PRESENT: CLAYTON H. SPIKES
9

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3

1 P R O C E E D I N G S

2 MR. JOHNSON: Good morning, everyone.

3 My name is Joseph Johnson. I'll be moderator for
4 this public hearing. I'll also provide a brief
5 presentation on the SURTASS LFA, some background
6 on the original EIS we did as well as why we're
7 doing a supplemental EIS, and what we have done
8 for that.

9 I'd like to introduce, Captain Craig
10 Selbrede. He's the resource sponsor and the Navy
11 requirements expert in this area.

12 I'd also like to introduce Jolie
13 Harrison from the National Marine Fisheries

14 Service.

15 As some of you may know, the National
16 Marine Cooperative Agencies in the supplemental
17 EIS efforts, Dr. Chris Clark is here from Cornell
18 University. Chris has helped us for years as far
19 as biological assessment. He's got impeccable
20 credentials in this area and he's been a big help
21 to us as far as analyzing potential impacts on
22 marina analysis.

□

4

1 The purpose of this is twofold. One is
2 to tell you what it is we're doing; the second is,
3 and I think the most important is to listen to
4 comments you have regarding what you think of our
5 process, of our proposed action.

6 There should have been -- let me get to
7 the administrative parts first. We have this room
8 till 11:00 a.m. The allocated time is typically
9 three minutes for comments. I don't think, given
10 the crowd size, that's going to be an issue, so if
11 you need a little more time, that's going to be
12 okay today. If we do get -- if things do go on
13 and it looks like time has become critical, I'll
14 give you like a one-minute signal, and if there is
15 time at the end we will come back and we will have
16 some more time to expand the meeting, if
17 necessary.

18 This is a formal public hearing process
19 and in accordance with the National Environmental
20 Policy act, we have prepared a supplemental draft

21 environmental impact statement. I've already said
22 the hearing has two parts: Presentation, which

5

1 I'll give you shortly, as well as the public
2 comments.

3 All attendees should have signed in at
4 the attendee sign-up list at the entrance here.
5 Anybody wishing to speak as far as comments was
6 requested to fill out a speaker registration card.
7 I will get those cards and randomly draw upon
8 speakers to make their comments. All comments
9 received here, when you leave a written set or
10 oral comments, will be part of the public record.
11 There are additional comment sheets outside. Our
12 comment period closes December 27th. We have had
13 a request to extend that. We're evaluating that
14 right now. I can't speak if that's going to be
15 extended or not, but right now the close date for
16 comments is December 27th.

17 There is three handouts available at
18 the front table: Copies of the federal registered
19 notice and the public hearing, copies of the draft
20 supplemental EIS executive summary. You can
21 always -- can you didn't back to the front page,
22 please.

6

1 You could always go to our web site.
2 All the files are there as far as everything we
3 have done basically as far as documents is
4 available for download from there as well as the

5 supplemental EIS, so if in a pinch you could
6 always go to that web site and either contact us
7 or download the files directly.

8 There is also in the front desk SURTASS
9 LFA fax sheets NFAQSN.

10 Again, I'll now go through what it is
11 we're preparing to supplement EIS for, and it's
12 really three or four different major thrusts.
13 The first was, there were significant changes in
14 2004 to the National Defense Authorization act,
15 NDAA to the marine mammal protection act.

16 what did it change? Some of the
17 wording as far as specific geographic region and
18 small numbers. This was one of the issues that
19 the court had with the Navy during the
20 legislation -- the process we had in 2003. We
21 have assessed this as part of the supplemental
22 EIS.

□

7

1 There has been a new definition of
2 harassment for military readiness and activities.
3 There has also been a determination of the least
4 practical impact on the species, which will
5 include considerations such as public safety,
6 practicality or costs of implementation, and
7 impact and the effectiveness of military
8 readiness.

9 Also as part of the supplemental EIS,
10 we're going from authorization for two ships to
11 four. That sounds like a growth year. The other

12 EIS was specified for four ships. At the time we
13 submitted our application for the rule from the
14 National Fisheries Service, we only had programmed
15 in the Navy two ships, so we cut the number back
16 to two. But the original analysis was for four.
17 We have upped that with additional analysis this
18 time to four LFA ships.

19 we're addressing the deficiencies cited
20 by the circuit court in 2003 and we're also, at
21 the time we finish this process, we'll be closing
22 the end of our five-year roll period. A roll is

□

8

1 what the National Fisheries service as a federal
2 regulator allows us to -- it's an enabler for a
3 permitting process which we're undergoing now.
4 That's a five-year process. That expires in
5 August 2007. We will use this as the amplified
6 information for application for an additional
7 five-year period for that rule.

8 Next slide.

9 Okay, why are we doing LFA and active
10 sonar? Twenty-five, thirty years ago, submarines
11 made a lot of noise, and one could listen, and we
12 could hear them, one could detect them, and navel
13 assets, U.S. navel assets and other allies'
14 ability to have hours to react to potential
15 threats, because they could detect it far enough
16 away. Technology improved, and when I say
17 technology improved, I'm talking about machinery,
18 mounting the machinery. Basically Tom Clancy kind
19 of stuff, if you read those books, on how much

20 noise submarines make. And what's happened is
21 they're not making nearly as much noise, therefore
22 they're becoming much, much harder to detect

9

1 passively. The ranges they can be detected at are
2 very short, provided only minutes or tens of
3 minutes, which is not a good thing. You know,
4 there is -- there is at least twenty billion
5 dollars a year spent in submarines. I mean,
6 they're very effective platforms. That's why we
7 build them and other countries build them.

8 So what LFA is trying to get back to is
9 where we were thirty years ago. What we do is put
10 a transmitter signal, bounce it off the target and
11 we turn it back there. There is really no way for
12 technology to hide that echo coming back, so we're
13 trying to extend the advantage we once had back to
14 the mid 70's, '80's kind of time frame. Another
15 way to look at it, literally look at it, is we're
16 taking the sound period, looking at it
17 individually, and there is what things looked like
18 thirty years ago, then they started getting
19 quieter and quieter to where they become stealth
20 or ghost. That's really a good way to look at it.
21 If you can't see it, you're not going to fight it.
22 If you can't fight it, it's a real problem for

10

1 military operation. So LFA is trying to get us
2 back to where we are here.

3

Next slide, please.

4

Of course, the bottom line is,

5

hopefully this will work, why are these such

6

effective -- just click on the -- submarines, they

7

are harder to detect. They have very effective

8

weapons platforms, and it wasn't more than -- the

9

Falklands was the last summary engagement, and

10

some of you remember what happened there. There

11

was a cruiser sunk. Three hundred people were

12

killed. It's happened in recent history, so

13

they're very effective platforms.

14

Next slide, please.

15

The other thing that we have to do in

16

washington D.C. and the acquisition community for

17

the Navy is listen to what our fleet commanders in

18

the field, the actual guys that are out front

19

there are saying. And they not only like LFA,

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they love it. I mean this is, you know,

21

anti-summary and warfare and a really challenging,

22

tough problem. Guys that get paid to do this for

□

11

1

a living are saying this is what we need to do our

2

job, and the reason why is going back to that

3

first slide is this long detection range, the

4

ability to cue other tactical forces, and I will

5

let you read what the Vice Admiral says. He is

6

the three-star admiral. It's the second highest

7

in the Navy. He's the Commander of Fleet. He

8

probably has thirty, forty ships and twenty

9

thousand or more sailors working directly for him,

10

and he's the one that's based in Japan, and these

11 are the kind of things that they're saying as far
12 as why they want LFA. So it's not us in DC, just
13 dreaming up stuff to do. It's listening to our
14 customers, which is the Navy warfare commanders in
15 the fleet and what they want. They're saying
16 words like, "You know, without it it becomes a
17 needle in a haystack problem. It's fundamental to
18 the defense." And there's other things
19 necessarily that are happening. We obviously have
20 a very positive relationship with the Chinese, but
21 their military readiness is increasing, and one of
22 the areas it is increasing is their submarine

□

12

1 force. So it's always better to be ready here
2 than not.
3 Next slide.
4 Okay, a real basic cartoon. SURTASS
5 LFA is not a sensor system or a sonar by itself.
6 It has two parts. One is all these ships had a
7 receiver array, and I will show you another
8 picture again. It's a long set of hydro phones.
9 It's the most capable one in the Navy. What we do
10 is we hang eighteen of these transducers and
11 they're about the size of this podium, maybe a
12 little wider, and they're big underwater speakers.
13 They make a lot of noise, no doubt about it, and
14 the idea there is to transmit signals, have the
15 echoes come back on this receiver array. The
16 whole thing weighs about a hundred thousand
17 pounds. It's not that different in terms of

18 absent levels that sonar has been using for the
19 past forty years. I mean, it's not -- the
20 technology isn't in how loud these transducers
21 are. It's in how this receiver and more
22 importantly how the processors, the computer

□

13

1 processors work on board the ship. That's really
2 where the technology increase has been. And the
3 problem is, you can't tell what's a submarine and
4 what's a rock. You know, that's what guys like me
5 get paid to figure out.

6 Next slide, please.

7 what I will do is take you through some
8 pictures here. Here is one of our two vessels.
9 Keep going.

10 There is an array going out there, you
11 see going through the things. Here's the
12 transducers themselves. It's a person. These are
13 all digital clips. I want you to get the size and
14 the feeling, how big they are. It's kind of
15 amusement park technology as far as getting the
16 system in and out. It takes about an hour and a
17 half. Here's an underwater shot from a diver that
18 the system drove over. There you go. It looks a
19 lot better. Again, eighteen of those comprises
20 the system. This is the inside of the processor
21 center. This is actually part of our site of
22 research program. Okay, that's it.

□

14

1 So, going back in history a little bit,
 Page 10

2 and again, the supplemental EIS was based in large
3 part on what we did as far as behavioral affects
4 to marine mammals on a research program. I
5 realized back in 1997 when we first started with
6 that, you know, we didn't have the expertise. At
7 least what I did as building sonars to really
8 analyze this problem for us. There was a lot of
9 anecdotes back and forth, and from an engineering
10 perspective, it wasn't clear what was going on, so
11 what we did is we went outside the Navy and we got
12 guys that were, you know, really top notch
13 biologists and engineers, which is really a tough
14 find. Chris Clark, Curtis Trup (phon), which is
15 his deputy at Cornell University. I met Peter
16 Tyeck. He was actually the science representative
17 or advisor for the Natural Resources Defense
18 Counsel, FRDC, back in 1997, and I really wanted
19 to have a balanced approach to this team here, and
20 Peter is, you know, an excellent scientist and he
21 agreed to come on board as part of the evaluation
22 team and the research team for the SURTASS LFA

□

15

1 research program.

2 So, again, all the results of what
3 these three, and there was probably, you know,
4 another dozen for each one of those, working
5 behind the scenes with them, but these were the
6 principal investigators, you know. It was a very
7 balanced approach. None of their research was
8 approved by the Navy as far as publication or

9 results or anything. Everything they did, all the
10 data was free to analyze and they were free to
11 publish or do whatever they wanted with the data.
12 we had a three-phase program. Phase one was
13 looking at the affects of blue whales and fin
14 whales feeding off the southern California basin
15 here, in St. Nicholas Island, in San Diego, Los
16 Angeles. The second phase was migrating gray
17 whales. And the third was humpback whales off the
18 Kona coast of Hawaii. Fairly expensive research
19 program. To my knowledge it's really the only one
20 that's happened to this magnitude as far as a play
21 back system where people on board vessels, in this
22 case, I'll show you another picture, where they're

□

16

1 observing approved protocol of animals. You know,
2 they didn't know if the LFA was being transmitted
3 or not. They were taking their readings as far as
4 the dive behavior, et cetera, with the animals,
5 following with a motor sailor, and then in phase
6 two we had a similar situation, but it was a fixed
7 asset with people on shore, and phase three was
8 very much like phase one. So again we had no clue
9 what the results of this program were going to be,
10 and the results actually, you know, the animals
11 definitely heard the sound. There were
12 noticeable -- there were observable behavioral
13 changes, but the consensus of this committee and
14 the others that reviewed it is with proper
15 mitigation used properly, this was a safe thing to
16 do. When I say safe, I mean following the

17 protocols of mitigation that there was -- all the
18 affects were observed, the animals returned to
19 their normal baseline behavior within a few tens
20 of minutes at most.

21 Next slide.

22 Here's some pictures. Here's the first

17

1 phase off of the Channel Islands, and just want to
2 get some of the assets we used and where we were.
3 Again, there is the sonar system on board that
4 Cornell put on board that Cornell put on as far as
5 analyzing the signals. The animals -- this
6 actually is stock footage. I just cheated there a
7 little bit. There is a reserve vessel actually
8 following an animal, people up in the sail; again
9 all biologists, not Navy personnel doing this.
10 That's one of the fin whales it looks like.

11 You can go to the next one.

12 That's actually animation. This is
13 phase two, actually up on a little, one of the
14 most beautiful parts of California, right off the
15 nuclear power plant, which is at Pointe Diablo.
16 It uses the autolight measurements system. It
17 measures the animals going through. We put a
18 sound source. You see a ship going up. Right in
19 the middle of the gray whale migration path, and
20 this had a transducer hanging down, so we watched
21 the duplex of the animals we moved it around,
22 where the sound was the same, the animals went

1 around. You see, it's detecting and they go
2 straight through. So again some rather surprising
3 results in the lack of response and the severity
4 of response.

5 Next slide.

6 So I think, you know, based on this
7 we're in pretty good shape with B 12s, one of the
8 issues, and I'll talk a little bit about that, the
9 next slide is, we really didn't take a whole lot
10 of -- the fish didn't seem to be an issue when we
11 were doing this originally. We probably should
12 have taken more a little bit, taken more of a look
13 at it. So what we did upon finishing the court
14 actions in 2002, 2003, we started looking at what
15 could we do with the effects of low frequency
16 sound on fish. You know, it's really difficult to
17 do large scale studies of fisheries, but you know,
18 one of the things we could do is determine is
19 there any physiological damage of sound upon
20 animals, and if so, when does it occur and what's
21 the severity of it, et cetera, so Dr. Art Popper
22 is a professor at the University of Maryland, one

□

1 of the preeminent experts in this field as far as
2 hearing and behavior of fin whales. We
3 commissioned him to do a test program. He used
4 rainbow trout, Channel catfish. Where we did it
5 we couldn't take a nonnative species in there for
6 fear they could get away and all that kind of
7 stuff. We took one transducer of LFA, and again

8 if you are close enough to it one is going to give
9 you as much power as all eighteen. The max power
10 we could get to the fish is a hundred and
11 ninety-three decibels, a hundred and fifty-three
12 meters away, a transparent cage; a lot of
13 experiments done; four tests, one pretest, three
14 tests. The results are shown here. There is some
15 hearing loss, which is temporary threshold shift,
16 and the animals recovered -- actually they didn't
17 recover, but the observation required them to be
18 put under a microscope. There is full recovery
19 within seventy-two hours or less. There is no
20 obvious damage to fish. This is really
21 surprising. They actually broke one of my
22 transducers because they ran it so long it was

□

20

1 beyond the specs we gave them. My point here is
2 we tried our best to see the results here as far
3 as the fish, and we weren't really able to do it
4 as far as direct hearing. And this is fifteen
5 meters away, blasting the thing for two hundred
6 seconds I believe, was the longest, one minute or
7 two minutes. So again peer review process, open
8 literature, these results will be presented to the
9 Acoustical Society, I guess they were, and the
10 publication is in process now, the physiological
11 affect on fish, and we're in really good shape.

12 Next slide.

13 The only thing we have is we're not
14 proposing we change other than as we've identified

15 for the supplemental some offshore biology areas,
16 which essentially take the national marine
17 sanctuaries and put those in those regions. We
18 have geographic restrictions where we operate LFA,
19 not near shore. We have visual monitors. You saw
20 pictures of the big eyes. We have passive
21 monitoring with the tail. We also developed a
22 high-frequency, active acoustic monitoring. This

□

21

1 is actually technology out of the diver detection
2 program for the Navy. The Navy is worried about
3 divers sneaking into harbors, and I took one of
4 those and said "Why can't we put it right up top
5 here and start using it to look around the ship,"
6 and this is the way, sort of, it looks. We had
7 that there operating for over two years now, very
8 successfully.

9 The bottom line is where we have been
10 operating LFA, there is very few if any animals
11 that ever come anywhere close to this. I think
12 including false alarms we're on the order of
13 single digits over hundreds of hours of testing as
14 far as this thing detecting anything and we have
15 tested it on live animals, so we know it works
16 very well.

17 Next slide.

18 This is currently where we're operating
19 SURTASS LFA. It's been operating for more than
20 twenty-five missions since 2003. We've looked at
21 any potential stranding or other incidents or
22 reports and we've been looking actively. There

1 haven't been any. So all SURTASS LFA operations
2 we have conducted here have been without incident
3 to the best of our knowledge. We've been looking.
4 So we feel this is a very safe system to operate.
5 The supplemental will seek out different areas to
6 operate. The Persian Gulf potentially off the
7 Continental United States, specifically in the
8 Pacific. Again this is for readiness training.

9 Next slide.

10 That's it? Go to the back. Keep
11 going. If you look at where we're operating,
12 there isn't -- you know, once you get off the near
13 shores, there isn't a whole lot of animals.
14 There is one sperm whale per almost five hundred
15 kilometers; B 12s, almost four hundred kilometers.
16 There is not a lot out here. I think we're taking
17 this area here.

18 So that concludes my presentation on
19 what we're doing as far as the supplemental EIS,
20 what we have done in the EIS to date.

21 We will now conduct the second part of
22 this hearing, which is the comment period.

1 As we start this I'd like to make a
2 note that the court reporter will be recording all
3 comments received here for the record. The final
4 supplemental EIS will address all comments heard
5 here, all comments received written. So we have

6 rules. We have cards, Clay?
7 (Brief pause.)
8 MR. JOHNSON: If we have no cards, it's
9 easy. We have no rules.
10 MR. SPIKES: Nobody has signed up to
11 make any comments.
12 MR. JOHNSON: Okay. If there are
13 comments to be made, we need to have you sign a
14 card and make them. It's for the record. It's
15 nothing more. I'll call the names, we will listen
16 to the comments, or you could leave written
17 comments.
18 Does anybody desire to do that.
19 Okay, Chris.
20 MR. CLARK: I didn't sign up but I'd
21 like to make a comment. Should I go sign up?
22 MR. JOHNSON: We need to have you sign

□

24

1 up but you can do that after the fact, I'm sure.
2 Go ahead, please.
3 MR. CLARK: Well, it was during your
4 brief when you were talking about the three phases
5 of research project, phase one, two and three,
6 where the first one was on St. Nicholas and prior
7 to all that and we had these public hearings and
8 we had these -- we had a number of meetings where
9 we -- you brought together all the invested
10 parties interested in this issue, and we
11 identified that the large whales, the Misty Sea
12 whales were the animals most at risk from LFA
13 sonar because they produce and hear sounds in the

14 low frequency range in exactly the same
15 frequencies that the sonar was operating. So when
16 we thought about it, and this is one of these
17 situations where scientists were brought into the
18 room and asked, well, "what would you do," and we
19 through out a lot of ideas, and I remember I think
20 Joe, you were sort of like, "Oh, my goodness.
21 what have I unleashed here?" Because we started
22 saying, well, let's see if you could go to

□

25

1 southern California and we could work on blue
2 whales and fin whales. These are large, you know,
3 seventy, a hundred foot long animals, free
4 ranging, two hundred miles off San Diego, no one
5 has ever done this before. Then we just blew it
6 aside. Then we said we shouldn't work on the gray
7 whale population because we have baseline data
8 from the early 1980's that Peter Tyeck and I had
9 done looking at the source of those animals with
10 the path to migrate, and it turns out these
11 animals were extremely sensitive to any acoustic
12 output in the migratory path. So we said we could
13 compare the LFA versus the industrial noises that
14 could be played back in the early '80's and we
15 said, okay, well, what's another species where we
16 have good baseline data. Those are humpbacks over
17 the big island of Hawaii where there are many,
18 many years, decades of baseline data and we could
19 compare how those animals respond, presence or
20 absence.

21 So we had expectations, actually, Joe,
22 and you will remember this, we actually had

26

1 expectations among the scientific group that we
2 were going to see responses to this sound source
3 and we felt we were going to see responses at
4 exposure levels of about a hundred and thirty-five
5 decibels, and this was right after the book had
6 came out by John Richardson where he had predicted
7 in the book, well, Richardson, 1995, where the
8 prediction had been that animals, that are
9 sensitive, would show responses, somewhere between
10 a hundred and thirty to a hundred and forty DB,
11 one micropass, you would start seeing responses,
12 so we went off California and did it and it was
13 really hard -- first of all it was really hard to
14 get animals exposed to a sound loud enough to get
15 it up to about a hundred and thirty, a hundred and
16 forty decibels. But we thought animals might
17 vacate the area. We thought the animals would
18 literally turn and move away. They didn't do it.
19 And then we went to the gray whale situation off
20 central California where thousands of animals are
21 streaming down the coast and the migration path and
22 sure enough, lo and behold, when we put the loud

27

1 speaker in the middle of the migratory corridor,
2 you could stand on the hillsides and, even if you
3 didn't know what the experiment was, you could see
4 the animals were avoiding that sound. People on

5 the hillside, even though they were blind to the
6 experiment, were getting correctly that the sound
7 condition was on, when the sound was close to
8 shore in the middle of the migration path. So
9 when we moved it offshore, we didn't see that
10 response, even though the animals were being
11 exposed to the same levels of sound, as they had
12 been when they were in shore. So suddenly we had
13 this funny little response difference, when they
14 were off shore they didn't respond, but when they
15 were in shore they did respond, so suddenly
16 context somehow became a factor in the animals
17 behavior.

18 And then when we went to Hawaii -- I'm
19 past my three minutes?

20 MR. JOHNSON: No. I think we have
21 time.

22 MR. CLARK: And then we went to Hawaii

□

28

1 and we said, "Here we are in the middle of a
2 breeding situation, male humpbacks singing
3 offshore, we're going to play them sounds. We
4 should see a response."

5 well, some whales responded, some
6 whales didn't respond, and the response again,
7 independent of the sound level of the animals that
8 we heard, some whales, anybody who has worked with
9 humpback whales knows that some males are very,
10 very sensitive, and I wouldn't call them wimpy,
11 that's sort of a Schwarzenegger term, but they're

12 very sensitive to any kind of disturbance. Even
13 if you are in a small boat, like a sixteen foot
14 Zodiac and you get up to about a hundred meters,
15 one hundred and fifty meters of a humpback, many
16 of them will simply stop singing and move away.
17 But we didn't find any consistent response of
18 animals as a function of the distance away or the
19 sound exposure. It seemed again it was more
20 dependent upon context. So I want to get across
21 in this message that we had expectations as
22 scientists that we were going to see much stronger

□

29

1 avoidance responses and changes in behavior to the
2 sound source than we actually observed, and second
3 of all, it became empirically very obvious that it
4 was really hard to get a high sound pressure level
5 on the animals, just simply because they were
6 moving in three dimensions, and this is something
7 that you guys mentioned in the EIS is that the
8 ship is moving in two dimensions and the animals
9 are moving in three dimensions, and this whole
10 world of sound exposure in a three-dimensional
11 world is not simple, and you have to take that
12 into effect in estimating the impact. So the
13 experiments provided counterintuitive results as
14 far as I was concerned and actually demonstrated
15 that, based at least in my mind, that it doesn't
16 -- it doesn't say that there is no potential
17 impact, but it's certainly dramatically less than
18 what I thought in my mind was going to be an
19 impact.

20 MR. JOHNSON: Thank you, Chris.
21 Okay, last call for speakers?
22 Okay. With no additional requests for

30

1 speakers, we will officially close the hearing.
2 So we're closed for the comments now. If there
3 are any questions, I can answer or anybody else
4 can answer for you. I'd be more than happy to do
5 that.

6 (Whereupon the hearing was concluded at
7 9:31 a.m.)

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1 CERTIFICATE OF NOTARY PUBLIC
2 I, KIM M. BRANTLEY, the officer before whom

3 the foregoing deposition was taken, do hereby,
4 certify that the witness whose testimony appears
5 in the foregoing deposition was duly sworn by me;
6 that the testimony of said witness was taken by me
7 in stenotype and thereafter reduced to
8 typewriting under my direction; that said
9 deposition is a true record of the testimony
10 given by said witness; that I am neither counsel
11 for, related to, nor employed by any of the
12 parties to the action in which this deposition was
13 taken; and, further, that I am not a relative or
14 employee of any counsel or attorney employed by
15 the parties hereto, nor financially or otherwise
16 interested in the outcome of this action.

17

18 KIM M. BRANTLEY, C.S.R.
19 Notary Public in and for
20 The District of Columbia

21

22 My commission expires: October 14, 2007

SAN DIEGO, CALIFORNIA

DECEMBER 3, 2005

1
2
3 PUBLIC HEARING
4 FOR A DRAFT
5 SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
6 FOR THE
7 SURVEILLANCE TOWED ARRAY SENSOR SYSTEM
8 LOW FREQUENCY ACTIVE SONAR
9 (SURTASS LFA)

10
11 ABOARD THE
12 USS MIDWAY: AIRCRAFT CARRIER MUSEUM

13
14 SAN DIEGO, CALIFORNIA
15 SATURDAY, DECEMBER 3, 2005
16 1:00 P.M. - 2:30 P.M.

17
18
19 RECORD OF PUBLIC SPEAKERS
20

21
22
23 Reported By: Bonnie G. Breen

24 CSR No. 5582

1 A T T E N D E E S:

2

3 JOSEPH JOHNSON, Chief Engineer,
4 (PMS-485)
5 Hearing Moderator

6

7 CLAY SPIKES, C.O.O.,
8 Marine Acoustics, Inc.

9

10 RAY MAHR, JR., P.E.,
11 Marine Acoustics, Inc.

12

13 KEVIN DIXON, Public Affairs

14

15 CAPTAIN JACQUIE YOST,
16 Major Region Southwest
17 Public Affairs Officer

18

19 CAPTAIN PAT SIEDEL,
20 Major Program Manager
21 Maritime Surveillance Systems

22

23 KEN HOLLINGSHEAD, NMFS Representative

24

1 A T T E N D E E S: (Continued)

2

3 DR. CHRIS CLARK, Director

4 Bioacoustics, Cornell University

5 Members of the public

6

7

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I N D E X O F S P E A K E R S

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2		
3	SPEAKER	PAGE
4	JOSEPH JOHNSON -	
5	Chief Engineer and Hearing Moderator	
6	(Presentation not recorded.)	
7		
8	CARA HOROWITZ -	
9	National Resources Defense Council	3
10		
11	CHERYL A. MAGILL -	
12	The Stop LFAS Worldwide Network	7
13		
14	KAY STEWART -	
15	Member of the Public	12
16		
17		
18		
19		
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22		
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1 SATURDAY, DECEMBER 3, 2005

2 USS MIDWAY

3 RECORD OF PUBLIC SPEAKERS

4
5 MR. JOHNSON: You weren't here when we
6 started. Since there are only three cards,
7 if you go too long, I will still give you a
8 couple minutes.

9
10 PUBLIC SPEAKER - CARA HOROWITZ
11 NATIONAL RESOURCES DEFENSE COUNCIL

12
13 MS. HOROWITZ: I'm not going to speak
14 for very long. I'm Cara Horowitz from the
15 National Resources Defense Council. I'm
16 here speaking on behalf of our organization
17 and our 650,000 members throughout the
18 United States.

19 NRDC has long recognized the
20 importance of the Navy's crucial missions.
21 It has always believed that these missions
22 can and must be accomplished in ways that
23 are consistent with protecting our natural
24 resources.

1 We will be submitting written
2 comments with respect to the Supplemental
3 EIS. Today, I'm just going to highlight a
4 few of our concerns.

5 I want to thank you very much
6 for hosting the public hearing in this
7 wonderful location. It has been an
8 adventure getting here.

9 Judge LaPorte in her decision
10 striking down the last EIS for the system
11 put forward by the Navy found that the
12 Navy's use of LFA Sonar has the potential
13 for serious, long-term environmental
14 impacts on marine life, including whales
15 and other marine mammals. She also found
16 that the Navy has available to it data
17 necessary to refine its operations in order
18 to afford reasonable protections to marine
19 life to prevent such harm.

20 Our review of the SEIS so far
21 is incomplete. It is a very long and
22 technical document, as I'm sure you all
23 know. We have not yet gotten very far into
24 it. So far, it does not appear that the

1 Navy has taken up many of the court's
2 invitations to adopt such protections.

3 For example, the Navy has
4 rejected the idea of identifying and
5 training only in areas that present a
6 reduced risk of harm to marine life,
7 instead re-asserting essentially the same
8 vast operational areas proposed in the
9 stricken EIS. Once again, the Navy seeks
10 to deploy LFA through more than 75 percent
11 of the world's oceans.

12 The Navy has also rejected
13 the suggestion that it implement mitigation
14 measures aimed at lessening harm to fish.
15 It has rejected the suggestion that it
16 increase coastal protection zones,
17 reverting to its former 12 nautical mile
18 proposal from the 30 nautical mile
19 protection zone imposed by the court.

20 The Navy has rejected the
21 suggestion that it lessen harm to marine
22 mammals by employing pre-operational or
23 small-boat surveys.

24 The Navy has rejected the

1 limitation imposed on it by NMFS earlier in
2 this process to using LFA only at
3 frequencies below 330 hertz, a measure that
4 was aimed at reducing the possibility of
5 resonance injury.

6 In fact, the Navy seems not
7 to revise very much of its stricken EIS at
8 all with respect to at least marine mammal
9 impacts, either in light of the court's
10 concerns or in light of the many studies on
11 marine mammals and acoustics that have come
12 to light in the past several years, stating
13 instead that there are now no new data that
14 contradict any of the assumptions or
15 conclusions made in the earlier EIS
16 analysis of potential impacts on marine
17 mammals.

18 For these reasons, after
19 initial review, we are not optimistic that
20 the Navy has succeeded in curing all of the
21 faults identified by the court or, more
22 importantly, in laying forth a proposal for
23 the use of LFA Sonar that will not
24 irreparably and unnecessarily harm marine

1 life. But, as I said, our review is
2 actually quite preliminary. The document
3 is very long and very technical.

4 And I finally want to say a
5 word about the process that we are
6 undertaking here. The SEIS is quite an
7 undertaking, and I congratulate the Navy
8 for getting it done. It is, however, quite
9 long; and the chapter listing cited
10 references, for example, is more than 62
11 pages long.

12 There is also an
13 extraordinary level of public concern over
14 the use of LFA Sonar technology, as proven
15 during the last EIS round. Many members of
16 the public, including many of our members,
17 and many scientists want and need
18 sufficient opportunity to participate in
19 this public comment period meaningfully.
20 And the Navy has set this public period
21 during the heart of the holiday season,
22 beginning a week before Thanksgiving and
23 ending two days after Christmas, and also
24 concurrently with the public comment period

1 now lasting for another very long and very
2 complex draft EIS for another sonar
3 training rating proposed on the east coast.

4 In our view, the delineated
5 period of time is too short to do this SEIS
6 justice; and we therefore requested of the
7 Navy an extension of the public comment
8 period by at least 45 days. That is the
9 letter I sent you last week, Mr. Johnson.

10 MR. JOHNSON: I actually mentioned
11 that before you got here.

12 THE WITNESS: That having been said,
13 we thank you very much for this opportunity
14 to comment. We look forward to working
15 with you.

16 (Conclusion of comments by
17 Cara Horowitz.)

18

19 MR. JOHNSON: The next speaker will be
20 Cheryl Magill.

21 Could you state your name and
22 if you are affiliated with any
23 organization?

24

1 PUBLIC SPEAKER - CHERYL A. MAGILL

2 THE STOP LFAS WORLDWIDE NETWORK

3

4 MS. MAGILL: I'm happy to do so.

5 Thank you, Mr. Johnson.

6 I'm Cheryl Magill. I'm the
7 Coordinator of the Stop LFAS Worldwide
8 Network. Our organization is comprised of
9 individuals. We are not incorporated.
10 Each of us is independent, and we sort of
11 coalesce, however that is done. Once you
12 know that members of the Navy are in our
13 network, as well as Navy families and
14 members of NATO and also National Marine
15 Fishery Service, lots of different people
16 want to know what we are doing. Sometimes
17 they don't contribute. They just
18 eavesdrop, but that is allowed.

19 We have a free service, and
20 we have maintained it since 1998. It is a
21 network of individuals, who want to
22 warehouse information and find out what is
23 going on. They are sincerely concerned.

24 First off, I would like to

1 thank the auspicious people, who are
2 gathered here today, you know, where it is
3 a small collection. The last event we had
4 was catered at the Radisson Hotel in Los
5 Angeles. They brought out cookies and cake
6 for us. Many of us were staying at the
7 hotel, and so I dressed appropriately for
8 the occasion. I wanted to make a splash.

9 Here on the USS Midway,
10 though, it seems that access was very
11 difficult for me. I'm sure if there were
12 friends of mine, who were in wheelchairs,
13 they wouldn't have been able to participate
14 in this hearing. I had to take off my
15 shoes to come down the ladder and sort of
16 take off, you know, as I would for an
17 airport, I believe someone pointed out; but
18 I wasn't really expecting to take flight
19 today. I was more expecting to come to a
20 hearing.

21 To have to enter through a
22 parking lot that you have to pay for
23 parking on and to have this entrance be
24 something that is separate and not really a

1 part of the community, it was awkward. So
2 I look to this process, and I say: This
3 seems challengeable to me.

4 I hope you understand that I
5 was humiliated upstairs when I was told
6 that I had to put away my "Stop LFA" sign
7 or I would be escorted off the ship by the
8 Harbor Master. I have several other signs
9 I could have strung up. I thought it was
10 very conciliatory of me to offer to take
11 the word stop off the sign, since there
12 were other signs that indicated there was
13 going to be a hearing, but that was
14 offensive, I was told. I did not bring the
15 sign up here, because I really don't want
16 to be escorted off the ship. I want to
17 participate in this hearing.

18 The separate entrance that
19 was noted in the federal documentation
20 regarding this hearing was not available.
21 I had to come in through the museum
22 entrance. I think this created a confusion
23 for the personnel, who called this museum
24 open for the public. They thought that I

1 should pay. Mr. Hollingshead was there; so
2 he was able to see some of the things I'm
3 talking about. If anyone wants further
4 information, I'm sure he's more articulate
5 than I when explaining such events. I was
6 told that I had to also -- well, go back.

7 Okay.

8 Anyway, let me move on to a
9 few of the things that have to do with the
10 points Mr. Johnson pointed out. One thing
11 is to note that, when we had a previous
12 EIS, I submitted information about time
13 reversed acoustics. Later on, when the
14 final draft or the draft was finalized, I
15 asked: "Where is my stuff on time reversed
16 acoustics? I don't see anything in here on
17 time reversed acoustics." I was told that,
18 really, nothing from the public had been
19 received on time reversed acoustics.

20 So let me say with emphasis,
21 I very much hope, though I have not had a
22 chance to look at your Draft Supplemental
23 Environmental Impact Statement,
24 Mr. Johnson, that there is sufficient

1 address on time reversed acoustics, which I
2 understand is a significant role. I could
3 be wrong on this. Nobody has told me
4 otherwise.

5 Secondly, on the
6 Supplemental, I note that state
7 coordinators usually receive information.
8 I have not received any information. I do
9 have a very old computer that is reluctant
10 to make certain trips on the Internet. I
11 do have DSL available, but using it on
12 Black Monday didn't seem like a reliable to
13 thing to do, since none of the computers
14 seemed to be very malleable that day due to
15 the number of people who were shopping on
16 the Internet.

17 So back to the process, I
18 called all the libraries, every single one.
19 Many of them still had their recordings on
20 from the holiday saying they won't be open
21 until after the Thanksgiving holiday.
22 Anyway, I called them. Only two of them
23 were able to locate the documentation sent
24 by the Navy.

1 And you know what?

2 Of those, all they could find
3 was CDs. Nobody had a hard copy. Well,
4 that is problematic when those libraries do
5 not in fact have a public document bureau.

6 When you put in the Federal
7 Register that you have documented all this
8 stuff and you have sent it out to all these
9 people, maybe you should point out that it
10 is actually unavailable. Some of the
11 libraries later followed up in that they
12 were able to locate the documentation
13 supplied, but it was in CD form; and if I
14 wanted to utilize it, I have to bring in my
15 own computer. Enough said, because I
16 already pointed out that my computer is
17 kind of flaky. Anyway, so it would have
18 been nice had real documentation in printed
19 form been available from the libraries.

20 The Federal Register noted
21 that electronic documentation was
22 available, but it indicated that that was
23 on line. It didn't indicate that the
24 electronic documentation or digital

1 documentation that was all that was
2 available at the libraries.

3 As far as mitigation methods,
4 the long waves and all of that of LFA, I
5 don't know if there are any baseline
6 studies of offshore rigs of LFA Sonar and
7 so on identifying how much noise disruption
8 is available. Can you not hear me over
9 that noise? Maybe I should speak a little
10 louder. Sorry. I couldn't resist.

11 The mitigation methods for
12 the long waves should be addressed on a
13 baseline level for what is happening in our
14 seashore, lagoons, and so on. I don't know
15 of studies that are accompanying these
16 particular issues. I don't know how you
17 can say that mitigation is really occurring
18 without this baseline study. Maybe I'm
19 just not aware of an aspect of the science
20 that should be applied here.

21 Anyway, but I do understand
22 the idea of finding through high frequency
23 sonar the whales that are in the area. In
24 fact, I believe that Dr. Tyack and

1 Dr. Stein were both sued by our
2 organization on these very points, as was
3 the Navy and National Marine Fishery
4 Services.

5 A hearing on the sonar range
6 and this comment period to occur within 24
7 hours of each other in terms of their time
8 frames on the day after Kwanzaa and the day
9 after the day after Kwanzaa and the
10 following week makes a little nonsense to
11 me. It just seems ridiculous, that in our
12 individual resources, persons with much
13 less, you know, happening for them
14 financially should have to have the greater
15 burden.

16 Okay.

17 At this point, I thank you
18 all for your time and your attention. I'm
19 not commenting on the science very much,
20 simply because I haven't seen the document
21 yet. Bye-bye.

22 (Conclusion of comments by
23 Cheryl Magill.)

24

1 MR. JOHNSON: The last card I have is
2 Kay Stewart.

3 Kay, you are representing
4 yourself; is that correct?

5 MS. STEWART: Yes, I am.

6

7 PUBLIC SPEAKER - KAY STEWART

8

9 MS. STEWART: My name is Kay Stewart.
10 I used to be a practicing biologist.

11 This is the largest ship I
12 have ever been on. My previous experience
13 on a ship was working for Scripps Institute
14 of Oceanography on one of their Trans Pac
15 research ships, which is a little 120-foot
16 converted Coast Guard vessel; but I
17 discovered, after three months of working
18 on it, I got terribly sea sick. So, from
19 then on, I worked only on resources on the
20 land; so I worked on anadromous fish
21 species. I have wanted to get on the
22 Midway since it arrived here in
23 San Diego; so this is a good excuse.

24 I have been interested in LFA

1 since about '99 and have been following it,
2 I have to say, casually, because my work
3 does not really entail this field. So I
4 started to burrow into the SEIS. Starting
5 last week, I was able to get it on my
6 computer. It is a copious -- copiously
7 challenging document; but I have to say,
8 Chapter III is probably going to be a great
9 resource for people teaching basic
10 oceanography.

11 I do want to thank you all
12 for having provided us with this
13 opportunity to speak on the issue; but I
14 agree totally with the others, who have
15 spoken so far, that it is a difficult
16 document. It is far too short a comment
17 period; and I really regret that others
18 have not been able to be here and to make
19 comment on it because of the shortness of
20 the notification. I just heard about this
21 a week ago through my network of friends.

22 I want to say just a few
23 comments based on what I have been able to
24 digest so far. I believe that the

1 mitigation measures as described in Chapter
2 V are inadequate. The offshore
3 biologically important areas that are noted
4 in Chapter III on the resources are not
5 included. There are many important
6 resource areas that are not included as
7 exclusions for the running of SURTASS LFA,
8 including, for instance, the Gulf of
9 California, where it is noted that the
10 Olive Ridley Turtle, it is one of its last
11 holdout areas. It is also used by many
12 whales.

13 The Carolina Banks, where we
14 have had recent events, of course, this was
15 mid-frequency sonar associated with the
16 strandings of a variety of marine mammals;
17 but that area is clearly quite an actively
18 used marine mammal area. And, of course,
19 now it is being proposed for submarine
20 training. So we'll see what happens with
21 that one.

22 The Canary Islands, now, I
23 don't know that the United States
24 Environmental Impact Statement process can

1 even talk about other nations'
2 international waters; but it seems to me
3 that where we have witnessed strandings and
4 know of their relationships with sonar
5 activities that those should be seriously
6 considered as exclusionary areas. So that
7 is part of it, of my comments on this.

8 I'm going to take advantage
9 of your offer to speak longer, since I'm
10 the third person, unless others have
11 arrived, who also are intending to speak.

12 MR. JOHNSON: Continue, please.

13 MS. STEWART: Thank you.

14 BY MS. STEWART:

15 I was surprised that after
16 spending something like 50 pages on
17 describing fish stocks and their
18 sensitivity to sound that there is no
19 mitigation for fish stocks; and I have to
20 really read the document to figure out why,
21 because, clearly, they found sensitivities
22 to sound levels in these frequencies,
23 et cetera.

24 I find it disturbing that the

1 company that produced all of the
2 environmental impact statements for the
3 Navy has been associated with the
4 development of the active monitoring
5 equipment, which may be a very fine device.
6 However, one of the issues that came out
7 during the prior impact statement comments
8 was that people were concerned about being
9 able to get reports on the effects of the
10 monitoring. And, as far as I know, those
11 documents have not been published.

12 At the time that that comment
13 was made, there were some statements made
14 that it would -- that it would put the
15 operating ships at risk to reveal where
16 they were in fact doing their maneuvers and
17 carrying out their operations; but it seems
18 to me that this question of reporting and
19 letting the public know if in fact there
20 have not been significant impacts is very
21 important, because, at this point, we just
22 have to take your word for it; and I'm not
23 satisfied with that. But if those reports
24 have been made available, I would very much

1 appreciate that that gets out to the
2 distribution list of those who have
3 expressed in the past an interest on this
4 subject.

5 Is there any possibility of
6 that or have those reports been in fact
7 published or made available?

8 MR. JOHNSON: I'm sorry. This forum
9 is not for a question-and-answer period.
10 We'll take your comments.

11 MS. STEWART: Okay. That is a
12 question then.

13 The acceptance of the science
14 as stated in the original final
15 Environmental Impact Statement I believe to
16 be irresponsible.

17 For one example, for
18 instance, criticism was registered in the
19 comments regarding sound attenuation and
20 the distribution to show if the source
21 levels of 220 to 230 decibels will have a
22 much wider area above 140 decibels; and I
23 still have not seen anybody really discuss
24 that, the factors that were discussed by

1 experts. And I have to say, I have huge
2 gaps in my knowledge of this field, but I'm
3 relying on others' comments.

4 Also, the fact that 180
5 decibel received level has been taken to be
6 the threshold for injury. That has never,
7 as far as I know, been confirmed by any
8 research; and, yet, that is the basis for
9 all of these operational constraints that
10 have been placed on the operation. That
11 is, it said that, within one kilometer,
12 that the received level will be no more
13 than 180 decibels. Maybe, maybe not,
14 because some of these sound attenuation
15 studies indicate that it is farther, that
16 it will go much farther than that at a
17 higher level; but, in addition, 180
18 decibels has not been confirmed by any
19 experimental research, because scientists,
20 and I totally sympathize with this, are
21 very reluctant to experiment on animals at
22 that sound level, other than, as it
23 appeared, that the fish studies, the salmon
24 studies have actually done that with the

1 caged fish.

2 I was a little bit taken back
3 by some of the biased language in what I
4 have read describing turtles in the eastern
5 seaboard being exposed to a flood of noise,
6 et cetera, when we were talking only about
7 75 decibels; so I believe that there is
8 kind of a bias in the writing.

9 And I think that is all I
10 have to say today. I hope that I will be
11 able to read it more thoroughly and put
12 some more in writing during the written
13 comment period.

14 And I do have to say that I
15 appreciate that the Navy is being put on --
16 basically, is being held accountable for
17 all of the anthropogenic noise in the
18 ocean, because the only handle that the
19 public has been able to get on this issue
20 was through the initial observations of sea
21 lions fleeing during some of the initial
22 secret testing of LFA SURTASS on the
23 central California coast; and that is when
24 people requested and got the requirement

1 that you would have to submit environmental
2 impact statements.

3 I know that this puts our
4 defense department in a position of paying
5 for an awful lot of stuff that really does
6 not necessarily improve our defense
7 capabilities; but I as a tax payer am happy
8 to pay that money, because I want to see
9 our natural resources protected. That's
10 it.

11 MR. JOHNSON: I noticed that some
12 people came in later.

13 Does anybody else wish to
14 fill out a speaker card or make comments?

15 Before I conclude the
16 hearing, let me just state that the final
17 Supplemental EIS will address all written
18 and all comments received here, as well as
19 in Washington, D.C., and Hawaii. So we
20 will address each of your comments in the
21 final Supplemental EIS.

22 Given that, we now conclude
23 the public hearing. We will stay around in
24 case people arrive later and keep people

1 around just in case there is a hard time
2 finding us, but that concludes for now.

3 Thank you very much for
4 coming. I appreciate your comments.

5 (Hearing adjourned at
6 2:30 p.m.)

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1 AGENCY CERTIFICATE
2

3 We hereby certify that a Notary
4 Public, in and for the State of California,
5 duly commissioned and qualified to
6 administer oaths, was present at the
7 foregoing public hearing.
8

9 We further certify that the
10 foregoing transcript was taken
11 stenographically by a representative of our
12 firm and reduced to typewriting under our
13 direction, and the foregoing is a true and
14 accurate transcript of the public hearing.
15

16 We further certify that we are
17 neither of counsel nor attorney to any of
18 the parties to said cause, nor are we an
19 employee of any party to said cause, nor are
20 we interested in the outcome of said cause.
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DEPARTMENT OF THE NAVY
CHIEF OF NAVAL OPERATIONS
PUBLIC HEARING FOR
SURVEILLANCE TOWED ARRAY SENSOR SYSTEM
(SURTASS LFA) SONAR

Held at the University of Hawaii Campus Center, Room
CC310, 2465 Campus Road, Honolulu, Hawaii 96822,
commencing at 7:30 p.m., on Monday, December 5, 2005.

BEFORE: MYRLA R. SEGAWA, CSR. No. 397
Notary Public, State of Hawaii

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1 MR. JOSEPH JOHNSON: Okay. We will
2 now begin the second part which is the public comment
3 portion of the hearing. A court reporter will record
4 the hearing which we incorporate by reference of the
5 supplemental EIS. The final supplemental EIS will
6 address all comments here today as well as written
7 comments received. I will address -- I will at
8 random take names from the card. If you could come
9 forward to the podium when your name is called,
10 address your comments to me, give me any written
11 statements, state your name, if you could. And if
12 you could state residence, capacity in which you
13 appear, which is yourself, yourself and part of your
14 organization, please state so. This is for the
15 record so we could make sure we address it right.

16 The time limit is three minutes. I
17 will notify you with a finger when it's one minute.
18 If I call on a speaker that's not present, I will
19 hold his or her card until I call the name again. If
20 he's not here in three times, I will go to the back
21 of the card. If there's additional time requested at
22 the end, we'll go back and call you again.

23 Let's go with -- again, I apologize
24 for the pronunciation of the name. Malia Farias,
25 F-A-R-I-A-S.

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1 MS. MALIA FARIAS:
2 No na wahi pana 'O Hawaii nei
3 Ho'lo mai ka leo o ka Moi'
Page 2

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4 Uwehe kaipu, Uwehe ka mana'o pono
5 Eia ka ho'o mana'o nui o ka Mo'i Hawaii nei
6 No ka 'akau, ka hema, ka mua, ka hope,
7 Ka mauka, ka makai
8 Ku I mana Hawaii nei!
9 Comes the voice of the King
10 Uncover the ipu, uncover the truth
11 Here is the great remembrance of the King
12 Of Hawaii
13 From the East, the West, the before, the.
14 After, the mountains, the sea
15 The mana of all Hawaii rises up!

16 MR. LANNY SINKIN: Aloha, my name is
17 Lanny Sinkin. I'm from Kurtistown, Hawaii. I'm an
18 attorney within the United States who has filed
19 numerous lawsuits challenging various aspects of the
20 Navy's program to deploy low frequency active sonar.

21 I have had the pleasure of
22 coordinating many of the presentations here tonight.
23 I am mystified that the Navy did not see fit to send
24 me a copy of the draft supplemental environmental
25 impact statement. Obviously, I'm an interested

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1 party, and under the guidelines of the circulation of
2 draft environmental impact statements, I should have
3 been sent a copy.

4 I am not here tonight, however, as an
5 attorney within the United States. I am here tonight

6 in my capacity as Ali'i Mana'o Nui which means chief
7 advocate and spiritual advisor to Ali'i Nui Mo'i
8 which means King, Edmund Keli'i Silva, Junior.

9 The King has authorized me to present
10 his views to this hearing regarding the deployment of
11 low frequency active sonar in the waters off the
12 islands of Hawaii and archipelago of Hawaii.

13 In my capacity as Ali'i Mana'o Nui,
14 I'm here to express the King's displeasure with the
15 intent of the United States Navy to deploy low
16 frequency active sonar in kingdom waters. As you may
17 know, the kingdom of Hawaii existed as an independent
18 nation prior to the overthrow of its government by
19 agents of the United States government.

20 The history of this event is detailed
21 in a resolution apologizing to the Hawaiian people
22 passed in 1993 by the United States Congress and
23 signed by then President William Jefferson Clinton.

24 While the United Nations called to the
25 United States to decolonize the Hawaiian Islands and

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1 the apology resolution acknowledged that the Hawaiian
2 people never relinquish their sovereignty, the United
3 States remains as an occupying power.

4 King Silva is now in the process of
5 restoring the kingdom government and reclaiming the
6 islands as an independent nation. He is visiting
7 with the people to determine their views on current
8 problems and solutions, engaging in dialogue with

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9 foreign countries regarding the new recognition and
10 gathering the key members of his initial government.
11 If you're interested in further information about
12 what is happening in the restoration process, we
13 invite you to visit the web site at [www.kingdom of](http://www.kingdomofhawaii.org)
14 [Hawaii.org](http://www.kingdomofhawaii.org).

15 The King is aware that the Navy
16 violated numerous United States laws by selecting
17 researching, designing and testing the low frequency
18 sonar system without preparing an environmental
19 impact statement, seeking permits under the Marine
20 Mammal Protection Act, or consulting regarding the
21 potential impacts on endangered and threatened
22 species.

23 Even though the Navy finally began to
24 comply with United States laws, the determination to
25 deploy the technology had already become a fixed

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1 decision. During the period prior to the initiation
2 of the environmental impact statement, the Navy spent
3 more than \$100 million preparing to deploy low
4 frequency active sonar. That huge investment
5 unquestionably created a bias toward deployment and
6 made an objective evaluation of the risks involved
7 highly unlikely. As various witnesses will testify
8 tonight, the potential for bias and lack of
9 objectivity became a reality in the environmental
10 impact statement process.

11 while those are internal matters for
12 the United States to deal with, that reality affects
13 everything to do with the deployment of this
14 technology. King Silva's obligations are to the
15 Kingdom. Just as the Kingdom overthrown by the
16 United States was a non-aligned nation, the restored
17 Kingdom is a non-aligned nation and intends to remain
18 so.

19 As such, the Kingdom has no quarrel
20 with any other nation and does not intend to be drawn
21 in such disputes within the human family. Instead
22 the Kingdom will offer its services and expertise in
23 dispute resolution to heal the many disputes that
24 divide the family.

25 The Armageddonists in charge of United

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1 States foreign policy and the Jihaddists pursuing
2 their own ultimate victory scenario are engaged in
3 the first phase of a great holy war into which they
4 hope to draw the entire world. The Celestial Council
5 of the Kingdom offers its services in finding other
6 pathways for the human family.

7 The King is aware that some planners
8 within the pentagon view Hawaii as a forward base for
9 a planned confrontation with China. The King rejects
10 any attempt to include Hawaii in such a plan.

11 As a non-aligned nation, the Kingdom
12 does not need the protection of any nation, including
13 the United States. There is, therefore, no need for

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14 the deployment of low frequency active sonar in
15 Kingdom waters. As United States military bases are
16 phased out of the restored Kingdom, there will be no
17 reason for any other nation to view the Kingdom as a
18 potential or actual adversary.

19 The King is also responsible for
20 ensuring the viability diversity, and general health
21 of the marine community that provides sustenance to
22 the kingdom. He is fully aware of the dangers
23 presented by the introduction of low frequency sonar
24 into the marine environment. He cannot permit such a
25 technology to be used in Kingdom waters.

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1 In the ancient spiritual traditions of
2 Hawaii, ocean life is our ancestors. The whale,
3 shark turtle and sea beings are considered amakua.
4 They are not to be subject to harassment or torment
5 by human technology. Once the government is fully in
6 place, the King will issue a proclamation banning the
7 use of all military sonars whether low, mid or high
8 frequency within the exclusive economic zone of the
9 kingdom that includes the entire Hawaiian archipelago
10 and waters extending out 200 miles from that
11 archipelago.

12 The United States chose to make Hawaii
13 a part of its nation over the objections of the vast
14 majority of Hawaiians as expressed in the petition
15 signed opposing annexation. That unilateral decision

16 by the United States has been a disaster for the
17 Hawaiian people.

18 Now the time has come to put right
19 what is wrong. Ho'oponopono is the Hawaiian term for
20 that process. The King sent a letter to President
21 Bush offering friendship and forgiveness. An
22 agreement, before the King issues his proclamation by
23 the United States Navy not to deploy low frequency
24 active sonar within the exclusive economic zone of
25 the kingdom would be a welcome step in the

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9

1 ho'oponopono process. Imua.

2 MR. JOSEPH JOHNSON: Thank you. Thank
3 you very much. Karen Boyle. Name, affiliation with
4 any organization.

5 MS. KAREN BOYLE: My name is Karen
6 Boyle. I work at Queen's Hospital. I'm a registered
7 nurse, and I've lived in Hawaii since 1968. I live
8 actually towards Kaimuki. I'm going to read a
9 statement, and I'm going to comment. I'm pretty much
10 aware of this statement. I just didn't know the
11 person's name. So I have read it a few times, and it
12 basically holds true to what I've heard.

13 Chris Reid is a naturalist on the
14 island of Hawaii, who has studied dolphins for many
15 years. Ms. Reid entered an ocean bay to observe
16 dolphin pod during the testing of SURTASS LFAS off
17 the island of Hawaii in 1998. She observed the pods
18 during a broadcast.

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19 Ms. Reid remained in the water for an
20 extended period watching dolphins and responding to
21 the broadcast lifting their heads out of the water
22 and vocalizing extensively. Ms. Reid emerged from
23 the water and experienced serious physiological
24 effects from the broadcast evidenced by inability to
25 walk in a straight line. She had trouble focusing

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1 and otherwise experienced extreme disorientations.
2 Shortly afterward a doctor examined Ms. Reid and
3 documented her condition.

4 Over the next two years, Ms. Reid had
5 great difficulty with maintaining mental focus and
6 had bouts of depression which she had not experienced
7 prior. Numerous healers on the island assisted her
8 with repair, and after two years she has fully
9 recovery.

10 The Navy was informed of this event
11 including a report at the time and declarations filed
12 by Ms. Reid and reportedly there are no Navy
13 follow-ups to affirm or disclaim this event. The
14 Navy did not send doctors to evaluate Ms. Reid either
15 mentally or physically.

16 The response came from scientists
17 about the LFAS possibility of sound decibels to be no
18 greater than 125 decibels which is considered
19 incapable of causing physiological effects suffered
20 by Ms. Reid. The response to the event is not

21 scientific.

22 Given Ms. Reid's exposure in the bay
23 where the LFAS would have bounced off the ocean
24 walls, this would have created a potential
25 amplification. True science would have found this

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11

1 anomaly very interesting and researched it to find
2 out if this could be a repeated test or have happened
3 in the first place. Instead -- let's see.

4 what I wrote down was that for me as a
5 member of the medical society, it is true that I have
6 heard about this. what I had heard was that
7 basically people on a boat were watching whales come
8 out and all this; so it's very similar to what I had
9 heard.

10 I didn't know the lady's name, but the
11 ears are basically susceptible. They don't have
12 hands to flap over their ears and we have yet to
13 track devices on whales to show the long-term effect.
14 And just because it doesn't show up in five minutes
15 doesn't mean that it may not have an impact on the
16 capacity of the species to reproduce itself, and the
17 beauty of this species is not itself alone it's part
18 of life. And the balance between war and peace is
19 beauty and all that is appreciated.

20 MR. JOSEPH JOHNSON: Appreciate it.
21 Thank you very much. Ira Rohter.

22 MR. IRA ROHTER: Hello. I'm Ira
23 Rohter. I'm appearing on behalf of the Green Party
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24 of Hawaii, who have been plaintiffs in four different
25 lawsuits related to this LFA. I want to set a little

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1 bit of a context and review the question as to why
2 you're here dealing with the issue of deployment and
3 I have by the way a complete statement.

4 First of all, we know why you're not
5 here. We know you're not here to acknowledge the
6 evidence about the harmful effects that emerged in
7 1998 when the Navy came to Hawaii's islands to test
8 the LFA system. At the time, numerous whale watch
9 boat captains, helicopter pilots and shore observers
10 reported that the humpback whales disappeared from
11 the test area.

12 The permit for the testing called for
13 suspension of the test if there was an abnormal
14 absence of whales. Despite the filing of several
15 such reports with the Navy and the National Marine
16 Fishery Service, the test continued. Despite the
17 extensive experience of the observers reporting the
18 absence of whales in the area, unusual phenomena for
19 them you chose to ignore the evidence with
20 considering results of the test.

21 Your paid scientists dismissed these
22 observations as if that term negates the credibility
23 and validity of knowledgeable observers themselves.

24 Honest science would require your paid
25 scientists to interview these observers to attempt to

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13

1 document their observations and otherwise treat their
2 information as relevant to the impact study.
3 Ignoring their evidence and dismissing their
4 observations as anecdotal is pseudo-science in
5 service to a predetermined outcome.

6 You are not here to apologize to the
7 naturalist that was just mentioned here studying the
8 dolphins who received extensive exposure to the LFA
9 broadcast while she was in the water which I gather
10 is left her with psychological and physiological
11 problems lasting for two years. You ignore the
12 evidence presented in court regarding the impact of
13 this exposure and made any attempts to contact her or
14 her doctor to discuss the witness.

15 You chose to rely on data collected on
16 professional naval divers and chose and ignored the
17 potential impact of LFA transmissions on general
18 public who are not part of your very narrow test
19 population.

20 Honest science would have led to your
21 contacting the injured individual and her doctor to
22 determine the nature and extent of her injuries.
23 Ignoring her injuries is pseudo-science in service to
24 a predetermined outcome.

25 You are not here because the birth

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1 rate in two dolphin pods that frequented the test
2 area dropped dramatically in the birthing season
3 following the LFA test. You have chosen to ignore
4 that evidence as well.

5 Honest science would have led to
6 examining the vast database collected by the pod
7 observers and determining the significance of the
8 precipitous drop in dolphin birth rates. If that
9 drop appears credible, a whole lot of potential
10 impacts such as the potential for LFA broadcast at
11 the resident frequency of tissues important to
12 gestation -- would have been raised.

13 Your entire approach to the deployment
14 of LFA has been to seek out evidence that would
15 justify deployment and to ignore evidence that would
16 argue against its use.

17 For years you knowingly pursued any
18 development, testing and deployment of LFA without
19 any regard for the numerous environmental laws that
20 require you to perform studies and evaluate the
21 potential impact of this new technology. You
22 invested more than \$100 million before beginning to
23 assess environmental impacts. You can hardly
24 conclude after spending all that money that this had
25 been a terrible mistake, so you skewed the science to

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1 justify deployment.

2 Part two, gaming legal process. You
3 are here because irresponsible behavior in 1998
4 outraged thousands of people literally in the islands
5 and the mainland. They have written letters to
6 Congress, the Navy, the National Marine Fisheries
7 Service and elsewhere objecting to your cavalier
8 attitude towards the whales and to deployment of this
9 technology.

10 You are here because the efforts by
11 people of these islands to protect the whales and
12 other sea life forms for your disregard including the
13 filing of numerous lawsuits challenging the tests,
14 the deployment and the failure to prepare an EIS for
15 deployment during threat and warfare conditions.

16 So you have begrudgingly been forced
17 to return to a place that you know is very concerned
18 about and active on the issue of low frequency active
19 sonar. So you slip in this little notice time wise
20 position wise as possible. The guidelines for draft
21 environmental impact statements call for the issuing
22 of an agency to circulate the document to parties
23 known to be interested in the subject. Yet you made
24 no effort to timely inform the public of those
25 parties in Hawaii that show particular interest about

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16

1 the release of supplemental environmental impact
2 statement.

3 The Green Party of Hawaii filed four
4 different lawsuits related to LFA. You did not send

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5 a copy of the draft EIS to either The Green Party or
6 its attorney. In the list of other interested
7 organizations found the draft statement the only
8 organizations sent a copy to in Hawaii was the
9 Pacific Whale Foundation in Maui which has never been
10 involved in litigation on the issue. Curious.

11 Obviously, you knew it was a
12 substantial interest in this issue and chose a
13 process that limited the likelihood that we would
14 learn about the document. We assume that given the
15 level of activity in Hawaii opposing deployment of
16 this technology this led to your decision to exclude
17 organizations and individuals. And otherwise
18 minimize your exposure to public scrutiny and
19 comment.

20 Those who did not receive the document
21 are left to download a 429-page text and print it out
22 themselves. You only sent CD disks, not hard copies
23 to libraries requiring people who wanted to see this
24 to sit at a library machine for hours, take notes
25 whatever. You have made the documents virtually

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1 inaccessible to those who do not receive hard copies.

2 Also notice two things. In order to
3 come on this campus you have to spend \$3.00 which is
4 not very publicly accessible. Also I'm fascinated
5 with your sign down here which is in the dark, and
6 these are hand made signs. It's clear that you have

7 really no systematic process to elicit public
8 support.

9 Your failure to send out the
10 supplemental environmental impact statement to
11 interested Hawaiian parties is evidence of a
12 deliberate attempt to minimize public knowledge of
13 and participation in this process. You want to be
14 able to stand before a judge and say you held a
15 hearing in Hawaii so you went through the motions
16 without any real substance.

17 On behalf of The Green Party of
18 Hawaii, I say shame on you frankly for your lack of
19 commitment to scientific objectivity. Shame on you
20 for your lack of commitment to democracy in public
21 participation and shame on you for being willing to
22 threaten the health of the marine community and of
23 humans who might be present whom you turn on your low
24 frequency active sonar. Thank you.

25 MR. JOSEPH JOHNSON: Thank you. Next

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1 Leon Siu, S-I-U.

2 MR. LEON SIU: Hello (speaking
3 Hawaiian). I'm here to represent The Hawaiian
4 Kingdom. And I'm here to read actually our testimony
5 is not really testimony. It's a public notice to be
6 distributed here as well as through the public
7 meetings.

8 It's a lawful public notice Honolulu,
9 Hawaii, 5 December, 2005. Lawful notice is hereby
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10 given to the Hawaiian Kingdom Government, by the
11 Hawaiian Kingdom Government functioning under its
12 national common law in assertion of its right as the
13 lawful government of this sovereign, independent and
14 neutral nation.

15 To the United States of America, its
16 leaders and representatives, to wit, the Hawaiian
17 Kingdom Government categorically protests, opposes
18 and condemns the illegal unilateral plan by the
19 United States to deploy low frequency active sonar in
20 our Hawaiian territorial waters.

21 The Hawaiian Kingdom is a sovereign
22 nation having treaties intact and in effect with
23 numerous foreign nations including the United States.
24 That Hawaii has been under a prolonged unlawful
25 military occupation by the United States does not

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19

1 alter Hawaii's sovereign status.

2 Therefore, unless there is a bilateral
3 treaty with the de jure Government of the Hawaiian
4 Kingdom regarding the LFA sonar system, the United
5 States has no lawful authority to deploy this device
6 in our Hawaiian territorial waters.

7 The Hawaiian Kingdom hereby prohibits
8 for cause United States Navy or any of its agencies
9 from deploying the sonar system or conducting any
10 military exercise pertaining to its application in
11 Hawaiian waters.

12 This Government furthermore warns
13 through this lawful notice that should the United
14 States choose to not comply to this prohibition, it
15 will be regarded as a breach of international law as
16 well as Hawaiian Kingdom law and Hawaiian Kingdom
17 will prosecute this case to its fullest extent in the
18 appropriate international courts of law.

19 Respectfully submitted, Aran Alton Ardaiz, Attorney
20 General Ke Apune O Hawaii Nei. Leon Siu, myself,
21 Minister of Foreign Affairs. Ke Aupuni O Hawaii Nei.

22 MR. JOSEPH JOHNSON: Thank you very
23 much. Henry Curtis.

24 MR. HENRY CURTIS: Aloha. I'm Henry
25 Curtis, executive director of Life of the Land. We

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1 were founded in February of 1970. One of our first
2 actions was in '71 with filing a suit against the
3 Navy in getting the first environmental assessment
4 over the bombing of Kahoolawe. The environmental
5 assessment found that bombing is bad for the
6 environment.

7 More recently we have served on
8 restoration advisory boards and technical review
9 committees with the military, the Schofield Barracks
10 Technical Advisory Committee, the technical review
11 committee, the central Oahu Air Force Restoration
12 Advisory Board, the U.S. Navy Pearl Harbor
13 Restoration Advisory Board, and the Hickam Air Force
14 Base Advisory Board of which I was community co-chair

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15 from '96 to this past summer of 2005. So we're used
16 to reading military documents and military jargons
17 and acronyms which are extensive even in an executive
18 summary.

19 We noticed a few points that I want to
20 raise before reading written testimony which I'll
21 submit is on page 8 of the executive summary. It
22 says independent research paid for by the Navy. Now,
23 we can argue over the quality of the data. But when
24 a researcher is paid by somebody, they're not
25 independent because you may say to someone you're

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1 free to say whatever you want, but we are the biggest
2 funder around and if we don't like your results,
3 you're not going to get hired again. That's pretty
4 good promotion to encourage results that you want.

5 we've also poured through risk
6 assessments put out by the military and inherently
7 risk assessments we are very conservative in our
8 approach and don't worry, nothing has been found.
9 But at the same time in the last few years, the cost
10 of war known as COW. I'm not sure why, holy cow
11 whatever cost of war has put off doing adequate
12 cleanup measures because the war in Iraq is gobbling
13 up all of our expenses. For some reason Al Queda
14 attacked us. We went after Iraq, and we're pouring
15 hundreds of billions of dollars in and therefore we
16 don't have the money to clean up toxic sites here in

17 Hawaii which are affecting Hawaii residents.

18 There is one site, for example, where
19 dioxin, the most lethal substance that man has ever
20 created is 1,500 times the maximum contamination
21 level. The site has not been delineated. Young
22 people have gone to the site and the Navy recently --
23 military recently conducted a study and found that
24 there is no risk, no harm, believe us, trust us
25 everything is okay.

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1 So when we see a document like this
2 where the subject is not land based where people can
3 directly impact it, are directly impacting but rather
4 the distant oceans where there are whales and sea
5 mammals, turtles, fish being affected, but they are
6 not directly observed all the time, we are
7 distrustful that everything is being done. And we
8 testified on the SCRIPPS ATOC project Kauai, the
9 acoustic thermometry of ocean climate, ATOC project
10 which the Navy assured once it was done in its
11 initial phase would be taken out. And of course
12 that's not anything that's remotely true. It's going
13 to remain there forever or until the Navy leaves
14 Hawaii.

15 One of the purposes of the ATOC
16 besides looking at sending waves out was also global
17 warming as if we needed additional tests to determine
18 that that's happening. My talk that I'm -- I have a
19 paper LFAS and disinformation which we have 10 copies

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20 here and I'll submit it. And without reading it in,
21 I will submit it.

22 MR. JOSEPH JOHNSON: Thank you.

23 MR. HENRY CURTIS: And we will be
24 submitting additional written information into the
25 record. But we should note also having been

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23

1 disinvolvement in military cleanup and military
2 monitoring military actions, we were also not sent a
3 hard copy of the EIS.

4 MR. JOSEPH JOHNSON: Okay. Thank you.
5 I'm going to have a hard time with the first letter
6 here. Brady?

7 MS. KAT BRADY: Kat Brady. Good
8 evening. My name is Kat Brady, and I'm with Life of
9 the Land, and Life of the Land resides in Hawaii, the
10 most militarized place on the planet.

11 I'm here tonight to speak for these
12 magnificent marine creatures who can't speak for
13 themselves today, and the U.S. Navy has obviously
14 turned a deaf ear to their calls. In the spring of
15 1998, the Navy came to the island of Hawaii to test
16 its low frequency active sonar on humpback whales
17 during their meeting and birthing season.

18 NMFS, The National Marine Fisheries
19 Service issued a permit for these tests containing
20 various provisions including provisions requiring
21 suspension of the testing if certain impacts

22 appeared.

23 One such condition required suspension
24 if there was an unusual absence of animals observed.
25 Shortly after the broadcasts began, boat captains

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1 reported a number of whales in the test areas dropped
2 rapidly. As the testing continued, whale watch boat
3 captains reported a complete absence of whales from
4 the test area. A helicopter pilot and shore
5 observers began reporting the same disappearance of
6 whales from the test area. The test area is a
7 primary birthing and breeding area for humpback
8 whales.

9 People on the islands sent these
10 reports and other observations of unusual marine
11 activity to NMFS and the Navy calling for suspension
12 of the tests as the permit provision called for.
13 NMFS refused to suspend the test.

14 You heard about The Green Party filing
15 suits, the community was outraged that this has
16 happened. Hawaii has one of the most pristine
17 environments on marine environment is our last
18 frontier.

19 The military has destroyed so much of
20 our land, that the ocean is our very last frontier
21 and we are very protective of it. In response to the
22 lawsuit and the only reason you're having this
23 hearing tonight is because people pushed for it
24 because of the lawsuit so it's not that the Navy is

25 coming here to say, hey we really want you to know

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1 what is going on. This is what is so egregious to
2 the people here.

3 You have hired your own scientists to
4 reach or determine conclusions. That's very
5 offensive to us. The Navy, the scientists conducting
6 the aerial survey found an abundance of whales
7 outside the test area. You know, we've had lots of
8 marine tests here where they model things on
9 computers somewhere else. And as many local people
10 who are watermen, boat captains people who are water
11 people can tell you a lot of that modeling doesn't
12 really work. You need to talk to the people who are
13 in the water who understand how the ocean reacts.

14 You need to understand how marine
15 mammals react around different things. There's a big
16 thing about, you know, boats and the engines on boats
17 and how close they could be near the marine mammals;
18 so put these high decibel things in the ocean where
19 there is proof from people who are water people that
20 the whales and marine life is breathing the test
21 area. You need to stop that. You need to operate
22 using the precautionary principle.

23 You know, other places they might have
24 some place to go. This is our place. And we don't
25 really have any other place to go. The mammals the

1 whales, they're part of us in Hawaiian culture,
2 they're people's amakua. They're part of their
3 family. They're part of their genealogy. This isn't
4 just something that you can go to a zoo and say gee,
5 isn't that nice. We're talking about the native
6 people here and their very sacredly held beliefs; so
7 I'm begging you to use the precautionary principle
8 where there's any chance of harm, don't do it.

9 This is the latest broken promise
10 because, you know, we all thought after the federal
11 court injunction that, you know, the ocean would be
12 safe. Again, you're coming back now and saying okay,
13 well, now we need, you know, readiness, military
14 readiness. We got to do this which is the catchall
15 for everything bad that happens in Hawaii. So this
16 is just the latest broken promise in a long chain of
17 deceit that Hawaii has suffered at the hands of the
18 U.S. military.

19 Recently, Life of the Land was asked
20 to judge an essay that a girl's school did. The
21 topic they picked was LFA. And after they did a run
22 of research, they just couldn't understand why would
23 anybody allow this in Hawaii? How could this be and
24 they turn to us and said well, why is this happening?

25 So I'm turning to you and I'm saying

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1 why is this happening on behalf of the girls who did
2 lots of research, why would you do this especially
3 when there has been in the Bahamas in 2000, 15
4 beached whales, two minke whales and a dolphin beached
5 themselves after a Navy exercise. In Puerto Rico a
6 beached whale and a humpback whale stranded on the
7 beach while Navy exercises were taking place in
8 April, 2002. In the U.S. Virgin Islands four beached
9 whales swam ashore in 1999 in October when a wildlife
10 official noted loud naval sonar. On Madeira Island
11 three beached whales were found on the beach in May,
12 2000 at the time of Navy exercises. In the Canary
13 Islands up to 19 beached whales come ashore in
14 September 2002 at least 13 died. The ones found say
15 life appeared disoriented. Unusual bleeding was
16 discovered in the animal's brains, spine and eyes.
17 Five of seven mass strandings here since '85 have
18 occurred in the Canary Islands. This has occurred
19 around the time of naval exercises.

20 In May 1996 in Greece during tests of
21 a new and more powerful low frequency sonar, fourteen
22 beached whales stranded themselves. What do you need
23 to know? What do you need to know? I'm asking you
24 please take your toys and go somewhere else. We are
25 under siege here. We love our land, we love our

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1 ocean, and we're saying no, no more. Mahalo.

2 MR. JOSEPH JOHNSON: The last card I

3 have is Art Mori.

4 MR. ART MORI: My name is Art Mori,
5 and I'm here as an individual, and I wouldn't be here
6 if but for the fact that some of my friends called me
7 and told me that this meeting was going to take place
8 because I presume it was in the newspapers somewhere
9 but probably in those areas that people my age can't
10 read.

11 In a former life, I was an Army
12 inductee as a recent graduate in chemical engineering
13 drafted into the Army and sent to Dugway proving
14 grounds; so I guess I was one of the few people in
15 the Navy in this room who really did work on weapons
16 of mass destruction.

17 Shortly after leaving the military,
18 there was a terrible incident at Dugway where several
19 sheep, hundreds of sheep were killed. The U.S.
20 chemical corps said they had nothing to do with it
21 and the CDC people rushed to the scene and found
22 evidence in every single dead animal they could find
23 traces of nerve gas.

24 After the Army paid the sheep herders
25 and the owners several times the value of the sheep,

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1 they made an official statement. The official
2 statement ran something like this, U.S. Army had
3 nothing to do with this particular incident, and we
4 will see that it doesn't ever happen again. And this
5 is true. I think you can read that that was, in

6 fact, the actual wording.

7 I really don't have any prepared or
8 written statement. I just came to listen, but I do
9 have some questions and possibly they are answered in
10 some of the documents here.

11 First of all, how many foreign
12 submarines actually have been detected using this
13 system? I mean, you've been, you know, using it in
14 various sites. I'm just wondering if any foreign
15 submarines have been detected? Number two, it does
16 seem as though not all of the answers of several
17 people in this room really have been questioned or
18 answered I should say.

19 Their concerns, although they might be
20 anecdotal, my only anecdotal experience is just
21 myself and my wife walking from Aina Haina to the
22 Kahala Mandarin or whatever it's called these days,
23 and it's amazing walking on the shore how many times
24 schools of fish are just scared, freaked out by us
25 walking along and I don't think we're making all that

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1 much noise. But it's always been some interest to
2 me. And my wife mentioned to me saying gee, they're
3 using sonar. We're freaking these fish out just
4 walking along what's going to happen with the sonar?

5 The other question I have is that as
6 you've mentioned, this seems to be the only way of
7 detecting submarines at long range and stealth

8 submarines and so forth. And if that is indeed the
9 case, I can only conclude that other countries will
10 also adopt this same method. And if other countries
11 adopt this same method will their efforts be
12 mitigated? There seems to be a lot of concern that
13 the Navy isn't mitigating. What is our assurance
14 that they're going to be mitigated by foreign powers.
15 It does bother me a little bit.

16 At any rate, I think the question of
17 whether there will be an effect and possibly cannot
18 be answered for certain one way or the other. The
19 Navy has their views. I think a number of other
20 scientists and other individuals have their views,
21 and it would seem to me that maybe it might be a nice
22 idea as Kathy mentioned just not go into it. If
23 there is some doubt, why try it? And I also seem to
24 feel that this may just lead to another whole series
25 of escalations of rather than arms race of defense

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1 mechanisms race which I don't think really is a very
2 nice idea.

3 Once again, I'm just very, very
4 concerned that not only will the Navy do a good job
5 but will other people who obviously will adopt the
6 same process will they be in any way concerned with
7 mitigating it. It would seem maybe a much better
8 idea would be to have some international protocols by
9 all nations possibly could dream up maybe it would be
10 nice to have no submarines. It seems to be maybe the

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11 reason for our whole -- the whole reason for our
12 having to use this particular method. At any rate,
13 as I say those are some questions I had and possibly
14 they are answered in the documents, but it seems to
15 me just a little bit frightening and I just hope that
16 somewhere along the line the U.S. Navy doesn't have
17 the say we didn't have anything to do with it. But
18 we'll be certain it won't happen again.

19 MR. JOSEPH JOHNSON: Okay. Thank you.
20 The last card I have is Kyle. Your last name.

21 MR. KYLE KAJIHIRO: Kajihiro. Aloha
22 kako. My name is Kyle Kajihiro. I live in Moiliili
23 just down the hill. I'm the program director for the
24 American Friend Service Committee, and I work with a
25 network of organizations concerned about the impacts

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1 of the military in Hawaii called the Demilitary Zone
2 Hawaii Network, Aloha Aina.

3 Although tonight I don't have a
4 prepared statement, I'm speaking as an individual.
5 Part of the reason why I don't have a statement is
6 that I think there's a public outreach and
7 notification for participation in this process has
8 been terribly inadequate.

9 We do a lot of monitoring and comments
10 on environmental statements, and it was very
11 difficult to find out what this hearing was about and
12 what was being proposed, and I have not seen a list

13 of anywhere with the document may be available for us
14 to review; so I have not seen the actual document.
15 I'm making comments on the principle of what is been
16 proposed.

17 For those of us who have studied the
18 history of Hawaii, you've gotten some of the comments
19 here tonight. We know that history does not allow us
20 to trust the military as a steward of our
21 environment. If you just look at the history, and
22 it's a litany of tragedies. We talk about chemical
23 weapons. Recently it was disclosed that 16,000
24 barrels of weapons were dumped in the oceans off of
25 Oahu without adequate safeguards, without adequate

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1 maps of where these things may be, without any
2 testing of what impacts these may have had on the
3 environment, the fish or communities.

4 You talk about agent orange which was
5 tested secretly here on Kauai and two UH agricultural
6 workers who died from their exposure and their claims
7 were fought in court for many years because they
8 wanted to get adequate compensation. Look at Waikana
9 Valley, the valley that the military leased from the
10 Kamaka family for training during World War II with a
11 promise that the land would be cleaned up to its
12 natural condition at the ending of their training.
13 At the end of that lease what happened? The military
14 condemned the land because it refused to pay the
15 price for cleaning it up. What about Makua Valley,

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16 which was taken from -- where people where evicted
17 during world war II. Their possessions were left on
18 the side of the road. They were told -- they were
19 given 24 hours to leave their homes, their church was
20 bombed for target practice and there was a promise
21 that the land would be returned six months after the
22 war. That war has been over a long time.

23 So now when we're faced with threats
24 such as this, we have the Stryker Brigade that's
25 proposing to take 25,000 acres of land in Hawaii,

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1 additional acres of land. That's a 10 percent
2 increase of the existing land that the military
3 controls. You already have a quarter of the island
4 of Oahu. You control all the defensive seas around
5 our islands. That's why too much and many of us have
6 said you know enough already. These things have got
7 to stop, and you've got to start cleaning up and
8 returning what was taken that wasn't yours to take.

9 And so this latest proposal is another
10 taking. And people in Hawaii see it as that, and you
11 know if you had done adequate outreach, you would
12 have seen that there was such resistance to what you
13 are proposing here. I don't think -- are you doing
14 any hearings on neighbor islands? None on the
15 neighbor islands. You know, how dare you guys come
16 here and propose this stuff without putting these
17 things out for the people to really look at and

18 assess this impact. And you know what is the problem
19 here is that these kinds of processes are always
20 driven by the wrong questions.

21 They're always driven by your
22 prerogatives and your interests while ignoring what
23 is in the interest of the security and health and
24 safety of the communities and the environment. If we
25 were to ask the question from a different perspective

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1 what's good for this place, for Hawaii, for the
2 environment, for the whales, for the Hawaiian people,
3 we come up with a very different conclusion.

4 So you need to assess the cumulative
5 impacts of all of these things that we're talking
6 about. You know, hundred, 10, 12 years of
7 occupation, you know, there's a cumulative impact of
8 all of that environmentally, culturally, socially,
9 that needs to be part of the assessment. And if you
10 do an honest assessment, I don't think you can come
11 up with any other solution than to reject the low
12 frequency sonar in Hawaii.

13 So I'm just closing by saying that I
14 really hope that you will take into consideration,
15 seriously take into consideration what people are
16 saying and ask the right questions, approach it from
17 a point of view of precaution as opposed to risk
18 assessment which is just plain, you know, a gamble
19 with our health, you know, with our health and the
20 environment. You know if you go from the point of

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21 view of precaution, I don't think you can arrive with
22 a conclusion that this project can go forward. Thank
23 you.

24 MR. JOSEPH JOHNSON: Thank you. Are
25 there any more people wishing to speak. Anybody

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1 else?

2 MS. MARTI TOWNSEND: My name is Marti
3 Townsend. I am a recent graduate at U.H. law school,
4 and I am a project coordinator at Kahea. I also do
5 not have a prepared speech because although I do work
6 at a non-profit who's focused on Hawaiian
7 environmental issues, I received no notice about
8 this. I consider Kahea to be fairly well connected
9 as many others do and so the fact that we got no
10 notice on this is rather shocking and it's very
11 shocking to hear that there are no hearings planned
12 for neighbor islands especially considering what
13 happened last year on Kauai when during the RIMPAC
14 exercises the military is doing heaven knows what in
15 the water and a bunch of whales beached themselves,
16 whales that never come ashore.

17 So there is an obligation for the
18 military to do hearings on the neighbor islands. And
19 if you don't, you need to explain why. Justify to
20 the people. Tell them why their opinion doesn't
21 matter. The hearings need to be proper in that they
22 need to be, you know, in a large building, large

23 room, air conditioned. There's usually -- like I've
24 been to many EIS hearings, signs, you know,
25 explanation, big like three-sided boards that are

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1 hung up with the actual EIS available and books and
2 you can flip through them. People get the EIS in the
3 mail. You know, it's not held at the University the
4 week before finals, things like that. It needs to be
5 a proper hearing where many people can come and easy
6 to find it.

7 Now, the questions that I'd like to
8 have answered, and I'm assuming as with usual EIS's,
9 you take my questions, respond to them and then
10 E-mail them to me or make them available on a web
11 site where we can see the responses. And the
12 responses I'm looking for is one, how many lawsuits
13 has the Navy gone through in regards to low frequency
14 sonar tests and training? I know at least that has
15 been brought against the Navy. I want to know how
16 much the Navy spent on these lawsuits as well as
17 EIS's and whatever coups you had to go through in
18 order to go through this process. And then I want to
19 know exactly how many lawsuits will it take to prove
20 to the Navy that this is a bad idea. What's the
21 threshold? Let me know where the go line is and I
22 will get us there, okay. But the point is is that
23 you keep putting us through these hoops, there's no
24 way of knowing when is this a bad idea.

25 we're just going to continually print
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1 up, you know, three reams of paper in order to prove
2 that this is a bad idea and go through a lawsuit,
3 print up three more reams of paper, this is a bad
4 idea and go to another lawsuit. At some point there
5 needs to be a threshold.

6 I really agree with the idea of maybe
7 considering banning submarines. If submarines are
8 really a threat to the U.S. security, then we should
9 talk about, you know, an international ban on nuclear
10 testing and on submarines. So in the responses in
11 the EIS supplemental EIS, I'd like to know if the
12 Navy has considered the concept of banning, an
13 international treaty banning submarines, how much
14 that would cost, and how that would fair in relation
15 to, you know, blowing up all the marine mammals in
16 the ocean in the Navy U.S. defense.

17 I think it's particularly telling as
18 Kyle pointed out that these types of hearings are
19 totally driven by the Navy's agenda and that for this
20 type of public process should truly be a public in
21 the spirit that it was created. We need to come
22 together and talk about things not from the
23 perspective of what can the Navy get away with. What
24 is the Navy allowed to do under the law, that type of
25 thing because we know like MMPA, the Marine Mammal

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1 Protection Act, the Navy got an exemption, a rider.
2 You know, last year that allowed them to blow up the
3 ears in marine mammals regardless of whatever law we
4 passed.

5 The point is is that these types of
6 public comments, if you are truly interested in
7 public comments you don't want to sit here and be
8 uncomfortable in a room that's too small with no air
9 conditioning, enough lighting is that we're not
10 interested in blowing up the ears of marine mammals.
11 And although we recognize that you may be interested
12 in doing whatever it takes to defend U.S. national
13 security, even if it kills us all, these public
14 hearings need to be driven by a true public process
15 where the issues that we bring up like the history of
16 Hawaii are truly addressed.

17 MR. JOSEPH JOHNSON: The last card I
18 have is H-U-S-S-E-Y.

19 MR. IKAIKA HUSSEY: My name is Ikaika
20 Hussey. Well, this will be difficult to follow, but
21 I will do my best. My name again is Ikaika Hussey
22 for the record. I live in Kaimuki. My family is
23 from Kaneohe. But we come originally from the Kona
24 district of the Hawaii island where there's a heiau
25 called Puu Kohala which means the hill of the whale.

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1 So I think there's a particular tie that people of
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2 this land have with our brothers and sisters who
3 reside in the ocean. And I think that that's a
4 relationship which is sacrosanct which is being
5 harmed irreparably by what we're talking about here
6 tonight.

7 I'm going to focus briefly on since
8 again, like many of the people in this room and many
9 more people outside of this room copies of the EIS
10 weren't provided. So I'm going to look at this
11 document which was placed up here. And on the first
12 page, you say that the United States is essentially
13 an island nation. By that I'm not sure if you mean
14 that gobbles up islands through illegal military
15 actions, but I'll take it at face value. It receives
16 a majority of its vital resources from overseas
17 trade. More than 90 percent of which comes from the
18 United States through merchant shipping. I'm going
19 to skip a sentence.

20 vital choke points such as the Suez in
21 the Panama Canals, the entrance to the Persian Gulf,
22 the Straits of Malaka and the Straits of Florida are
23 particularly vulnerable. I think just pondering
24 those sentences gives you some idea of what we're
25 talking about. We're talking about a rationale based

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1 on economic control that will drive this active sonar
2 system. And you know, let's talk about what it means
3 for the United States to have this kind of economic

4 control that it wants to protect quote, end quote and
5 "guarantee" through this technology. we're talking
6 about a country that is 6 percent of the world's
7 population, but consumes 40 percent of the world's
8 resources.

9 That means that if other countries on
10 the planet wanted to have the same kind of living
11 that American -- that at least the middle class and
12 the upper class in the United States enjoy, that we
13 would need nine more planets just in terms of
14 resources that would have to be consumed to have it
15 expropriated in order to fulfill the desires for SUV
16 and endless supplies of petroleum which we know will
17 come to an end.

18 You know, affordable clothing made by
19 underpaid labor in China and Taiwan and Mexico, and
20 Malaysia and Thailand. Look at the labels on the
21 back of your shirts. Think about the living
22 conditions of the people that are working in sweat
23 shops. That's what the sensor -- that's what the
24 sonar system will be guaranteeing will be working to
25 protect is your ability to have your shirts at the

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1 prices you paid and the underpriced labor in those
2 countries. Is it worth that? Sorry for making you
3 uncomfortable. But I promise there's people who are
4 more uncomfortable than the ones in this room.

5 Since the 1830's we've gotten very
6 accustomed to seeing U.S. military and European

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7 military forces in Hawaii. We've seen economic
8 intrusions, economic interventions -- I'm sorry.
9 strike that. Military interventions in Hawaii since
10 the 1830's for the purpose of securing U.S. economic
11 interests. The overthrow of our constitutional
12 government in 1893 was largely because of U.S.
13 economic interests, military interest in Hawaii. And
14 so you think about all of the sins that have been
15 committed, all of the horrendous things which the
16 people of the United States are forced to live with,
17 where the children of the United States who are born
18 in a never committing those actions but will be left
19 with the guilt things like slavery, another thing
20 that was done for economic interest. The
21 expropriation of land and the forced removal of
22 millions of native Americans for U.S. economic and
23 military all throughout North America. That's what
24 we're talking about.

25 So you know, there's a technology

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1 that's on the table, but there's an entire context of
2 U.S. imperial hegemonic designs which frame the
3 context of this conversation. I think that some
4 points that were brought up earlier I need to
5 underscore which is the fact that if the United
6 States starts to employ this technology, can we
7 assume other countries to do the same? Just as the
8 United States has to employ ballistic missile quote,

9 end quote "defense technology" in outer space, can we
10 assume other countries to try to do the same.

11 we're talking about an arm's race in
12 the heavens and an arm's race in the oceans. I don't
13 think that benefits anyone's national security. And
14 I'm just going to close with two questions that I'd
15 like the EIS the final EIS documents to answer. And
16 that is how will the Navy compensate the native
17 peoples who relied on whales for religious practices
18 and subsistence practices? There are tribes, native
19 tribes who have lived for thousands of years on the
20 Pacific Northwest who live in Alaska for thousands of
21 years and also people in Hawaii for whom a
22 relationship not of domination, not of -- certainly
23 not shooting sonar at them but a relationship of
24 mutuality is what has persisted and allowed for
25 survival for thousands of years. What will the Navy

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1 do to pay back for its actions?

2 And secondly, there's already a lot of
3 international concern about things like whaling
4 whenever countries like Japan engage in actions which
5 harm whales in the oceans, there's the United States
6 government complains about it, groups throughout the
7 European union complain about these things. How was
8 this any different? How can the United States say
9 that one set of morality, one set of laws will apply
10 to those people but not the United States? I think
11 these are critical questions. I think you have done

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12 a poor job of making this a discussion that many
13 people can't participate in. Thank you.

14 MR. JOSEPH JOHNSON: Thank you. Okay.
15 Is there anyone who wishes to speak that hasn't had a
16 chance so far? Okay. That will close the hearing.
17 I'd like to add that the form for the response to the
18 questions received will be as part of the final
19 supplemental EIS. Every one of those comments that
20 we have received will be addressed in that document
21 as required. The hearing is now closed.

22 (Hearing concluded at 8:26 p.m.)

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1 C E R T I F I C A T E

2 STATE OF HAWAII)
3 CITY AND COUNTY OF HONOLULU) SS:

4 I, MYRLA R. SEGAWA, Notary Public, State of
5 Hawaii, do hereby certify:

6 That on Monday, December 5, 2005, at
7 7:30 p.m., appeared before the persons whose
8 statements are contained herein;

9 That the statements were taken down by me
10 in machine shorthand and was thereafter reduced to
11 typewriting under my supervision; that the foregoing
12 represents, to the best of my ability, a true and
13 correct transcript of the proceedings had in the

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14 foregoing matter.

15 I further certify that I am not an attorney
16 for any of the parties hereto, nor in any way
17 concerned with the cause.

18 DATED this 14th day of December, 2005, in
19 Honolulu, Hawaii.

20

21

22 MYRLA R. SEGAWA, CSR NO. 397
23 Notary Public, State of Hawaii
24 My Commission Exp: 1-27-2009

24

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