Appendices A-J
of the
Final Atlantic Fleet Active Sonar Training Environmental Impact Statement/ Overseas Environmental Impact Statement

Lead Agency:
Department of the Navy
Action Proponent:
United States Fleet Forces Command
For Additional Information:
Naval Facilities Engineering Command, Atlantic
Attention: Code EV22 (Atlantic Fleet Sonar Project Manager)
6506 Hampton Boulevard
Norfolk, VA 23508-1278
http://afasteis.gcsaic.com
Cooperating Agency:
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, Maryland 20910-3226

Published December 12, 2008

Abstract:

The Department of the Navy has prepared this Environmental Impact Statement/Overseas Environmental Impact Statement to analyze the potential environmental effects associated with the use of active sonar technology and the improved extended echo ranging system during Atlantic Fleet training exercises, maintenance, and research, development, test, and evaluation activities. The potential effects to physical, biological, and man-made environmental resources associated with the training alternatives were studied to determine how the Proposed Action could affect these resources.

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The Department of the Navy has prepared this Environmental Impact Statement/Overseas Environmental Impact Statement to analyze the potential environmental effects associated with the use of active sonar technology and the improved extended echo ranging system during Atlantic Fleet training exercises, maintenance, and research, development, test, and evaluation activities. The potential effects to physical, biological, and man-made environmental resources associated with the training alternatives were studied to determine how the Proposed Action could affect these resources.

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APPENDIX A

AGENCY CORRESPONDENCE

COOPERATING AGENCY CORRESPONDENCE

EARLY CONSULTATION CORRESPONDENCE

COOPERATING AGENCY CORRESPONDENCE

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

IN REPLY REFER TO

5090
Ser N456C/7U158019
15 February 2007

Dr. William T. Hogarth
Assistant Administrator
National Oceanic and Atmospheric
Administration (NOAA) Fisheries
1315 East West Highway
Silver Springs, MD 20910

Dear Dr. Hogarth:

In accordance with the National Environmental Policy Act (NEPA), the Department of the Navy (Navy) has initiated preparation of an Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) to evaluate potential environmental effects associated with mine warfare (MIW) and antisubmarine warfare (ASW) active sonar training exercises along the east coast of the United States and the Gulf of Mexico. The Proposed Action will further our statutory obligations under Title 10 of the United States Code governing the roles and responsibilities of the Navy.

In order to adequately evaluate the potential environmental effects of the Proposed Action, the Navy and National Marine Fisheries Service (NMFS) will need to work together on acoustic effects to marine species protected under the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA). To assist in this effort, and in accordance with 40 CFR Section 1501.6 and the Council on Environmental Quality Cooperating Agency guidance issued on 30 January 2002, the Navy requests NMFS serve as a cooperating agency for the development of this "Atlantic Fleet Active Sonar Training" (AFAST) EIS/OEIS.

The Proposed Action for the AFAST EIS/OEIS involves:

- MIW and ASW sonar training exercises including Independent Unit Level Training, Coordinated Unit Level Training, and Strike Group Training exercises.
- Active sonar training exercises including air, surface, and subsurface sonar platforms that are manned by personnel who require training in order to maintain certification and readiness for deployment.
- Identifying areas in which to conduct ASW and MIW active sonar training along the east coast and Gulf of Mexico.

The purpose of the proposed action is to provide and maintain the long-term viability of Navy active sonar training for the U.S. Atlantic Fleet ship, submarine, and aircraft crews to meet deployment requirements and maintain proficiency of ASW and MIW skills. The need for the proposed action is to meet the legal mandate for the Chief of Naval Operations to organize, equip, and train all naval forces for combat as directed in 10 U.S.C. 5062. Navy forces must train to deal with the threat of modern quiet submarines; the most effective detection technology available is active sonar detection. In addition, Navy forces must train to detect mines which can prevent access to strategic areas, damage fleet forces, and disrupt commerce.

The EIS/OEIS will consider two Action Alternatives to accomplish these objectives, in addition to the No Action Alternative. The No Action Alternative is the continuation of year-round training within and adjacent to Navy East Coast and Gulf of Mexico Operating Areas.

The EIS/OEIS will address foreseeable activities in the particular geographical areas affected by the No-Action Alternative and action alternatives. This EIS/OEIS will include acoustic exposure modeling and an effects analysis for marine mammals. The effects analysis will be based upon validated Navy acoustic models and agreed upon Navy/NMFS evaluation methodology. In addition, other environmental resource areas that will be addressed, as applicable, in the EIS/OEIS include the physical environment; socioeconomic resources; and biological resources including wildlife, threatened and endangered species, marine mammals, migratory birds, fish and fisheries, essential fish habitat, coastal, marine and benthic communities, and special biological resource areas.

As the lead agency, the Navy will be responsible for overseeing preparation of the EIS/OEIS, which will include, but not be limited to the following:

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

Navy requests that NMFS, as cooperating agency, provide support as follows:

- Provide timely comments after agency information meetings and on working drafts of the EIS/OEIS documents. The Navy requests that comments on draft EIS/OEIS documents be provided within 21 calendar days.
- Respond to Navy requests for information, in particular related to review of the acoustic effects analyses and evaluation of effects associated with protection and mitigation measures.
- Coordinating, to the maximum extent practicable, any public comment periods necessary in the MMPA authorization process with the Navy's NEPA public comment periods, including discussion of coordinated comment response for consideration in the Final EIS/OEIS and NMFS rulemaking processes.
- Participate, as necessary, in meetings hosted by the Navy for discussion of EIS/OEIS related issues.
- Adhere to the overall project schedule agreed upon by the Navy and NMFS.
- Provide a formal, written response to this request.

The Navy appreciates your consideration of this request. My point of contact for this action is Ms. Karen M. Foskey, (703) 602-2859, email: karen.foskey@navy.mil.

Sincerely,

J.A. SYMONDS
Rear Admiral, U.S. Navy
Director, Environmental Readiness Division

Copy to:
ASN (I&E)
DASN (E)
OAGC (I&E)
FLTFORCOM N77
CNRSE N45
CNRMA N45
NAVFACLANT EV2

3

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, Maryland 20910
THE DIRECTOR

MAR 12 2007

Admiral J.A. Symonds
Director, Environmental Readiness Division
Department of the Navy
2000 Navy Pentagon
Washington, DC 20350-2000

Dear Admiral Symonds:

Thank you for your letter requesting the National Marine Fisheries Service (NOAA Fisheries) be a cooperating agency in the preparation of an Environmental Impact Statement (EIS) to evaluate potential environmental effects associated with mine warfare (MIW) and antisubmarine warfare (ASW) active sonar training exercises along the east coast of the United States and the Gulf of Mexico. We support the Navy's decision to prepare an EIS for this Atlantic Fleet Active Sonar Training (AFAST) and agree to be a cooperating agency, due, in part, to our responsibilities under section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA) and section 7 of the Endangered Species Act. We met with the Navy on February 7, 2007, and are currently working on a joint plan that will address how NOAA Fisheries and the Navy will cooperate during the development of multiple Navy EISs for Training Ranges and Major Exercises, including AFAST. Until the joint plan is complete, NOAA Fisheries will make every effort to support the Navy in the specific ways described in the Navy's February 15, 2007, letter.

If you need any additional information, please contact Ms. Jolie Harrison, (301) 713-2289, ext. 166.

Sincerely,

William T. Hogarth, Ph.D.

THE ASSISTANT ADMINISTRATOR
FOR FISHERIES

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EARLY CONSULTATION CORRESPONDENCE

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

IN REPLY REFER TO

5090
Ser N456K/7U158231
17 August 2007

Mr. P. Michael Payne
Division Chief
Permits, Conservation, and Education Division
Office of Protected Resources
National Marine Fisheries Service (NMFS)
National Oceanic and Atmospheric Administration
B-SSMC3 Room 13821
1315 East-West Highway
Silver Spring, MD 20910-3282

Dear Mr. Payne:

The Commander, U.S. Fleet Forces Command (USFF) is preparing an Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) to assess the potential environmental impacts associated with the conduct of Anti-Submarine Warfare (ASW) and Mine Warfare (MIW) activities within the Atlantic Fleet Area of Responsibility (Atlantic Fleet Active Sonar Training (AFAST) EIS/OEIS). The proposed action is to provide active sonar training for U.S. Navy Atlatnic fleet ship, submarine and aircraft crews to meet the requirements of the Fleet Readiness Training Plan (FRTP) and stay proficient in ASW and MIW skills. As part of the EIS/OEIS analysis, the Navy seeks to define where active sonar activities will occur within and adjacent to existing operating areas (OPAREAs) located along the East Coast of the United States and the Gulf of Mexico. These areas will be used to accommodate ASW, MIW and Improved Extended Echo Ranging (IEER) explosive sonobuoy training and research, development, test and evaluation (RDT&E) activities.

Conduct of these activities will likely result in acoustic exposure of marine mammals listed under the Marine Mammal Protection Act (MMPA) from active sonar and IEER , and likely requires a Letter of Authorization (LOA). As such, the Navy will be submitting an LOA request to your office in the coming months for these activities. Navy has prepared a draft of this LOA request and has been working with your staff on its contents. It is expected that species for which an LOA is sought will include species listed under the Endangered Species Act (ESA).

As an applicant for an MMPA permit, the Navy requests your office initiate early consultation procedures with the Endangered Species Division, in accordance with Section 7(a)(3) of the ESA, and its implementing regulations at 50 CFR §402.11. In accordance with these regulations, the Navy's preliminary draft AFAST EIS/OEIS provided to your office on August 8, 2007 through our cooperating agency relationship under the National Environmental Policy Act (NEPA) serves as the Navy's definitive proposal outlining the action. As previously stated, the effects of the proposed action for purposes of the MMPA permit will be from potential exposure to acoustic energy from active sonar and the IEER impulsive source. The level of magnitude of these effects is still being modeled, and will be included in the Navy's request for an LOA. In addition, the consideration of specific geographic locations of ASW and MIW training and testing will be informed by the public participation process afforded under NEPA.

Title 10, Section 5062 of the United States Code requires the Navy to be "organized, trained, and equipped primarily for prompt and sustained combat incident to operations at sea." The current and emerging training and RDT&E activities that are being analyzed are conducted in fulfillment of this legal requirement. Thus, in accordance with 50 CFR §402.11(b), this letter serves as the Navy's certification that it has a definite proposal and intends to implement the proposal should an MMPA authorization be obtained from your office.

We appreciate your continued support in helping us to meet our Section 7 responsibilities. My point of contact for this matter is Ms. Elizabeth Phelps 703-604-5420 or elizabeth.phelps@navy.mil, or Commander, U.S. Fleet Forces point of contact is Mr. Jene Nissen, 757-836-5221 or richard.j.nissen@navy.mil.

Sincerely,

R E Tickle

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

Copy to:
OPNAV N43
USFF N77

APPENDIX B

DISTRIBUTION LIST AND STAKEHOLDER LIST

DISTRIBUTION LIST

The individuals, agencies, and organizations listed in Table B-1 received a copy of the Atlantic Fleet Active Sonar Training (AFAST) Draft and Final Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). Please note that not all states have a clearinghouse. For states that do not have a clearinghouse, a copy of the AFAST EIS/OEIS was sent to the most relevant state agency. In addition to the copy of the AFAST Draft EIS/OEIS, an information letter was enclosed. A sample of this letter is presented at the end of Table B-1. Please refer to Table B-2, Stakeholder List, for a list of individuals, agencies, and organizations that received notification of the availability of the AFAST Draft and Final EIS/OEIS.

Since the release of the AFAST Draft EIS/OEIS, the points of contacts at some of the agencies and organizations have changed; therefore, Tables B-1 and B-2 have been updated to reflect these changes. Although the points of contacts may have changed, the same agencies and organizations received a copy of both the Draft and Final EIS/OEIS.

Table B-1. AFAST EIS/OEIS Distribution List

STATE CLEARINGHOUSES, APPROPRIATE STATE AGENCY, AND OTHER STATE AGENCIES	
Maine	
Maryalice Crofton State Planning Office 184 State Street 38 State House Station Augusta, Maine 04333	
New Hampshire	
Amy Ignatius, Acting Director New Hampshire Office of Energy and Planning Attn: Intergovernmental Review Process Mark Toussiant 57 Regional Drive Concord, New Hampshire 03301	
Massachusetts	
Rick Sullivan, Commissioner Department of Conservation and Recreation 251 Causeway Street, Suite 600 Boston, MA 02114-2104	Joseph Pelcsarski State of Massachusetts EOEEA/CZM 251 Causeway Street, Suite 800 Boston, MA 02114
Rhode Island	
Joyce Karger Department of Administration One Capitol Hill Providence, Rhode Island 02908	

Table B-1. AFAST EIS/OEIS Distribution List Cont'd

STATE CLEARINGHOUSES, APPROPRIATE STATE AGENCY, AND OTHER STATE AGENCIES Cont'd	
Connecticut	
Karl J. Wagener, Executive Director Connecticut Council on Environmental Quality 79 Elm Street Hartford, CT 06106	
New York	
Pete Grannis, Commissioner New York State Department of Environmental Conservation 625 Broadway Albany, NY 12233-1011	
Delaware	
Jennifer L. Carlson Associate Fiscal and Policy Analyst Office of Management and Budget Budget Development, Planning & Administration Haslet Armory, Third Floor 122 William Penn Street Dover, Delaware 19901	
New Jersey	
Lisa P. Jackson, Commissioner New Jersey Department of Environmental Protection 401 E State Street, 7th Floor, East Wing Trenton, NJ 08625-0492	Ken Koschek New Jersey Department of Environmental Protection 401 E State Street, 7th Floor, East Wing Trenton, NJ 08625
Maryland	
Linda C. Janey, J.D. Director, Maryland State Clearinghouse For Intergovernmental Assistance 301 West Preston Street, Room 1104 Baltimore, Maryland 21201-2305	
Virginia	
David K. Paylor, Director Virginia Department of Environmental Quality 629 East Main Street P.O. Box 1105 Richmond, VA 23218	

Table B-1. AFAST EIS/OEIS Distribution List Cont'd

STATE CLEARINGHOUSES, APPROPRIATE STATE AGENCY, AND OTHER STATE AGENCIES Cont'd	
North Carolina	
Chrys Baggett State Environmental Review Clearinghouse NC Department of Administration 1301 Mail Service Center Raleigh, NC 27699-1301	Steven H. Everhart NC Division of Coastal Management 127 Cardinal Drive Wilmington, NC 28405
Michelle Duval NC Division of Marine Fisheries P.O. Box 769 Morehead City, NC 28557	
South Carolina	
Jean Ricard Office of State Budget 1201 Main Street, Suite 870 Columbia, South Carolina 29201	
Georgia	
Barbara Jackson Georgia State Clearinghouse 270 Washington Street, SW, 8th Floor Atlanta, Georgia 30334	
Florida	
Lauren P. Milligan Florida State Clearinghouse Florida Department of Environmental Protection 3900 Commonwealth Blvd. Mail Station 47 Tallahassee, Florida 32399-3000	
Alabama	
Onis "Trey" Glenn III Office of the Director Alabama Department of Environmental Management P.O. Box 301463 Montgomery, AL 36130-1463	
Mississippi	
Janet Riddell Clearinghouse Officer Department of Finance and Administration 1301 Woolfolk Building, Suite E 501 North West Street Jackson, Mississippi 39201	

Table B-1. AFAST EIS/OEIS Distribution List Cont'd

STATE CLEARINGHOUSES, APPROPRIATE STATE AGENCY, AND OTHER STATE AGENCIES Cont'd	
Louisiana	
Harold Leggett Louisiana Department of Environmental Quality Office of the Secretary P.O. Box 4301 Baton Rouge, LA 70821-4301	
Texas	
Denise S. Francis Director, State Grants Team State Grants Division Office of the Governor P.O. Box 12428 Austin, Texas 78711	
STATE ELECTED OFFICIALS	
Maine	
Governor John E. Baldacci Office of the Governor #1 State House Station Augusta, ME 04333	
New Hampshire	
Governor John Lynch Office of the Governor State House 25 Capitol Street Concord, NH 03301	
Massachusetts	
Governor Deval Patrick Office of the Governor State House, Room 360 Boston, MA 02133	
Rhode Island	
Governor Donald L. Carcieri Office of the Governor 222 State House, Room 115 Providence, RI 02903	
Connecticut	
Governor M. Jodi Rell Officer of the Governor 210 Capitol Avenue Hartford, CT 06106	

Table B-1. AFAST EIS/OEIS Distribution List Cont'd

STATE ELECTED OFFICIALS, Cont'd	
New York	
Governor David Paterson Office of the Governor State Capitol Albany, NY 12224	
Delaware	
Governor Ruth Ann Minner Office of the Governor Tatnail Building William Penn Street, 2nd Floor Dover, DE 19901	
New Jersey	
Governor Jon S. Corzine Office of the Governor PO Box 001 Trenton, NJ 08625	
Maryland	
Governor Martin O'Malley Office of the Governor 100 State Circle Annapolis, MD 21401	
Virginia	
Governor Tim Kaine Office of the Governor Patrick Henry Building, 3rd Floor 111 East Broad Street Richmond, VA 23219	
North Carolina	
Governor Michael F. Easley Office of the Governor 20301 Mail Service Center Raleigh, NC 27699	
South Carolina	
Governor Mark Sanford Office of the Governor PO Box 12267 Columbia, SC 29211	
Georgia	
Governor Sonny Perdue Office of the Governor Georgia State Capitol Atlanta, GA 30334	

Table B-1. AFAST EIS/OEIS Distribution List Cont'd

STATE ELECTED OFFICIALS, Cont'd	
Florida	
Governor Charlie Crist Office of the Governor PL-05 The Capitol Tallahassee, FL 32399	
Alabama	
Governor Robert Riley Office of the Governor State Capitol 600 Dexter Avenue Montgomery, AL 36130	
Mississippi	
Governor Haley Barbour Office of the Governor PO Box 139 Jackson, MS 39205	
Louisiana	
Governor Piyush "Bobby" Jindal Attn: Constituent Services PO Box 94004 Baton Rouge, LA 70804	
Texas	
Governor Rick Perry Office of the Governor PO Box 12428 Austin, TX 78711	
FEDERAL AGENCIES	
U.S. Environmental Protection Agency	
US Environmental Protection Agency Office of Federal Activities EIS Filing Section Mail Code 2252-A, Room 7241 Ariel Rios Building (South Oval Lobby) 1200 Pennsylvania, NW Washington, DC 20460	Mr. Robert Varney Regional Administrator US EPA New England, Region I 1 Congress Street, Suite 1100 Boston, MA 02114
Mr. Alan J. Steinberg Regional Administrator US EPA Region II 290 Broadway New York, NY 10007	Mr. Thomas E. Slenkamp Deputy Director Office of Environmental Programs US EPA Region III 1650 Arch Street Philadelphia, PA 19103

Table B-1. AFAST EIS/OEIS Distribution List Cont'd

FEDERAL AGENCIES Cont'd	
U.S. Environmental Protection Agency Cont'd	
Mr. Jimmy Palmer Regional Administrator US EPA Region IV Sam Nunn Atlanta Federal Center 61 Forsyth Street SW Atlanta, GA 30303	Mr. Richard Greene Regional Administrator US EPA Region VI Fountain Place, 12th Floor, Suite 1200 1445 Ross Avenue Dallas, TX 75202
Mrs. Marthea Roundtree Office of Federal Activities 1200 Pennsylvania Avenue NW South Oval Office RM 7239A (MC-2252A) Washington DC, 20460	
National Oceanic & Atmospheric Administration	
Kyle Baker NMFS Southeast Regional Office 263 13th Avenue South St. Petersburg, FL 33701	Leila Hatch Stellwagen Bank National Marine Sanctuary 175 Edward Foster Road Scituate, MA 02066
Keith Mullen Southeast Fisheries Science Center 75 Virginia Beach Drive Miami, FL 33149	Becky Shortland Gray's Reef National Marine Sanctuary 10 Ocean Science Circle Savannah, GA 3141
Kristen Koyama NMFS Northeast Regional Office 1 Blackburn Drive Gloucester, MA 01930	Jim Lecky NMFS Headquarters 1315 East-West Highway Silver Spring, MD 20910
Richard Merrick Northeast Fisheries Science Center 166 Water Street Woods Hole, MA 02543-1026	
U.S. Army Corps of Engineers	
LTG Robert L. Van Antwerp Commander US Army Corps of Engineers 441 G Street Northwest Washington DC 20314-1000	
Department of Interior	
Dr. Willie Taylor Office of Environmental Policy and Compliance 1849 C Street, NW (Mail Stop 2342) Washington DC, 20240 Attn: Ms Loretta Sutton	Casey Rowe U.S. Department of the Interior Minerals Management Service 1201 Elmwood Park Boulevard New Orleans, LA 70123-2394

Table B-1. AFAST EIS/OEIS Distribution List Cont'd

FEDERAL AGENCIES Cont'd	
Marine Mammal Commission	
Dr. Robert Gisiner Scientific Program Director Marine Mammal Commission 4340 East-West Highway, Room 905 Bethesda, MD 20814	
Appointed Councils	
Mr. Wayne Swingle Executive Director Gulf of Mexico Fishery Management Council 2203 N. Lois Avenue, Suite 1100 Tampa, FL 33607	Mr. Daniel T. Furlong Executive Director Mid-Atlantic Fishery Management Council Federal Building, Suite 2115 300 S. New Street Dover, DE 19904
Mr. Paul J. Howard Executive Director New England Fishery Management Council 50 Water Street, Mill 2 Newburyport, MA 01950	Mr. Robert Mahood Executive Director South Atlantic Fishery Management Council 4055 Faber Place Drive, Suite 201 North Charleston, SC 29405
INFORMATION REPOSITORIES	
Portland Public Library 5 Monument Square Portland, ME 04101	Boston Public Library - Central Library 700 Boylston Street Boston, MA 02116
Kirn Memorial Library 301 East City Hall Avenue Norfolk, VA 23510	New London Public Library 63 Huntington Street New London, CT 06320
Charleston County Public Library 68 Calhoun Street Charleston, SC 29401	Carteret County Public Library 210 Turner Street Morehead City, NC 28516
Bay County Public Library 25 West Government Street Panama City, FL 32402	Jacksonville Public Library 303 North Laura Street Jacksonville, FL 32202
Corpus Christi Public Library Central Library 805 Comanche Corpus Christi, TX 78401	Anne Arundel County Public Library 1410 West Street Annapolis, MD 21401
Camden County Public Library 1410 Highway 40 East Kingsland, GA 31548	

Table B-1. AFAST EIS/OEIS Distribution List Cont'd

ASSOCIATIONS/ORGANIZATIONS	
CSA International, Inc. 8502 SW Kansas Avenue Stuart, FL 34997	PenderWatch & Conservancy 1836 Corcus Ferry Road Hampstead, NC 28443
Citizens Opposing Active Sonar Threats 536 Point Road Hancock, ME 04640	Bay Defense Alliance 608 Shoreline Drive Panama City, FL 32404
Coastal Conservation Association 5215 Webb Court Morehead City, NC 28557	Cetacean Society International 16 Mountal Laurel Lane Redding, CT 06896
Coastal Conservation League 328 East Bay Street Charleston, SC 29401	Environmental Services, INC 7220 Financial Way, Ste 100 Jacksonville, FL 32256
Norfolk Environmental Commission 2019 Fox's Lair Trail Norfolk, VA 23518	Pamlico-Tar River Foundation 3305 Walden Drive Greenville, NC 27858
Sierra Club 887 Marshside Court Jacksonville Beach, FL 32250	Sierra Club: Chesapeake Bay Group 2021 Kenlake Place Norfolk, VA 23518
Virginia Aquarium 717 General Booth Boulevard Virginia Beach, VA 23451	
INDIVIDUALS	
Axel Westerberg New London, CT	Mark Sayger Havelock, NC
Andrew J. McGuckin Morehead City, NC	Zoey Hanson-Dibello Norwich, CT
Debbie Daloisio Panama City Beach, FL	John Eisler Jacksonville, FL
Deb Venn Jacksonville, FL	Rafael Facundo Middleburg, FL
Greg Wahl Charleston, SC	Rick Spaulding Bainbridge Island, WA
Ann Young Springfiled, MO	Frances Armstrong Bath, NC
Brian Watson Swampscott, MA	Paul Abney Virginia Beach, VA
Garland Armstrong Virginia Beach, VA	Ron Asher Virginia Beach, VA
Chris Bain Mt. Pleasant, SC	Chris Baroody Charleston, SC
Kevin Bowlin Lynn Haven, FL	Brooks Beaufort, NC

Table B-1. AFAST EIS/OEIS Distribution List Cont'd

INDIVIDUALS Cont'd	
Pablo J. Canter Santa Monica, CA	Lucas and Raquel de Oliveira Pensacola, FL
Kevin Delaney Jacksonville, FL	Robin Ferguson New Bern, NC
Craig Hardy Morehead City, NC	Dave Hodge Panama City, FL
David Hoskins Panama City, FL	Kevin Kelly Mt. Pleasant, SC
Thomas and Todd Kraft Chesapeake, VA	Tripp Livingston Mt. Pleasant, SC
Thomas Louis Ballston Spa, NY	R. Lynch Isle of Palms, SC
Alisha Martini Mt. Pleasant, SC	(name illegible) Saint Augustine, FL
Wayne McFee Charleston, SC	Adriana M. Ortiz Wallops Island, VA
Jeff Osmer Mt. Pleasant, SC	Melissa Recks Charleston, SC
Jose A. Rojas Cabridge, MA	Rick Schmidt Daniel Island, SC
Joe Shuti Atlantic Beach, NC	April Simpson Isle of Palms, SC
John R. Spruill Hampstead, NC	Gott Steven Jacsonville, FL
Diane Till Jacksonville, FL	Kim Urian Gloucester, NC
Lynne Williams Beaufort, NC	Carol Wirth Jacksonville Beach, FL
Andrew Read Gloucester, NC	Melody Cooke Jacksonville, FL
Nadia Gordon Jacksonville, FL	James W. Keller Savannah, GA
James C. Morris Panama City, FL	Benjamin Dykes Panama City, FL
Glenda Arrington Virginia Beach, VA	Jeff Willows Panama City, FL

ATLANTIC FLEET ACTIVE SONAR TRAINING DRAFT ENVIRONMENTAL IMPACT STATEMENT/ OVERSEAS ENVIRONMENTAL IMPACT STATEMENT RELEASE INFORMATION

Introduction

The United States Navy Fleet Forces Command is announcing the availability of the Atlantic Fleet Active Sonar (AFAST) Draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS), which evaluated potential environmental effects associated with training activities. The intent of this process is to inform the public on the results of environmental analysis associated with the Proposed Action. Information and updates on the AFAST Draft EIS/OEIS are available on the AFAST project website at http://afasteis.gcsaic.com.

The AFAST Draft EIS/OEIS provides the results of physical, biological, and man-made environmental analysis associated with the Proposed Action. This document integrates regulatory requirements of the National Environmental Policy Act, Presidential Executive Order 12114, as well as a variety of other environmental regulations (e.g., Endangered Species Act and Marine Mammal Protection Act).

Project Description

The Proposed Action is for the Navy to designate areas where mid- and high-frequency active sonar and improved extended echo ranging (IEER) system training; maintenance; and research, development, test, and evaluation (RDT&E) activities will occur within and adjacent to existing operating areas and to conduct these activities. These areas will be used to accommodate the current level of Anti-Submarine Warfare (ASW) and Mine Warfare (MIW) training along the East Coast of the United States and within the Gulf of Mexico.

The purpose of the Proposed Action is to provide mid- and high-frequency active sonar and IEER training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan (FRTP) and to stay proficient in ASW and MIW skills. In addition, the Proposed Action incorporates RDT&E active sonar activities similar and coincident to Atlantic Fleet training that have not been previously evaluated in other environmental planning documents. The FRTP is the U.S. Navy's training cycle requiring naval forces to prepare for operational deployment and maintain a high level of proficiency and readiness while deployed. All phases of the FRTP training cycle are needed to meet United States Code Title 10 requirements.

The AFAST Draft EIS/OEIS evaluated potential environmental effects associated with physical, biological, and man-made resources including sediment quality, water quality, marine habitat, marine mammals, sea turtles, essential fish habitat, marine fish, seabirds, marine invertebrates, marine plants and algae, national marine sanctuaries, airspace management, energy, socioeconomics, and cultural resources (shipwrecks). The analysis also included an evaluation of direct, indirect, and cumulative impacts.

Public Involvement

The U.S. Navy will host six public hearings to provide interested agencies, officials, organizations, and the public an opportunity to comment on the analysis presented in the AFAST Draft EIS/OEIS. Public hearings will be held on the following dates at the following locations:

Location	*Time*	*Date*
Virginia Beach, VA Tidewater Community College *Advanced Technology Center (ATC): Technology Theater* Faculty Drive	5 pm – 9 pm	Tuesday, March 4, 2008
Boston, MA Boston University *Kenmore Classroom Building, Room 101* 565 Commonwealth Avenue	5 pm – 9 pm	Thursday, March 6, 2008
Morehead City, NC Crystal Coast Civic Center *1st Floor: Quads 1 & 2* 3505 Arendall Street	5 pm – 9 pm	Tuesday, March 11, 2008
Mount Pleasant, SC Charleston Harbor Resort & Marina *Atlantic Ballroom* 20 Patriots Point Road	5 pm – 9 pm	Thursday, March 13, 2008
Jacksonville, FL Florida Community College at Jacksonville *Nathan H. Wilson Center for the Arts: Lakeside Conference Room* 11901 Beach Boulevard	5 pm – 9 pm	Tuesday, March 18, 2008
Panama City, FL Florida State University, Panama City Campus *Auditorium* 4750 Collegiate Drive	5 pm – 9 pm	Wednesday, March 19, 2008

An open house information session will be held from 5 pm to 7 pm. During the open house session, interested parties will have the opportunity to learn more about the Proposed Action and Alternatives, EIS/OEIS process, and results of the AFAST Draft EIS/OEIS analysis. A formal presentation will begin at 7 pm. Public comments will be solicited immediately after the presentation.

The public review and comment period will extend through March 31, 2008. Comments regarding the document can be provided either in writing or orally at the public hearing. In addition, written comments may be submitted during the public comment period via three methods:

- Mail:

  Naval Facilities Engineering Command, Atlantic
  Attn: Code EV22 (AFAST Project Manager)
  6506 Hampton Boulevard
  Norfolk, VA 23508-1278

- Fax: (888) 875-6781

- Electronically via the project website at:

  http://afasteis.gcsaic.com

Additional information regarding the AFAST Draft EIS/OEIS and public involvement can be found on the AFAST Website.

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STAKEHOLDER LIST

Postcards were disseminated to the individuals, agencies, and organizations listed in Table B-2. The postcards acted as formal notification of the availability of the AFAST Draft EIS/OEIS and announcement of public hearings. A sample of the postcard is presented at the end of Table B-2.

In addition, postcards announcing the availability of the AFAST Final EIS/OEIS were also sent to the same stakeholders, as well as those that attended the public hearings. A sample of the postcard is also presented at the end of Table B-2.

Table B-2. AFAST EIS/OEIS Stakeholder List

STATE ELECTED OFFICIALS	
Maine	
Representative Joseph A. Tardy ME House – Newport 2 State House Station, Room 332 Augusta, ME 04333	The Honorable Beth Edmonds ME Senate – Cumberland County 3 State House Station Augusta, ME 04333
The Honorable Elizabeth H. Mitchell ME Senate – Kennebec County 3 State House Station Augusta, ME 04333	The Honorable Carol Weston ME Senate – Waldo County 3 State House Station Augusta, ME 04333
Representative Glenn Cummings ME House – Portland 2 State House Station, Room 303 Augusta, ME 04333	Representative Hannah M. Pingree ME House – North Haven 2 State House Station, Room 333 Augusta, ME 04333
New Hampshire	
The Honorable Debora Pignatelli NH Executive Council – 5th District 22 Appletree Green Nashua, NH 03062	The Honorable Raymond S. Burton NH Executive Council – 1st District 338 River Road Bath, NH 03740
The Honorable Paul Hodes NH Executive Council – 2nd District 8 McIntire Road Nelson, NH 03457	The Honorable Beverly A. Hollingworth NH Executive Council – 3rd District 209 Winnacunnet Road Hampton, NH 03842
The Honorable Raymond J. Wieczorek NH Executive Council – 4th District 1060 Ray Street Manchester, NH 03104	
Massachusetts	
Representative Bradley H. Jones, Jr. MA House – 20th District State House, Room 124 Boston, MA 02133	The Honorable Therese Murray MA Senate State House, Room 330 Boston, MA 02133

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

Massachusetts Cont'd	
The Honorable Frederick E. Berry MA Senate State House, Room 333 Boston, MA 02133	The Honorable Richard R. Tisei MA Senate State House, Room 308 Boston, MA 02133
Representative Salvatore F. DiMasi MA House – 3rd District State House, Room 356 Boston, MA 02133	Representative John H. Rogers MA House – 12th District State House, Room 370 Boston, MA 02133
Rhode Island	
Representative Robert A. Watson RI House – 30th District 106 State House Providence, RI 02903	The Honorable M. Teresa Paiva-Weed RI Senate – 13th District 316 State House Providence, RI 02903
The Honorable Joseph A. Montalbano RI Senate – 17th District 318 State House Providence, RI 02903	The Honorable Dennis L. Algiere RI Senate – 38th District 6 Elm Street Westerly, RI 02891
Representative Gordon D. Fox RI House – 4th District 323 State House Providence, RI 02903	Representative William J. Murphy RI House – 26th District 323 State House Providence, RI 02903
Connecticut	
Representative Christopher G. Donovan CT House – 142nd District Legislative Office Building, Room 4106 Hartford, CT 06106	The Honorable Martin M. Looney CT Senate – 11th District Legislative Office Building, Room 3300 Hartford, CT 06106
The Honorable John McKinney CT Senate – 28th District Legislative Office Building, Room 3400 Hartford, CT 06106	The Honorable Donald E. Williams, Jr. CT Senate – 29th District Legislative Office Building, Room 3300 Hartford, CT 06106
The Honorable Len Fasano CT Senate – 34th District Legislative Office Building, Room 3400 Hartford, CT 06106	Representative Lawrence F. Cafero CT House – 86th District Legislative Office Building, Room 4200 Hartford, CT 06106
Representative James A. Amann CT House – 118th District Legislative Office Building, Room 4105 Hartford, CT 06106	
New York	
Representative James Tedisco NY House – 110th District 12 Jay Street Schenectady, NY 12305	The Honorable Kenneth P. Lavalle NY Senate – 1st District Legislative Office Building, Room 806 Albany, NY 12247

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE ELECTED OFFICIALS Cont'd	
New York, Cont'd	
The Honorable Malcolm A. Smith NY Senate – 14th District 250 Broadway, Suite 1930 New York, NY 10007	The Honorable Joseph L. Bruno NY Senate – 43rd District Legislative Office Building, Room 909 Albany, NY 12247
Representative Sheldon Silver NY House – 64th District 250 Broadway, Suite 2307 New York, NY 10007	Representative Ron Canestrari NY House – 106th District Legislative Office Building, Room 926 Albany, NY 12248
Delaware	
Representative Gregory Hastings DE House – 41st District PO Box 1401 Dover, DE 19903	The Honorable Harris B. McDowell, III. DE Senate – 1st District PO Box 1401 Dover, DE 19903
The Honorable Margaret Rose Henry DE Senate – 2nd District PO Box 1401 Dover, DE 19903	The Honorable Catherine L. Cloutier DE Senate – 5th District PO Box 1401 Dover, DE 19903
The Honorable Dorinda A. Conner DE Senate – 12th District PO Box 1401 Dover, DE 19903	The Honorable James T. Vaughn DE Senate – 14th District PO Box 1401 Dover, DE 19903
The Honorable Colin R.J. Bonini DE Senate – 16th District PO Box 1401 Dover, DE 19903	The Honorable John C. Still, III. DE Senate – 17th District PO Box 1401 Dover, DE 19903
The Honorable F. Gary Simpson DE Senate – 18th District PO Box 1401 Dover, DE 19903	The Honorable George H. Bunting, Jr. DE Senate – 20th District PO Box 1401 Dover, DE 19903
Representative Hazel D. Plant DE House – 2nd District PO Box 1401 Dover, DE 19903	Representative Richard C. Cathcart DE House – 9th District PO Box 1401 Dover, DE 19903
Representative Diana M. McWilliams DE House – 6th District PO Box 1401 Dover, DE 19903	Representative Robert J. Valihura DE House – 10th District PO Box 1401 Dover, DE 19903
Representative Gregory F. Lavalle DE House – 11th District PO Box 1401 Dover, DE 19903	Representative Peter C. Swartzkopf DE House – 14th District PO Box 1401 Dover, DE 19903

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE ELECTED OFFICIALS Cont'd	
Delaware, Cont'd	
Representative Valerie Longhurst DE House – 15th District PO Box 1401 Dover, DE 19903	Representative James Johnson DE House – 16th District PO Box 1401 Dover, DE 19903
Representative Michael P. Mulrooney DE House – 17th District PO Box 1401 Dover, DE 19903	Representative Bruce C. Ennis DE House – 28th District PO Box 1401 Dover, DE 19903
Representative Donna D. Stone DE House – 32nd District PO Box 1401 Dover, DE 19903	Representative Robert Walls DE House – 33rd District PO Box 1401 Dover, DE 19903
Representative V. George Carey DE House – 36th District PO Box 1401 Dover, DE 19903	Representative Joseph W. Booth DE House – 37th District PO Box 1401 Dover, DE 19903
Representative Gerald W. Hocker DE House – 38th District PO Box 1401 Dover, DE 19903	
New Jersey	
Representative Alex DeCroce NJ House – 26th District 101 Gibraltar Drive, Suite 1-A Morris Plains, NJ 07950	The Honorable Leonard Lance NJ Senate – 23rd District 119 Main Street Flemington, NJ 08822
The Honorable Richard J. Codey NJ Senate – 27th District 449 Mount Pleasant Avenue West Orange, NJ 07052	The Honorable Bernard F. Kenny, Jr. NJ Senate – 33rd District 235 Hudson Street, Suite 1-A Hoboken, NJ 07030
Representative Joseph J. Roberts, Jr. NJ House – 5th District Brooklawn Shopping Plaza Route 130 & Browning Road Brooklawn, NJ 08030	Representative Bonnie Watson Coleman NJ House – 15th District 226 West State Street Trenton, NJ 08608
Maryland	
Representative James E. Mathia, Jr. MD House – 38th B District House Office Building, Room 307 6 Bladen Street Annapolis, MD 21401	The Honorable J. Lowell Stoltzfus MD Senate – 38th District James Senate Office Building, Room 323 11 Bladen Street Annapolis, MD 21401

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE ELECTED OFFICIALS Cont'd	
Maryland Cont'd	
Representative Norman H. Conway MD House – 38th B District House Office Building, Room 121 6 Bladen Street Annapolis, MD 21401	
Virginia	
Delegate Lynwood W. Lewis, Jr. VA Delegate – 100th District PO Box 406 Richmond, VA 23218	The Honorable Martin E. Williams VA Senate – 1st District PO Box 396 Richmond, VA 23218
The Honorable Mamie E. Locke VA Senate – 2nd District PO Box 396 Richmond, VA 23218	The Honorable Thomas K. Norment, Jr. VA Senate – 3rd District PO Box 396 Richmond, VA 23218
The Honorable Yvonne B. Miller VA Senate – 5th District PO Box 396 Richmond, VA 23218	The Honorable Rick Rerras VA Senate – 6th District PO Box 396 Richmond, VA 23218
The Honorable Frank W. Wagner VA Senate – 7th District PO Box 396 Richmond, VA 23218	The Honorable Patricia S. Ticer VA Senate – 30th District PO Box 396 Richmond, VA 23218
The Honorable Mary Margaret Whipple VA Senate – 31st District PO Box 396 Richmond, VA 23218	Delegate Terrie L. Suit VA Delegate – 81st District PO Box 406 Richmond, VA 23218
Delegate Robert J. Wittman VA Delegate – 99th District PO Box 406 Richmond, VA 23218	
North Carolina	
Representative Hugh Holliman NC House – 81st District Legislative Office Building, Room 2301 Raleigh, NC 27601	The Honorable Marc Basnight NC Senate – 1st District Legislative Office Building, Room 2007 Raleigh, NC 27601
The Honorable Jean Preston NC Senate – 2nd District Legislative Office Building, Room 1121 Raleigh, NC 27603	The Honorable Harry Brown NC Senate – 6th District Legislative Office Building, Room 515 Raleigh, NC 27603
The Honorable R.C. Soles, Jr. NC Senate – 8th District Legislative Office Building, Room 2022 Raleigh, NC 27601	The Honorable Julia Boseman NC Senate – 9th District Legislative Office Building, Room 309 Raleigh, NC 27603

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE ELECTED OFFICIALS Cont'd	
Virginia, Cont'd	
North Carolina Cont'd	
Representative Bill Owens NC House – 1st District Legislative Office Building, Room 635 Raleigh, NC 27603	Representative Timothy L. Spear NC House – 2nd District Legislative Office Building, Room 402 Raleigh, NC 27603
Representative Pat McElraft NC House – 13th District Legislative Office Building, Room 603 Raleigh, NC 27603	Representative George G. Cleveland NC House – 14th District Legislative Office Building, Room 504 Raleigh, NC 27603
Representative W. Robert Grady NC House – 15th District Legislative Office Building, Room 302 Raleigh, NC 27603	Representative Carolyn H. Justice NC House – 16th District Legislative Office Building, Room 306A3 Raleigh, NC 27603
Representative Bonner L. Stiller NC House – 17th District Legislative Office Building, Room 306A2 Raleigh, NC 27603	Representative Daniel F. McComas NC House – 19th District Legislative Office Building, Room 506 Raleigh, NC 27603
Representative Paul Stam NC House – 37th District Legislative Office Building, Room 613 Raleigh, NC 27601	Representative Joe Hackney NC House – 54th District Legislative Office Building, Room 2304 Raleigh, NC 27601
South Carolina	
Representative Richard Chalk, Jr. SC House – 123rd District 404C Blatt Building Columbia, SC 29202	The Honorable Ray Cleary SC Senate – 34th District 501 Gressette Building Columbia, SC 29202
The Honorable Lawrence Grooms SC Senate – 37th District 203 Gressette Building Columbia, SC 29202	The Honorable Randy Scott SC Senate – 38th District 606 Gressette Building Columbia, SC 29202
The Honorable Glen F. McConnell SC Senate – 41st District 101 Gressette Building Columbia, SC 29202	The Honorable Robert Ford SC Senate – 42nd District 506 Gressette Building Columbia, SC 29202
The Honorable George Campsen, III. SC Senate – 43rd District 604 Gressette Building Columbia, SC 29202	The Honorable Clementa Pinckney SC Senate – 45th District 613 Gressette Building Columbia, SC 29202
The Honorable Catherine C. Ceips SC Senate – 46th District 608 Gressette Building Columbia, SC 29202	Representative Converse Chellis, III. SC House – 94th District 519C Blatt Building Columbia, SC 29202

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE ELECTED OFFICIALS Cont'd	
South Carolina, Cont'd	
Representative Annette Young SC House – 98th District 308C Blatt Building Columbia, SC 29202	Representative James Merrill SC House – 99th District 518B Blatt Building Columbia, SC 29202
Representative Vida Miller SC House – 108th District 335D Blatt Building Columbia, SC 29202	Representative David Mack, III. SC House – 109th District 328D Blatt Building Columbia, SC 29202
Representative Harry Limehouse, III. SC House – 110th District 326C Blatt Building Columbia, SC 29202	Representative Floyd Breeland SC House – 111th District 328C Blatt Building Columbia, SC 29202
Representative Ben Hagwood, Jr. SC House – 112th District 306B Blatt Building Columbia, SC 29202	Representative J. Seth Whipper SC House – 113th District 328A Blatt Building Columbia, SC 29202
Representative Robert Harrell SC House – 114th District 506 Blatt Building Columbia, SC 29202	Representative Wallace Scarborough SC House – 115th District 326B Blatt Building Columbia, SC 29202
Representative Robert Brown SC House – 116th District 330D Blatt Building Columbia, SC 29202	Representative Thomas Dantizer SC House – 117th District 308B Blatt Building Columbia, SC 29202
Representative William Herbkersman SC House – 118th District 434B Blatt Building Columbia, SC 29202	Representative Leonidas E. Stavrinakis SC House – 119th District 420D Blatt Building Columbia, SC 29202
Representative Kenneth Hodges SC House – 121st District 434A Blatt Building Columbia, SC 29202	Representative Curtis Brantley SC House – 122nd District 314D Blatt Building Columbia, SC 29202
Georgia	
Representative Cecily Hill GA House – 180th District Coverdell Legislative Office Building, Suite 501 Atlanta, GA 30334	The Honorable Eric Johnson GA Senate – 1st District 321 State Capitol Atlanta, GA 30334
The Honorable Jeff Chapman GA Senate – 3rd District 110 D State Capitol Atlanta, GA 30334	The Honorable Jack Hill GA Senate – 4th District 234 State Capitol Atlanta, GA 30334

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE ELECTED OFFICIALS Cont'd	
Georgia Cont'd	
The Honorable Tommie Williams GA Senate – 19th District 236 State Capitol Atlanta, GA 30334	Representative Buddy Carter GA House – 159th District Coverdell Legislative Office Building, Suite 508 Atlanta, GA 30334
Representative Bob Bryant GA House – 160th District Coverdell Legislative Office Building, Suite 608 Atlanta, GA 30334	Representative Lester Jackson GA House – 161st District Coverdell Legislative Office Building, Suite 511 Atlanta, GA 30334
Representative J. Craig Gordon GA House – 162nd District Coverdell Legislative Office Building, Suite 607 Atlanta, GA 30334	Representative Burke Day GA House – 163rd District State Capitol, Room 218 Atlanta, GA 30334
Representative Ron Stephens GA House – 164th District State Capitol, Room 228 Atlanta, GA 30334	Representative Al Williams GA House – 165th District Coverdell Legislative Office Building, Suite 511 Atlanta, GA 30334
Representative Terry Barnard GA House – 166th District State Capitol, Room 401 Atlanta, GA 30334	Representative Roger Bert Lane GA House – 167th District Coverdell Legislative Office Building, Suite 404 Atlanta, GA 30334
Representative Tommy Smith GA House – 168th District State Capitol, Room 131 Atlanta, GA 30334	Representative Mark Williams GA House – 178th District Coverdell Legislative Office Building, Suite 504 Atlanta, GA 30334
Representative Jerry Keen GA House – 179th District State Capitol, Room 338 Atlanta, GA 30334	
Florida	
Representative Ron Saunders FL House – 120th District 90311 Overseas Highway, Suite A PO Box 699 Tavernier, FL 33070	The Honorable Durell Peaden, Jr. FL Senate – 2nd District 598 North Ferdon Blvd. Crestview, FL 32536

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE ELECTED OFFICIALS Cont'd	
Florida Cont'd	
The Honorable Alfred Lawson, Jr. FL Senate – 6th District Senate Office Building, Room 210 404 South Monroe Street Tallahassee, FL 32399	The Honorable Evelyn J. Lynn FL Senate – 7th District 536 North Halifax, Avenue, Suite 101 Daytona Beach, FL 32118
The Honorable James King, Jr. FL Senate – 8th District 9485 Regency Square Blvd., Suite 108 Jacksonville, FL 32225	The Honorable Daniel Webster FL Senate – 9th District 315 South Dillard Street Winter Garden, FL 34787
The Honorable Michael Bennett FL Senate – 21st District 3653 Cortez Road West, Suite 90 Bradenton, FL 34210	The Honorable Lisa Carlton FL Senate – 23rd District 2127 S. Tamiami Trail Osprey, FL 34229
The Honorable Bill Posey FL Senate – 24th District 1802 S. Fiske Blvd., Suite 108 Rockledge, FL 32955	The Honorable Mike Haridopolos FL Senate – 26th District 1360 Sarno Road, Suite C Melbourne, FL 32935
The Honorable Ken Pruitt FL Senate – 28th District 1850 SW Fountainview Blvd., Suite 200 Port St. Lucie, FL 34986	The Honorable Steven A. Geller FL Senate – 31st District 400 South Federal Highway, Suite 204 Hallandale Beach, FL 33009
The Honorable Burt Saunders FL Senate – 37th District Administration Building, Suite 304 3301 E. Tamiami Trail Naples, FL 34112	The Honorable Larcenia Bullard FL Senate – 39th District 8603 S. Dixie Highway, Suite 304 Miami, FL 33143
Representative Greg Evers FL House – 1st District 5224 Willing Street Milton, FL 32570	Representative Dave Murzin FL House – 2nd District 7100 Plantation Road, #3 Pensacola, FL 32504
Representative Clay Ford FL House – 3rd District 1804 W. Garden Street Pensacola, FL 32501	Representative Ray Sansom FL House – 4th District 99 Eglin Parkway NE, Suite 18 Fort Walton Beach, FL 32548
Representative Donald Brown FL House – 5th District OWCC Building 2, #205 908 Highway 90 West DeFuniak Springs, FL 32433	Representative Jimmy T. Patronis FL House – 6th District 455 Harrison Avenue, Suite A Panama City, FL 32401
Representative Marti Coley FL House – 7th District Chipola College, Building L, Room 108 3094 Indian Circle Marianna, FL 32446	Representative Aaron Bean FL House – 12th District 905 South 8th Street Fernandina Beach, FL 32034

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE ELECTED OFFICIALS Cont'd	
Florida Cont'd	
Representative Terry L. Fields FL House – 14th District Hope Plaza, Suite 307 435 Clark Road Jacksonville, FL 32218	Representative Audrey Gibson FL House – 15th District 101 East Union Street, Suite 402 Jacksonville, FL 32202
Representative Mark Mahon FL House – 16th District 233 East Bay Street, Suite 1133 Jacksonville, FL 32202	Representative Stan Jordan FL House – 17th District 3414-A North Main Street Jacksonville, FL 32206
Representative Don Davis FL House – 18th District 2320 South 3rd Street, Suite 3 Jacksonville Beach, FL 32250	Representative Dick Kravitz FL House – 19th District 155 Blanding Blvd., Suite 10 Orange Park, FL 32073
Representative William L. Proctor FL House – 20th District 900 SR 16, Suite 2 St. Augustine, FL 32084	Representative Joe H. Pickens FL House – 21st District 3841 Reid Street, Suite 5 Palatka, FL 32177
Representative Pat Patterson FL House – 26th District 230 North Woodland Blvd., Room 222 DeLand, FL 32720	Representative Joyce Cusack FL House – 27th District 224 North Woodland Blvd. DeLand, FL 32720
Representative Dorothy Hukill FL House – 28th District 2990 S. Atlantic Avenue, Suite 100 Daytona Beach Shores, FL 32118	Representative Thad Altman FL House – 30th District PO Box 411780 Melbourne, FL 32941
Representative Bob Allen FL House – 32nd District 321 Magnolia Avenue Merritt Island, FL 32952	Representative James C. Frishe FL House – 54th District 125 Indian Rocks Road North, Suite A Belleaiir Bluffs, FL 33770
Representative Marsha L. Bowen FL House – 65th District 353 Avenue "C" Southwest Winter Haven, FL 33880	Representative Bill Galvano FL House – 68th District 1023 Manatee Avenue West, Suite 715 Bradenton, FL 34205
Representative Keith Fitzgerald FL House – 69th District 1660 Ringling Blvd., Suite 310-311 Sarasota, FL 34236	Representative Doug Holder FL House – 70th District 8486 S. Tamiami Trail Sarasota, FL 34238
Representative Michael Grant FL House – 71st District County Administration Building 18500 Murdock Circle Port Charlotte, FL 33948	Representative Gary Aubuchon FL House – 74th District 3501 Del Prado Blvd., Suite 305 Cape Coral, FL 33904

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE ELECTED OFFICIALS Cont'd	
Florida Cont'd	
Representative Trudi Williams FL House – 75th District 12811 Kenwood Lane, Suite 212 Fort Myers, FL 33907	Representative Garrett Richter FL House – 76th District Administration Building, Suite 203 3301 E. Tamiami Trail Naples, FL 34112
Representative Adam Hasner FL House – 87th District 33 NE 4th Avenue Delray Beach, FL 33483	Representative Dan Gelber FL House – 106th District Third Floor 19 Meridian Avenue Miami Beach, FL 33139
Alabama	
Representative Randy Davis AL House – 96th District 11 S. Union Street, Room 538-B Montgomery, AL 36130	The Honorable Phil Poole AL Senate – 21st District 11 S. Union Street, Room 736 Montgomery, AL 36130
The Honorable W.H. Lindsey AL Senate – 22nd District 11 S. Union Street, Room 721 Montgomery, AL 36130	The Honorable Henry Sanders AL Senate – 23rd District 11 S. Union Street, Room 730 Montgomery, AL 36130
The Honorable Bobby Singleton AL Senate – 24th District 11 S. Union Street, Room 734 Montgomery, AL 36130	The Honorable Jimmy Holley AL Senate – 31st District 11 S. Union Street, Room 731-C Montgomery, AL 36130
The Honorable Trip Pittman AL Senate – 32nd District 11 S. Union Street, Room 738-B Montgomery, AL 36130	The Honorable Ben Brooks AL Senate – 35th District 11 S. Union Street, Room 735-A Montgomery, AL 36130
Representative Ken Guin AL House – 14th District 11 S. Union Street, Room 517-E Montgomery, AL 36130	Representative William Thigpen, Sr. AL House – 16th District 11 S. Union Street, Room 538-D Montgomery, AL 36130
Representative Alan Harper AL House – 61st District 11 S. Union Street, Room 538-C Montgomery, AL 36130	Representative Gerald Allen AL House – 62nd District 11 S. Union Street, Room 531 Montgomery, AL 36130
Representative Dr. Robert Bentley AL House – 63rd District 11 S. Union Street, Room 537-D Montgomery, AL 36130	Representative Harry Shiver AL House – 64th District 11 S. Union Street, Room 526-D Montgomery, AL 36130
Representative Marc Keahey AL House – 65th District 11 S. Union Street, Room 630-A Montgomery, AL 36130	Representative Alan Baker AL House – 66th District 11 S. Union Street Montgomery, AL 36130

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE ELECTED OFFICIALS Cont'd	
Alabama Cont'd	
Representative Yusuf Salaam AL House – 67th District 11 S. Union Street, Room 539-E Montgomery, AL 36130	Representative James Thomas AL House – 69th District 11 S. Union Street, Room 525-B Montgomery, AL 36130
Representative Chris England AL House – 70th District 11 S. Union Street, Room 539-B Montgomery, AL 36130	Representative A.J. McCampbell AL House – 71st District 11 S. Union Street, Room 539-C Montgomery, AL 36130
Representative Ralph Howard AL House – 72nd District 11 S. Union Street, Room 527-D Montgomery, AL 36130	Representative Seth Hammett AL House – 92nd District 11 S. Union Street, Room 519-A Montgomery, AL 36130
Representative Joe Faust AL House – 94th District 11 S. Union Street, Room 524-C Montgomery, AL 36130	Representative Stephen McMillan AL House – 95th District 11 S. Union Street, Room 532 Montgomery, AL 36130
Mississippi	
Representative J.P. Compretta MS House – 122nd District PO Box 1018, Room 302-NC Jackson, MS 39215	The Honorable Lydia Graves Chassaniol MS Senate – 14th District PO Box 1018 Jackson, MS 39215
The Honorable Gary Jackson MS Senate – 15th District PO Box 1018 Jackson, MS 39215	The Honorable Bennie Turner MS Senate – 16th District PO Box 1018, Room 404B-NC Jackson, MS 39215
The Honorable Gloria Williamson MS Senate – 18th District PO Box 1018 Jackson, MS 39215	The Honorable Joseph Thomas MS Senate – 21st District PO Box 1018 Jackson, MS 39215
The Honorable David L. Jordan MS Senate – 24th District PO Box 1018, Room 405A-NC Jackson, MS 39215	The Honorable Terry Burton MS Senate – 31st District PO Box 1018, Room 212C-NC Jackson, MS 39215
The Honorable Videt Carmichel MS Senate – 33rd District PO Box 1018 Jackson, MS 39215	The Honorable Billy Thames MS Senate – 34th District PO Box 1018, Room 404A-NC Jackson, MS 39215
The Honorable Scottie R. Cuevas MS Senate – 46th District PO Box 1018 Jackson, MS 39215	The Honorable Tommy Robertson MS Senate – 51st District PO Box 1018, Room 215C-NC Jackson, MS 39215

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE ELECTED OFFICIALS Cont'd	
Mississippi Cont'd	
The Honorable Tommy Moffatt MS Senate – 52nd District PO Box 1018, Room 213D-NC Jackson, MS 39215	Representative Linda Whittington MS House – 34th District PO Box 1018 Jackson, MS 39215
Representative Dannie Reed MS House – 35th District PO Box 1018 Jackson, MS 39215	Representative Tyrone Ellis MS House – 38th District PO Box 1018, Room 112C-NC Jackson, MS 39215
Representative Reecy Dickson MS House – 42nd District PO Box 1018, Room 400E-NC Jackson, MS 39215	Representative Gale Gregory MS House – 43rd District PO Box 1018 Jackson, MS 39215
Representative C. Scott Bounds MS House – 44th District PO Box 1018 Jackson, MS 39215	Representative Bennett Malone MS House – 45th District PO Box 1018, Room 401C-NC Jackson, MS 39215
Representative Bobby Howell MS House – 46th District PO Box 1018, Room 201-NC Jackson, MS 39215	Representative Bryant Clark MS House – 47th District PO Box 1018 Jackson, MS 39215
Representative Mary Ann Stevens MS House – 48th District PO Box 1018, Room 201M4-NC Jackson, MS 39215	Representative Billy Nicholson MS House – 78th District PO Box 1018, Room 400F-NC Jackson, MS 39215
Representative Charles Young, Sr. MS House – 82nd District PO Box 1018, Room 205A-NC Jackson, MS 39215	Representative Greg Snowden MS House – 83rd District PO Box 1018, Room 400F-NC Jackson, MS 39215
Representative Eric Robinson MS House – 84th District PO Box 1018, Room 115-NC Jackson, MS 39215	Representative Dirk Dedeaux MS House – 93rd District PO Box 1018, Room 102-NC Jackson, MS 39215
Representative Frank Hamilton MS House – 109th District PO Box 1018, Room 400E-NC Jackson, MS 39215	Representative Carmel Wells-Smith MS House – 111th District PO Box 1018, Room 201M6-NC Jackson, MS 39215
Louisiana	
Representative Ernest D. Wooton LA House – 105th District 8018 Highway 83, Suite 214 Belle Chasse, LA 70037	The Honorable Walter J. Boasso LA Senate – 1st District PO Box 94183 Baton Rouge, LA 70804

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE ELECTED OFFICIALS Cont'd	
Louisiana Cont'd	
The Honorable J. Chris Ullo LA Senate – 8th District PO Box 94183 Baton Rouge, LA 70804	The Honorable D.A. Gautreaux LA Senate – 21st District PO Box 94183 Baton Rouge, LA 70804
The Honorable Craig F. Romero LA Senate – 22nd District PO Box 94183 Baton Rouge, LA 70804	The Honorable Nick Gautreaux LA Senate – 26th District PO Box 94183 Baton Rouge, LA 70804
The Honorable Gerald J. Theunissen LA Senate – 25th District PO Box 94183 Baton Rouge, LA 70804	Representative Joe R. Salter LA House – 24th District PO Box 250 Florien, LA 71429
Representative Mickey Frith LA House – 47th District 407 Charity Street, Suite 102 Abbeville, LA 70510	Representative Troy Hebert LA House – 49th District PO Box 32 Jeanerette, LA 70544
Representative Jack D. Smith LA House – 50th District St. Mary Parish Courthouse, Room 304 Franklin, LA 70538	Representative Carla Blanchard LA House – 51st District 1006 8th Street Morgon City, LA 70380
Representative Damon J. Baldone LA House – 53rd District 162 New Orleans Blvd. Houma, LA 70364	Representative Loulan J. Pitre, Jr. LA House – 54th District 104 West 65th Street Cut Off, LA 70345
Representative Kenneth L. Odinet, Sr. LA House – 103rd District 127 Highway 22 East, Suite W7 Madisonville, LA 70447	
Texas	
Representative Juan Manuel Escobar TX House – 43rd District PO Box 2910, Room EXT E2.606 Austin, TX 78768	The Honorable Kyle Janek TX Senate – 17th District Capitol Station PO Box 12068 Austin, TX 78711
The Honorable Glenn Hegar TX Senate – 18th District Capitol Station PO Box 12068 Austin, TX 78711	The Honorable Eddie Lucio, Jr. TX Senate – 27th District Capitol Station PO Box 12068 Austin, TX 78711
Representative Tom Craddick TX House – 82nd District PO Box 2910, Room CAP 2W.13 Austin, TX 78768	Representative Allan Ritter TX House – 21st District PO Box 2910, Room EXT E2.406 Austin, TX 78768

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE ELECTED OFFICIALS Cont'd	
Texas Cont'd	
Representative Dennis Bonnen TX House – 25th District PO Box 2910, Room EXT E2.602 Austin, TX 78768	Representative Mike O'Day TX House – 29th District PO Box 2910, Room EXT E1.208 Austin, TX 78768
Representative Juan M. Garcia TX House – 32nd District PO Box 2910, Room EXT E2.320 Austin, TX 78768	Representative Solomon Ortiz TX House – 33rd District PO Box 2910, Room EXT E1.322 Austin, TX 78768
CITY OFFICIALS	
Massachusetts	
The Honorable Thomas Menino Mayor of Boston Mayor's Office 1 City Hall Plaza Boston, MA 02210	
Connecticut	
The Honorable Margaret Curtin Mayor of New London New London City Hall 181 State Street New London, CT 06320	
Virginia	
The Honorable Paul Fraim Mayor of Norfolk 1109 City Hall Building 810 Union Street Norfolk, VA 23510	
North Carolina	
The Honorable Gerald Jones, Jr. Mayor of Morehead City Town of Morehead City 706 Arendell Street Morehead City, NC 28557	Mr. John Langdon Carteret County Manager 302 Courthouse Square Beaufort, NC 28516
South Carolina	
The Honorable Joseph Riley, Jr. Mayor of Charleston 80 Broad Street Charleston, SC 29401	
Florida	
The Honorable John Peyton Mayor of Jacksonville 117 W. Duval Street, #400 Jacksonville, FL 32202	The Honorable Lauren DeGeorge Mayor of Panama City 3529 E. 3rd Street Panama City, FL 32401

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

FEDERAL AGENCIES	
U.S. Department of the Interior	
Mr. H. Dale Hall Director US Fish and Wildlife Service 1849 C Street, NW Washington, DC 20240	Mr. Sam Hamilton Director, Southeast Region US Fish and Wildlife Service 1875 Century Blvd., Suite 400 Atlanta, GA 30345
Mr. Marvin Moriarty Director, Northeast Regional Office US Fish and Wildlife Service 300 Westgate Center Drive Hadley, MA 01035	Ms. Johnnie Burton Director Minerals Management Service 1849 C Street, NW Washington, DC 20240
Department of Commerce	
Dr. William Hogarth Assistant Administrator National Marine Fisheries Service 1315 East West Highway, SSMC3 Silver Spring, MD 20910	Mr. Jim Lecky Director National Marine Fisheries Service Office of Protected Resources 1315 East West Highway Silver Spring, MD 20910
National Oceanic and Atmospheric Administration 14th Street & Constitution Avenue NW, Room 6217 Washington, DC 02023	Dr. Roy E. Crabtree Regional Administrator, Southeast Region National Oceanic & Atmospheric Administration National Marine Fisheries Service 263 13th Avenue, South St. Petersburg, FL 33701
Ms. Patricia Kurkul Regional Administrator, Northeast Region National Oceanic & Atmospheric Administration National Marine Fisheries One Blackburn Drive Gloucester, MA 01930	
U.S. Department of Transportation	
Admiral Thad W. Allen Commandant (G-MWV) US Coast Guard – Headquarters 2100 Second Street, SW Washington, DC 20593	Rear Admiral Larry Hereth US Coast Guard – 5th District 431 Crawford Street Portsmouth, VA 23704
Rear Admiral Timothy S. Sullivan District Commander 1st Coast Guard District 408 Atlantic Avenue Boston, MA 02110	Rear Admiral Joel R. Whitehead District Commander 8th Coast Guard District Hale Boggs Federal Building 500 Poydras Street New Orleans, LA 70130

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

FEDERAL AGENCIES, Cont'd	
U.S. Department of Transportation, Cont'd	
Ms. Shelley Meyer Sylivant Naval Surface Warfare Center (NSWC) 2202 Cambridge Downs Drive Morehead City, NC 28557	
STATE AGENCIES	
Maine	
Mr. Patrick K. McGowan Department of Conservation Commissioner's Office 22 State House Station Augusta, ME 04333-0022	Mr. James Brooks Director Department of Environmental Protection Bureau of Air Quality 28 Tyson Drive Augusta, ME 04333-0017
Mr. Gary P. Cleaves General Manager Maine Military Authority 32 Connecticut Road Limestone, ME 04750	Mr. Andrew Fisk Director Department of Environmental Protection Bureau of Land and Water Quality 28 Tyson Drive Augusta, ME 04333
Ms. Martha Freeman Director Maine Coastal Program 38 State House Station 184 State Street Augusta, ME 04333	Mr. Mark Hyland Acting Director Department of Environmental Protection Bureau of Remediation & Waste Management 28 Tyson Drive Augusta, ME 04333
Major General John Libby Adjutant General & Commissioner Maine Army National Guard The State of Maine Department of Defense Veterans and Emergency Camp Keyes Augusta, ME 04333	Mr. David P. Littell Department of Environmental Protection Office of the Commissioner 28 Tyson Drive Augusta, ME 04333
Mr. Roland D. Martin Commissioner Department of Inland Fisheries & Wildlife 41 State House Station 284 State Street Augusta, ME 04333	Mr. Earle G. Shettleworth, Jr. Director Historic Preservation Commission 65 State House Station 55 Capitol Street Augusta, ME 04333

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE AGENCIES, Cont'd	
New Hampshire	
Mr. George Bald Commissioner New Hampshire Department of Resources & Economic Development 172 Pembroke Road PO Box 1856 Concord, NH 03302	Mr. Roy Duddy Director State of New Hampshire Economic Development NH Business Resource Center 172 Pembroke Road PO Box 1856 Concord, NH 03302
Mr. Philip A. Bryce Director NH Division of Forests & Lands PO Box 1856 Concord, NH 03302	Major General Kenneth R. Clark Adjutant General New Hampshire National Guard The Adjutant General's Department 4 Pembroke Road Concord, NH 03301
Mr. John J. Barthelmes Commissioner NH Department of Safety James H. Hayes Safety Building 33 Hazen Drive Concord, NH 03305	Mr. Van McLeod Commissioner Department of Cultural Resources 20 Park Street Concord, NH 03301
Mr. Tom Burack NH Department of Environmental Services Commissioner's Office 29 Hazen Drive Concord, NH 03302	Mr. Lee E. Perry Executive Director NH Fish and Game Department 11 Hazen Drive Concord, NH 03301
Massachusetts	
Ms. Priscilla E. Geigis Acting Commissioner Department of Conservation and Recreation 251 Causeway Street, Suite 600 Boston, MA 02114	Mr. Lawrence B. Adams Executive Director Central MA Regional Planning Commission 35 Harvard Street Worcester, MA 01609
Mr. Timothy W. Brennan Executive Director Pioneer Valley Planning Commission 26 Central Street, Suite 34 West Springfield, MA 01089	Mr. Dennis DiZoglio Executive Director Merrimack Valley Planning Commission 160 Main Street Haverhill, MA 01830
Mr. John Auerbach Commissioner Department of Public Health 250 Washington Street Boston, MA 02108	Ms. Kristin Decas Deputy Director MA Seaport Advisory Council 40 Center Street Fairhaven, MA 02719

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE AGENCIES, Cont'd	
Massachusetts, Cont'd	
Mr. Richard Dimino President Metropolitan Area Planning Council 60 Temple Place Boston, MA 02111	Mr. Marc Draisen Executive Director Metropolitan Area Planning Council 60 Temple Place Boston, MA 02111
Ms. Linda Dunlavy Executive Director Franklin Regional Council of Governments 425 Main Street, Suite 20 Greenfield, MA 01301	Ms. Margo Fenn Executive Director Cape Cod Commission 3225 Main Street PO Box 226 Barnstable, MA 02630
Mr. Richard M. Flynn Executive Director Northern Middlesex Council of Government Gallagher Terminal, Floor 3B 115 Thorndike Street Lowell, MA 01852	Mr. Ian A. Bowles Secretary Executive Office of Environmental Affairs 100 Cambridge, 9th Floor Boston, MA 02114
Mr. Nathaniel Karns Executive Director Berkshire Regional Planning Commission 1 Fenn Street, Suite 201 Pittsfield, MA 01201	Mr. Thomas J. Kinton, Jr. Chief Executive Officer MA Port Authority (Massport) 1 Harborside Drive, Suite 200S East Boston, MA 02128
Mr. John Knipe, Jr. Chair Central MA Regional Planning Commission 35 Harvard Street Worcester, MA 01609	Mr. Victor Koivumaki Chairman Montachusett Regional Planning Commission R1427 Water Street Fitchburg, MA 01420
Mr. Frederick A. Laskey Executive Director MA Water Resources Authority Charlestown Navy Yard 100 1st Avenue Boston, MA 02129	Mr. Robert Lavoie Chairman Merrimack Valley Planning Commission 160 Main Street Haverhill, MA 01830
Mr. Mark London Executive Director Martha's Vineyard Commission PO Box 1447 Oak Bluffs, MA 02557	Ms. Laila Michaud Executive Director Montachusett Regional Planning Commission R1427 Water Street Fitchburg, MA 01420
Ms. Lorri-Ann Miller Chair Southeastern Regional Planning & Economic Development District 88 Broadway Taunton, MA 02780	Dr. Judy Ann Bigby Secretary Massachusetts Executive Office of Health & Human Services 1 Ashburton Place, 11th Floor Boston, MA 02108

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE AGENCIES Cont'd	
Massachusetts Cont'd	
Mr. Barry Rector Chairman Nantucket Planning & Economic Development Commission 2 Fairgrounds Road Nantucket, MA 02557	Ms. Linda Sibley Chairman Martha's Vineyard Commission PO Box 1447 Oak Bluffs, MA 02557
Mr. Stephen C. Smith Executive Director Southeastern Regional Planning & Economic Development District 88 Broadway Taunton, MA 02780	Mr. Andrew Vorce AICP, Director Nantucket Planning & Economic Development Commission 2 Fairgrounds Road Nantucket, MA 02557
Rhode Island	
Dr. W. Michael Sullivan Director Department of Environmental Management 235 Promenade Street Providence, RI 02908	Major General Robert Bray Adjutant General RI National Guard Joint Force Headquarters Command Readiness Center 645 New London Avenue Cranston, RI 02920
Mr. Grover Fugate Executive Director Coastal Resources Management Council Stedman Government Center, Suite 3 4808 Tower Hill Road Wakefield, RI 02879	Dr. David R. Gifford Director Department of Health 3 Capitol Hill Providence, RI 02908
Mr. Juan Mariscal General Manager Water Resources Board 1 Capitol Hill, 3rd Floor Providence, RI 02908	Mr. Daniel W. Varin Chair Water Resources Board 1 Capitol Hill, 3rd Floor Providence, RI 02908
Connecticut	
Ms. Gina McCarthy Commissioner Department of Environmental Protection 79 Elm Street Hartford, CT 06106	Ms. Joan McDonald Commissioner Department of Economic & Community Development 505 Hudson Street Hartford, CT 06106
Dr. J. Robert Galvin Commissioner CT Department of Public Health 410 Capitol Avenue Hartford, CT 06106	Mr. Thomas F. Harrison Chairman CT Council of Environmental Quality 79 Elm Street Hartford, CT 06106

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE AGENCIES Cont'd	
Connecticut Cont'd	
Major General Thaddeus J. Martin Adjutant General CT National Guard CT Military Department 360 Broad Street Hartford, CT 06105	Mr. S. Derek Phelps Executive Director CT Siting Council 10 Franklin Square New Britain, CT 06051
Mr. Brian Toal Principal Investigator CT Environmental Public Health Tracking, EPHT 410 Capitol Avenue, MS #11EOH PO Box 340308 Hartford, CT 06134	Mr. Karl J. Wagener Executive Director CT Council on Environmental Quality 79 Elm Street Hartford, CT 06106
Mr. David Fox CT Department of Environmental Protection Office of Environmental Review 79 Elm Street Hartford, CT 06106	
New York	
Mr. Pete Grannis Commissioner Department of Environmental Conservation 625 Broadway Albany, NY 12233	Ms. Maureen Coleman Assistant Commissioner Office of Legislative Affairs 625 Broadway Albany, NY 12233
Mr. Carl Johnson Deputy Commissioner Office of Air & Waste Management 625 Broadway Albany, NY 12233	Ms. Ruth A. Moore Deputy Commissioner Office of Natural Resources & Water Quality 625 Broadway Albany, NY 12233
Mr. Willie Janeway Regional Director, Region 3 Department of Environmental Conservation 21 South Putt Corners New Paltz, NY 12561	Mr. Peter A. Scully Regional Director, Region 1 Department of Environmental Conservation SUNY-Building 40 50 Circle Road Stony Brook, NY 11790
Delaware	
Mr. John Hughes Secretary Department of Natural Resources & Environmental Control 89 Kings Highway Dover, DE 19901	Ms. Sarah Cooksey Environmental Program Administrator DE Department of Natural Resources & Environmental Control Soil and Water Coastal Management Program 89 Kings Highway Dover, DE 19901

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE AGENCIES Cont'd	
New Jersey	
Ms. Lisa P. Jackson Commissioner Department of Environmental Protection 401 East State Street, 7th Floor, East Wing PO Box 402 Trenton, NJ 08625	Mr. Chuck Chiarello Chairperson Pinelands Municipal Council 15 Springfield Road PO Box 7 New Lisbon, NJ 08064
Ms. Carol R. Collier Executive Director Delaware River Basin Commission 25 State Police Drive PO Box 7360 West Trenton, NJ 08628	Ms. Caren S. Franzini Chief Executive Officer NJ Economic Development Authority PO Box 990 Trenton, NJ 08625
Dr. Larry A. Greene Chairman NJ Historical Commission NJ Department of State PO Box 305 Trenton, NJ 08625	Major General William T. Grisoli Chair Delaware River Basin Commission 25 State Police Drive PO Box 7360 West Trenton, NJ 08628
Ms. Barbara Haney Irvine Executive Director New Jersey Historic Trust Department of Community Affairs PO Box 457 Trenton, NJ 08625	Mr. Charles M. Kuperus Secretary of Agriculture Department of Agriculture PO Box 330 Trenton, NJ 08625
Major General Glenn K. Rieth Adjutant General NJ Military & Veterans Affairs PO Box 340 Trenton, NJ 08625	Mr. Ralph Siegel Executive Director Garden State Preservation Trust 135 West Hanover Street PO Box 750 Trenton, NJ 08625
Ms. Betty Wilson Chairperson Jersey Pinelands Commission 15 Springfield Road New Lisbon, NJ 08064	Mr. Ken Koschek NJ Department of Environmental Protection Office of Permit Coordination & Environmental Review PO Box 418 Trenton, NJ 08625
Maryland	
Mr. John R. Griffin Secretary Department of Natural Resources Tawes State Office Building 580 Taylor Avenue Annapolis, MD 21401	Ms. Shari T. Wilson Secretary Department of Environment Montgomery Park Business Center 1800 Washington Blvd. Baltimore, MD 21230

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE AGENCIES Cont'd	
Virginia	
Mr. Steven G. Bowman Commissioner Marine Resources Commission 2600 Washington Avenue, 3rd Floor Newport News, VA 23607	Mr. Robert S. Bloxom Secretary Department of Agriculture & Forestry Patrick Henry Building, 4th Floor 1111 East Broad Street Richmond, VA 23219
Mr. Richard D. Brown Director Department of Planning & Budget Patrick Henry Executive Office Building 1111 East Broad Street, Room 5040 Richmond, VA 23219	Mr. L. Preston Bryant, Jr. Secretary Department of Natural Resources PO Box 1475 Richmond, VA 23219
Mr. Carl E. Garrison, III. State Forester Department of Forestry 900 Natural Resources Drive, Suite 800 Charlottesville, VA 22903	Mr. Timothy Gette Executive Director/CEO Virginia Museum of Natural History 21 Starling Avenue Martinsville, VA 24112
Mr. Pierce R. Homer Secretary of Transportation Department of Transportation PO Box 1475 Richmond, VA 23218	Ms. Ellie Irons Program Manager Office of Environmental Impact Review VA Department of Environmental Quality 629 East Main Street, Suite 901 PO Box 10009 Richmond, VA 23240
Ms. Kathleen Kilpatrick Director Department of Historic Resources 2801 Kensington Avenue Richmond, VA 23221	Mr. Daniel LeGrande Area Manager Virginia Port Authority 600 World Trade Center Norfolk, VA 23510
Mr. Joseph H. Maroon Director VA Department of Conservation & Recreation 203 Governor Street, Suite 213 Richmond, VA 23219	Mr. W. Gerald Massengill Interim Director Department of Game & Inland Fisheries 4010 West Broad Street Richmond, VA 23230
Major General Robert B. Newman, Jr. Adjutant General Department of Military Affairs VA National Guard 202 North 9th Street, 4th Floor Richmond, VA 23219	Mr. David K. Paylor Director Department of Environmental Quality 629 East Main Street, Suite 901 PO Box 1105 Richmond, VA 23218

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE AGENCIES Cont'd	
North Carolina	
Mr. William G. Ross, Jr. Secretary North Carolina Department of Environmental & Natural Resources 1601 Mail Service Center Raleigh, NC 27699	Mr. Bryan E. Beatty Secretary NC Department of Crime Control & Public Safety 4701 Mail Service Center Raleigh, NC 27699
Ms. Lisbeth C. Evans Secretary NC Department of Cultural Resources 109 East Jones Street 4601 Mail Service Center Raleigh, NC 27699	Mr. Richard Hamilton Executive Director NC Wildlife Resources Commission 1701 Mail Service Center Raleigh, NC 27699
Mr. Wes Seegars Chairman NC Wildlife Resources Commission PO Box 1756 Goldsboro, NC 27533	Mr. Bill Flournoy North Carolina Department of Environment and Natural Resources Office of Conservation and Community Affairs 1601 Mail Service Center Raleigh, NC 27699
Charlan Owens North Carolina Department of Environment and Natural Resources Division of Coastal Management 1367 US 17 South Elizabeth City, NC 27909	Mr. Steven H. Everhart NC Wildlife Resources Commission 127 Cardinal Drive Wilmington, NC 28405
South Carolina	
Mr. John Frampton Director Department of Natural Resources PO Box 167 Columbia, SC 29202	Mr. Cecil Campbell Coastal Region Forester South Carolina Forestry Commission 413 Sidneys Road Walterboro, SC 29488
Mr. Bernard S. Groseclose, Jr. President/CEO SC State Ports Authority 176 Concord Street PO Box 22287 Charleston, SC 29413	Mr. C. Earl Hunter Commissioner SC Department of Health & Environmental Control 2600 Bull Street Columbia, SC 29201
Mr. Chad Prosser Director SC Department of Parks, Recreation, & Tourism 1205 Pendleton Street Columbia, SC 29201	Mr. Robert C. Schowalter State Forester South Carolina Forestry Commission 5500 Broad River Road Columbia, SC 29201

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE AGENCIES Cont'd	
South Carolina, Cont'd	
Major General Stanhope S. Spears Office of the Adjutant General SC Military Department 1 National Guard Road Columbia, SC 29201	Mr. Hugh E. Weathers Commissioner SC Department of Agriculture PO Box 11280 1200 Senate Street Columbia, SC 29211
Georgia	
Mr. Noel Holcomb Commissioner Georgia Department of Natural Resources East Tower, Suite 1252 2 Martin Luther King, Jr. Drive, SE Atlanta, GA 30334	Mr. Chris Clark Executive Director Georgia Environmental Facilities Authority Harris Tower, Suite 900 233 Peachtree Street, NE Atlanta, GA 30303
Mr. Craig S. Lesser Commissioner Department of Economic Development 75 5th Street, NW, Suite 1200 Atlanta, GA 30334	Major General David B. Poythress Adjutant General Georgia Department of Defense PO Box 17965 Atlanta, GA 30316
Mr. Robert Farris Director Georgia Forestry Commission 5645 Riggins Mill Road Dry Branch, GA 31020	
Florida	
Mr. Michael W. Sole Secretary Department of Environmental Protection 3900 Commonwealth Blvd., MS 49 Tallahassee, FL 32399	Major General Douglas Burnett Adjutant General Florida Department of Military Affairs St. Francis Barracks 82 Marine Street St. Augustine, FL 32084
Ms. Pamela Dana Director Office of Tourism, Trade, & Economic Development 400 S. Monroe Street Tallahassee, FL 32399	Ms. Sally Mann Florida Department of Environmental Protection Marjory Stoneman Douglas Building 3900 Commonwealth Blvd. Tallahassee, FL 32399
Ms. Mary Ann Poole Florida Fish & Wildlife Conservation Commission Office of Policy & Stakeholder Coordination 620 S. Meridian Street Tallahassee, FL 32399	

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE AGENCIES Cont'd	
Alabama	
Mr. R. Vernon Minton Director Alabama Department of Conservation & Natural Resources Marine Resources Division PO Box 189 Dauphin Island, AL 36528	Major General John M. White Adjutant General Alabama State Defense Force PO Box 3711 Montgomery, AL 36109
Col. John Neubauer Executive Director Alabama Historical Commission 468 S. Perry Street Montgomery, AL 36130	Mr. James H. Griggs Director Alabama Department of Conservation & Natural Resources Lands Division, Coastal Section 64 N. Union Street, Suite 468 Montgomery, AL 36130
Mr. Don Heath Chairman Alabama Forestry Commission PO Box 302550 Montgomery, AL 36130	Mr. M. Barnett Lawley Commissioner of Conservation Alabama Department of Conservation & Natural Resources 64 N. Union Street, Suite 468 Montgomery, AL 36130
Mr. Gaines C. McCorquodale Chairman State Oil & Gas Board of Alabama 420 Hackberry Lane PO Box 869999 Tuscaloosa, AL 35486	Mr. Ron Sparks Commissioner Alabama Department of Agriculture & Industries 1445 Federal Drive Montgomery, AL 36107
Ms. Debi Thomas Executive Assistant Environmental Management Commission PO Box 301436 Montgomery, AL 36130	Mr. Neal Wade Director Alabama Development Office 401 Adams Avenue, 6th Floor Montgomery, AL 36130
Mr. Onis Glenn, III. Director Alabama Department of Environmental Management PO Box 301463 Montgomery, AL 36130	

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE AGENCIES Cont'd	
Mississippi	
Dr. Vernon Asper Chairman Mississippi Department of Marine Resources 1141 Bayview Avenue, Suite 101 Biloxi, MS 39530	Mr. Donald R. Allee Executive Director/CEO Mississippi State Port Authority PO Box 40 Gulfport, MS 39502
Ms. Trudy Fisher Executive Director Department of Environmental Quality PO Box 20305 Jackson, MS 39289	Major General Harold A. Cross Adjutant General MS National Guard Joint Force Headquarters 1410 Riverside Drive Jackson, MS 39296
Mr. Don Underwood Executive Director Mississippi Soil & Water Conservation Commission PO Box 23005 Jackson, MS 39225	Mr. Don Pittman President Pat Harrison Waterway District 6081 Highway 49 South PO Drawer 1509 Hattiesburg, MS 39403
Ms. Terry Teague Gulf of Mexico Program Office Mail Code: EPA/GMPO Stennis Space Center Stennis Space Center, MS 39529	Mr. Robert E. Cox Chairman Mississippi Forestry Commission 1732 Douglastown Road Maben, MS 39750
Mr. David A. Scott Chairman Mississippi State Oil & Gas Board 500 Greymont Avenue, Suite E Jackson, MS 39202	
Louisiana	
Mr. Scott A. Angelle Secretary Louisiana Department of Natural Resources PO Box 94396 Baton Rouge, LA 70804	Dr. Mike McDaniel Secretary Department of Environmental Quality PO Box 4301 Baton Rouge, LA 70802
Mr. Michael Olivier Secretary/CEO Department of Economic Development PO Box 94185 Baton Rouge, LA 70804	

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

STATE AGENCIES Cont'd	
Texas	
Ms. Kathleen Hartnett White Chairman Texas Commission of Environmental Quality MC 100 PO Box 13087 Austin, TX 78711	Mr. Joseph J. Beal Director Lower Colorado River Authority PO Box 220 Austin, TX 78767
Col. Peter P. Flores Executive Director Texas Parks & Wildlife Department 6300 Ocean Drive 4200 Smith School Road Austin, TX 78744	Mr. Phil Ford General Manager Brazos River Authority 4600 Cobbs Drive PO Box 7555 Waco, TX 76714
Lt. Col. Jerry Patterson Commissioner Texas General Land Office 1700 North Congress Avenue, Suite 935 Austin, TX 78701	Mr. Scott W. Tinker Director Bureau of Economic Geology The University of Texas at Austin University Station, Box X Austin, TX 78713
Mr. J. Kevin Ward Executive Administrator Texas Water Development Board Stephen F. Austin Building PO Box 13231 Austin, TX 78711	Lt. Gen. Charles G. Rodriguez Adjutant General Texas National Guard 2200 West 35th Street Austin, TX 78763
ASSOCIATIONS/ORGANIZATIONS	
Southern Environmental Law Center (SELC) Ms. Michele Nowlin 200 W. Franklin St., Suite 300 Chapel Hill, NC 27516	Southeastern Ct. Enterprises (SECTER) Mr. John Markowicz 190 Governor Winthrop Blvd. New London, CT 06320
The Humane Society of the United States Ms. Naomi Rose, PhD, marine mammal scientist 2100 L. Street, NW Washington, DC 20037	Marine Acoustics, Inc. Ms. Kimberly Skrupky 4100 Fairfax Drive, Suite 730 Arlington, VA 22203
Southern Environmental Law Center (SELC) Ms. Anna Davis 200 W. Franklin Street, Suite 330 Chapel Hill, NC 27516	Save the Whales Rick, Pam, Victoria, & Veronica Arma 113 Holman Road Williamsburg, VA 231850

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

ASSOCIATIONS/ORGANIZATIONS	
North Carolina Coastal Federation Ms. Christine Miller 813 S. Yaupon Terrace Morehead City, NC 28557	Florida Chapter Sierra Club John S. Glenn, Conservation Chair 214 N. 17^{th} Street Fernandina Beach, FL 32034
Captain Anderson Sightseeing Betty Canaugh 1424 Canaugh Lane Southport, FL 32409	Natural Resources Defense Council Joel R. Reynolds, Director Marine Mammal Protection Project 1314 Second Street Santa Monica, CA 90401
Citizens Opposing Active Sonar Threats COAST Russell Wray 536 Point Road Hancock, ME 04640	Neuse River Foundation 220 S. Front Street New Bern, NC 28560
Carteret County Crossroads P.O. Box 155 Beaufort, NC 28443	Sierra Club of North Carolina Capital Group P.O. Box 6076 Raleigh, NC 27628
Pamlico-Tar River Foundation P.O. Box 1854 Washington, NC 27889	Associated Scientist at Wood's Hole Jim Hain P.O. Box 721 Wood's Hole, MA 02543
Environmental Defense 4000 Westchase Boulevard Suite 510 Raleigh, NC 27607	Natural Resources Defense Council Dorothee Alsentzer 1314 2nd Street Santa Monica, CA 90401
The Nature Conservancy Shelley Beville 45 West Bay Street Ste 202 Jacksonville, FL 32202	NEEF Richard Bierly 213 Brandywine Park Drive Morehead City, NC 28557
NC Wildlife Resources Wendy Cluse 211 Virginia Avenue Morehead City, NC 28557	Coastal Conservation League Hamilton Davis 320 East Bay Street Charleston, SC 29401
Sierra Club Kristina Jackson 1024 NW 13 Avenue Gainesville, FL 32601	Carteret Fisherman Association 652 Seashore Atlantic, NC 28511
Southeastern Ct. Enterprises J.W. (Bill) Sheehan 19 Laurel Drive Waterford, CT 06385	

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

Individuals (Public Scoping Meeting Attendees)	
Ulrich Alsentzer Greenville, NC	Bill Austin Orange Park, FL
Doug Beckmann Norfolk, VA	Catherine Booker Charleston, SC
Beth Branham Panama City, FL	Jeffery Brantley Jacksonville, FL
James Brantley Glen St. Mary, FL	Rodney Leon Brantley Jacksonville, FL
Evan Brinkman Santa Monica, CA	Sonya Brown Jacksonville, FL
James Brown Atlanta, GA	Valerie Carpenter Virginia Beach, VA
CDR Gerald Battle Morehead City, NC	Gina Coelho Leesby, MD
:CDR Ted Cooper Panama City, FL	Sean Corsladden Panama City, FL
Kim Counts Charleston, SC	Debbie Daloisio Panama City Beach, FL
Willis T Dixon Norfolk,VA	Bruck Durig Jacksonville, FL
Hank Eacho Norfolk, VA	John Eisler Jacksonville, FL
Catherine Elkins Gloucester, NC	Barbara Everhart Wilmington, NC
Rafael Facundo Jacksonville, FL	Carmen Ferrer Panama City, FL
Fulcher Morehead City, NC	Michael Hagerty Chesapeake, VA
Zoey Hanson-Dibello Norwich	Wanda Holmes Charleston, SC
Bert Howell Panama City, FL	Chris Hudine Virginia Beach, VA
Rick Hughes Chesapeak, VA	Van John Charleston, SC
Peter Johnson Jacksonville, FL	Gabe Judd Jacksonville Beach, FL
Michael King Cape Carteret, NC	Drew King St. Augustine, FL
Kimberly Kler Silverdale, WA	Ruth Koczela Washington DC
Kathy Kotecki-White Chesapeake, VA	Glenn Markwith Gloncester Point, VA
Steve McClain Panama City, FL	Andrew McGuckin Morehead City, NC

Table B-2. AFAST EIS/OEIS Stakeholder List Cont'd

Individuals (Public Scoping Meeting Attendees) Cont'd	
Stephanie McManus Norfolk, VA	Bryan Murphy Virginia Beach, VA
Wade Nelms Newport, NC	Jeffery Nors Corpus Christi, TX
Clark Ostrowki Norfolk, VA	Bill Raspet Jacksonville, FL
Melissa Rettig Summerville, SC	Ward Reynolds Mt. Pleasant, SC
Danny Roberts Newport, NC	Tina Willis Rodriquez Morehead City, NC
Stephen Rynas Morehead City, NC	F.D.S. Panama City, FL
Paul S. Panama City, FL	Mark Sayger Morehead City, NC
Sandy Simmas Chesapeake, VA	Brandi Simpson Nortfolk, VA
Rick Spaulding	Kathryn and Ellen Steverson Summerville, SC
Michael Street Morehead City, NC	Shelley Meyer Sylivant Morehead City, NC
Gerald Troyer Morehead City, NC	Joe Twomey Norfolk, VA
Deb Venn Jacksonville, FL	Greg Wahl Charleston, SC
Gary Weltman Jacksonville, FL	Axel Westerberg New London, CT
Lisa White Jacksonville, FL	Hugh L. Wilde Beaufort, NC
Jeff Willows Panama City Beach, FL	
Individuals (Public Hearing Attendees)	
Paul Abney Norfolk, VA	Susan Adnnie Chesapeake, VA
Jerry Allegood Morehead City, NC	Eric Anderson Morehead City, NC
Aaron Armstrong Virginia Beach, VA	Garland Armstrong Norfolk, VA
Glenda Arrington Norfolk, VA	Ron Asher Norfolk, VA
Bill Austin Jacksonville, FL	Eric and Janet Bailey Mt. Pleasant, SC
Chris and Haley Bain Mt. Pleasant, SC	Tom Barbee Jacksonville, NC
Susan Barco Norfolk, VA	Chris Barody Charleston, SC

Individuals (Public Hearing Attendees) Cont'd	
Doug Beckmann Norfolk, VA	William D. Blackburn Jacksonville, NC
Doug Bolton Morehead City, NC	Kris Bonner Norfolk, VA
Becca Borrera Mt. Pleasant, SC	Kevin Bowlin Panama City, FL
Aaron Bowman Mayport, FL	Linda Bremer Jacksonville, FL
Dale Britt Morehead City, NC	Brooks Morehead City, NC
Regina Brown Jacksonville, FL	Stephen Brown Morehead City, NC
Thomas J. Brown Charleston, SC	Jared Brumbaugh Morehead, NC
Greg Burkov Homer, AL	Pablo J. Canter Morehead City, NC
Mary Carlyle Brown Morehead City, NC	Clint Carroll Jacksonville, FL
Michael Carter Mt. Pleasant, SC	Sathya Chinnadurai Morehead City, NC
Cathi, Chris and Joshua Ciappa Charleston, SC	Karen Coghlan Jacksonville, FL
Melody Cooke Jacksonville, FL	Theresa Cottrell Jacksonville, FL
Addie Coward Charleston, SC	Rosabel Cowpen-Gherini Morehead City, NC
John Crawford Boston, MA	Andrew Cronin Norfolk, VA
Willliam S. Culler Morehead City, NC	David M. Curfman Chesapeake, VA
Bill Daniels Norfolk, VA	Judith Darrell Kemp Boston, MA
Hamilton Davis Charleston, SC	Maggie Davis-Bausch Morehead City, NC
D. W. Dawkins Pine Knoll Shores, NC	Lucas and Raquel de Oliveira Panama City, FL
Kevin Delaney Jacksonville, FL	John Dempsey Brookline, MA
Kate Dempsey Waltham, MA	Lee Dengler Jacksonville, FL
Mike Derenburger Morehead City, NC	Gary Donoher Jacksonville, FL
Andrew Doud Morehead City, NC	Coleman and Lea Dunne Mt. Pleasant, SC

Individuals (Public Hearing Attendees) Cont'd	
Hank Eacho Norfolk, VA	Catherine Elkins Gloucester, NC
Emily Fergusun Jacksonville, FL	Carmen Ferrer Panama City, FL
Evelyn P. Flengan Virginia Beach, VA	John, Louise, and Rachel Foertsch Mt. Pleasant, SC
Lawton Fosberry Mt. Pleasant, SC	F. T. Gallagher Dorchester, MA
Joan Gerdsen Swansboro, NC	Steve Hairfield Hanahav, SC
John P. Hall Mt. Pleasant, SC	Trace Hall Mt. Pleasant, SC
Chris Harding Virginia Beach, VA	Lees Hardy Morehead City, NC
Karen Hattman Beaufort, NC	Jack Hayser Mt. Pleasant, SC
Rachel Healey Jacksonville, FL	Todd Hollis Daniel Island, SC
Paula J. Hughes Virgnia Beach, VA	Mila Huguenin Cambridge, MA
David M. James Norfolk, VA	Kim Joyner-Barg Courtland, VA
Theresa Kirchner Gloucester, MA	Gary Kirkland Neptune Beach, FL
Kelly Knight Norfolk, VA	Katie Kovitvongsa Brookline, MA
Cealia Krahforst Greenville, NC	Sandra Krebs Virginia Beach, VA
Lesley Leonard Virginia Beach, VA	Phil Lobel Boston, MA
Kristen Louis Ballston Spa, NY	Aiden and R. Lynch Isle of Palms, SC
Jack Martini Mt. Pleasant, SC	Chris and Emily Mason Mt. Pleasant, SC
Jim Massengill Morehead City, NC	Ray McCauley Chesapeake, VA
Cheryl McGarrity Norfolk, VA	Ryan McManus Mt. Pleasant, SC
Karley, Kathy, and Randy McWhorter Mt. Pleasant, SC	Shelley Meyer Sylivant Morehead City, NC
W. Jack Millis Pine Knoll Shores, NC	Emily and Haley Osmer Mt. Pleasant, SC
Maureen Rama Mt. Pleasant, SC	Bill Raspet Jacksonville, FL

Individuals (Public Hearing Attendees) Cont'd	
Mary Richter Morehead City, NC	Lani Roe Mt. Pleasant, SC
Bill Rogers New Bern, NC	Alisha Salmonsen Mt. Pleasant, SC
Mary Theresa Saurman Cambridge, MA	Ethan Shimony Wellesley, MA
Creighton Shipman Daniel Island, SC	Lee Shipman Charleston, SC
Joe Shuti Morehead, City, NC	Cynthia Sidner Virginia Beach, VA
Amy Smith Annandale, VA	Ronald Smith Morehead City, NC
Bernice and R. Snyder Jacksonville, FL	Gott Steven Jacksonville, FL
Michael W. Street Morehead City, NC	Jolinne Surette Gloucester, MA
Lexi Thomas Mt. Pleasant, SC	Paris L. Thomas Boston, MA
Joseph and Patrick Tompkins Mt. Pleasant, SC	Douglas Tortorici Mt. Pleasant, SC
Jeff Waizach Boston, MA	Mark Walker Hubert, NC
John and Verne Walsh Arlington, VA	Danielle Waples Beaufort, NC
Brian Watson Swampscott, MA	Wayne Williamsen Panama City, FL
Twila Williams-Sabin Charleston, SC	

The Navy Announces the Availability and Public Hearings for the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS)

Virginia Beach, Virginia
March 4, 2008
Tidewater Community College
Advanced Technology Center: Technology Theater
Faculty Drive

Boston, Massachusetts
March 6, 2008
Boston University
Kenmore Classroom Building, Room 101
565 Commonwealth Avenue

Morehead City, North Carolina
March 11, 2008
Crystal Coast Civic Center
1st Floor: Quads 1 and 2
3505 Arendall Street

Mount Pleasant, South Carolina
March 13, 2008
Charleston Harbor Resort & Marina
Atlantic Ballroom
20 Patriots Point Road

Jacksonville, Florida
March 18, 2008
Florida Community College at Jacksonville
Nathan H. Wilson Center for the Arts
Lakeside Conference Room
11901 Beach Boulevard

Panama City, Florida
March 19, 2008
Florida State University, Panama City Campus
Auditorium
4750 Collegiate Drive

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Naval Facilities Engineering Command, Atlantic
Attn: Code EV22 (Atlantic Fleet Sonar Project Manager)
6506 Hampton Boulevard, Norfolk, Virginia 23508-1278
Info Line: 757-322-4767; Fax: 888-875-6781; Website: http://afasteis.gcsaic.com

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Norfolk, Virginia 23508-1278

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The Navy Announces the Availability of the Atlantic Fleet Active Sonar Training Final Environmental Impact Statement/ Overseas Environmental Impact Statement

The Atlantic Fleet Active Sonar Training (AFAST) Final Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) is now available electronically via the AFAST website.

For more information on the AFAST Final EIS/OEIS or to request a CD of the AFAST Final EIS/OEIS, please contact:

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APPENDIX C

EXERCISE AND SONAR TYPE DESCRIPTIONS

EXERCISE AND SONAR TYPE DESCRIPTIONS

Unit Level Training (ULT), Coordinated ULT, Strike Group training, active sonar maintenance, and research, development, test, and evaluation (RDT&E) activities are addressed within this appendix. The active acoustic systems associated with each training platform (aircraft, ships, submarines, etc.) are identified. This is followed by 17 scenario descriptions defining the platforms that participate in each active sonar event. The yearly frequency of each scenario occurrence is listed. The criteria for selection of active sonar sources for inclusion in the analysis are presented. Lastly, the operating parameters for each selected source are described to the extent classification restrictions permit.

C.1 ACOUSTIC SOURCES

Various active acoustic sources that may or may not affect the local marine mammal population are deployed by platforms during each of the training exercises, maintenance events, and RDT&E activities discussed in this appendix. The following sections discuss the acoustic sources that would be present during such training exercises, maintenance events, and RDT&E activities.

C.1.1 Surface Ship Sonars

- <u>AN/SQS-53</u> – a computer-controlled, hull-mounted surface-ship sonar that has both active and passive operating capabilities, providing precise information for anti-submarine warfare (ASW) weapons control and guidance. The system is designed to perform direct-path ASW search, detection, localization, and tracking from a hull-mounted transducer array. The AN/SQS-53 (Figure C-1) is characterized as a mid-frequency active (MFA) sonar, operating from 1 to 10 kilohertz (kHz); however, the exact frequency is classified. The AN/SQS-53 sonar is the major component to the AN/SQQ-89 sonar suite, and it is installed on Arleigh Burke Class guided missile destroyers (DDGs), and Ticonderoga Class guided missile cruisers (CGs) (FAS, 1999).


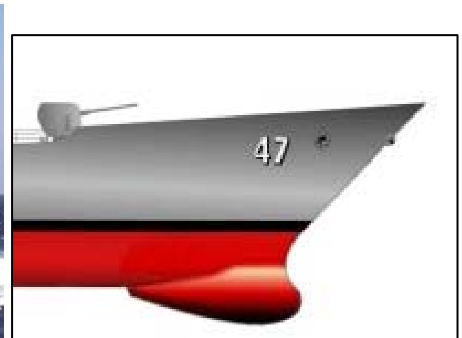

Figure C-1. Arleigh Burke Class DDG equipped with AN/SQS-53 (L); Ticonderoga Class CG showing AN/SQS-53 (R)

- AN/SQS-53 Kingfisher – a modification to the AN/SQS-53 sonar system that provides the surface ship with an object detection capability. The system uses MFA sonar, although the exact frequency range is classified. This sonar system is installed on Arleigh Burke Class DDGs, and Ticonderoga Class CGs (FAS, 1999).
- AN/SQS-56 – a hull-mounted sonar that features digital implementation, system control by a built-in mini computer, and an advanced display system. The sonar is an active/passive, preformed beam, digital sonar providing panoramic active echo ranging and passive digital multibeam steering (DIMUS) surveillance. The sonar system is characterized as MFA sonar, although the exact frequency range is classified. The AN/SQS-56 (Figure C-2) is the major component of the AN/SQQ-89 sonar suite and is installed on Oliver Hazard Perry Class frigates (FFGs) (FAS, 1998).

Figure C-2. Oliver Hazard Perry Class FFG equipped with AN/SQS-56

- AN/SQR-19 – a tactical towed array sonar (TACTAS) that is able to passively detect adversary submarines at a very long range. The AN/SQR-19, which is a component of the AN/SQQ-89 sonar suite, is a series of passive hydrophones towed from a cable several thousand feet behind the ship. This sonar system is a passive sensing device; therefore, it is not analyzed in this Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS). The AN/SQR-19 (Figure C-3) can be deployed by Arleigh Burke Class DDGs, Ticonderoga Class CGs, and Oliver Hazard Perry Class FFGs (FAS, 1998).

Figure C-3. AN/SQR-19

C.1.2 Surface Ship Fathometer

The surface ship fathometer (AN/UQN-4) is used to measure the depth of water from the ship's keel to the ocean floor for safe operational navigation. Fathometers are operated from all classes of United States (U.S.) Navy surface ships and are considered MFA sonar, although the exact frequency range is classified (FAS, 1999).

C.1.3 Submarine Sonars

- AN/BQQ-5 **–** a bow- and hull-mounted passive and active search and attack sonar system. The system includes the TB-16 and TB-23 or TB-29 towed arrays and Combat Control System (CCS) MK 2. This sonar system is characterized as MFA, although the exact frequency range is classified. The AN/BQQ-5 (Figure C-4) sonar system is installed on Los Angeles Class nuclear attack submarines (SSNs) and Ohio Class ballistic missile nuclear submarines (SSBNs), although the AN/BQQ-5 systems installed on Ohio Class SSBNs do not have an active sonar capability (FAS, 1998). The AN/BQQ-5 system is being phased out on all submarines in favor of the AN/BQQ-10 sonar. The operating parameters of both systems with regard to sound output in the ocean are almost identical. For these reasons, these systems will be referred to as AN/BQQ-10 in this EIS.

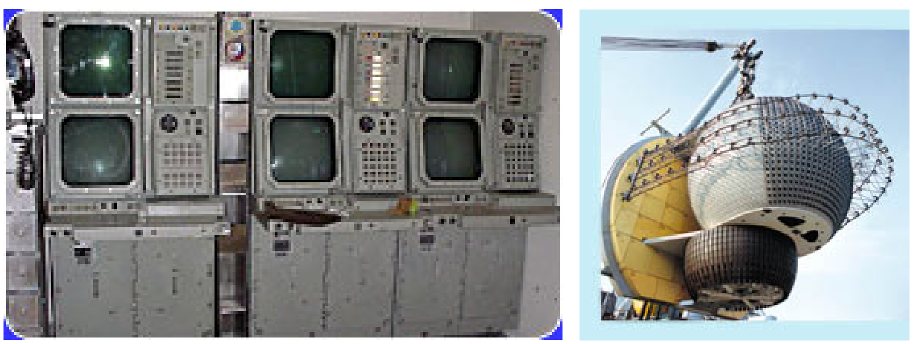

Figure C-4. AN/BQQ-5

- AN/BQQ-10 (also known as Advanced Rapid Commercial-Off-the-Shelf Insertion [ARCI]) – a four-phase program for transforming existing submarine sonar systems (i.e., AN/BQQ-5) from legacy systems to more capable and flexible active and passive systems with enhanced processing using commercial-off-the-shelf (COTS) components. The system is characterized as MFA, although the exact frequency range is classified. The AN/BQQ-10 (Figure C-5) is installed on Seawolf Class SSNs, Virginia Class SSNs, Los Angeles Class SSNs, and Ohio Class SSBN/nuclear guided missile submarines (SSGNs). The BQQ-10 systems installed on Ohio Class SSBNs do not have an active sonar capability (FAS, 1998).

Figure C-5. Sailors operating AN/BQQ-10

C.1.4 Submarine Fathometer

A submarine fathometer (AN/BQN-17, AN/UQN-4) is used to measure the depth of water from the submarine's keel to the ocean floor for safe operational navigation. All U.S. Navy submarines operate fathometers, which operate at MFA, although the exact frequency range is classified (FAS, 1999).

C.1.5 Submarine Auxiliary Sonar Systems

- TB-16, TB-23, TB-29, and TB-33 – passive acoustic sensor arrays, which are towed behind a submarine on a cable 732 meters (m) (2,400 feet [ft]) long, 0.94 centimeters (cm) (0.37 inches [in]) in diameter, weighing 204 kilograms (kg) (450 pounds [lbs]) (Figure C-6). The actual arrays vary in length from several hundred to several thousand feet long, depending on the type. These arrays are not analyzed in the EIS/OEIS because they are not active sensing devices.

  All submarines can deploy two towed arrays, the TB-16 and either the TB-23, TB-29, or the new TB-33. While submerged, a submarine usually has the TB-16 towed array deployed at all times (FAS, 2007).

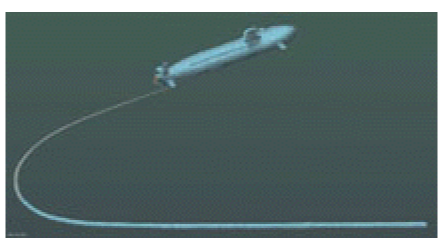

Figure C-6. Submarine Towed Array

- AN/BQS-15 – an under-ice navigation and mine-hunting sonar (Figure C-7) that uses both mid- and high-frequency (i.e., greater than 10 kHz) active sonar, although the exact frequencies are classified. Later versions of the AN/BQS-15 are also referred to as Submarine Active Detection Sonar (SADS). The Advanced Mine Detection System (AMDS) is being phased in on all ships and will eventually replace the AN/BQS-15 and

- SADS. These systems are installed on Seawolf Class SSNs, Virginia Class SSNs, Los Angeles Class SSNs, and Ohio Class SSGNs (FAS, 1998).

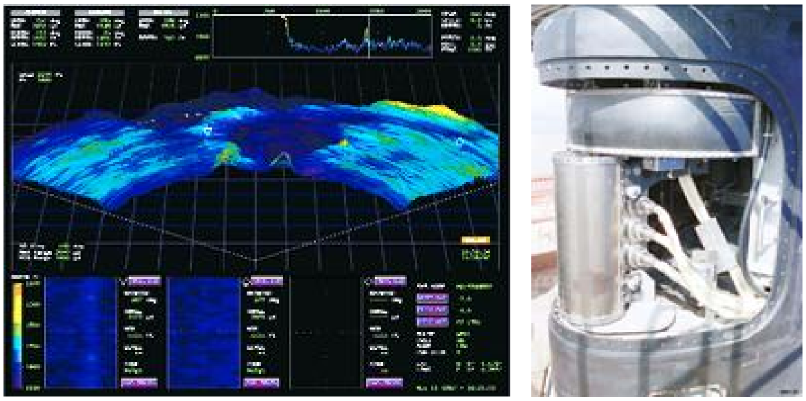

Figure C-7. AN/BQS-15 display (L), and sensor components (R)

- AN/WQC-2 – an MFA sonar underwater communications system that can transmit either voice or signal data in two bands, 1.5 to 3.1 kHz or 8.3 to 11.1 kHz. The AN/WQC-2 (Figure C-8), also referred to as the "underwater telephone" (UWT), is on all submarines and most surface ships, and allows voice and tonal communications between ships and submarines (FAS, 1999; EDO Corp., 2004).

Figure C-8. AN/WQC-2 transducer (L), and control unit (R)

C.1.6 Aircraft Sonar Systems

Aircraft sonar systems that could be deployed during active sonar events include sonobuoys (tonal [active], listening [passive], and extended echo ranging [EER] or improved extended echo ranging [IEER]) and dipping sonar (AN/AQS-13/22 or AN/AOS-22). Sonobuoys may be deployed by Marine Patrol Aircraft (MPA) or SH-60 helicopters. A sonobuoy is an expendable device used by aircraft for the detection of underwater acoustic energy and for conducting vertical water column temperature measurements. Most sonobuoys are passive, but some can generate active acoustic signals as well as listen passively. Dipping sonars are used by SH-60 helicopters. Dipping sonar is an active or passive sonar device lowered on cable by helicopters to detect or maintain contact with underwater targets. A description of various types of sonobuoys and dipping sonar is provided below.

- AN/AQS-13 Helicopter Dipping Sonar – an active scanning sonar that detects and maintains contact with underwater targets through a transducer lowered into the water from a hovering helicopter. It operates at mid-frequency, although the exact frequency is classified. The AN/AQS-13 (Figure C-9) is operated by SH-60 helicopters (FAS, 1999).

Figure C-9. AN/AQS-13 being deployed by SH-60 helicopter

- AN/AQS-22 Airborne Low-Frequency Sonar (ALFS) – the U.S. Navy's dipping sonar system for the SH-60 helicopter Light Airborne Multi-Purpose System III (LAMPS III), which is deployed from aircraft carriers, cruisers, destroyers, and frigates. It operates at mid-frequency, although the exact frequency is classified. The AN/AQS-22 (Figure C-10) employs both deep- and shallow-water capabilities (Raytheon, 2005).

Figure C-10. AN/AQS-22 being deployed by SH-60 helicopter

- AN/SSQ-62C Directional Command Activated Sonobuoy System (DICASS) – sonobuoy that operates under direct command from ASW fixed-wing aircraft or SH-60 helicopters (Figure C-11). The system can determine the range and bearing of the target relative to the sonobuoys position and can deploy to various depths within the water column. The active sonar operates at mid-frequency, although the exact frequency range is classified. After water entry, the sonobuoy transmits sonar pulses (continuous waveform [CW] or linear frequency modulation [LFM]) upon command from the aircraft. The echoes from the active sonar signal are processed in the buoy and transmitted to the receiving station onboard the launching aircraft (FAS, 1998).

Figure C-11. AN/SQS-62 (L); MPA equipped with AN/SQS-62 sonobuoys (R)

- AN/SSQ-110A Explosive Source Sonobuoy – a commandable, air-dropped, high source level explosive sonobuoy. The AN/SSQ-110A explosive source sonobuoy (Figure C-12) is composed of two sections, an active (explosive) section and a passive section. The upper section is called the "control buoy" and is similar to the upper electronics package of the AN/SSQ-62 DICASS sonobuoy. The lower section consists of two signal underwater sound (SUS) explosive payloads of Class A explosive weighing 1.9 kg (4.2 lbs) each. The arming and firing mechanism is hydrostatically armed and detonated. Once in the water, the SUS charges explode, creating a loud acoustic signal. The echoes from the explosive charge are then analyzed on the aircraft to determine a submarine's position. The AN/SSQ-110A explosive source sonobuoy is deployed by MPA (FAS, 1998).

Figure C-12. MPA deploying AN/SSQ-110A

- AN/SSQ-125 Advanced Extended Echo Ranging (AEER) Sonobuoy - a third generation of multi-static active acoustic search systems to be developed under the EER family of the systems and is being developed as the replacement for the AN/SSQ-110A. AEER brings coherent acoustic source technology and improved signal processing to the air multi-static active ASW mission set. This technology makes possible the creation of coherent pulses or pings vice the explosion-like incoherent impulses used in previous EER systems. The AN/SSQ-125 sonobuoy is composed of two sections, the control section and the active source section. The control section is similar to the upper electronics package of the AN/SSQ-62 DICASS sonobuoy. The lower section consists of the active sonar source. The echoes from pings of the sonar are then analyzed on the aircraft to determine a submarine's position. The AN/SSQ-125 sonobuoy will be deployed by MPA.

- AN/SSQ-53D/E Directional Frequency Analysis and Recording (DIFAR) – a passive sonobuoy deployed by MPA aircraft and SH-60 helicopters. The DIFAR sonobuoy (Figure C-13) provides acoustic signature data and bearing of the target of interest to the monitoring unit(s) and can be used for search, detection, and classification. The buoy uses a hydrophone with directional detection capabilities in the very low frequency, low frequency, and mid-frequency ranges, as well as an omnidirectional hydrophone for general listening purposes (FAS, 1998).

Figure C-13. AN/SSQ-53 (L); AN/SSQ-53 being loaded onto MPA (R)

C.1.7 Mine-Hunting Sonar Systems

Mine-hunting sonars are used to detect, locate, and characterize mine-like objects under various environmental conditions, including those suspended in the water (i.e., moored mines), mines on the ocean floor (i.e., proud mines), and mines buried under the ocean floor. In addition, the majority of the sonar sensors used can be deployed by more then one platform (i.e., towed body from a helicopter, unmanned underwater vehicles [UUVs], surf zone crawler, or surface ship) and may be interchangeable within the sensor package. Types of mine-hunting sonar systems are described below.

- AN/AQS-14 – an active-controlled, helicopter-towed mine-hunting active sonar (Figure C-14). It is a multibeam, side-looking sonar with electronic beam forming, all-range focusing, and an adaptive processor. The high frequency (HF) sonar system's exact frequency is classified. The system consists of three parts: a stabilized underwater vehicle, electromechanical tow cable, and airborne electronic console. The underwater vehicle is 3.3 m (10.7 ft) long and can be maintained at a fixed depth above the sea floor. It is towed by MH-60 helicopters. This system was not analyzed in this document, due to the fact that it operates above 200 kHz (Global Security, 2007).

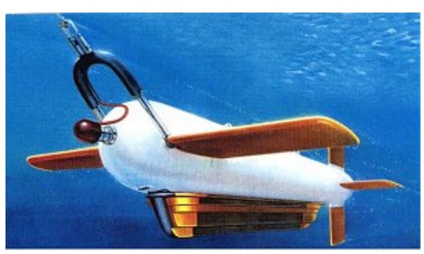

Figure C-14. AN/AQS-14

- AN/AQS-24 – the upgraded version of AN/AQS-14, including digital electronics, smaller avionics, higher resolution (image clarity), and the optional addition of a laser line scanner for target identification (Deagal, 2007). The HF side-looking sonar is towed by MH-53 helicopters (Figure C-15), but the exact frequency range is classified. This system was not analyzed in this document, due to the fact that it operates above 200 kHz.

Figure C-15. AN/AQS-24

- AN/BLQ-11 Long Term Mine Reconnaissance System (LMRS) – a UUV (Figure C-16) that, when in operation, can be launched and recovered through the torpedo tubes by all classes of submarines. It can be equipped with MFA sonar for mine detection and is intended to extend the submarine's reach for mine reconnaissance missions, although the exact frequency is classified (FAS, 2000).

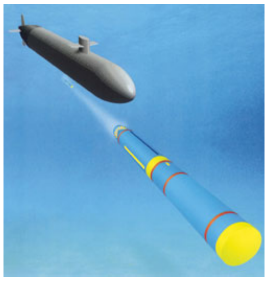

Figure C-16. AN/BLQ-11

- AN/SQQ-32 – a variable-depth mine detection and classification HF active sonar (Figure C-17), although the system's exact frequency range is classified. The AN/SQQ-32 became the standard sonar for the Avenger Class mine countermeasures (MCM), replacing the AN/SQQ-30. The AN/SQQ-32 displays search and classification information simultaneously and independently, using separate search and classification transducers in a stable, variable-depth body. The AN/SQQ-32 can also be used from the vessel's hull in shallow water (FAS, 1998).

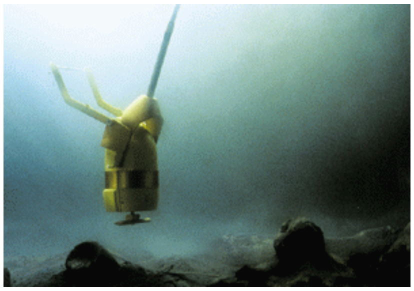

Figure C-17. AN/SQQ-32

- AN/AQS-20A-FLS/VSS/SLS/GFS – a high-frequency active towed sonar system composed of five independent sonar sensors intended to detect and identify deeper moored mines and visible bottom mines (Figure C-18). The exact frequency range of this system is classified. It consists of a state-of-the-art, side-looking, multibeam active sonar system that delivers real-time high-resolution imagery of the ocean bottom. The AN/AQS-20 is towed by MH-53, H-60 helicopters and RMS. This system was not analyzed in this document, due to the fact that it operates above 200 kHz (GlobalSecurity, 2007).

Figure C-18. AN/AQS-20

- AN/SLQ-48 – a system (Figure C-19) that uses a remote-controlled submersible vehicle to identify underwater objects and, if they are mines, render them safe. The operating frequency of the AN/SLQ-48 is classified. The prime feature is the 1,225-kg (2,700-lb), tethered, video and sonar-equipped mine neutralization vehicle (MNV), which places an explosive destructive charge on bottom mines and cuts the cables of moored mines. The AN/SLQ-48 is best suited to deep water and is deployed by Avenger Class MCMs. This system was not analyzed in this document, due to the fact that it operates above 200 kHz (FAS, 1999).

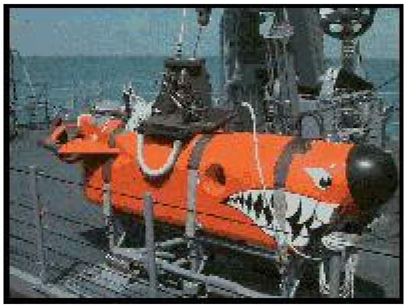

Figure C-19. AN/SLQ-48

- AN/SLQ-37 – installed on Avenger Class MCMs and consists of a straight tail magnetic sweep (M MK 5A) combined with the A MK 4(v) and/or A MK 6(b) active acoustic sweep sonar. The operating frequency of the AN/SLQ-37 (Figure C-20) is classified. Earlier versions of these components were used by Navy World War II sweepers. The system can be configured several ways, including diverting the magnetic cable and/or the acoustic devices by using components of the AN/SLQ-38 mechanical sweep gear. This system was not analyzed in this document, due to the fact that it operates above 200 kHz (FAS, 1998).

Figure C-20. Avenger Class MCM equipped with AN/SLQ-37

- <u>SEABAT</u> – a forward-looking active sonar that provides high-resolution sonar imaging of the water column or ocean floor for mine and object detection. The SEABAT (Figure C-21) can be carried by (Remotely Operated Vehicles/Unmanned Undersea Vehicles [ROVs/UUVs]) and operates at high frequency and low power, ranging from 100 to 455 kHz. Although the low spectrum of this system is below 200 kHz, it was not analyzed due to its low power and its infrequent operation (Reson Inc., 2007).

Figure C-21. SEABAT

- <u>Dual Frequency Acoustic Lens System (DFALS)</u> – an active sonar intended to detect buried or proud objects and mines. The active frequencies are unavailable. The DFALSs have low source levels, and are installed on ROVs and UUVs.

C.1.8 Torpedoes

Torpedoes are the primary ASW weapon used by surface ships, aircraft, and submarines. When torpedoes operate actively, they transmit an active acoustic signal to ensonify the target and use the received echoes for guidance.

- <u>MK 48 and MK 48 Advanced Capability (ADCAP)</u> (Figure C-22) are heavyweight torpedoes deployed on all classes of Navy submarines. MK 48 and MK 48 ADCAP torpedoes are inert and considered HF sonar, but the frequency ranges are classified. Due to the fact that both torpedoes are essentially identical in terms of environmental interaction, they will be referred to collectively as the MK48 in this EIS (FAS, 1998).

Figure C-22. MK 48/MK 48 ADCAP (L); Seawolf Class SSN launching MK-48/MK-48 ADCAP (R)

- MK 46 Lightweight Torpedo (Figure C-23) are ASW torpedoes. They are less than half the size of the MK 48 and can be launched from surface ships, helicopters, and fixed wing aircraft. When used in training, the MK 46 is inert and considered HF sonar, but the exact frequency range is classified. When dropped from an aircraft, the MK 46 may have a parachute, which is jettisoned when it enters the water. The MK 46 torpedo also carries a small sea dye marker (Fluorescein) that is marks the torpedo's position on the surface to facilitate recovery. The MK 46 is planned to remain in service until 2015. (FAS, 1998).

Figure C-23. MK 46 Torpedo at launch (L), and recovery (R)

- MK 54 Lightweight Hybrid Torpedo (LHT) (Figure C-24) can be launched from surface ships, fixed wing aircraft, and helicopters. The MK-54 is half the size of a MK 48. The training torpedoes are inert and may carry a parachute, which is jettisoned as it enters the water. The MK 54 torpedo also carries a small sea dye marker (Fluorescein) that is marks the torpedo's position on the surface to facilitate recovery (GlobalSecurity.org, 2007).

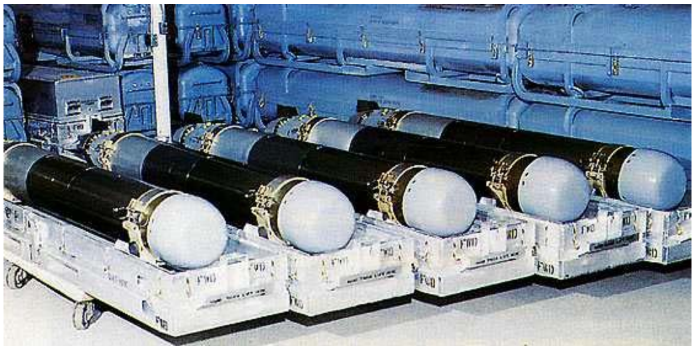

Figure C-24. MK 54 Torpedoes

C.1.9 Countermeasures

Several types of countermeasure (CM) devices (Figure C-25) could be deployed during active sonar events, including the Noise Acoustic Emitter (NAE), Acoustic Device Countermeasure (ADC) MK 1, MK 2, MK 3, MK 4 and the AN/SLQ-25A (NIXIE). CM devices are submarine simulators and act as decoys to avert localization and torpedo attacks. Countermeasures produce mid-frequency sound. The NAE and ADC are deployed from submarines and are free floating, while the AN/SLQ-25 (NIXIE) is towed from surface ships (FAS, 1999).

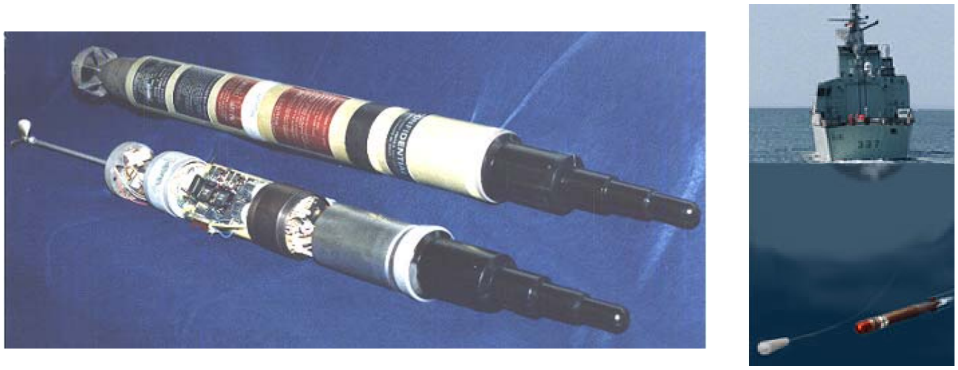

Figure C-25. ADC CM (L), and AN/SLQ-25 (NIXIE) CM (R)

C.1.10 Exercise Training Targets

There are two types of training targets, the MK 30 Acoustic Target and the MK 39 Expendable Mobile ASW Training Target (EMATT) (Figure C-26). ASW training targets simulate submarines as an ASW target in the absence of participation by a submarine in an exercise. They are equipped with acoustic projectors emanating sounds to simulate submarine acoustic signatures, and echo repeaters to simulate the characteristics of the reflection of a sonar signal from a submarine.

Figure C-26. MK 39 EMATT (L) and MK 30 (R)

In addition, surface targets such as “sleds” (aluminum catamarans), seaborne powered targets (radio-controlled high-speed boats), and target drone units (TDUs) could also be deployed during training exercises.

C.1.11 Tracking Pingers, Transponders, and Acoustical Communications (ACOMs)

Tracking pingers are installed on training platforms to track the position of underwater vehicles. The pingers generate a precise, preset, acoustic signal for each target to be tracked. ACOMs and transponders provide the communication link between sensor packages and base platform allowing information to be exchanged.

- MK 84 Pinger Signal, Underwater Sound (SUS) – an air or surface dropped noisemaking device (Figure C-27) that emits tonal patterns with four selectable frequencies of approximately 9, 13, 33, and 37 kHz; it is used to provide prearranged signal communications to submerged submarines (Sparton Inc., 2006).

Figure C-27. MK 84

- RMS – HF active sonar locator beacon that operates from 16 to 30 kHz (Figure C-28). It is utilized to aid divers in identifying the location of the RMS UUV (AN/WLD-1), which is deployed from surface ships.

Figure C-28. RMS

C.2 TRAINING EXERCISES, MAINTENANCE, AND RDT&E DESCRIPTIONS

This section attempts to capture and describe all Naval Fleet training activities occurring within the Atlantic Ocean and Gulf of Mexico that require the use of active sonar. The identified sonar training activities have been grouped into the following five categories:

1. Basic/ULT: The basic phase focuses on completion of platform specific ULT requirements: team training both on board and ashore, unit level exercises in port and at sea, unit inspections, assessments, qualifications, and certifications. During the basic phase, a unit will maximize distance learning options for individual skills development. Additionally, a unit will maximize in-port synthetic training. Successful completion of the ULT phase ensures units are proficient in all required mission essential capabilities, meet various certification criteria, and are ready for more complex integrated training events. ULT follows an instituted assess, train, and certify process. (In this Final EIS/OEIS, the basic phase training is described as Independent ULT, which involves one unit and Coordinated ULT, which involves more than one unit.)
2. Integrated/Strike Group Training: The goal of integrated phase training is to synthesize unit/staff actions into coordinated strike group operations in a challenging, multi-warfare operational environment. This phase provides an opportunity for strike group decision makers and watchstanders to complete staff planning and warfare commanders courses; conduct multi-unit in-port and at-sea training; and to build on individual skill proficiencies attained in their respective basic phase. The integrated phase is adaptable in order to provide training for Major Combat Operations (MCO) Surge certification, MCO Ready certification, and/or tailored training to support emergent combatant commander requirements.
3. Sustainment Training: The sustainment phase begins upon completion of the integrated phase, continues throughout the post deployment period and ends with the commencement of the maintenance phase. Sustainment consists of a variety of training evolutions designed to sustain warfighting readiness as a group, multi-unit, or unit until and following employment. Sustainment phase training exercises units and staffs in multi-mission planning and execution, and to inter-operate in a joint/coalition environment. Sustainment training, in port and at sea, allows forces to demonstrate proficiency in operating as part of a joint and coalition combined force, and ensures that proficiency is maintained in all mission essential tasks in order to maintain MCO Ready. The extent of the sustainment training will vary depending on the unit's length of time in an MCO Ready status, as well as the anticipated tasking. During sustainment, units/groups maintain an MCO Ready status until the commencement of the maintenance phase, unless otherwise directed by the Fleet Commander. Unit/group integrity during this period is vital to ensure integrated proficiency is maintained. This is especially vital for strike groups.
4. Active Sonar Maintenance: Maintenance events captured and discussed within this document only refer to AN/SQS-53, AN/SQS-56 and AN/BQQ-10 events that require active pinging.

5. RDT&E Activities: For RDT&E activities included in this analysis, active sonar activities occur in similar locations as representative ULT events.

C.2.1 Fleet Response Training Plan (FRTP)

The FRTP was implemented under the overall Fleet Response Plan, which ensures that, at any one time, there are six Carrier Strike Groups (CSGs) on deployment or available for deployment within 30 days, as well as two CSGs available for deployment within 90 days. FRTP provides for a flexible and scalable approach to training that aligns Navy capabilities and missions in support of combatant commander and Navy requirements. FRTP requirements are defined through fleet training instructions. A notional FRTP for strike group and individual unit (e.g., ship) deployers consists of four phases: maintenance, basic, integrated and sustainment. This results in defined progressive levels of employable capability for Navy forces. Unit level and coordinated unit level training takes place during the maintenance and basic phases. Strike group training takes place during the intermediate and sustainment phases. During the early stages of the FRTP, it is quite common to see a noted reduction in proficiency associated with deployment readiness activities. The reduction in proficiency can be attributed to extended maintenance periods and crew turnover. Thus, the ULT conducted during the initial stages of the FRTP are performed utilizing a minimal number of fleet training resources, because units training in the latter stages of the FRTP have priority to ensure full combat readiness prior to deployment. The basic design of FRTP is progressive in nature, and proficiency of units should steadily increase as they move into the later stages of FRTP. The three principle phases of the FRTP are described in detail below.

C.2.2 Unit Level Training (ULT) Event Descriptions

The ULT phase lasts approximately 6 months and is the responsibility of the type commander (TYCOM) and unit's commanding officer. This phase focuses on completion of TYCOM ULT requirements: team training both on board and ashore, unit level exercises in port and at sea, unit inspections, assessments, qualifications, and certifications. During the basic phase, a unit will maximize schoolhouse learning options for individual skills development. Additionally, a unit will maximize in-port synthetic training. Successful completion of basic phase ensures units are proficient in all required warfare areas, meet TYCOM certification criteria, and are ready for more complex integrated training events. During the basic phase, ULT will focus on the following training requirements:

- Unit and System Familiarization or Operation
- System Maintenance
- Equipment Operation and Operator Maintenance
- Equipment/Component Trouble-Shooting, Repair and Overhaul
- Interactive Courseware (ICW)
- Team and Sub-team Training
- Flight Deck Operations
- Command and Control Training

- Engineering and Damage Control
- Combat Systems
- Casualty Control Scenarios
- Anti-Ship Missile Defense (ASMD)/Combat Air Patrol (CAP) Coordination
- Rules of Engagement Play
- Ship/Aircraft Integration
- Harpoon Missile Engagements
- Ballast/Deballast Training
- Well Deck Operations (i.e., allowing water in to allow for the docking of Landing Craft Air Cushions [LCACs])
- Underway Replenishment
- Rescue/Salvage

There may also be additional training areas dependent upon requirements to support anticipated missions while forward deployed. The primary objectives of this training are geared around specialty training associated with mine warfare, amphibious and salvage operations.

Amphibious Warfare Specialty Training: Consists of post-maintenance or inter-deployment specialized warfare training for amphibious class ships.

MCM Warfare Specialty Training: The goal is to develop an organic training capability that will improve team proficiency prior to MIW evaluation during MIW Specialty Training, fleet operations, and integrated mine countermeasure operations.

Salvage Training (SALVTRA): The objective of this specialized training is to ensure that all salvage ships are trained and ready to respond immediately and effectively to any diving and salvage mission (GlobalSecurity.org, 2005).

The majority of the ULT events conducted can occur at any time during the maintenance and basic phases.

Assumptions Made With Regards to ULT Events:

A) If the hourly usage associated with a sonar system was provided in a range (e.g., 6 to 12 hours [hrs] per event) then an average was taken to represent the total number of hrs per event (e.g., 9 hrs/event).

B) The numbers of events per ULT have been provided on a per ship basis. Thus, to calculate the total number of events occurring over the period of a year, the total number of available ships identified as being home ported at Naval Stations along the Atlantic and Gulf of Mexico waters were multiplied by the total number of individual events per ship. Based on the information captured, the following total number of ships were used:

(1) DDGs = 26 ships

(2) CGs = 10 ships

(3) FFGs = 18 ships

(4) MCMs = 9 ships

(5) SSNs/SSGNs/SSBNs = 37 submarines

C) All three sensors contained within the variable depth body function at the same time.

D) The AN/SLQ-48 is utilized 50 percent of the time and the AN/SQQ-32 is utilized 100 percent of the time during MIW events unless informed otherwise.

E) When the AN/SQS-53 and the AN/SQS-56 sonar are used, they function 70 percent of the time in search mode and 30 percent of the time in track mode.

F) Specific ASW ULT sonar operations are conducted using both active and passive modes of sonar. During such events, the overall duration of each mode is split 50/50, and of those, 50 percent are conducted using synthetic (simulated) equivalents.

G) If ULT is conducted once every 2 years, then half the DDGs, FFGs, and CGs conduct this training each year on a rotational basis.

H) The SSN's AN/BQQ-10 sonar would only emit one ping every 2 hrs.

C.2.3 Coordinated Unit Level Training/Strike Group Training Event Descriptions

<u>Squadron Commander's Exercise (RONEX)</u>

The RONEX is conducted during the intermediate training phase and is designed to bring ships that have mastered individual unit mine countermeasures (MCM) disciplines together as a task force under the MCM squadron in a tactical exercise scenario, and provide additional training as required. The RONEX is designed to provide intermediate phase training in mine sweeping, mine hunting and mine neutralization capabilities in a multi-ship environment and is the second training phase of a three-part series designed to give ships' crews the skills needed for effective mine countermeasures capability. Typically the RONEX is conducted within the Gulf of Mexico near Corpus Christi, Texas, and/or Panama City, Florida.

<u>Assumptions Made:</u>

A) All three of the sensors on the AN/SQS-32 will be active at the same time for the duration of the exercise.

<u>Southeastern ASW Training Initiative (SEASWTI)</u>

The SEASWTI is a Commander, Second Fleet training initiative conducted to assess Atlantic Fleet ASW performance and capability among various units operating together in a "real world" threat environment. The need for the exercise is to maintain the highly perishable skills of ASW proficiency among operators of Navy ships, submarines, and aircraft.

<u>Assumptions Made:</u>

A) On average the SEASWTI exercise is conducted over a 5 day period.

B) The SEASWTI exercise could potentially be conducted using either DDGs or FFGs. It is assumed that AN/SQS-56 sonar system is used 50 percent of the time and the AN/SQS-53 is utilized the remaining 50 percent of the time.

C) The AN/SQS-53 and AN/SQS-56 would be operated in search mode 70 percent of the time and in track mode 30 percent of the time.

D) The SSN's AN/BQQ-10 sonar would only emit one ping every 2 hrs.

E) The SH-60F would dip the AN/AQS-13 five times per day for an average .25 hrs per dip.

<u>Submarine Commanders Course (SCC Ops)</u>

SCC Ops is a Commander, U.S. Submarine Forces requirement to provide the necessary training to prospective submarine commanders in rigorous and realistic scenarios. This training assesses prospective commanding officers' abilities to operate in numerous hostile environments, encompassing surface ships, aircraft as well as other submarines. The need for this training is to ensure they are properly trained for command at sea to maximize the submarines' survivability during real world operations.

<u>Assumptions Made:</u>

A) All Undersea Warfare capable surface ships, SSNs and helicopters partaking in the training event will be actively utilizing their sonar systems continuously over the 24-hr training period.

B) During the Mini-War event, the two AN/SQS-53 sonar systems and the AN/SQS-56 system would be used 50 percent of the time and the AN/AQS-13/22 would be used the other 50 percent of the time.

C) The AN/SQS-53 and AN/SQS-56 would be operated in search mode 70 percent of the time and in track mode 30 percent of the time.

D) The AN/BQQ-10 would only ping once every 2 hours.

E) It has been assumed that this course is conducted two times per year on the East Coast.

Group Sail

The Group Sail Exercise typically involves two to three ships and up to two helicopters searching for, locating, and attacking one submarine. Typically, one ship and helicopter are actively prosecuting while the other ship and helicopter are repositioning. While the ships are searching for the submarine, the submarine may practice simulated attacks against the ships. Multiple acoustic sources may be active at one time.

Assumptions Made

A) The AN/SQS-53 and AN/SQS-56 would be operated in search mode 70 percent of the time and in track mode 30 percent of the time.

B) The SSBN's AN/BQQ-10 sonar would only emit one ping every 2 hrs.

C) At least one helicopter with an AN/AQS-22 unit would be continuously active over the 6-hr event duration.

Integrated ASW Course

IAC is a tailored course of instruction designed to improve Sea Combat Commander (SCC) and Strike Group integrated ASW warfighting skill sets. Key components for this course of instruction are; coordinated ASW training for the SCC or ASW Commander (ASWC) and staff, key shipboard decision makers and ASW watch teams. IAC consists of two phases: Integrated ASW Course phase I, (IAC I) and Integrated ASW Course phase II, (IAC II). IAC I is an approved Navy course of instruction consisting of five days of basic and intermediate level classroom training. IAC II is intended to leverage the knowledge gained during IAC I and build the basic ASW coordination and integration skills of the Strike Group ASW Team. IAC II is a coordinated training scenario that typically involves three DDG's, one CG and one FFG, two to three embarked helicopters, a submarine and one MPA aircraft searching for, locating, and attacking one submarine. The scenario consists of two 12-hour events that occur five times per year. While the ships are searching for the submarine, the submarine may practice simulated attacks against the ships. The ships and their embarked helicopters conduct ASW localization training using the AN/SQS-53, AN/SQS-56, and AN/AQS-13 or AN/AQS-22 dipping sonar. The submarine also periodically operates the AN/BQQ-10 sonar and approximately 18 tonal sonobuoys may also be used per scenario. Multiple acoustic sources may be active at one time. These events would be taking place within and seaward of the VACAPES, CHPT, JAX/CHASN OPAREAs or within and adjacent to the GOMEX OPAREA. During these exercises, some activities may occur in more than one OPAREA.

Assumptions Made

A) The AN/SQS-53 and AN/SQS-56 would be operated in search mode 70 percent of the time and in track mode 30 percent of the time.

B) The SSN's AN/BQQ-10 sonar would only emit one ping every 2 hrs.

C) At least one helicopter with a AN/AQS-22 unit would be continuously active over the event duration.

C.2.4 Integrated and Sustainment Training Event Descriptions

The goal of integrated phase training is to synthesize unit/staff actions into coordinated strike group operations in a challenging, multi-warfare operational environment. This phase provides an opportunity for strike group decision makers and watchstanders to complete staff planning and warfare commanders' courses, conduct multi-unit in-port and at-sea training, and build on individual skill proficiencies attained in their respective basic phase. The integrated phase is adaptable in order to provide training for MCO Surge certification, MCO Ready certification, and/or tailored training to support emergent combatant commander requirements. The sustainment phase begins upon completion of the integrated phase, continues throughout the post deployment period and ends with the commencement of the maintenance phase. Sustainment consists of a variety of training evolutions designed to sustain warfighting readiness as a group, multi-unit, or unit until and following employment. Sustainment phase training exercises units and staffs in multi-mission planning and execution, and to inter-operate in a joint/coalition environment. Sustainment training, in port and at sea, allows forces to demonstrate proficiency in operating as part of a joint and coalition combined force and ensures that proficiency is maintained in order to maintain MCO Ready. The extent of the sustainment training will vary depending on the unit's length of time in a MCO Ready status, as well as the anticipated tasking. During sustainment, units/groups maintain a MCO Ready status until the commencement of the maintenance phase, unless otherwise directed by the Fleet Commander. Unit/group integrity during this period is vital to ensure integrated proficiency is maintained. This is especially vital for strike groups.

Carrier Strike Group (CSG) Composite Training Unit Exercise (COMPTUEX)

Each CSG performs a rehearsal called Composite Training Unit Exercise (COMPTUEX) before departing for deployment. Prior to the COMPTUEX, each ship and aircraft in the strike group has practiced/trained in their specialty. The COMPTUEX is an intermediate-level strike group exercise designed to forge the group into a cohesive fighting team. COMPTUEX is a critical step in the training cycle and a prerequisite for the strike group's Joint Task Force Exercise (Global Security Org., 2005).

COMPTUEX is normally conducted during a 2 to 3 week period 6 to 8 weeks before JTFEX and consists of an 18 day schedule of event (SOE) driven exercise, and a 3 day Final Battle Problem (FBP) (Global Security Org., 2005).

Assumptions Made:

A) COMPTUEX is three times per year on the East Coast and once a year in the Gulf of Mexico.

B) AN/BQQ-10 systems are only pinged once every 2 hrs and an equal number of short pulse and long pulse pings are emitted.

C) The AN/SQS-53 and AN/SQS-56 are operated in search mode 70 percent of the time and in track mode 30 percent of the time.

D) Up to six surface ships, one to five aircraft, and one submarine participate in the COMPUTEX exercise, approximately half of which are not equipped with active sonar sensors.

E) ASW-5-I – Shallow Water Exercise and ASW-8-I – Choke Point Transit occur once per COMPTUEX or JTFEX. Each event is conducted four times per year. Thus, on a yearly basis each event is conducted two times in conjunction with a COMPTUEX, and two times with a JTFEX.

Expeditionary Strike Group (ESG) Composite Training Unit Exercise (COMPTUEX)

In the past, the Navy and Marine Corps deployed Amphibious Ready Group (ARG) rotational forces overseas. The ARG typically consisted of a three amphibious ships and a Marine Expeditionary Unit. However, in recent years the Navy and Marine Corps have changed the way they deploy forces overseas. The new operational concept is called Expeditionary Strike Group (ESG), which has replaced the traditional Amphibious Ready Group, Marine Expeditionary Unit (ARG/MEU[SOC]) arrangement. Each ESG has nominally been assigned a dedicated guided missile cruiser, a guided missile destroyer, an FFG and a fast attack submarine. These enhancements provide the ESG with additional capabilities, including the ability to launch Tomahawk Land Attack Missiles (TLAMs). Under the new concept, the CSG and the ESG can be combined to form an Expeditionary Strike Force (ESF), with the combined capability of deep strike with aircraft and TLAMs, as well as an amphibious entry capability and expanded support for Special Operations Forces.

Thus, the Navy has implemented an ESG training strategy in an effort to ensure pre-deployment readiness of its forces. The ESG COMPTUEX combines both on-land and in-water operations to facilitate training associated with amphibious operations and live air-to-ground operations.

Assumptions Made:

A) ESG COMPTUEX is conducted three times per year.

B) AN/BQQ-10 systems ping once every 2 hrs. An equal number of short pulse and long pulse pings are emitted.

C) The AN/SQS-53 and AN/SQS-56 are operated in search mode 75 percent of the time and in track mode 25 percent of the time.

D) Up to six surface ships, one to five aircraft, and one submarine participate in the COMPUTEX exercise, approximately half of which are not equipped with active sonar sensors.

Gulf of Mexico Exercise (GOMEX)

The GOMEX is scheduled quarterly for those MCM units that have completed the basic training phase. GOMEX is conducted as a part of the advanced phase and brings air, surface, and underwater MCM units together. GOMEX focuses on integrated MCM operations in preparation for participation with the battle group in major fleet exercises involving complex MCM operations. MCM Squadron Commanders tailor the intermediate and advanced phases to the forces involved and will consider the types of scenarios to be encountered in upcoming major fleet exercises and deployments. GOMEX marks the transition of a mine warfare readiness group from training to ready-to-deploy status and includes integrated surface, air and explosive ordnance disposal (EOD) MCM operations (GlobalSecurity.org, 2005).

The advanced level GOMEX is an integrated exercise involving all parts of the MCM triad (surface MCM [SMCM], airborne MCM [AMCM], and undersea MCM [UMCM] forces). The GOMEX is scheduled to allow sufficient time to integrate lessons learned from the RONEX, and is a scenario-driven event against a reasonably complex threat. The GOMEX is assessed in an effort to provide post-exercise analysis to the participants and a final certification report to Mine Warfare Command (COMINEWARCOM).

Assumptions Made:

A) All three sensors on the AN/AQQ-32 are operated simultaneously through the training event.

Joint Task Force Exercise (JTFEX)

This is the culmination of training and preparation for deployment. This exercise requires the U.S. Naval and often, Allied forces, to integrate all assets to accomplish missions in a multi-threat, multi-dimensional environment. The exercise serves as the ready-to-deploy certification for the Navy-Marine team, requiring tests of critical plans, synchronized employment of available assets and realistic training with live ordnance. The JTFEX is typically scheduled 6 to 8 weeks prior to deployment and is conducted over a period of 21 days at sea.

Assumptions Made:

A) JTFEX exercises are conducted three times per year on the East Coast and once a year in the Gulf of Mexico.

B) The AN/SQS-53 and AN/SQS-56 are operated in search mode 70 percent of the time and in track mode 30 percent of the time.

C) The AN/BQQ-10 sonar would only ping once every 2 hours, and an equal number of short pulse and long pulse pings would be emitted.

D) The JTFEX Free Play Exercise would consist of three, 6-hr events conducted four times per year.

E) ASW-5-I – Shallow Water Exercise and ASW-8-I – Choke Point Transit occur once per COMPTUEX or JTFEX. Each event is conducted four times per year. Thus, on a yearly basis each event is conducted two times in conjunction with a COMPTUEX and two times with a JTFEX.

Table C-1 summarizes training events utilizing active sonars analyzed in this EIS (sonars with frequencies lower than 200 kHz). It includes the type of event and the number of each training event.

Table C-1. Captured Exercises and Tempo

Training Phase	Event Name/ Description	Annual Requirement	No. of Synthetic Events	No. of Passive Events	No of Active Events	Total No. of Events	Platform(s)	Active Sonar Use / Event / Platform	Total Active Sonar Use per event	Active Sonar Use /Year	Area (NM^2)
***Unit Level Training (ULT) Events** (usage shown per exercise and annually)*											
AN/SQQ-32- *usage shown in hours*											
MIW ULT	MIW-1-SF Mine Sweeping Mechanical Gear	2 per MCM annually	0	0	18	18	1 MCM	9	9	162	1NM X 2NM
MIW ULT	MIW-4.1-SF Mine hunting Countermeasures	5 per MCM annually	0	0	95	95	1 MCM	15	15	1425	1NM X 2NM
MIW ULT	MIW-4.4-SF Contact Marking	1 per MCM annually	0	0	19	19	1 MCM	3	3	57	1NM X 2NM
MIW ULT	MIW-4.7-SF MNV Ops	7 per MCM annually	67	0	67	133	1 MCM	1	1	67	1NM X 2NM
MIW ULT	MIW-8-SF Danning	1 per MCM annually	0	0	10	10	1 MCM	2	2	20	1NM X 2NM
MIW ULT	MIW-8.6-SF: Transiting Mineable Waterways	2 per MCM annually	19	0	19	38	1 MCM	1.5	1.5	29	1NM X 2NM
MIW ULT	MIW-11.1-SF Route Survey Operations	1 per MCM annually	0	0	19	19	1 MCM	15	15	285	1NM X 2NM
MIW ULT	MIW-13-SF Sonar Conditions Check	1 per MCM annually	0	0	19	19	1 MCM	1.5	1.5	29	1NM X 2NM
Totals :					**266**					**2074**	
AN/SQS-53- *usage shown in hours*											
Surface ASW ULT	ASW-19-SF RTT Attack Operations	2 per DDG or CG annually	19	37	19	74	1 DDG or CG	2	2	37	20NM X 30NM
Surface ASW ULT	ASW-52-SF - WQC-6 Probe Alert Ops	1 per DDG or CG annually	0	19	19	37	1 DDG or CG	1	1	19	No Reqmt
Surface ASW ULT	ASW-8-SF Active Operations	4 per DDG or CG annually	74	0	74	148	1 DDG or CG	4	4	296	20NM X 30NM
Surface ASW ULT	ASW-15-SF Submarine Familiarization	1 per DDG or CG annually	0	0	37	37	1 DDG or CG	2	2	74	20NM X 30NM
Surface ASW ULT	ASW-18-SF SVTT Attack Operations	2 per DDG or CG annually	19	37	19	74	1 DDG or CG	2	2	37	20NM X 20NM
Surface ASW ULT	ASW-22-SF - ASW Screening	4 per DDG or CG annually	37	74	37	148	1 DDG or CG	6	6	222	30NM X 40NM
Surface ASW ULT	ASW-31-SF - Close-In Screening for Surface Force	1 per DDG or CG annually	9	19	9	37	1 DDG or CG	6	6	54	30NM X 40NM
Surface ASW ULT	ASW-32-SF - Perimeter Screening of Surface Force	1 per DDG or CG annually	9	19	9	37	1 DDG or CG	6	6	54	30NM X 40NM
Surface ASW ULT	ASW-33-SF - Barrier Search / Defend AOA	1 per DDG or CG annually	9	19	9	37	1 DDG or CG	6	6	54	30NM X 40NM
Surface ASW ULT	ASW-42-SF Ship/Fixed-Wing Coordination	1 per DDG or CG every other year	0	0	19	19	1 DDG or CG	4	4	76	20NM X 30NM
Surface ASW ULT	ASW-48-SF Acoustic Data Collection	2 per DDG or CG annually	37	0	37	74	1 DDG or CG	2	2	74	20NM X 20NM
Surface ASW ULT	ASW-24-SF LAMPS Prosecution	1 per DDG or CG annually	0	0	37	37	1 DDG or CG	2	2	74	20NM X 30NM
Totals :					**325**					**1071**	
Surface Ship Object Detection & Navigation ULT	ASW-54-SF Small Object Avoidance	2 per DDG or CG annually	0	0	74	74	1 DDG or CG	2	2	148	5NM X 10NM
Totals :					**74**					**148**	
AN/SQS-56- *usage shown in hours*											
Surface ASW ULT	ASW-8-SF Active Operations	4 per FFG annually	34	0	34	68	1 FFG	4	4	136	20NM X 30NM
Surface ASW ULT	ASW-15-SF Submarine Familiarization	1 per FFG annually	0	0	17	17	1 FFG	2	2	34	20NM X 30NM
Surface ASW ULT	ASW-18-SF SVTT Attack Operations	2 per FFG annually	9	17	9	34	1 FFG	2	2	17	20NM X 20NM
Surface ASW ULT	ASW-22-SF - ASW Screening	4 per FFG annually	17	34	17	68	1 FFG	6	6	102	30NM X 40NM
Surface ASW ULT	ASW-31-SF - Close-In Screening for Surface Force	1 per FFG annually	4	9	4	17	1 FFG	6	6	24	30NM X 40NM
Surface ASW ULT	ASW-32-SF - Perimeter Screening of Surface Force	1 per FFG annually	4	9	4	17	1 FFG	6	6	24	30NM X 40NM
Surface ASW ULT	ASW-33-SF - Barrier Search / Defend AOA	1 per FFG annually	4	9	4	17	1 FFG	6	6	24	30NM X 40NM

Table C-1. Captured Exercises and Tempo Cont'd

Training Phase	Event Name/ Description	Annual Requirement	No. of Synthetic Events	No. of Passive Events	No of Active Events	Total No. of Events	Platform(s)	Active Sonar Use / Event / Platform	Total Active Sonar Use per event	Active Sonar Use /Year	Area (NM^2)
***Unit Level Training (ULT) Events Cont'd** (usage shown per exercise and annually)*											
AN/SQS-56- *usage shown in hours*											
Surface ASW ULT	ASW-42-SF Ship/Fixed-Wing Coordination	1 per FFG every other year	0	0	9	9	1 FFG	4	4	36	20NM X 30NM
Surface ASW ULT	ASW-48-SF Acoustic Data Collection	2 per FFG annually	17	0	17	34	1 FFG	2	2	34	20NM X 20NM
Surface ASW ULT	ASW-24-SF LAMPS Prosecution	1 per FFG annually	0	0	17	17	1 FFG	2	2	34	20NM X 30NM
Totals :					**132**					**465**	
Surface Ship Object Detection & Navigation ULT	ASW-54-SF Surface Ship Small Object Avoidance	2 per FFG annually	0	0	34	34	1 FFG	2	2	68	5NM X 10 NM
Totals :					**34**					**68**	
AN/AQS- 13 and 22 Dipping Sonar - *usage shown in hours (10 pings per five-minute dip)*											
Helicopter ASW ULT	ASW-24-SF LAMPS Prosecution	1 per MH-60R annually	0	0	54	54	1 SH-60R	1	1	54	20NM X 30NM
Helicopter ASW ULT	ASW-41-SF LAMPS III Control	1 per DDG or CG every two years	9	0	9	19	1 SH-60R	1	1	9	20NM X 30NM
Helicopter ASW ULT	ASW-49-SF Non-LAMPS Helo Control	1 per DDG or CG annually	0	0	37	37	1 SH-60R	1	1	37	20NM X 30NM
Helicopter ASW ULT	RDT&E	2 per year	0	0	60	60	1 SH-60R	1	1	60	
Totals :					**160**					**160**	
AN/BQQ- 5 or 10- *usage shown in pings (one pings every two hours)*											
Submarine ULT	ASW/USW-05-AS-A Covert and Overt Evasion (Submarine)	1 per SSN annually	0	0	25	25	1 SSN	36	36	900	30NM X 40NM
Submarine ULT	ASW/USW-08-AS-P-W Approach and Attack Diesel Submarine	1 per SSN annually	0	0	25	25	1 SSN	36	36	900	30NM X 40NM
Submarine ULT	MOB-02-AS-A Navigate in Restricted Waters and Reduced Visibility	1 per SSN annually	0	0	25	25	1 SSN	36	36	900	30NM X 40NM
Submarine ULT	MOB-06-AS-A Navigate in Restricted Waters and Reduced Visibility with Casualties	1 per SSN annually	0	0	25	25	1 SSN	36	36	900	30NM X 40NM
Totals :					**100**					**3600**	
AN/BQS-15 - ***usage shown in hours***											
Submarine ULT	Submarine Navigation ULT	1 per SSN or SSBN monthly	0	0	300	300	1 SSN or SSBN	1.5	1.5	450	5NM X 10NM
Totals :					**300**					**450**	
AN/SSQ- 62 DICASS Sonobuoy- *usage shown in number of sonobuoys (each buoy pings 12 times over six minutes)*											
Helo ASW ULT	ASW-24-SF LAMPS Prosecution	1 per DDG, CG, and FFG annually	0	0	54	54	1 SH-60	4	4	216	20NM X 30NM
Helo ASW ULT	ASW-41-SF LAMPS III Control	1 per DDG, CG, and FFG every other year	14	0	14	27	1 SH-60	3	3	42	20NM X 30NM
Helo ASW ULT	ASW-49-SF Non-LAMPS Helo Control	1 per DDG or CG annually	0	0	37	37	1 SH-60	3	3	111	20NM X 30NM
Helo ASW ULT	RDT&E		0	0	60	60	1 SH-60	3	3	180	20NM X 30NM
Totals :					**165**					**549**	

Table C-1. Captured Exercises and Tempo Cont'd

Training Phase	Event Name/ Description	Annual Requirement	No. of Synthetic Events	No. of Passive Events	No of Active Events	Total No. of Events	Platform(s)	Active Sonar Use / Event / Platform	Total Active Sonar Use per event	Active Sonar Use /Year	Area (NM^2)
***Unit Level Training (ULT) Events Cont'd** (usage shown per exercise and annually)*											
MPA ASW ULT	ASW-42-SF Ship/Fixed-Wing Coordination	1 per DDG, CG, and FFG every other year	0	0	37	37	1 MPA	4	4	148	20NM X 30NM
MPA ASW ULT	ASW 201- Littoral ASW (& similar RDT&E)		0	0	78	78	1 MPA	10	10	780	60NM X 60NM
MPA ASW ULT	ASW 202- Open Ocean ASW (& similar RDT&E)		0	0	111	111	1 MPA	10	10	1110	60NM X 60NM
MPA ASW ULT	ASW 203- Coordinated ASW (& similar RDT&E)		0	0	74	74	1 MPA	4	4	296	60NM X 60NM
MPA ASW ULT	ASW 204- Range Torpex (& similar RDT&E)		0	0	83	83	1 MPA	2	2	166	30NM X 30NM
MPA ASW ULT	ASW 205 (& similar RDT&E)		0	0	129	129	1 MPA	3	3	387	60NM X 60NM
MPA ASW ULT	ASW 206 (& similar RDT&E)		0	0	132	132	1 MPA	3	3	396	60NM X 60NM
MPA ASW ULT	ASW 210		0	0	82	82	1 MPA	3	3	246	60NM X 60NM
MPA ASW ULT	MOB 203- Crew PQS (& similar RDT&E)		0	0	65	65	1 MPA	1	1	65	30NM X 30NM
Totals :					**791**					**3594**	
MK-46 or 54 Torpedo- *usage shown in number of torpedoes (each torpedo pings for approximately 15 minutes)*											
Surface ASW ULT	RDT&E	2 per year	0	0	2	2	1 DDG or FFG	2	4	8	
Helicopter ASW ULT	RDT&E	2 per year	0	0	2	2	1 helicopter	2	4	8	
MPA ASW ULT	RDT&E	2 per year	0	0	2	2	1 MPA	2	4	8	
Totals :					**6**					**25**	
MK-48 Torpedo- *usage shown in number of torpedoes (each torpedo pings for approximately 15 minutes)*											
Submarine ASW ULT	RDT&E	2 per year	0	0	2	2	1 submarine	16	16	32	
Totals :					**2**					**32**	
AN/SSQ-110A IEER sonobuoy- *usage shown in number of sonobuoys (each sonobuoy has two explosive packages)*											
MPA ASW ULT	ASW 205 (& similar RDT&E)		0	0	99	99	1 MPA	4	4	396	60NM X 60NM
MPA ASW ULT	ASW 210		0	0	70	70	1 MPA	4	4	280	60NM X 60NM
Totals :					**169**					**676**	
AN/SLQ-25A (NIXIE)- *usage shown in hours*											
Surface ASW ULT	ASW-51-SF Torpedo Countermeasures	Up to 2 per DDG, CG, FFG, CVN, AO, AOE, LHA, and LPD annually	0	0	158	158	1 DDG, CG, FFG, CVN, AO, AOE, LHA, or LPD			108	20NM X 20NM
Totals :					**158**					**108**	
Acoustic Device Countermeasures (total of MK-1, MK-2, MK-3, and MK-4) – *usage shown in number of units*											
Surface ASW ULT	Various ASW ULT's	Surface Units	0	0	225	179	Surface Units	1	1	225	
Totals:					**225**					**225**	
Noise Acoustic Emitter (NAE) – *usage shown in number of units*											
Surface ASW ULT	Various ASW ULT's	Surface Units	0	0	127	127	Surface Units	1	1	127	
Totals:					**127**					**127**	

Table C-1. Captured Exercises and Tempo Cont'd

Training Phase	Event Name/ Description	Annual Requirement	No. of Synthetic Events	No. of Passive Events	No of Active Events	Total No. of Events	Platform(s)	Active Sonar Use / Event / Platform	Total Active Sonar Use per event	Active Sonar Use /Year	Area (NM^2)
***Coordinated ULTs** (usage shown per exercise and annually)*											
AN/SQQ-32- *usage shown in hours*											
Coordinated MIW ULT	GOMEX	4 times per year in the Gulf of Mexico	0	0	4	4	4 MCMs	90	360	1440	20NM X 20NM
Coordinated MIW ULT	RONEX	4 times per year in the Gulf of Mexico	0	0	4	4	4 MCMs	60	240	960	20NM X 20NM
Totals :					**8**					**2400**	
AN/SQS-53- *usage shown in hours*											
Coordinated ASW ULT	Integrated ASW Course (IAC)	Two scenarios that occur five times a year for training (hours shown include both scenarios)	0	0	5	5	3 DDGs	19	57	285	120NM X 60NM
Totals :					**5**					**285**	
Coordinated ASW ULT	Group Sail	20 times per year	0	0	20	20	2 DDGs	6	12	240	
Totals :					**20**					**240**	
Coordinated ASW ULT	Southeastern Integrated Training Initiative (SEASWITI)- Submarine Familiarization	4 times per year & 1 similar RDT&E	0	0	5	5	2 DDGs	4	8	40	10NM X 20NM
Coordinated ASW ULT	SEASWITI- Tactical Training	4 times per year & 1 similar RDT&E	0	0	5	5	2 DDGs	8	16	80	10NM X 20NM
Coordinated ASW ULT	SEASWITI- Freeplay Event	4 times per year & 1 similar RDT&E	0	0	5	5	2 DDGs	28	56	280	10NM X 20NM
Totals :					**15**					**440**	
ANSQS-56- *usage shown in hours*											
Coordinated ASW ULT	Integrated ASW Course	Two scenarios that occur five times a year for training (hours shown include both scenarios)	0	0	5	5	1 FFG	20	20	100	120NM X 60NM
Totals :					5					100	
Coordinated ASW ULT	Group Sail	20 times per year	0	0	20	20	1 FFG	6	6	120	
Totals :					**20**					**120**	
Coordinated ASW ULT	SEASWITI- Submarine Familiarization	4 times per year & 1 similar RDT&E	0	0	5	5	1 FFG	4	4	20	10NM X 20NM
Coordinated ASW ULT	SEASWITI- Tactical Training	4 times per year & 1 similar RDT&E	0	0	5	5	1 FFG	8	8	40	10NM X 20NM
Coordinated ASW ULT	SEASWITI- Freeplay Event	4 times per year & 1 similar RDT&E	0	0	5	5	1 FFG	28	28	140	10NM X 20NM
Totals :					**15**					**200**	

Table C-1. Captured Exercises and Tempo Cont'd

Training Phase	Event Name/ Description	Annual Requirement	No. of Synthetic Events	No. of Passive Events	No of Active Events	Total No. of Events	Platform(s)	Active Sonar Use / Event / Platform	Total Active Sonar Use per event	Active Sonar Use /Year	Area (NM^2)
***Coordinated ULTs Cont'd** (usage shown per exercise and annually)*											
AN/AQS-13/22 dipping sonar - *usage shown in hours (10 pings per dip)*											
Coordinated ASW ULT	Integrated ASW Course	Two scenarios that occur five times a year for training (hours shown include both scenarios)	0	0	5	5	1 helo	1	1	5	120NM X 60NM
Totals :					**5**					**5**	
Coordinated ASW ULT	Group Sail	20 times per year	0	0	20	20	2 helos	1.5	3	60	
Totals :					**20**					**60**	
Coordinated ASW ULT	SEASWITI- Submarine Familiarization	4 times per year & 1 similar RDT&E	0	0	5	5	1 helo	0.2	0.2	1	10NM X 20NM
Coordinated ASW ULT	SEASWITI- Tactical Training	4 times per year & 1 similar RDT&E	0	0	5	5	1 helo	0.4	0.4	2	10NM X 20NM
Coordinated ASW ULT	SEASWITI- Freeplay Event	4 times per year & 1 similar RDT&E	0	0	5	5	1 helo	1.4	1.4	7	10NM X 20NM
Totals :					**15**					**10**	
BQQ-5 or 10- *usage shown in pings*											
Coordinated ASW ULT	Integrated ASW Course	Two scenarios that occur five times a year for training (pings shown include both scenarios)	0	0	5	5	2 SSNs	6	12	60	120NM X 60NM
Totals :					**5**					**60**	
Coordinated Submarine ASW	SCC Ops- Sub vs. Sub	2 times per year	0	0	2	2	2 SSNs	12	24	48	30NM X 50NM
Totals :					**2**					**48**	
Coordinated ASW ULT	Group Sail	20 times per year	0	0	0	20	1 SSN	2	2	40	
Totals :					**20**					**40**	
Coordinated ASW ULT	SEASWITI- Submarine Familiarization	4 times per year & 1 similar RDT&E	0	0	5	5	2 SSNs (only one actively pinging)	2	2	10	10NM X 20NM
Coordinated ASW ULT	SEASWITI- Tactical Training	4 times per year & 1 similar RDT&E	0	0	5	5	2 SSNs (only one actively pinging)	4	4	20	10NM X 20NM
Coordinated ASW ULT	SEASWITI- Freeplay Event	4 times per year & 1 similar RDT&E	0	0	5	5	2 SSNs (only one actively pinging)	14	14	70	10NM X 20NM
Totals :					**15**					**100**	
AN/SSQ- 62 DICASS sonobuoy- *usage shown in number of sonobuoys (each buoy pings 12 times over six minutes)*											
Coordinated ASW ULT	Integrated ASW Course	Two scenarios that occur five times a year for training (sonobuoys shown include expenditure for both scenarios),	0	0	5	5	MPA and helo	36	36	180	120NM X 60NM
Totals :					5					**180**	
Coordinated ASW ULT	Group Sail	20 times per year	0	0	20	20	1 helo	2	4	80	
Totals :					**20**					**80**	

Table C-1. Captured Exercises and Tempo Cont'd

Training Phase	Event Name/ Description	Annual Requirement	No. of Synthetic Events	No. of Passive Events	No of Active Events	Total No. of Events	Platform(s)	Active Sonar Use / Event / Platform	Total Active Sonar Use per event	Active Sonar Use /Year	Area (NM^2)
Coordinated ULTs Cont'd ***(usage shown per exercise and annually)***											
Coordinated ASW ULT	SEASWITI- Submarine Familiarization	4 times per year & 1 similar RDT&E	0	0	5	5	MPA	4	4	20	10NM X 20NM
Coordinated ASW ULT	SEASWITI- Tactical Training	4 times per year & 1 similar RDT&E	0	0	5	5	MPA	8	8	40	10NM X 20NM
Coordinated ASW ULT	SEASWITI- Freeplay Event	4 times per year & 1 similar RDT&E	0	0	5	5	MPA	12	12	60	10NM X 20NM
Totals :					**15**					**120**	
Strike Group Training *(anticipate up to 2 JTFEXs and 4 COMPTUEXs on the East Coast and 1 COMPTUEX in the Gulf of Mexico)*											
AN/SQS-53- *usage shown in hours*											
CSG COMPTUEX and ESG COMPTUEX	ASW Proficiency Training	1 time per CSG COMPTUEX & ESG COMPTUEX	0	0	5	5	3 DDGs or CGs	13	40	200	5NM X 20NM
CSG COMPTUEX and ESG COMPTUEX	Battle Problem - Area Search and Straight Transit (simulated choke point)	Occurs four times during each CSG COMPTUEX and ESG COMPTUEX (hours shown are sum of four events during one COMPTUEX) , plus equivalent of one similar RDT&E COMPTUEX event annually	0	0	6	6	2 DDGs and 1 CG	30	90	540	60NM X 80NM
JTFEX	Freeplay	1 time per JTFEX	0	0	2	2	3 DDGs and 1 CGs	25	100	200	60NM X 80NM up to 180NM X 180NM
Totals :										**940**	
AN/SQS-56- *usage shown in hours*											
CSG COMPTUEX and ESG COMPTUEX	ASW Proficiency Training	1 time per COMPTUEX & ESGEX	0	0	5	5	1 FFG	14	14	70	5NM X 20NM
CSG COMPTUEX and ESG COMPTUEX	Battle Problem - Area Search and Straight Transit (simulated choke point)	Occurs four times during each CSG COMPTUEX and ESG COMPTUEX (hours shown are sum of four events during one COMPTUEX) , plus equivalent of one similar RDT&E COMPTUEX event annually	0	0	6	6	1 FFG	30	30	180	60NM X 80NM
JTFEX	Freeplay	1 time per JTFEX	0	0	2	2	2 FFGs	25	50	100	60NM X 80NM up to 180NM X 180NM
Totals :										**350**	

Table C-1. Captured Exercises and Tempo Cont'd

Training Phase	Event Name/ Description	Annual Requirement	No. of Synthetic Events	No. of Passive Events	No of Active Events	Total No. of Events	Platform(s)	Active Sonar Use / Event / Platform	Total Active Sonar Use per event	Active Sonar Use /Year	Area (NM^2)
Strike Group Training Cont'd *(anticipate up to 2 JTFEXs and 4 COMPTUEXs on the East Coast and 1 COMPTUEX in the Gulf of Mexico)*											
AN/AQS-13 or 22- *usage shown in hours (10 pings per 5-minute dip)*											
CSG COMPTUEX	ASW Proficiency Training	1 time per CSG COMPTUEX	0	0	3	3	1 helo	0.25	0.25	0.75	5NM X 20NM
CSG COMPTUEX	Battle Problem - Area Search and Straight Transit (simulated choke point)	Occurs four times during CSG COMPTUEX (hours shown are sum of four events during one COMPTUEX) , plus equivalent of one similar RDT&E COMPTUEX event annually	0	0	4	4	1 helo	2	2	8	60NM X 80NM
JTFEX	Freeplay	1 time per JTFEX	0	0	2	2	1 helo	1	1	2	60NM X 80NM up to 180NM X 180NM
Totals :										**11**	
BQQ-5 or 10- *usage shown in pings*											
CSG COMPTUEX and ESG COMPTUEX	ASW Proficiency Training	1 time per CSG COMPTUEX & ESG COMPTUEX	0	0	5	5	1 SSN	2	4	20	5NM X 20NM
CSG COMPTUEX and ESG COMPTUEX	Battle Problem - Area Search and Straight Transit (simulated choke point)	Occurs four times during CSG COMPTUEX (pings shown are sum of four events during one COMPTUEX) , plus equivalent of one similar RDT&E COMPTUEX event annually	0	0	6	6	1 SSN	8	16	96	60NM X 80NM
JTFEX	Freeplay	1 time per JTFEX	0	0	2	2	3 SSNs	2	6	12	60NM X 80NM up to 180NM X 180NM
Totals :										**108**	
AN/SSQ- 62 DICASS- *usage shown in number of sonobuoys (each buoy pings 12 times over six minutes)*											
CSG COMPTUEX and ESG COMPTUEX	ASW Proficiency Training	1 time per CSG COMPTUEX & ESG COMPTUEX	0	0	5	5	helicopter	4	4	20	5NM X 20NM
CSG COMPTUEX and ESG COMPTUEX	Battle Problem - Area Search and Straight Transit (simulated choke point)	Occurs four times during CSG COMPTUEX (sonobuoy expenditure shown is sum of four events during one COMPTUEX) , plus equivalent of one similar RDT&E COMPTUEX event annually	0	0	6	6	MPA and helicopter	72	72	432	60NM X 80NM
JTFEX	Freeplay	1 time per JTFEX	0	0	2	2	MPA and helicopter	18	18	36	60NM X 80NM up to 180NM X 180NM
JTFEX	ASW 201- Littoral ASW	5 times per JTFEX (sonobuoys shown for all five events)	0	0	2	2	MPA	NA	50	100	60NM X 60NM
CSG COMPTUEX and ESG COMPTUEX	ASW 201- Littoral ASW	2 times per COMPTUEX (sonobuoys shown for both events)	0	0	5	5	MPA	NA	50	250	

Table C-1. Captured Exercises and Tempo Cont'd

Training Phase	Event Name/ Description	Annual Requirement	No. of Synthetic Events	No. of Passive Events	No of Active Events	Total No. of Events	Platform(s)	Active Sonar Use / Event / Platform	Total Active Sonar Use per event	Active Sonar Use /Year	Area (NM^2)
Strike Group Training Cont'd *(anticipate up to 2 JTFEXs and 4 COMPTUEXs on the East Coast and 1 COMPTUEX in the Gulf of Mexico)*											
JTFEX	ASW 203- Coordinated ASW	10 times per JTFEX (sonobuoys shown for all 10 events)	0	0	2	2	MPA	NA	100	200	60NM X 60NM
CSG COMPTUEX and ESG COMPTUEX	ASW 203- Coordinated ASW	5 times per COMPTUEX (sonobuoys shown for all 5 events)	0	0	5	5	MPA	NA	50	250	
JTFEX	ASW 205- EER	1 time per JTFEX	0	0	2	2	MPA	NA	3	6	60NM X 60NM
CSG COMPTUEX and ESG COMPTUEX	ASW 205- EER	1 time per COMPTUEX	0	0	5	5	MPA	NA	3	15	
JTFEX	ASW 206- IEER	1 time per JTFEX	0	0	2	2	MPA	NA	3	6	60NM X 60NM
CSG COMPTUEX and ESG COMPTUEX	ASW 206- IEER	1 time per COMPTUEX	0	0	5	5	MPA	NA	3	15	
Totals :										**1330**	
AN/SSQ-110A IEER sonobuoy- *usage shown in number of sonobuoys (each sonobuoy has two explosive packages)*											
JTFEX, CSG COMPTUEX, and ESG COMPTUEX	ASW 205- EER	1 time per JTFEX and COMPTUEX	0	0	7	7	MPA	NA	14	98	60NM X 60NM
JTFEX, CSG COMPTUEX, and ESG COMPTUEX	ASW 206- IEER	1 time per JTFEX and COMPTUEX	0	0	7	7	MPA	NA	14	98	
Totals :										**196**	
Maintenance											
AN/SQS-53- *usage shown in hours*											
Maintenance	R-2M- MRC	12 per CG annually (In port or underway)	0	0	132	132	CG	1.8	1.8	238	NA
Totals :					**132**					**238**	
AN/SQS-56- *usage shown in hours*											
Maintenance	Q-26R/30R/33R MRC	1 per FFG per quarter in port or underway	0	0	68	68	FFG	4	4	272	NA
Maintenance	MRC -10Q	1 per FFG per quarter in port	0	0	68	68	FFG	2	2	136	NA
Maintenance	R-16M MRC	1 per FFG per month underway	0	0	204	204	FFG	0.2	0.2	41	NA
Totals :					**278**					**449**	
AN/BQQ-5 or AN/BQQ-10- *usage shown in pings (60 pings per hour)*											
Maintenance		1 per SSN every quarter	0	0	100	100	SSN	60	60	6000	
Totals :					**100**					**6000**	

APPENDIX D

DESCRIPTION OF ALTERNATIVES DEVELOPMENT

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DESCRIPTION OF ACTION ALTERNATIVES DEVELOPMENT

The Navy developed its action alternatives to both meet the operational training requirements of the Atlantic Fleet and minimize potential environmental effects. The environmental effect of most concern is exposure of marine mammals to underwater sound. Since the Navy requires active sonar use as part of training and research, development, test, and evaluation (RDT&E), potential marine mammal exposures could not be lessened by reducing use of sound sources. Therefore, the Atlantic Fleet Active Sonar Training (AFAST) action alternatives were developed in an effort to identify active sonar activity use areas which met the Navy's operational training requirements and reduced the use of areas with high marine mammal densities that would expose fewer marine mammals to sound.

Two components were needed to develop the action alternatives. First, the following operational training requirements were utilized to ensure that all alternatives developed met the operational requirements associated with Atlantic Fleet training:

- **Realistic training environment requirements** – the ability to conduct real world training.
- **Year-round opportunities** – the ability to conduct Anti-Submarine Warfare (ASW), Mine Warfare (MIW), and RDT&E active sonar activities year-round.
- **Proximity to homeports –** the maximum operational distance feasible between homeport and training location. This requirement is driven by both platform and crew.
- **Coordinated sea and air space** – ensures the appropriate scheduling and deconflicting of military and civilian activities.
- **Training area size –** the minimum size of the training area necessary to provide adequate and safe training capabilities, as well as multi-unit active sonar activities.
- **Water depth –** the minimum safe water depth for each platform.
- **Proximity to support facilities** – the maximum operational distance feasible between support facilities and Strike Group training and RDT&E activity locations. This includes ranges, amphibious assault locations, and device recovery for Strike Group training and support personnel, equipment, and device deployment and recovery for RDT&E activities.
- **Acoustic environment** – properties that may affect the transmission and reception of underwater sound.
- **Target availability –** the ability to obtain, lay, and recover targets for select activities.

The second component utilized in the development of the action alternatives was the estimated marine mammal exposure variances for beaked whales, right whales, and sperm whales within the Gulf of Mexico and Atlantic Ocean. Marine mammals and the manner in which sound travels can vary by location and season; therefore, the seasonal and spatial data were combined and modeled in a surrogate analysis to provide a visual comparison of the potential for high, medium, and low sound exposures to marine mammals throughout the Study Area. Next, the Navy identified active sonar activity areas that met operational requirements. These active sonar activity areas were then refined using the surrogate model to reduce potential exposures of marine mammals to underwater sound. It should be noted that this effort was only used for the development of the alternatives. The actual exposures for the Proposed Action were calculated separately (refer to Chapter 4 and Appendix H, Summary of Acoustic Modeling Results). An overview of the steps involved in this process included the following actions:

(1) Define the operational requirements needed to effectively meet Navy training requirements. This was achieved using operator input for ASW and MIW training requirements, as well as information from Navy Systems Commands regarding RDT&E requirements.

(2) Use the requirements defined in Step 1 (e.g. the size of the area, the water depth, or the bottom type needed for a particular training event) to identify the feasible active sonar locations (Section 2.4).

(3) Using the locations identified in Step 2, the surrogate environmental analysis was conducted to analyze the sound exposures of marine mammals to 100 hours of AN/SQS-53 sonar. This surrogate analysis provided a comparison of the number of marine mammal exposures that would be estimated in a given area during a given season, providing a basis from which geographic and seasonal alternatives were developed for full analysis in this EIS/OEIS. The surrogate analysis allowed alternatives to be developed based on the potential to reduce the number of marine mammal exposures while supporting the conduct of required active sonar activities. These locations were carried forward as reasonable alternatives for analysis of all active sonar activities and sonar hours described in the AFAST Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS).

(4) U.S. Fleet Forces (USFF) was able to consider biological factors such as animal densities and unique habitat features because of geographic flexibility in conducting ASW training. USFF is not tied to a specific range support structure for the majority of the training. Additionally, the topography and bathymetry along the East Coast of the United States and in the Gulf of Mexico is unique in that there is a wide continental shelf leading to the shelf break affording a wider range of training opportunities.

In addition, designated marine sanctuaries were considered in the development of all alternatives. Specifically, the Navy will not conduct active sonar activities within the Stellwagen Bank, Monitor, Gray’s Reef, Flower Garden Banks, and Florida Keys National Marine Sanctuaries and will avoid these sanctuaries by observing a 5-kilometer (km) (2.7-nautical mile [NM]) buffer. At all times, the Navy will conduct AFAST activities in a manner that avoids to the maximum extent practicable any adverse impacts on sanctuary resources. In the event the Navy determines AFAST activities, due to operational requirements, are likely to destroy, cause the loss of, or injure any sanctuary resource (for Stellwagen Bank National Marine Sanctuary, the threshold is “may” destroy, cause the loss of, or injure), the Navy would first consult with the Director, Office of National Marine Sanctuaries in accordance with 16 United States Code, Section 1434(d).

D.1 ALTERNATIVE DEVELOPMENT STEPS

The following subsections provide a more detailed discussion of each of the alternatives development process.

D.1.1 Operational Data Gathering

To ensure that the active sonar areas designated during the development of Alternatives 1, 2, and 3 met the operational requirements associated with specific AFAST activities, the Navy operational and RDT&E communities were queried for operational requirements associated with various active sonar training activities. The operational requirements for specific AFAST activities and platforms are presented in Table D-1.

D.1.2 Development of Training Areas Based on Operation Data

The operational requirements captured for each of the training activities were then used to identify the overall nominal operational training area size and operationally preferred training area size. The operationally preferred training area size took into account activities occurring simultaneously in the same water and air space. The Navy AFAST EIS/OEIS team developed training areas for each of the captured training activities using ArcGIS that met the operationally preferred training area sizes. The team then used the water depth and proximity to homeports, air stations, and support facility requirements to place the training areas on a map in locations that met the specific training event requirements. The Navy AFAST EIS/OEIS team then reviewed the placement of the training areas to ensure they meet all the operational requirements depicted in Table D-1.

D.1.3 Surrogate Analysis

The surrogate analysis and its associated exposure estimates were used directly in the development of the AFAST EIS/OEIS alternatives. The surrogate analysis was a completely separate analysis and was not utilized in the determination of potential effects associated with sonar and explosive sound sources contained within Chapter 4 of the AFAST EIS/OEIS. The surrogate analysis was conducted using a single sonar source (i.e., AN/SQS-53) to determine the likelihood of marine mammal exposures across different areas within the Atlantic Ocean and in the Gulf of Mexico. The AN/SQS-53 surface ship sonar is one of the most common and most powerful sound sources used during ASW training. Therefore, it was chosen as the representative sonar for the surrogate analysis. After the initial analysis of the AN/SQS-53, it was noted that similar results would be ascertained no matter which sound source was used. This determination was based on the fact that the primary driver for the variance in exposures from area to area was directly related to the density of marine mammals. The purpose of surrogate analysis was not to determine the exact number of exposures resulting from the ASW training, but was used only to determine whether certain training areas would result in overall higher exposures. The following subsections describe in detail the steps conducted and assumptions made during the surrogate analysis.

D.1.3.1 Marine Mammal Density Data

The Navy AFAST EIS/OEIS team initiated the development of a marine mammal density grid. In the past, the Navy utilized the original marine mammal density reports associated with the respective Operating Area (OPAREA) Marine Resource Assessments (MRAs). The density data contained in these reports divided the marine mammal species data into two depth strata (i.e., on-shelf and off-shelf). However, prior to beginning the AFAST EIS/OEIS effort, the Navy realized that the accuracy and fidelity of the marine mammal densities could be significantly improved through the development and use of habitat suitability modeling. Thus, the Navy updated the marine mammal density data using a habitat suitability study as described within the *Navy OPAREA Density Estimates (NODE) for the Northeast OPAREAs* report (DON, 2007a*)*, the *NODE for the Southeast OPAREAs* report (DON, 2007b), and the *NODE for the GOMEX OPAREA* report (DON 2007c).

The updated marine mammal densities showed a number of different on-shelf and off-shelf densities for the same species based on the location and the environmental parameters present. The older density data were used to fill in any gaps identified within the new density files.

The density data were placed into 10 km (5 NM) by 10 km (5 NM) grid boxes, which were then saved as species-specific density layers for easy viewing in ArcGIS. To accomplish this, a 10 km (5 NM) grid was created and applied like a cookie cutter to each density data set. This produced perfectly aligned 100 square kilometer (km^2) (29 square nautical miles [NM^2]) areas that could then be summed and/or multiplied by each other.

D.1.3.2 Acoustic Propagation Data

To develop a representative acoustic footprint, the AFAST EIS/OEIS team utilized one of the primary mid-frequency hull-mounted sonars, AN/SQS-53, as the sample system. The AN/SQS-53 was modeled within each of the 36 acoustic provinces in the Atlantic Ocean and Gulf of Mexico to provide the estimated one hour seasonal exposure footprints for the 195 decibels references to 1 squared micro Pascal second (dB re 1 μPa^2-s) and 190 dB re 1μPa^2-s energy flux density (EFD) levels. These levels were chosen because they encompass both permanent threshold shift (PTS) and temporary threshold shift (TTS) exposures, in addition to a portion of the behavioral responses (at the time of this analysis, dose function criteria were under development). The methodology used and a detailed description of the acoustic modeling conducted are discussed in detail in Appendix H.

An acoustic province is an area that has similar sound propagation properties. Individual layers containing sound spreading information for all 36 provinces of the Study Area were produced in ArcGIS so that they could be layered under the Study Area.

D.1.3.3 Development of Relative Exposure Grids

Using the AN/SQS-53 acoustic footprints and the marine mammal density data, map grids were created to show areas of low to high likelihood of marine mammal exposure to sound. To develop the potential exposure grids, 100 hrs of active AN/SQS-53 mid-frequency hull-mounted sonar was analyzed in each of the 10 km x 10 km (5 x 5 NM) marine mammal density grids

Table D-1. Operational Requirements per Activity Type

	Realistic Training Environmental Requirements	Year-Round Opportunities	Proximity to Homeports	Controlled Sea and Air Space	Training Area Size	Water Depth	Proximity to Support Facilities	Acoustic Environment	Target Availability
Littoral ASW Independent ULT	Y	Y	**Max:** 100 NM **Special Exception: Helicopter Dipping Max:** 20 NM **Min:** 4 NM **Optimal:** 15 NM (The dip areas provide shallow and deep water close to NAS JAX).	**Dipping:** Y **Surface Ship:** N/A **Submarine:** N/A **MPA:** Y	60 NM x 90 NM	**Min:** 100 ft **Max:** 3,000 ft	N/A	Convergence Zone (seasonal) and a variety of environments	N/A
Open-Ocean ASW Independent ULT	Y	Y	**Greater OPAREA** **Max:** 100 NM	**Dipping:** Y **Surface Ship:** N/A **Submarine:** N/A **MPA:** Y	60-NM x 130-NM	**Min:** 1,200 ft **Max:** 3,000 ft	N/A	Convergence Zone (seasonal) and a variety of environments	N/A
MIW Independent ULT	Y	Y	**Max:** 100 NM	N	60 NM x 80 NM	**Min:** 30 ft	Y	Convergence Zone (seasonal) and a variety of environments	Y

Table D-1. Operational Requirements per Activity Type

	Realistic Training Environmental Requirements	Year-Round Opportunities	Proximity to Homeports	Controlled Sea and Air Space	Training Area Size	Water Depth	Proximity to Support Facilities	Acoustic Environment	Target Availability
Object Detection/ Navigational Sonar Independent ULT	Y	Y	**Optimal:** leaving and entering port	N/A	2-NM buffer on each side of transit lane	**Min:** 45 ft	N/A	N/A	N/A
Coordinated ULT	Y	Y	**Max :** 100 NM **Optimal:** <90 NM	Y	60 NM x 130 NM	**Min:** 100 ft **Max:** 3,000 ft	N/A	Surface Duct and Bottom Bounce, Low Bottom Loss Area, and Gulf Stream	Y
Strike Group Training Exercise	Y	Y	**Max :** 120 NM **Optimal:** 90 NM CVN Ops require 100-120 NM of shore prior to blue water "no divert" certification	Y	80 NM x 120 NM	**Min:** 100 ft **Max:** 3,000 ft	N/A	Surface duct and Convergence Zone, and Gulf Stream	N/A
RDT&E Activities	Y	Y	N/A	Y	**General:** 3-NM x 5-NM **Sonobuoys**: 100 NM x 100 NM	**Min:** 40 ft **Max**: 2,000 ft	**Max:** 60 NM **Optimal:** 20 NM	Dependent on Specific Test Activities	Y
Active Sonar Maintenance	N/A	Y	Pierside	N/A	Pierside	N/A	Pierside	N/A	N/A

ASW– Anti-Submarine Warfare; ft – Feet ; Max – Maximum; Min – Minimum; MIW – Mine Warfare; N/A – Not Applicable; NM – Nautical Miles; OPAREA – Operating Area RDT&E – Research, Development, Test, and Evaluation; ULT – Unit-Level Training boxes seaward to 556 km (300 NM). The AN/SQS-53 was assumed to be operated in both search and track modes with a 70/30 split between the two modes. Overall, any number of active AN/SQS-53 operating hours would provide identical variances in exposure results. The total number of active sonar hours analyzed was chosen to facilitate easy identification of variances in exposure numbers per area. The estimated exposures generated were for comparison purposes only and should not be mistaken as the actual exposure data associated with the analysis of the Proposed Action contained within Chapter 4 of this EIS/OEIS.

The number of animals exposed to sound was calculated by multiplying the total exposure footprint for 100 hrs of AN/SQS-53 by the weighted average density for each individual species during each season within each of the 10 km (5 NM) by 10 km (5 NM) grid boxes as shown in Figure D-1. Seasonal exposure footprints were provided for the 195 dB re 1µPa^2-s EFD and 190 dB re 1µPa^2-s EFD thresholds for both the first hour and subsequent hours of sonar operation. The calculated exposure footprints are smaller during the first hour of operation and then become consistent with subsequent sonar operation hours. The area impacted by 100 hrs of AN/SQS-53 sonar operation was calculated using the methodology discussed below.

The ***195 EFD*** and ***190 EFD*** areas represent the first hour footprint and ***195 EFD/dA*** and ***190 EFD/dA*** areas represent the subsequent time footprints, and allowing subscripts (*s*) and (*t*) to represent search and track modes respectively, and ***D*** to represent the density of marine species, then total footprint ***TF*** can be calculated as:

$$\boldsymbol{TF} = 0.7 * ((\boldsymbol{195_s} + \boldsymbol{190_s}) + 99(\boldsymbol{195_s}' + \boldsymbol{190_s}')) + 0.3\,((\boldsymbol{195_t} + \boldsymbol{190_t}) + 99(\boldsymbol{195_t}' + \boldsymbol{190_t}'))$$

And Exposures (***E***) can be calculated from:

$$\boldsymbol{E = TF * D}$$

Using the above calculation, the estimated seasonal exposures for each 10 km (5 NM) by 10 km (5 NM) grid were calculated for each animal, resulting in calculated exposure grids. The calculated exposure grids of marine mammals were then placed into ArcGIS as seven independent layers for the purpose of identifying areas of low marine mammal exposures during alternatives development. The grids were color-coded to show areas of high (red) to low (green) possible sound exposures. The color-coded grids were then used as a tool to assist placing sonar training areas.

The surrogate analysis focused on the potential exposures to beaked whales, right whales, and sperm whales. In addition, calculated exposure grids were generated for mysticetes and odontocetes, and an overall exposure grid was generated for Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA) species. However, the overall MMPA and ESA maps did not show the definition needed to identify the potential difference in area exposures. It has been assumed that the higher species density numbers associated with specific species within these groupings (i.e. dolphins and humpbacks) masked the exposure data. As a result, there was little to no difference in exposure numbers across the Study Area on the MMPA and ESA exposure maps.

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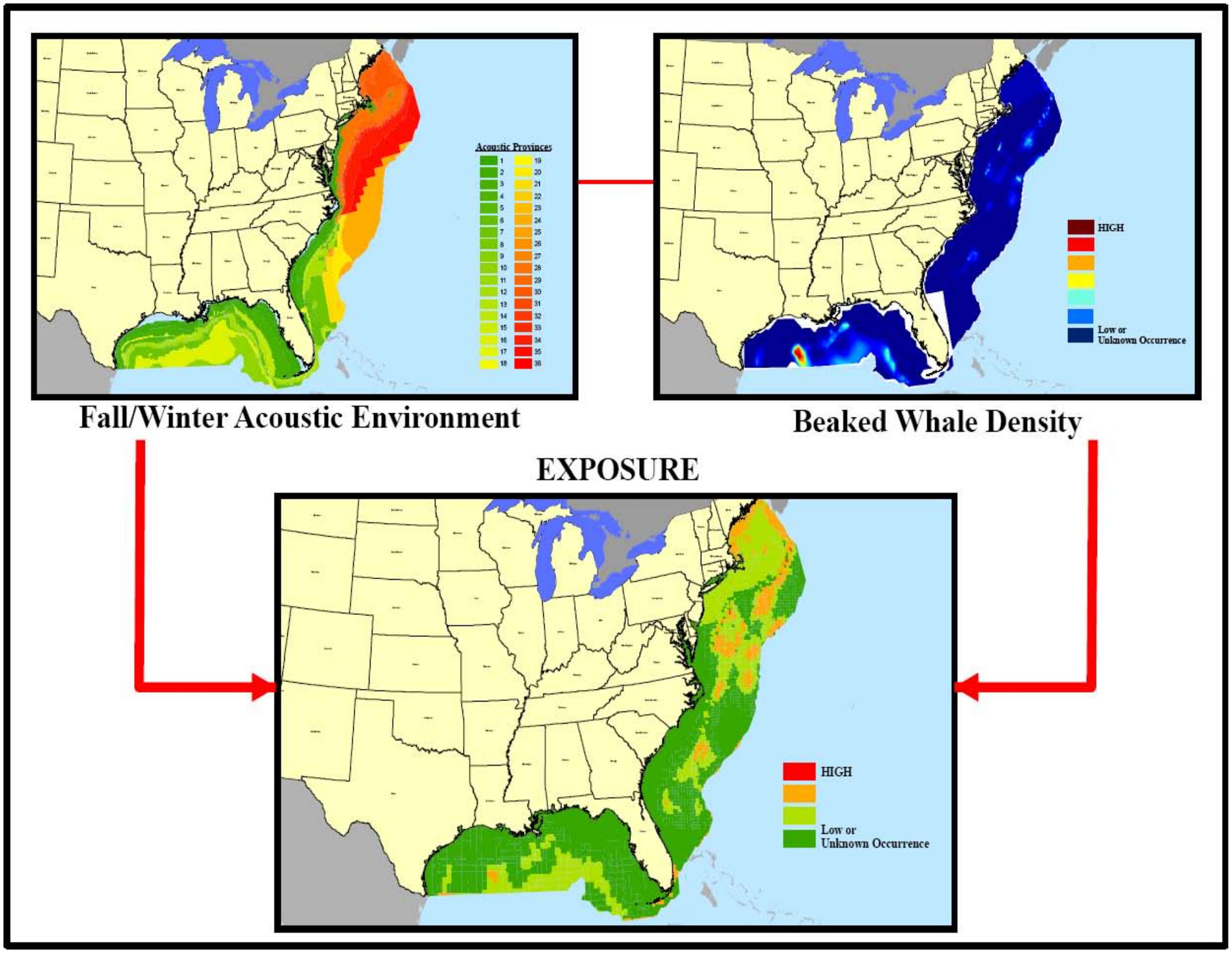

Figure D-1. Flow Diagram of Map Generated for Beaked Whale Exposures (Fall)

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D.2 ALTERNATIVE 1: DESIGNATED ACTIVE SONAR AREAS

The development of Alternative 1 focused on the designation of fixed active sonar areas based on operational criteria and quantitative and geographic environmental analysis. These areas met the operational criteria initially identified according to the process described in Section D.1.2.

D.2.1 Alternative 1 Development

In the development of Alternative 1, the AFAST EIS/OEIS team used the estimated exposures grids generated during the surrogate modeling for all four seasons, as described in Section D.1.3.3, and the optimal operational requirements to identify training areas. The analysis focused on beaked whales, North Atlantic right whales, and sperm whales as representative species, due to either their ESA status or sensitivity to sound exposures. Optimal sonar use area shape files were created in a geospatial information system and placed in locations that met the requirements for each type of training. If any areas of high exposures were noted to be present within the potential training areas, the training areas were moved or reduced in size in an effort to exclude the potential high exposure areas. However, prior to adjusting the size, shape or locations of any identified training areas, the AFAST EIS/OEIS team identified the boundary constraints and operational requirements for which the training area could be moved or adjusted and still meet the requirements captured in Table D-1.

The calculated seasonal exposure grids for beaked whales, Northern Atlantic right whales and sperm whales were utilized as the primary driver for the placement of the training areas under Alternative 1. Based on ESA status and species behavioral patterns, beaked whale, North Atlantic right whale, and sperm whale densities were specifically considered during the environmental analysis. However, based on the well-published sensitivities that beaked whales exhibit to mid-frequency active sonar, beaked whale seasonal density graphics and exposure grids serve as the primary data used to limit the placement of the training areas locations under Alternative 1. The following sections describe how the training areas designated for each type of training event were geographically moved and/or altered to avoid areas of high exposures.

D.2.2 Independent Unit Level Training Areas

Utilizing the operational requirements listed in Table D-1, the AFAST EIS/OEIS team developed Independent Unit Level Training (ULT) boundary constraints. These boundary constraints defined the area within each OPAREA that would meet the operational requirements. The exposure grids generated for each season during the surrogate environmental analysis were then utilized to identify areas of high exposure potential within each OPAREA. If any of the high exposure areas fell within the designated ULT areas, the ULT areas were then moved or reshaped within the boundary constraints to avoid areas of high exposures.

For operational requirements, shallow water is water with a depth less than 183 m (600 ft).

D.2.2.1 Anti-Submarine Warfare Unit Level Training Areas

Feedback received from the operational community during the data gathering effort specified that all ASW ULT activities require both a shallow 30 m (100 ft) and a deep-water, 914 m (3,000 ft) training area within each of the OPAREAs proposed under Alternative 1.

The following sections discuss the ASW ULT boundary constraints for the various types of platform-based ASW ULT activities.

D.2.2.1.1 Anti-Submarine Warfare Surface Ship Unit Level Training Areas

Under Alternative 1, ASW surface ship ULT areas were designated using the operational criteria presented in Table D-1. Based on the requirements received from the operational community, ASW surface ship ULT activities require a 111 km x 167 km (60 NM x 90 NM) shallow-water training area and a 111 km x 241 km (60 NM x 130 NM) deep-water training area. However, the actual ASW surface ship ULT areas utilized during the surrogate environmental analysis consisted of a 185 x 222 km (100 NM x 120 NM) shallow-water ASW surface ship ULT area and a 185 x 222 km (100 NM x 120 NM) deep-water ASW surface ship ULT area. To accommodate multiple and simultaneous training activities and to facilitate de-confliction of activities that are incompatible, the ASW surface ship ULT areas designated for the surrogate environmental analysis were larger than the actual operational size requirements. The Navy ensured that ASW surface ship ULT areas were provided in each OPAREA.

The shallow and deep-water ASW surface ship ULT areas were then compared to the marine mammal density graphics and the gridded exposure estimate layers that were generated during the surrogate environmental analysis for each of the four seasons. As a result, the ASW ULT area boxes were geographically moved to areas of lower marine mammal densities and exposures, while meeting the minimal operational training requirements as shown in Figures D-2 through D-37. These exposure maps clearly show that the proposed ASW surface ship ULT areas were placed outside areas of potential high marine mammal exposures. They also show that the beaked whale exposures were the primary driver used in the placement of the proposed ASW surface ship ULT areas.

D.2.2.1.2 Anti-Submarine Warfare Helicopter Dipping Sonar Unit Level Training Areas

Under Alternative 1, the operational data received identifies the primary bed-down locations for Navy helicopter squadrons that would train with dipping sonars (i.e., AN/SQS-13/22). The data received from the operational community determined that the primary area used for ASW helicopter dipping sonar ULT activities is located within the Tactical Air Navigation (TACAN) area located within the controlled airspace (i.e., W-158) just offshore of Mayport Naval Air Station. The operational data captured and presented in Table D-1 identifies that the entry point for such training is required to be no further then 7 km (4 NM) from the air station. Thus, based on the stringent operational requirements associated with the ASW helicopter dipping sonar ULT activities, minimal to no flexibility exists in moving or reshaping the designated training area. As a result, the ASW helicopter-dipping sonar ULT area remains geographically unchanged for all alternatives, as shown in Figures D-6 through D-9, D-18 through D-21, and D-30 through D-33.

However, ASW helicopters assigned to ships would conduct dipping sonar activities within the ASW Surface Ship ULT areas since they are only restricted by the location of the surface combatant.

D.2.2.1.3 Anti-Submarine Warfare Submarine Unit Level Training Areas

ASW submarine ULT activities require a 56 km x 56 km (30 NM x 30 NM) training area. Thus, the majority of ASW submarine ULT activities could be conducted within the 185 x 222 km (100 NM x 120 NM) ASW surface ship ULT sonar training areas that were previously designated using the exposure grids as shown in Figures D-2 through D-37.

In addition, ASW submarine ULT activities require a 48 km x 37 km (26 NM x 20 NM) shallow-water (i.e. 91 to 183 m [300 to 600 ft] depth) training areas located on the shelf in each southeastern OPAREA.

D.2.2.1.4 Anti-Submarine Warfare Maritime Patrol Aircraft Unit Level Training Areas

ASW Maritime Patrol Aircraft (MPA) ULT activities require a 167 km x 167 km (90 NM x 90 NM) training area with a water depth range of 20 to 333 fathoms (ftm) (120 to 2,000 ft). Thus, all ASW MPA ULT activities deploying passive and tonal sonobuoys could be conducted within the 185 km x 222 km (100 NM x 120 NM) ASW surface ship ULT sonar training areas previously designated using the exposure grids as shown in Figures D-2 through D-37.

In addition, the operational data received associated with ASW MPA Improved Extended Echo Ranging (IEER) system ULT activities involving the deployment of explosive source sonobuoys (AN/SSQ-110A) indicate that the majority of explosive source sonobuoy deployment would be conducted within 185 x 185 km (100 x 100 NM) training areas located within the Jacksonville/Charleston (JAX/CHASN), Cherry Point (CHPT), Northeast, and Gulf of Mexico (GOMEX) OPAREAs. Thus, potential 185 km x 185 km (100 NM x 100 NM) training areas were digitalized for each of the applicable OPAREAs. Next the potential training area boxes were placed within the three Atlantic OPAREAs and were compared to the six density graphics and estimated exposure grids for each of the four seasons. Based on the comparison of potential marine mammal exposures, all three 185 km x 185 km (100 x 100 NM) training boxes within the Atlantic OPAREAs fell inside the already designated training areas for the ASW surface ship ULT areas.

The 185 x 185 km (100 x 100 NM) potential MPA IEER ULT area for explosive source sonobuoys (AN/SSQ-110A) within the Gulf of Mexico was determined based on coordinates captured in operational data received. The location of the box was then compared to the six density graphics and exposure grids for each of the four seasons. Based on the comparison, the 185 km x 185 km (100 NM x 100 NM) was geographically moved northeast onto the shelf to an area of lower marine mammal densities and exposures, as shown in Figures D-10 through D-13, D-22 through D-25, and D-34 through D-37.

D.2.2.2 Mine Warfare Unit Level Training Areas

To maintain platform certifications and proficiency associated with MIW, the U.S. Navy conducts a variety of different MIW ULT activities throughout the year using various high frequency sonar systems deployed from surfaces ships (mine countermeasure [MCM]), unmanned aerial vehicles (UAVs) and helicopters. This analysis only considered designating areas for ship-based systems operating at less than 200 kHz.

Based on the requirements provided by the operational community, presented in Table D-1, MIW ULT activities require water depths out to approximately 40 m (131 ft) of water. Thus, all MIW ULT activities would be conducted on the shelf.

D.2.2.2.1 Mine Warfare Surface Ship Unit Level Training Areas

MIW surface ship ULT activities involve a MCM surface ship using its over-the-side-sonar systems (i.e., AN/SQQ-32) to detect, classify, and localize bottom and moored mine-like objects (MLOs). MIW Surface Ship ULT activities would require a 37 km x 37 km (20 NM x 20 NM) training area located within the western portion of the Gulf of Mexico.

The MIW surface ship ULT areas were compared to the six density graphics and the exposure grids that were generated during the Surrogate Environmental Analysis for each of the four seasons. Based on the habitat preference of the beaked whale, sperm whale and North Atlantic right whale, the comparison showed that the entire Corpus Christi OPAREA does not have any areas of potential high exposures for any of the three whale species. As a result, the proposed MIW surface ship training area within the western portion of the GOMEX OPAREA is geographically unchanged for all alternatives as shown in Figures D-10 through D-13, D-22 through D-25, and D-34 through D-37.

D.2.3 Coordinated Unit Level Training Activities

Based on the data received from the operational community, the majority of the ASW Coordinated ULT activities would require a 111 km x 241 km (60 NM x 130 NM) training area within 167 km (90 NM) of a military air field. Therefore, the majority of ASW Coordinated ULT areas would overlap with the ASW surface ship ULT areas that were designated and placed using the estimated exposure grids.

However, based on specific training needs, certain ASW Coordinated ULT activities require the designation of additional training areas. The following sections discuss the various types of ASW Coordinated ULT activities conducted. In addition, these sections discuss the designated operating areas associated with each type of ASW Coordinated ULT activity based on the surrogate environmental analysis.

D.2.3.1 Anti-Submarine Warfare Coordinated Unit Level Training Activities

Based on the data received from the operational community, the majority of the ASW Coordinated ULT activities would require a 111 km x 241 km (60 NM x 130 NM) training area within 167 km (90 NM) of a military air field. Therefore, the majority of ASW Coordinated ULT areas would overlap with the ASW surface ship ULT areas that were designated and placed using the estimated exposure grids.

However, based on specific training needs, certain ASW Coordinated ULT activities require the designation of additional training areas. The following sections discuss the various types of ASW Coordinated ULT activities conducted. In addition, these sections discuss the designated operating areas associated with each type of ASW Coordinated ULT activity based on the surrogate environmental analysis.

D.2.3.1.1 Anti-Submarine Warfare Surface Ship Coordinated Unit Level Training Areas

Based on the operational data received and presented in Table D-1, the 185 km x 222 km (100 NM x 120 NM) training areas designated in each of the Atlantic Ocean OPAREAs for ASW surface ship ULT activities would meet the operational criteria associated with conducting the majority of ASW surface ship Coordinated ULT activities.

However, the operational data notes that the current Southeastern Anti-Submarine Warfare Integrated Training Initiative (SEASWITI) training area utilizes the Kilo, Lima, Mike warning areas within the JAX OPAREA. In order to meet the maximum distance from homeport, the western boundary (i.e., training area entry point) of the SEASWITI training area needs to be between 167 and 185 km (90 and 100 NM) from port. Therefore, based on the maximum operational distance requirement of 426 km (230 NM), the eastern boundary of the training area was determined to be 241 km (130 NM) east of the western boundary. Utilizing the maximum distance from homeport to training area entry point requirement, a 185 km (100 NM) arc was digitized around Mayport, Florida, which defined the potential locations of the southern and northern boundaries for SEASWITI training area entry points that meet the maximum 167 and 185 km (90 and 100 NM) entry point requirement.

During the development of the SEASWITI training box, the previously defined ASW surface ship ULT boxes within the JAX/CHASN OPAREA overlapped the eastern portion of the SEASWITI designated training area. Thus, only the western portion of the SEASWITI box needed to be compared to the six density graphics and exposure grids that were generated during the Surrogate Environmental Analysis for each of the four seasons. As a result, the western portion of the SEASWITI training box was geographically moved to an area of lower marine mammal densities and exposures, while meeting the maximum distance for the entry point to the training area as shown in Figures D-6 through D-9, D-18 through D-21, and D-30 through D-33.

D.2.3.1.2 Anti-Submarine Warfare Submarine Coordinated Unit Level Training Areas

Torpedo Exercise (TORPEX) activities require a 55 km x 55 km (30 NM x 30 NM) training areas that is located within 77 NM of a homeport. The data received from the operational community show that TORPEX activities typically occur within the eastern portion of the GOMEX OPAREA, the Virginia Capes (VACAPES) OPAREA, and the Northeast OPAREA.

TORPEX activities occurring within the eastern portion of the GOMEX OPAREA are typically conducted in the Charlie and Delta areas of W-151 (Naval Surface Warfare Center Panama City Division [NSWC PCD] OPAREA) and W-155 (Naval Air Station Pensacola [Pensacola] OPAREA). Utilizing the minimum depth requirement of 30 m (100 ft) for TORPEX activities, the review determined that the northern boundary of the TORPEX training area within the Gulf of Mexico would be the 50-ftm (300-ft) curve. The southern boundary of the TORPEX area follows the southern boundary of the Delta area, which in turn equates to the 371 km (200 NM) line. The western boundary of the TORPEX training area was determined to be the eastern boundary of the Pensacola OPAREA out to the 371 km (200 NM) line. The eastern boundary of the TORPEX training area was determined to be the eastern boundary of the NSWC PCD OPAREA out to the 371 km (200 NM) line.

After determining the boundaries of the overall general TORPEX area that would meet the TORPEX criteria presented in Table D-1, a 111 km x 148 km (60 NM x 80 NM) TORPEX area was digitalized using ArcGIS. The digitalized area was then compared to the six density graphics and estimated exposure grids for each of the four seasons. Based on the seasonal comparison of potential exposures, the review determined that the current location of the TORPEX training would remain unchanged. However, the TORPEX area needed to be reduced in size to avoid a pocket of high exposures to sperm whales occurring in the western portion of the training area near the eastern edge of the Desoto Canyon. As a result, the overall size of the GOMEX TORPEX training area was reduced to a 111 x 74 km (60 x 40 NM) area that still exceeded the minimal area size requirement as shown in Figures D-10 through D-13, D-22 through D-25, and D-34 through D-37.

The operational data received noted that TORPEX activities have been conducted within the VACAPES OPAREA in the past. However, no operational data was received defining the required area within the VACAPES OPAREA. Personal communications via phone calls and email with U.S. Navy operators was initiated in order to verify that the VACAPES TORPEX area is still a current training requirement. The feedback from the operational community verified that the VACAPES TORPEX area is still a hard requirement and needs to be included in the AFAST analysis. The data received during the verification effort reported that the VACAPES TORPEX was typically conducted on-shelf in the northern portion of the OPAREA. Therefore, an additional 111 km x 74 km (60 NM x 40 NM) training area was digitalized and compared to the six density graphics and estimated exposure grids for each of the four seasons within the VACAPES OPAREA. As a result, the VACAPES TORPEX box was geographically placed in an area of lower marine mammal densities and exposures while meeting the minimal operational training requirements as shown in Figures D-6 through D-9, D-18 through D-21, and D-30 through D-33.

TORPEX activities in the Northeast occur in designated boxes near the southern boundary of the Boston OPAREA. Due to proximity to support facilities and ongoing informal consultation over use of these areas, the location of TORPEX boxes in the Northeast will remain unchanged across all alternatives.

D.2.4 Strike Group Training Exercises Areas

For Strike Group Training exercise areas, the carrier airfield diversion requirement of 222 km (120 NM) was utilized to determine the western boundary of the general exercise area. To remain consistent with the placement of the western boundary, the 100 ftm (600 ft) curve was utilized as the western boundary of the general Strike Group Training exercise areas based on its average distance from shore of 185 km (100 NM). The eastern boundary of the Strike Group Training exercise was designated to be 371 km (200 NM) from the 100 ftm curve or 556 km (300 NM) from shore. Based on the operational requirements associated with the Strike Group Training exercises and locations of Navy homeports, the 28°N latitude line was designated as the southern boundary. Based on the requirements to conduct Missile Exercises (MISSLEX), the 38°N latitude line located in the northern portion of VACAPES was designated as the northern boundary of the Strike Group exercise areas.

Once the overall general area associated with Strike Group exercises was delineated, the required area for conducting such exercises was compared to the overall size of the digitalized ASW surface ship ULT boxes and to the density graphics and estimated exposure grids for each of the four seasons within the JAX/CHASN, CHPT and VACAPES OPAREAs. The comparison reveals the two 185 km x 222 km (100 NM x 120 NM) ASW surface ship ULT areas designated for each Atlantic OPAREA are more than sufficient in size to accommodate Strike Group Exercises. Therefore, under Alternative 1, Strike Group exercises would be conducted within the same 185 km x 222 km (100 NM x 120 NM) training boxes as ASW surface ship ULT activities within the JAX/CHASN, CHPT and VACAPES OPAREAs, as shown in Figures D-6 through D-9, D-18 through D-21, and D-30 through D-33.

The historically used Strike Group exercise area within the Gulf of Mexico is located in and south of the GOMEX OPAREA (i.e., W-151 [NSWC PCD OPAREA] and W-155 [Pensacola OPAREA]). This area was compared to the six density graphics and estimated exposure grids within the Gulf of Mexico for each of the four seasons. This comparison showed that the northern portion of the currently designated Strike Group exercise area is already located in an area of reduced marine mammal exposure potential. Thus, the existing training area location would be within the northern portions of the GOMEX Strike Group exercise area as shown in Figures D-10 through D-13, D-22 through D-25 and D-34 through D-37.

D.2.5 Object Detection/Navigational Sonar Training Areas

The information received from the operational community determined that both surface ships, as well as submarines, utilize active sonar for object detection and navigational purposes when departing from and returning to port. The level of usage is directly related to weather conditions and overall visibility as well as training requirements.

Therefore, navigational sonar training areas for surface ships using the AN/SQS-53 or AN/SQS-56 Kingfisher modes were designated using existing shipping lanes and channels that are currently utilized to access both Norfolk and Mayport Navy Stations. Ships can potentially operate on either side of a shipping lane or channel. Therefore, a 4-km (2-NM) buffer was included on each side of the shipping lanes and channels making up the designated object detection and navigational sonar training area. Information received from the operational community determined that the surface ship object detection and navigational sonar training area for Norfolk, Virginia should begin just east of the Chesapeake Bay Tunnel and run out to Buoys 1 and 2, and from port out to the FTJ buoy in Mayport, Florida. Since this training has stringent requirements to occur during transit from and to port, no flexibility exists associated with moving the designated training areas. In addition, no marine mammal density measurements were available for the estuaries and inshore areas associated with homeports, thus no exposure comparisons could be made.

Similarly, the object detection and navigational sonar training areas for submarines were designated using the identical process described above for surface ships. The submarine transit lanes used for entering and departing Norfolk, Virginia; Groton, Connecticut; and Kings Bay, Georgia sub bases were buffered by 4 km (2 NM) on each side all the way from port out to open water as shown in Figures D-2 through D-9, D-14 through D-21, and D-26 through D-33.

D.2.6 Research, Development, Test, & Evaluation Event Areas

Under Alternative 1, the RDT&E activities would typically be conducted within the OPAREAs adjacent to U.S. Navy RDT&E facility locations. Therefore, the majority of the MIW RDT&E activities would be conducted on the shelf within the GOMEX OPAREA. The majority of the MIW RDT&E activities would occur within the littoral zone offshore of NSWC PCD. No new density numbers exist for the inshore waters associated with the NSWC PCD OPAREA. Thus, a comparison of potential exposures within the littoral zone and bays adjacent to the NSWC PCD facility could not accurately be conducted. In addition, the majority of the systems utilized during these activities would be operated at frequencies above 200 kilohertz (kHz) and were not analyzed, as these signals attenuate rapidly during propagation (30 decibel (dB)/km or more signal spreading losses), resulting in very short propagation distances. In addition, such frequencies are outside the known hearing range of most marine mammals. Therefore, no specific area was designated for MIW RDT&E activities under Alternative 1.

ASW RDT&E activities captured in the operational data are associated with the testing of sonobuoys. Thus, the majority of the ASW RDT&E would occur within the VACAPES and Northeast OPAREAs adjacent to Patuxent River Naval Air Station and the Naval Undersea Warfare Center, Newport facilities. Therefore, since the RDT&E activities involve the use of sonobuoys, the ASW RDT&E locations would remain consistent with those designated for the ASW MPA ULT activities, as shown in Figures D-2 through D-37.

D.2.7 Active Sonar Maintenance Areas

Active sonar maintenance areas associated with surface ship and submarine sonars occur most often at pier side. The pier side maintenance areas occur within the homeports of the surface ships or submarines. Thus, Norfolk, Virginia and Mayport, Florida have been designated as surface ship sonar (i.e., AN/SQS-53 an AN/SQS-56) maintenance areas. Kings Bay, Georgia and Groton, Connecticut ports have been identified as the two maintenance areas for submarine sonars (i.e., AN-BQQ-5 or BQQ-10).

Since the majority of maintenance activities occur pier side while in port, no flexibility exists in geographically moving the location of active sonar maintenance activities.

Based on the stringent criteria that active sonar maintenance occurs pier side within homeports, no flexibility exists associated with moving the designated training areas. As result, these areas remained unchanged for all alternatives. Due to the minimal size of these areas, they are not depicted on any of the Appendix D maps.

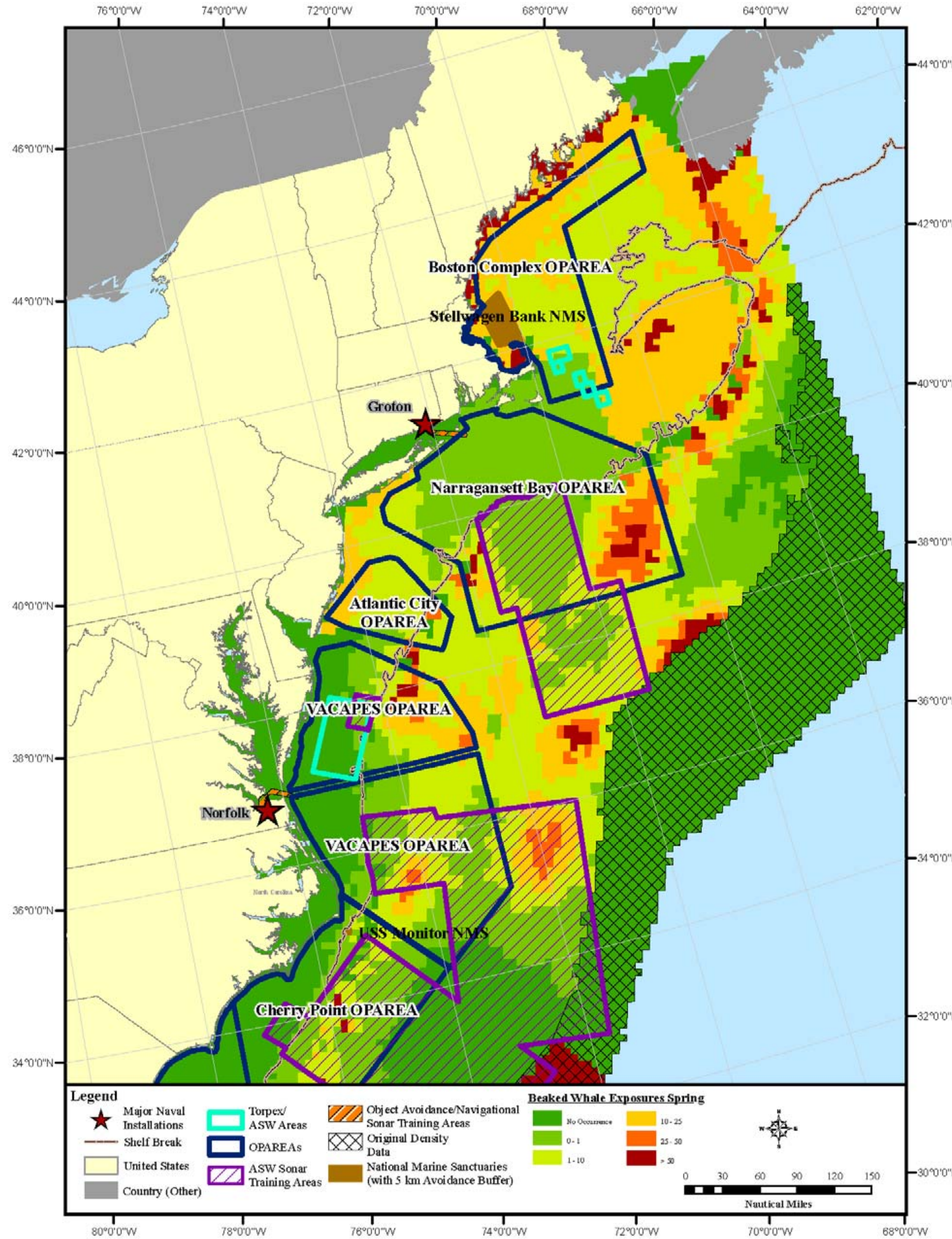

Figure D-2. Alternative 1, NE Beaked Whale-Spring

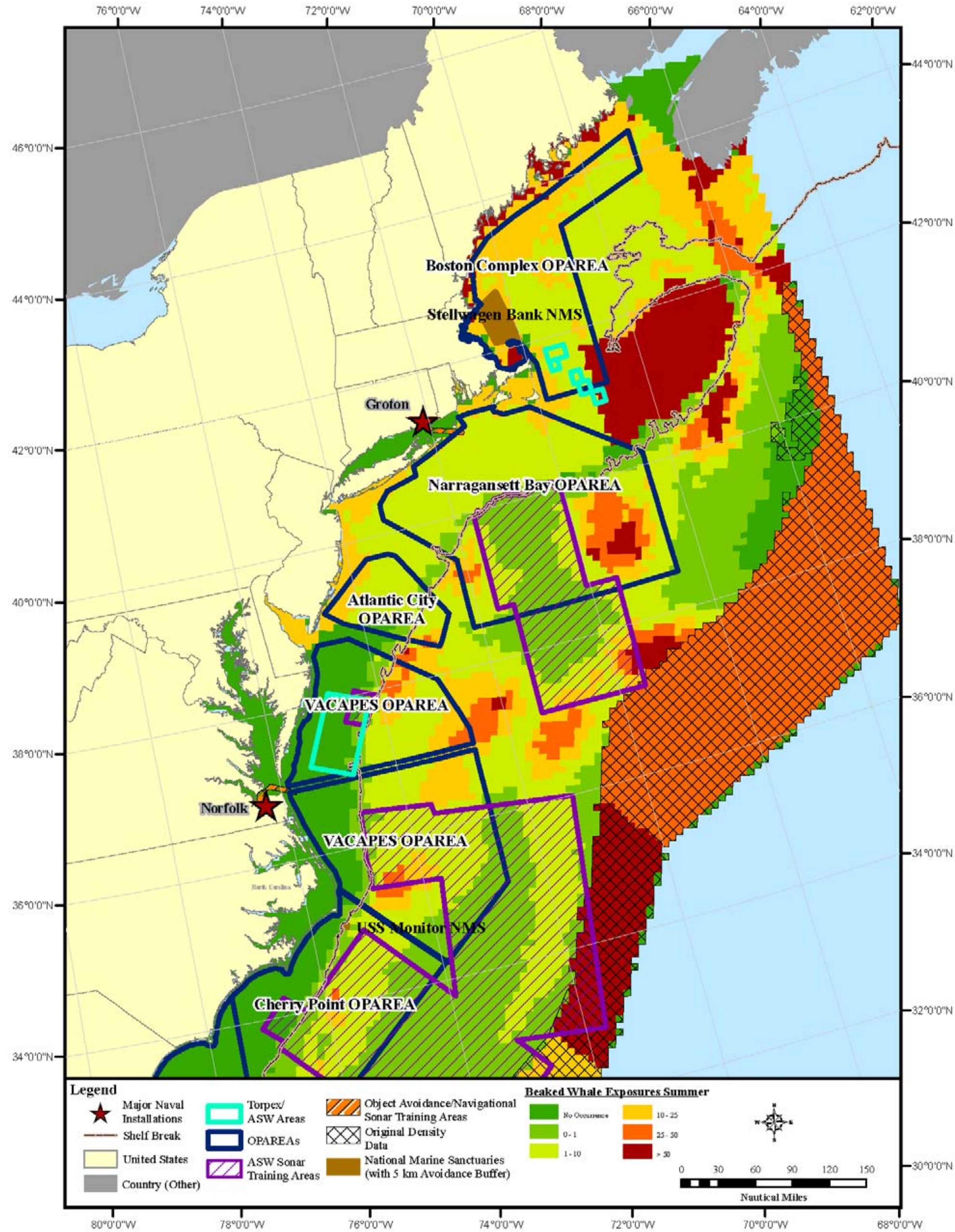

Figure D-3. Alternative 1, NE Beaked Whale-Summer

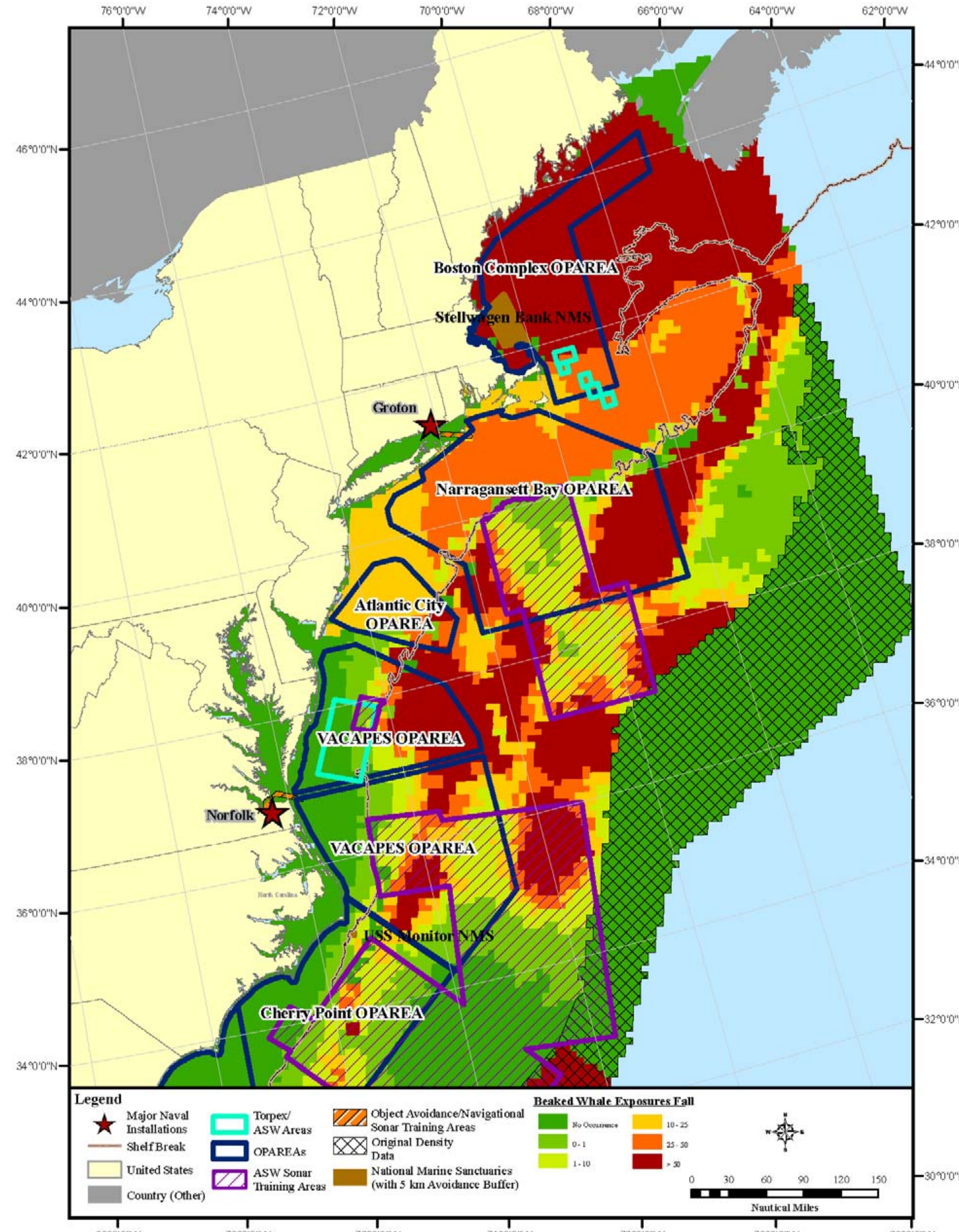

Figure D-4. Alternative 1, NE Beaked Whale-Fall

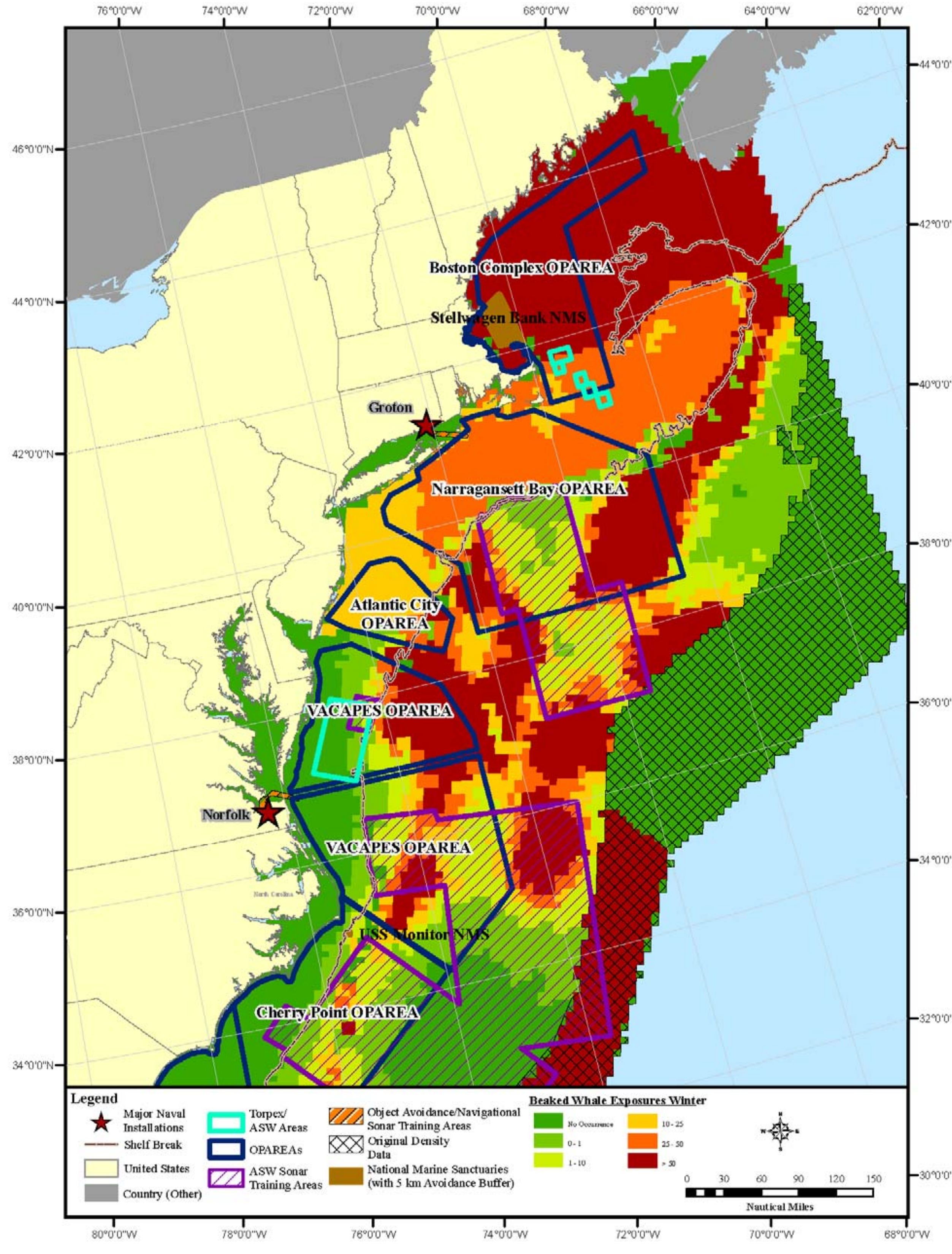

Figure D-5. Alternative 1, NE Beaked Whale-Winter

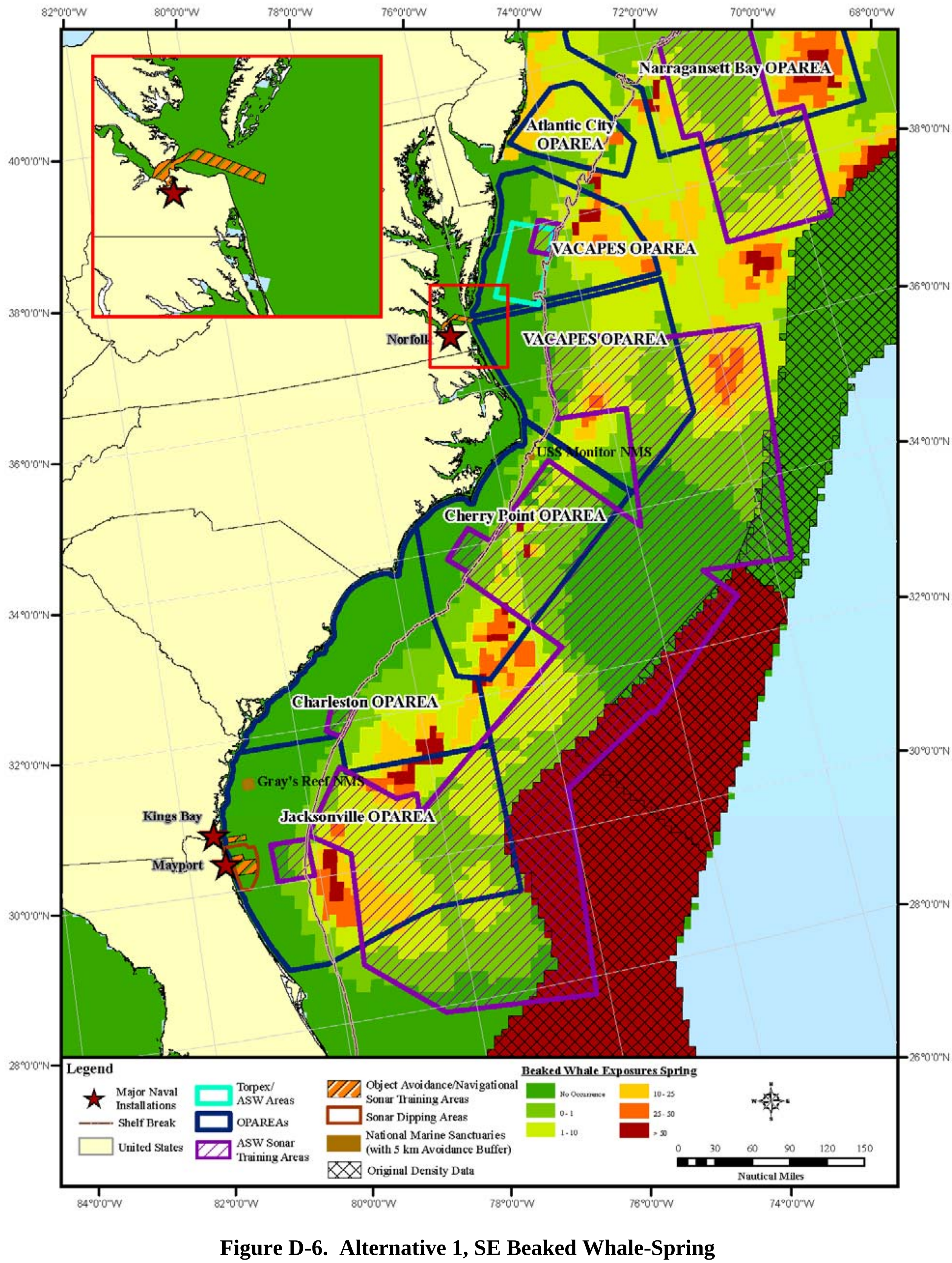

Figure D-6. Alternative 1, SE Beaked Whale-Spring

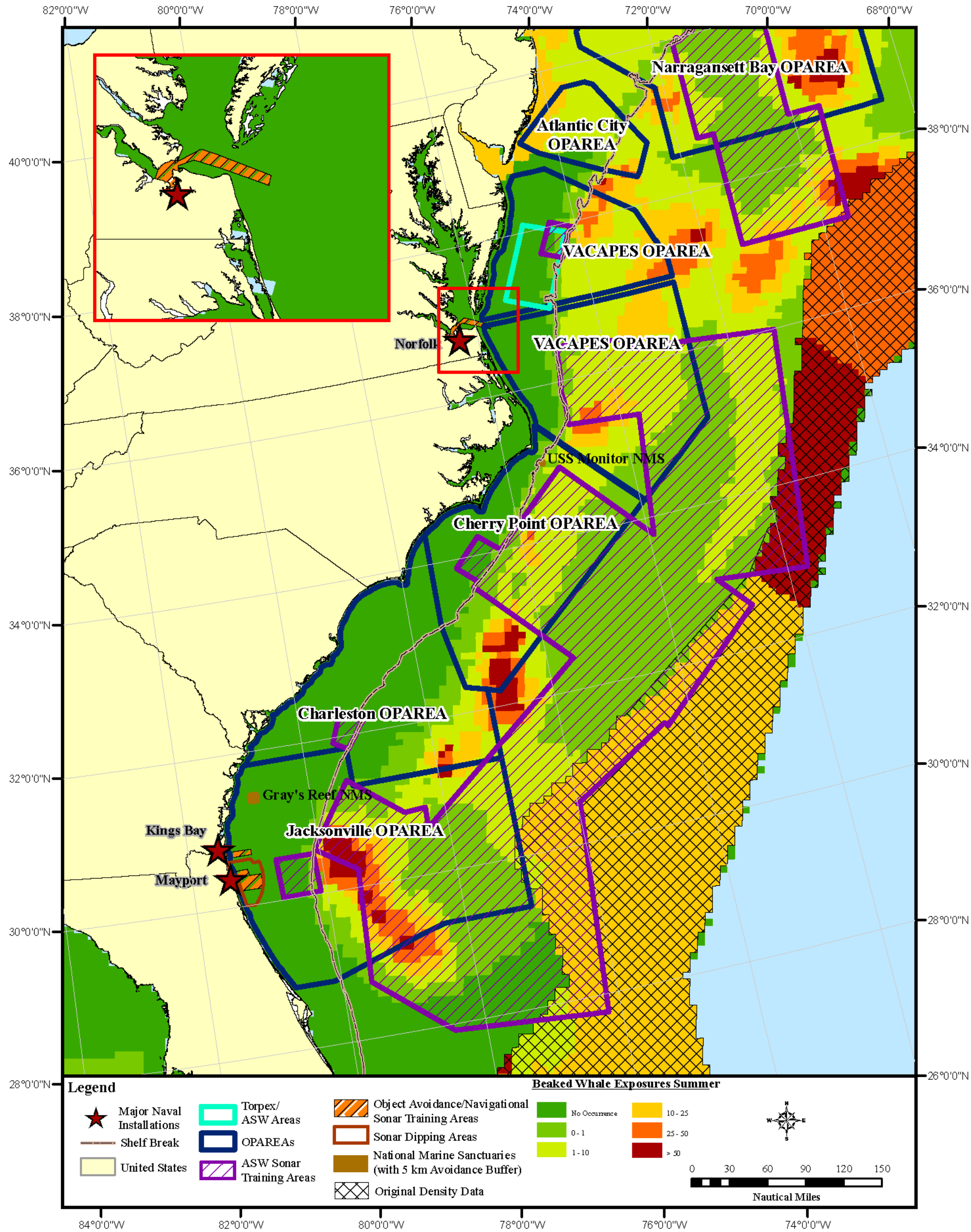

Figure D-7. Alternative 1, SE Beaked Whale-Summer

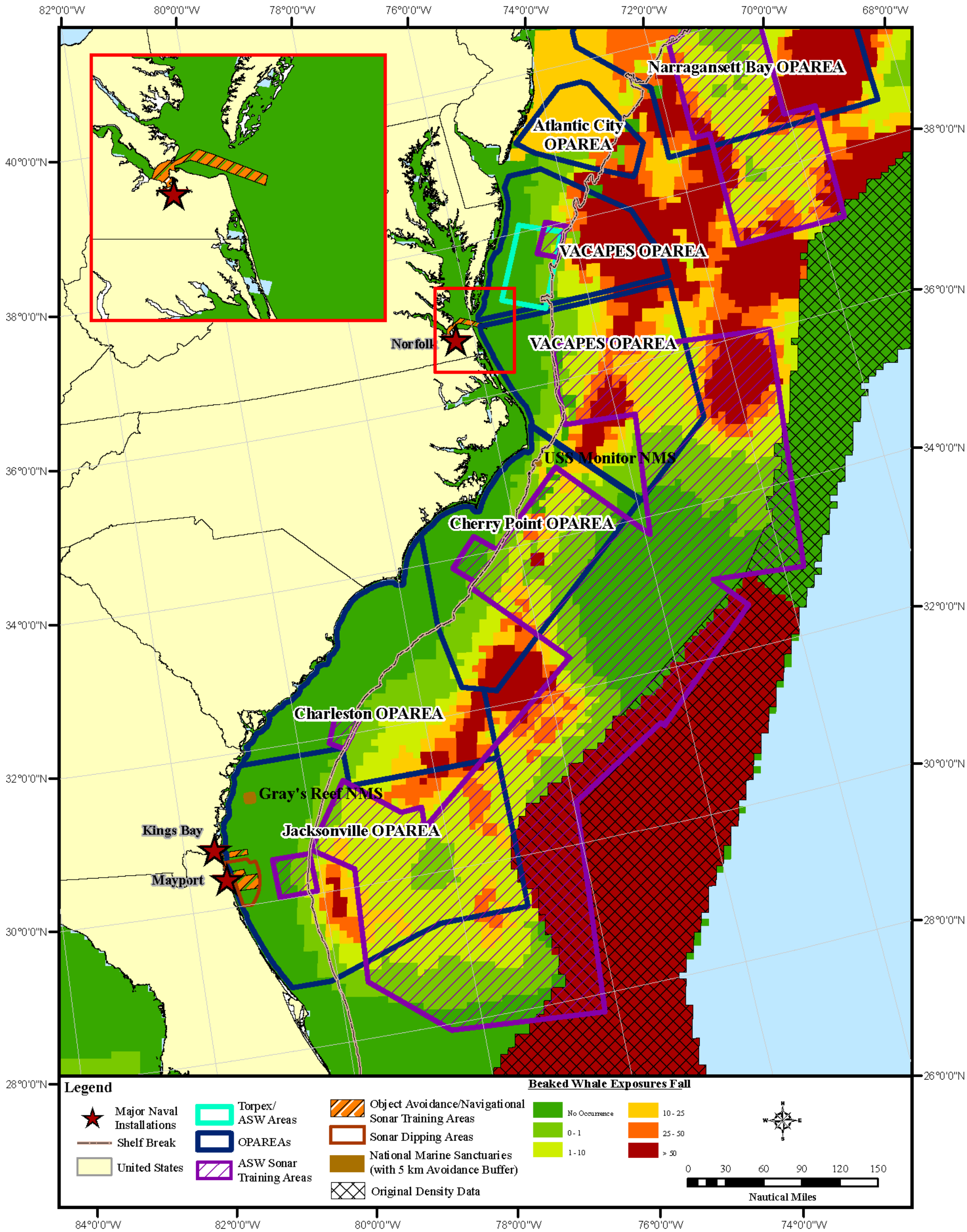

Figure D-8. Alternative 1, SE Beaked Whale-Fall

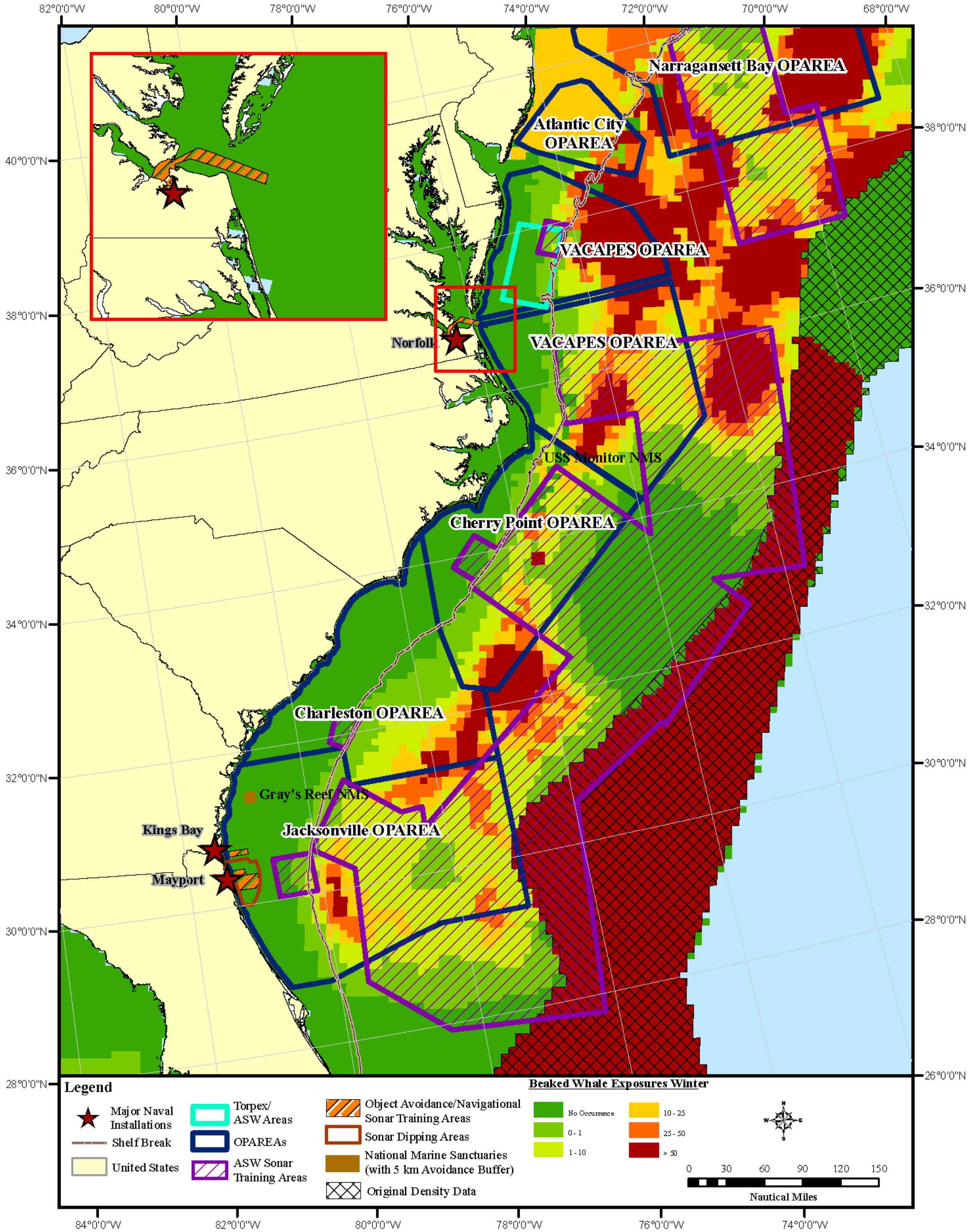

Figure D-9. Alternative 1, SE Beaked Whale-Winter

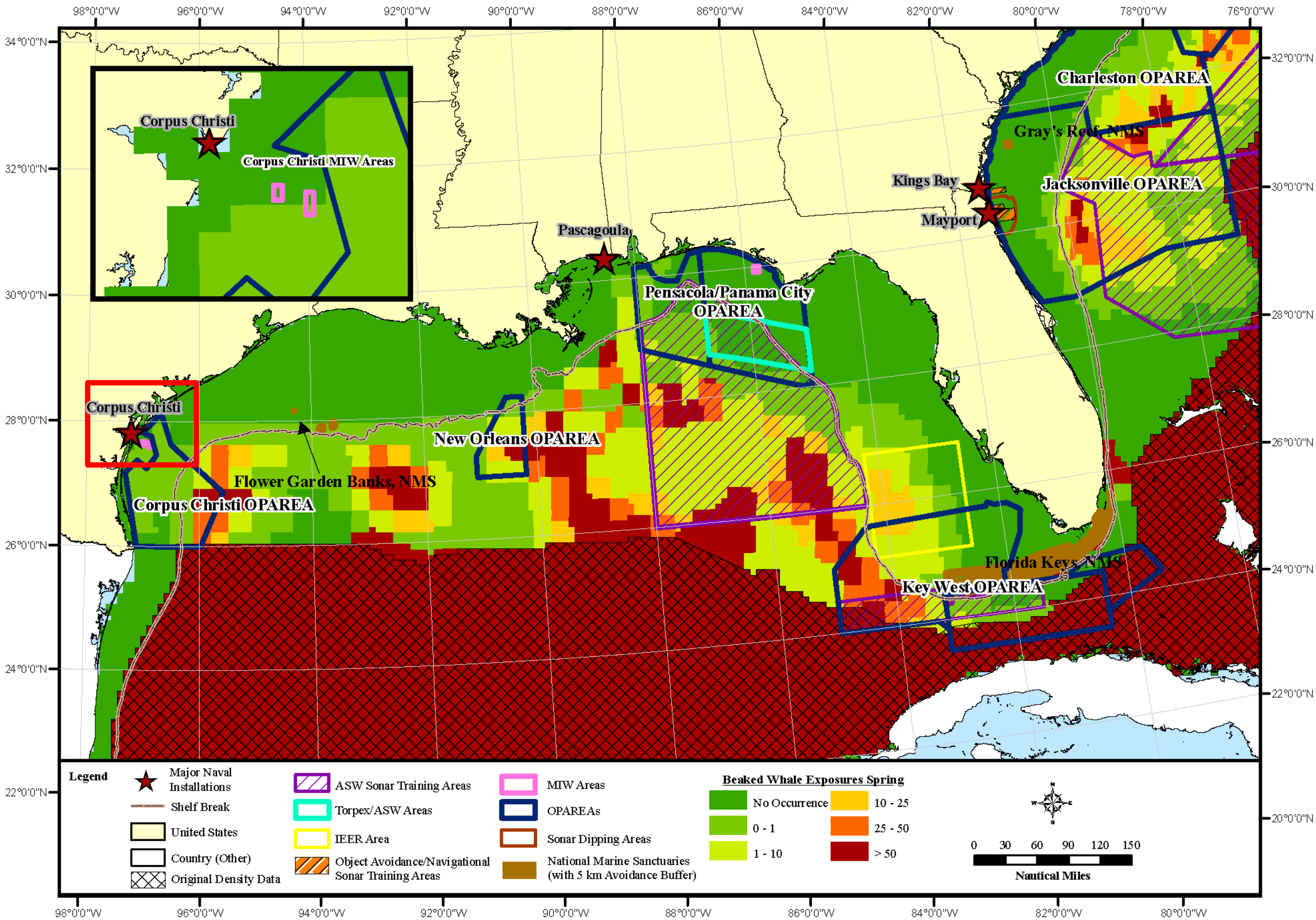

Figure D-10. Alternative 1, GOMEX Beaked Whale-Spring

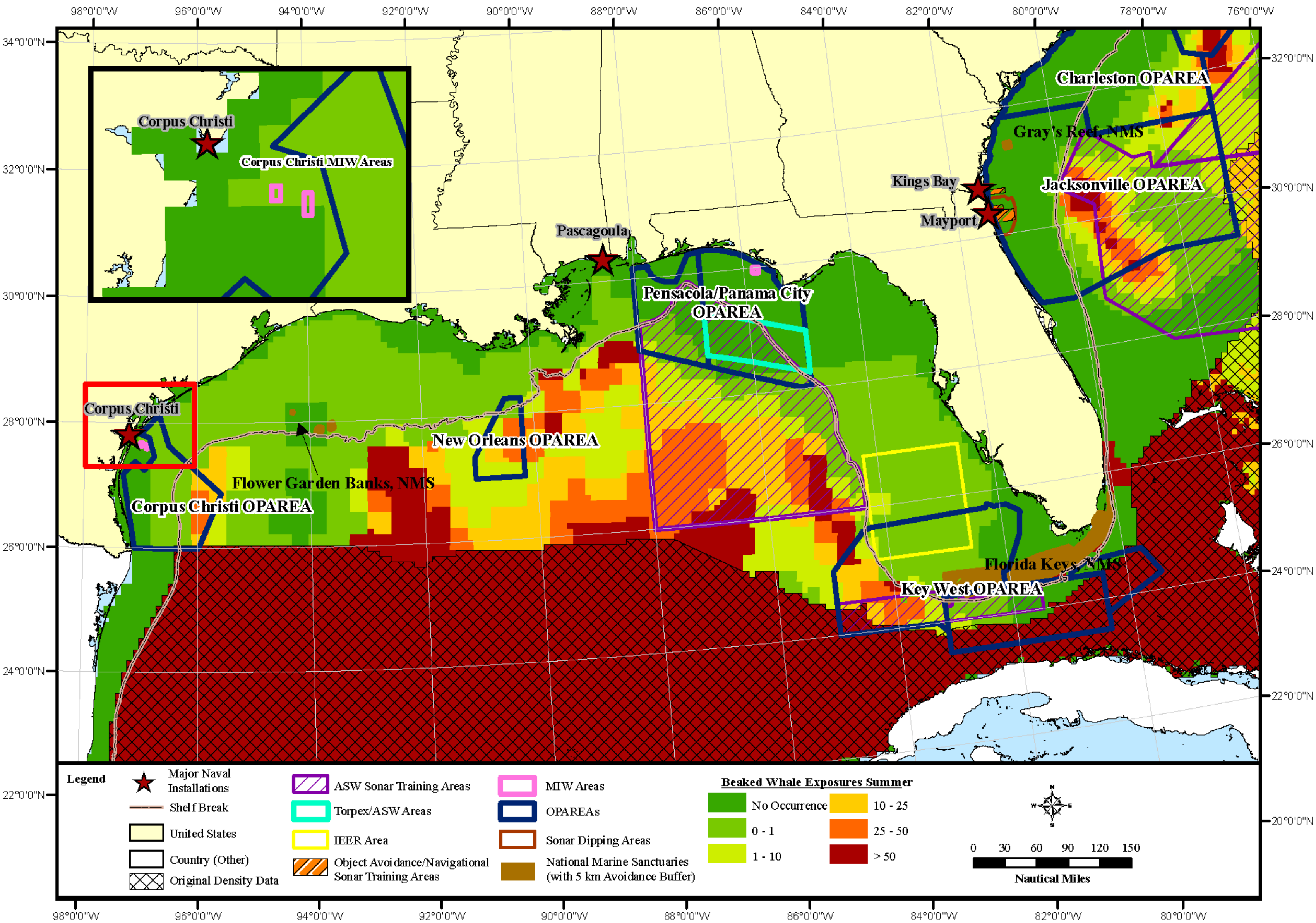

Figure D-11. Alternative 1, GOMEX Beaked Whale-Summer

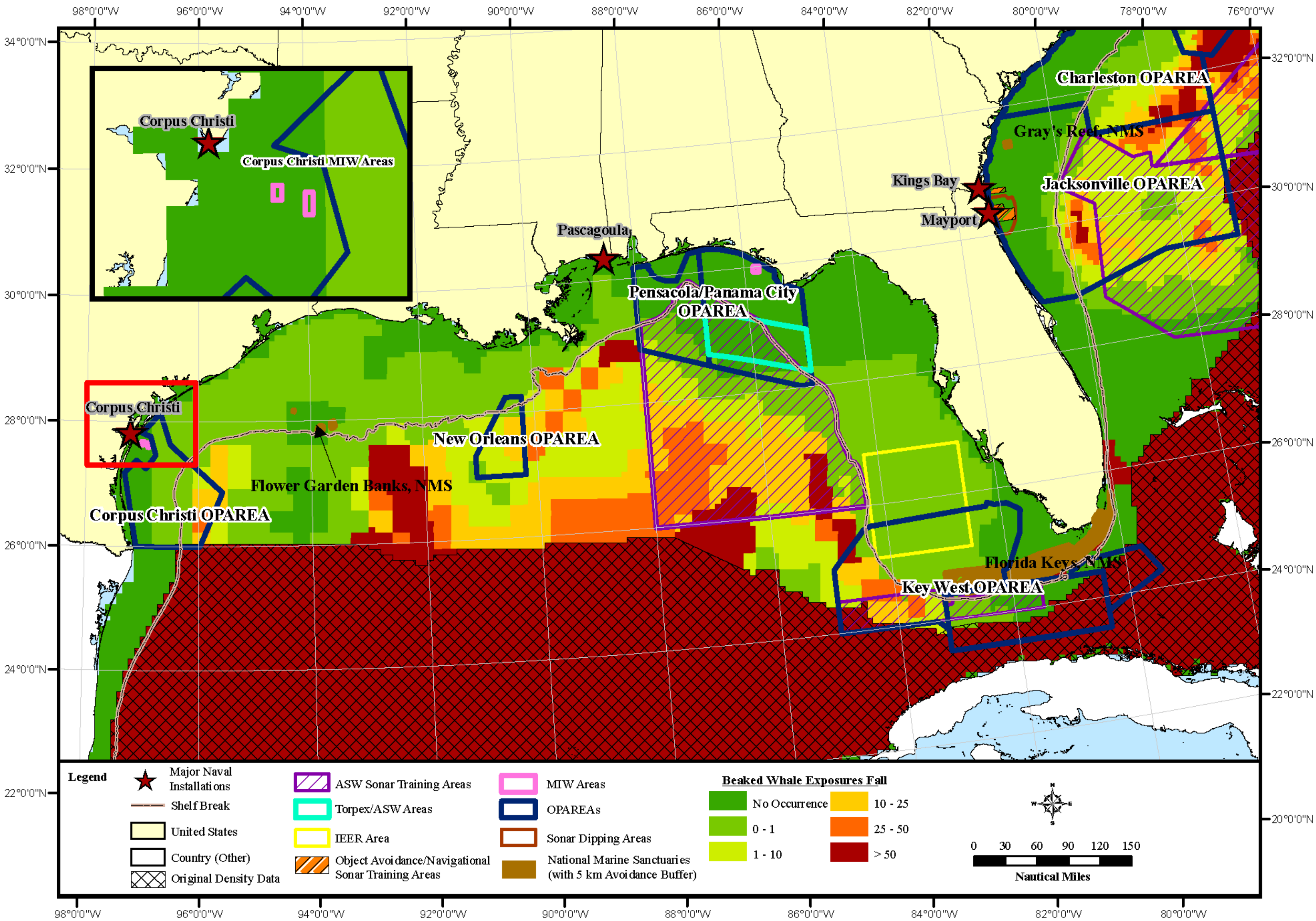

Figure D-12. Alternative 1, GOMEX Beaked Whale-Fall

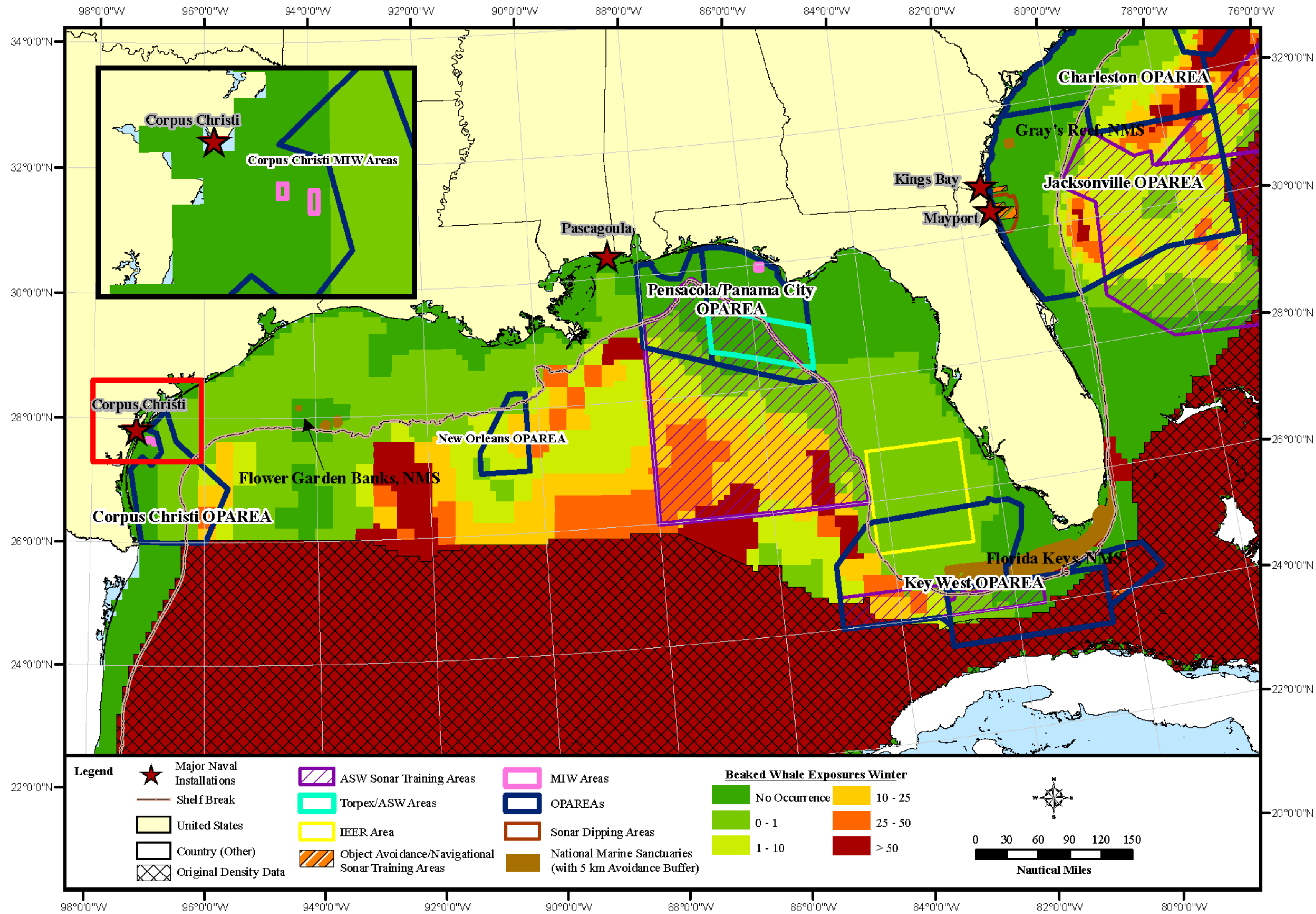

Figure D-13. Alternative 1, GOMEX Beaked Whale-Winter

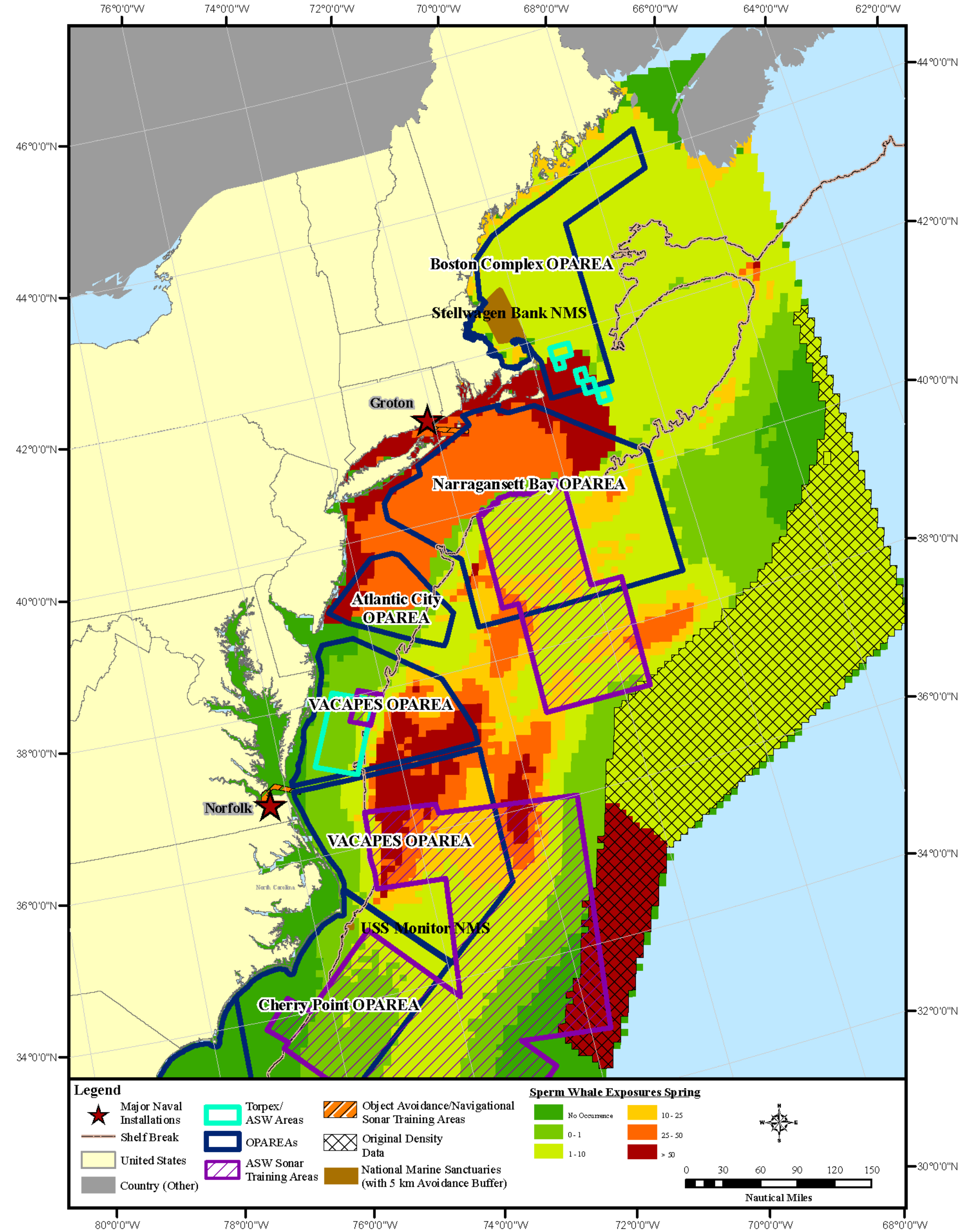

Figure D-14. Alternative 1, NE Sperm Whale-Spring

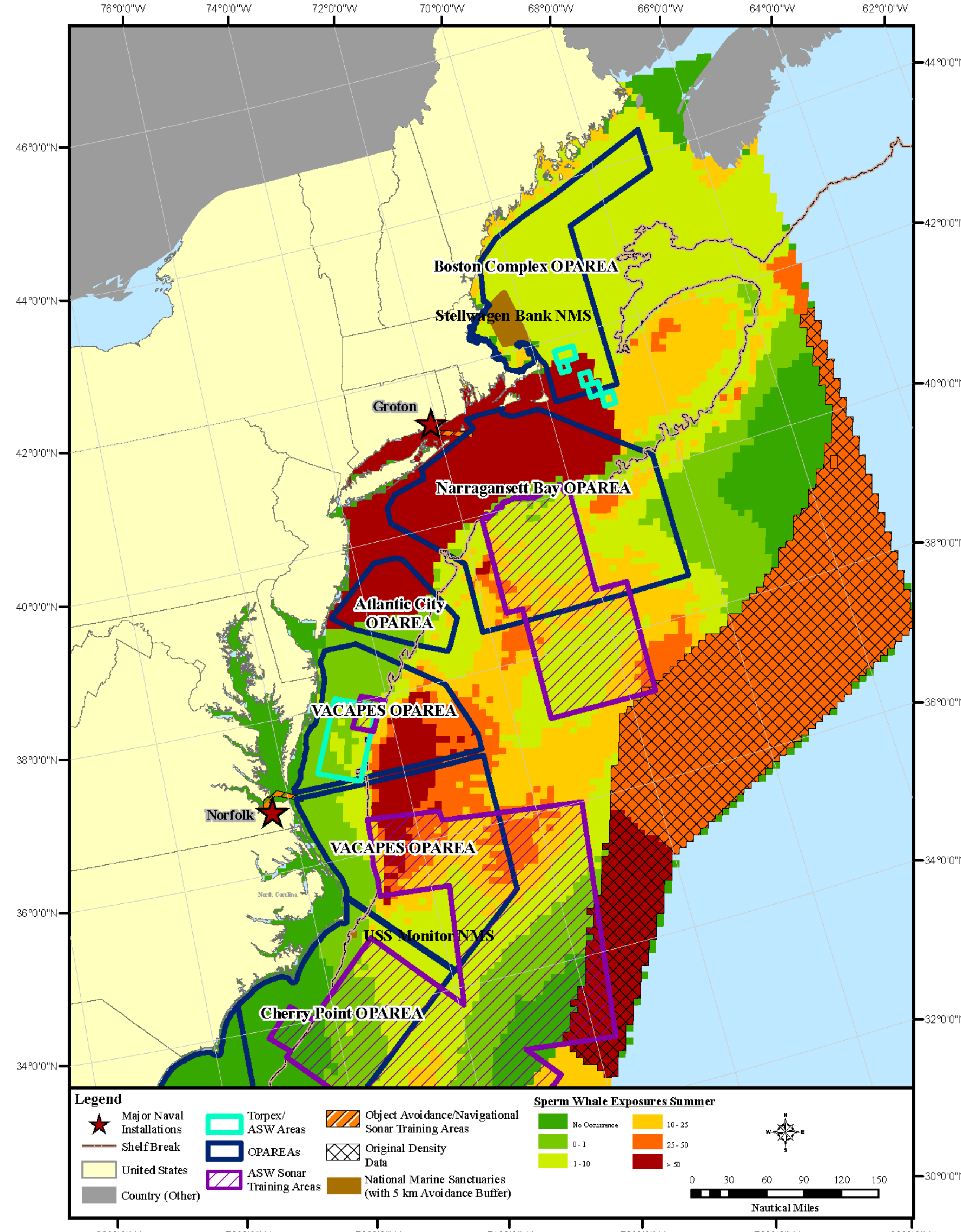

Figure D-15. Alternative 1, NE Sperm Whale-Summer

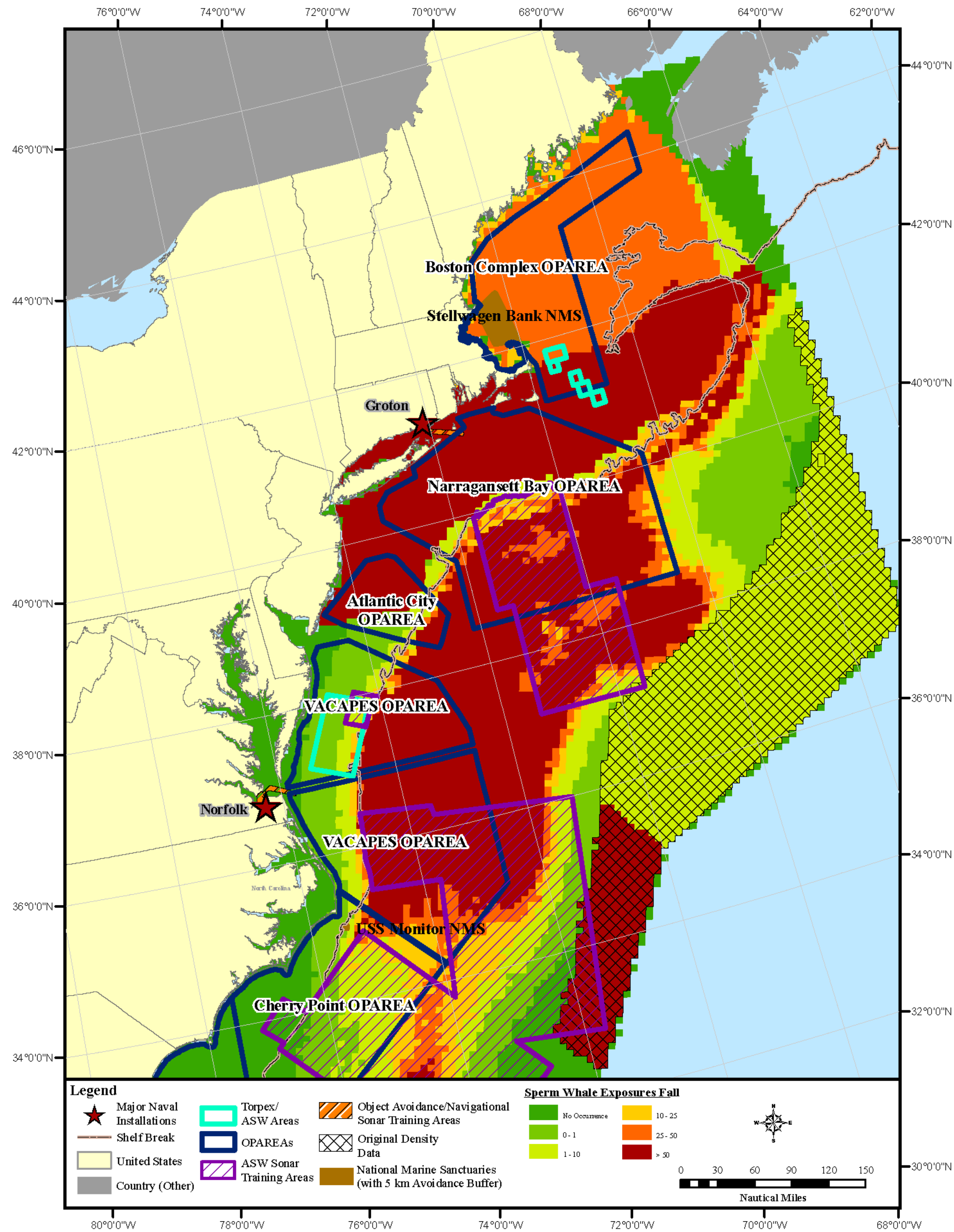

Figure D-16. Alternative 1, NE Sperm Whale-Fall

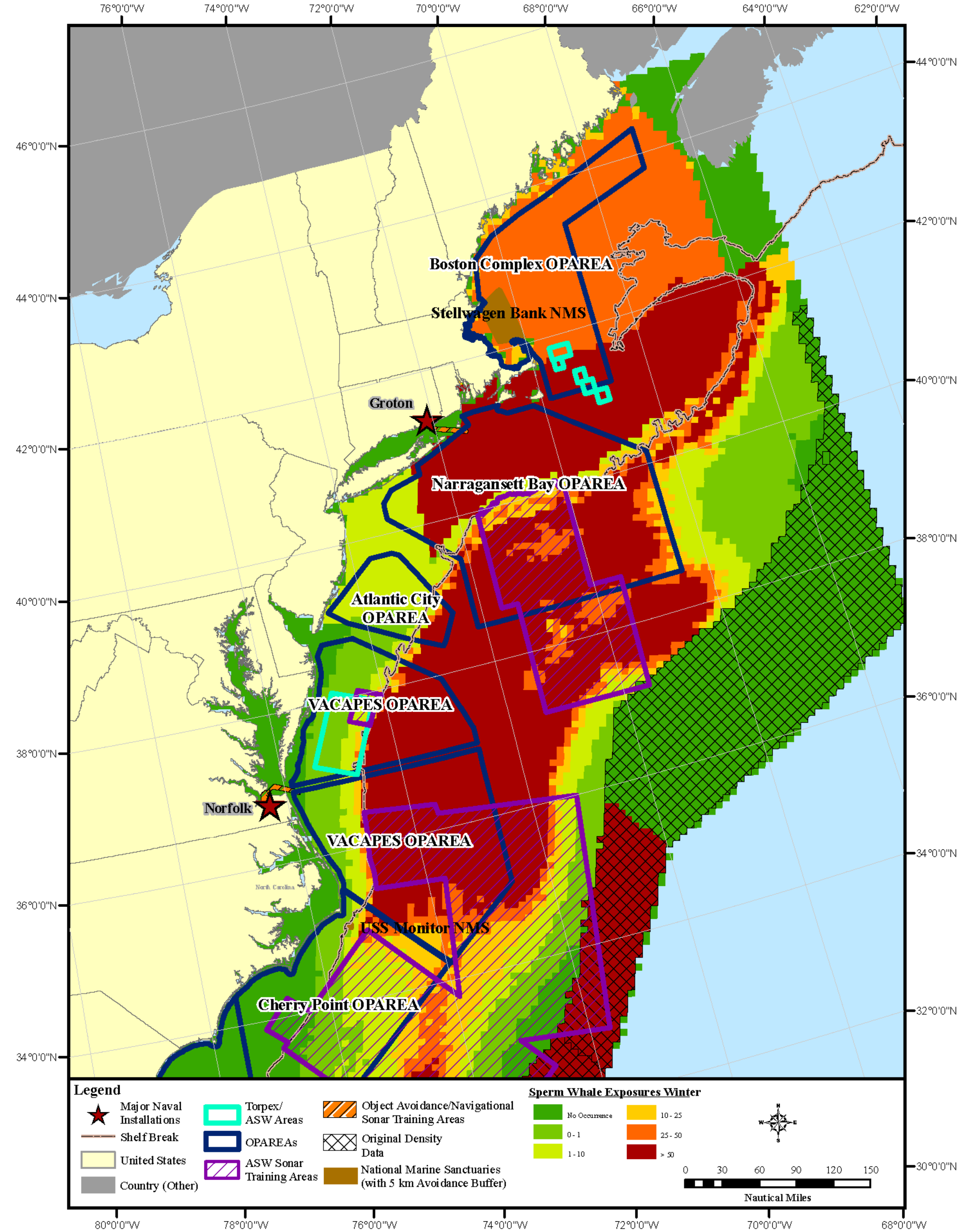

Figure D-17. Alternative 1, NE Sperm Whale-Winter

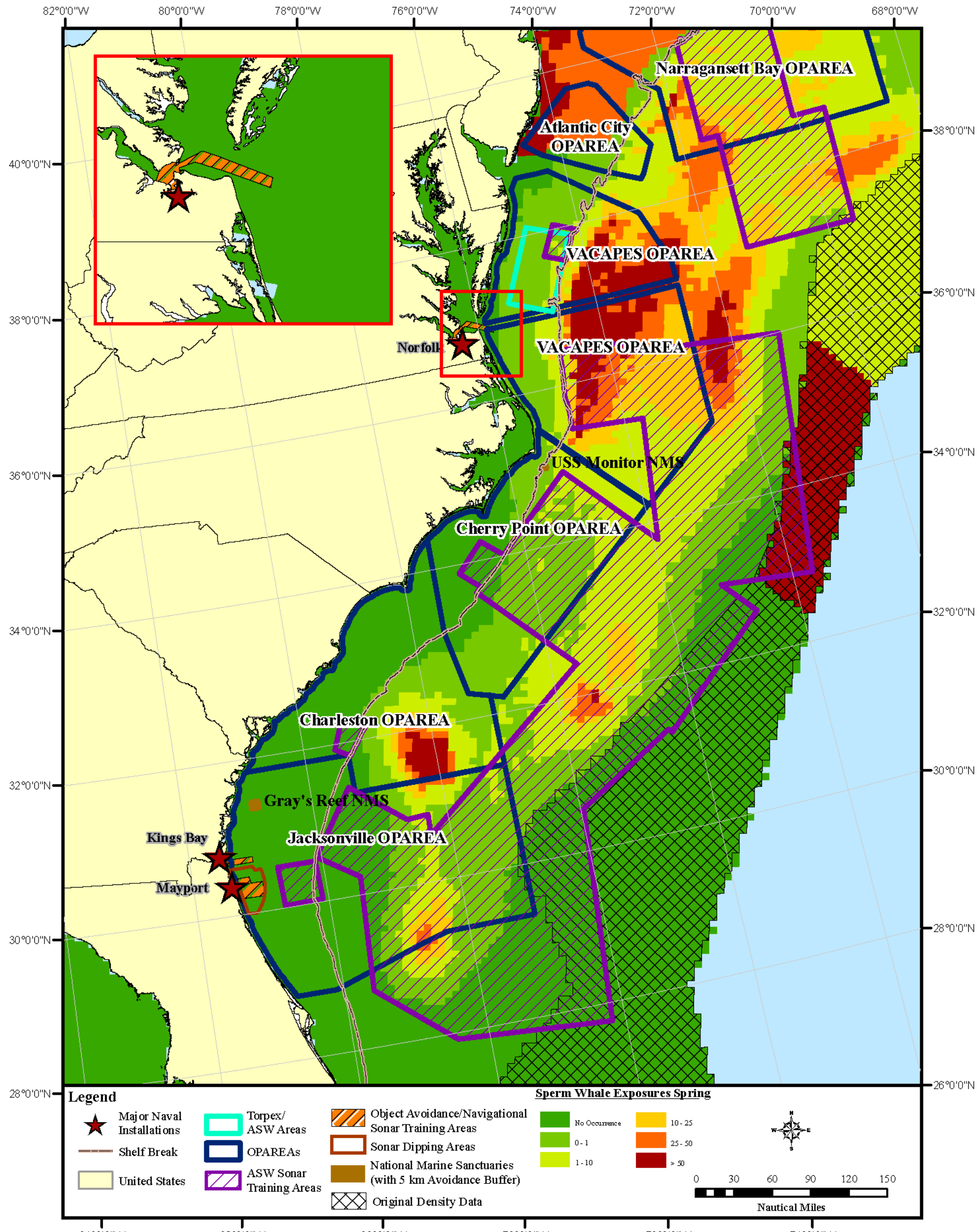

Figure D-18. Alternative 1, SE Sperm Whale-Spring

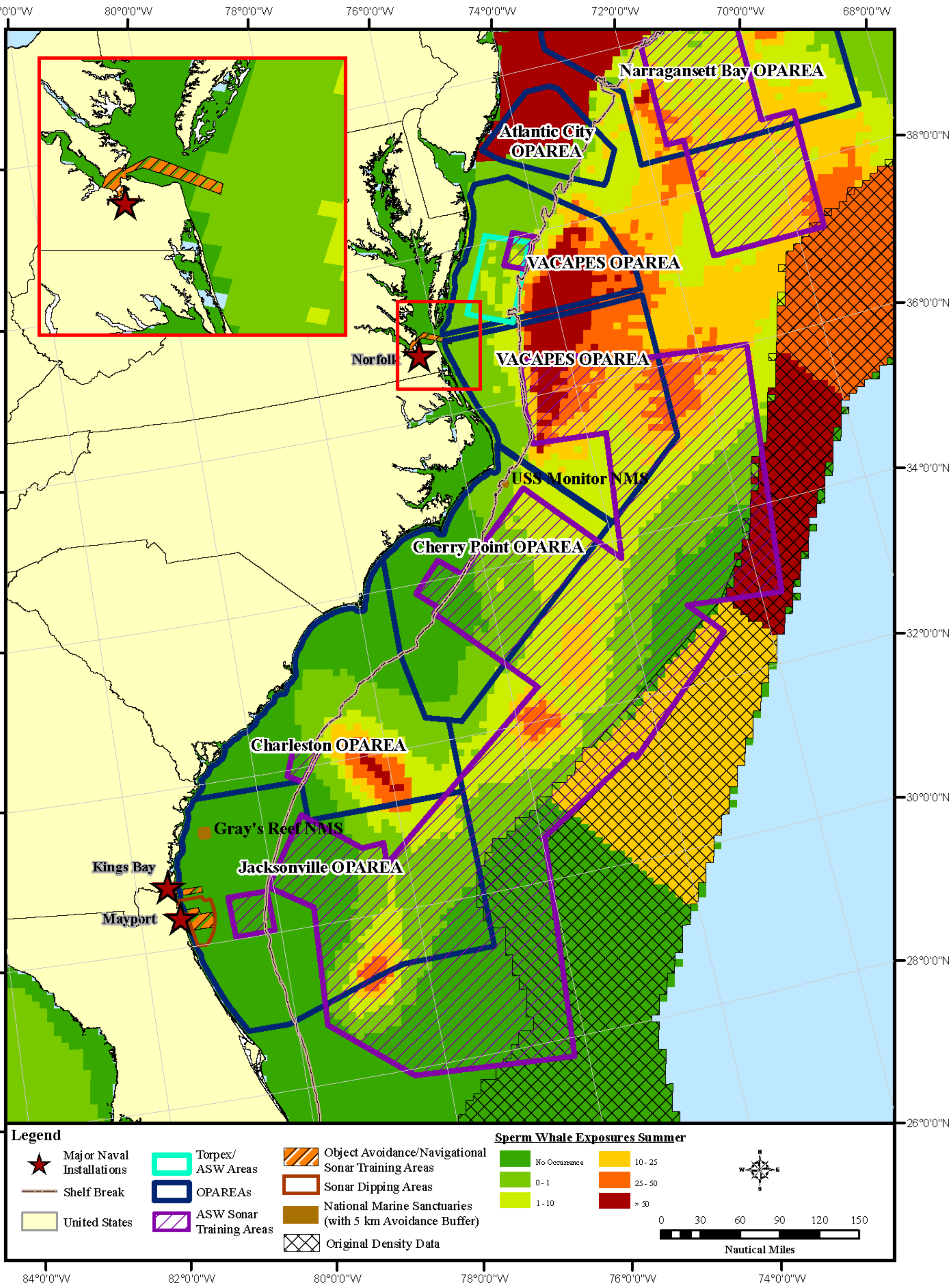

Figure D-19. Alternative 1, SE Sperm Whale-Summer

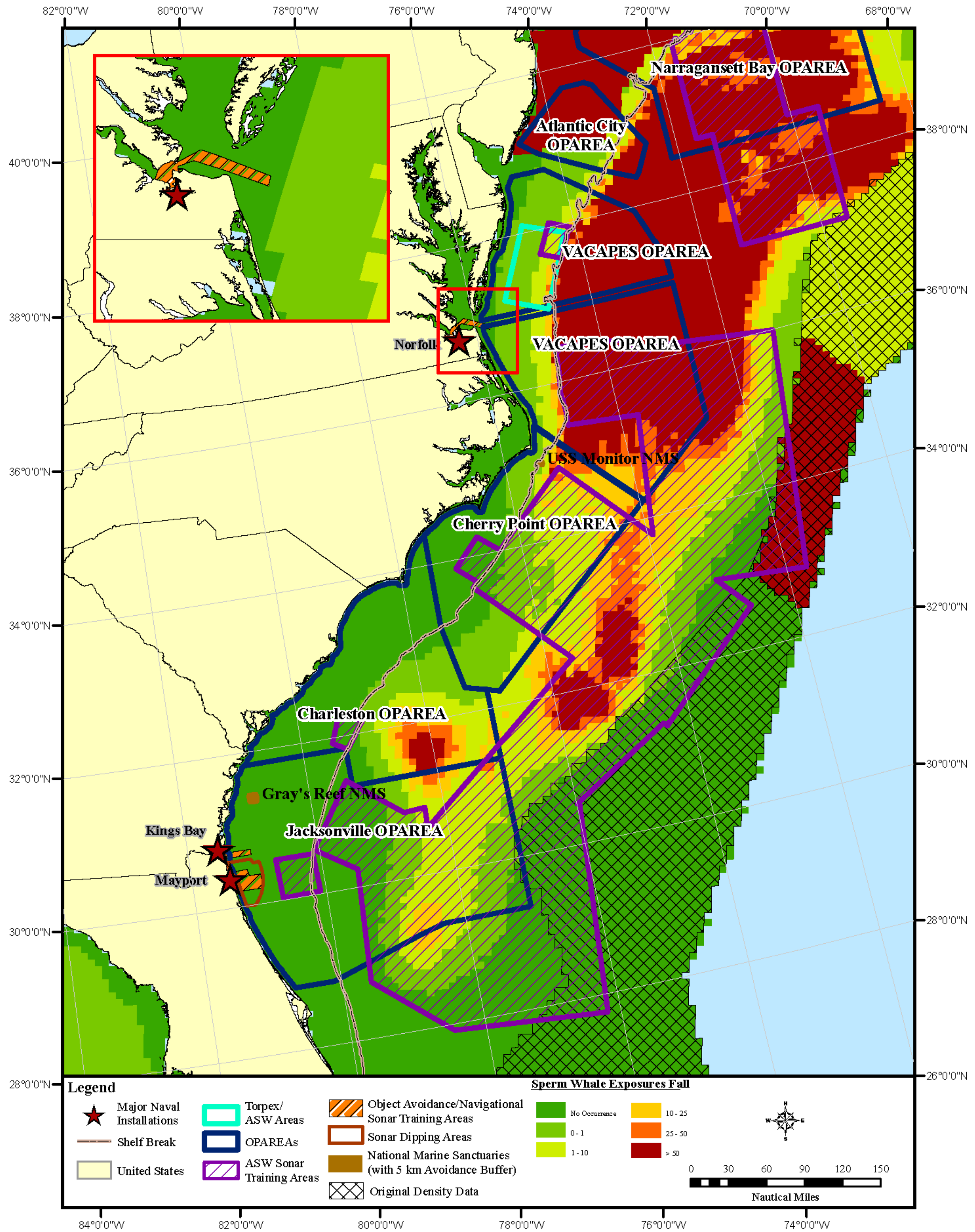

Figure D-20. Alternative 1, SE Sperm Whale-Fall

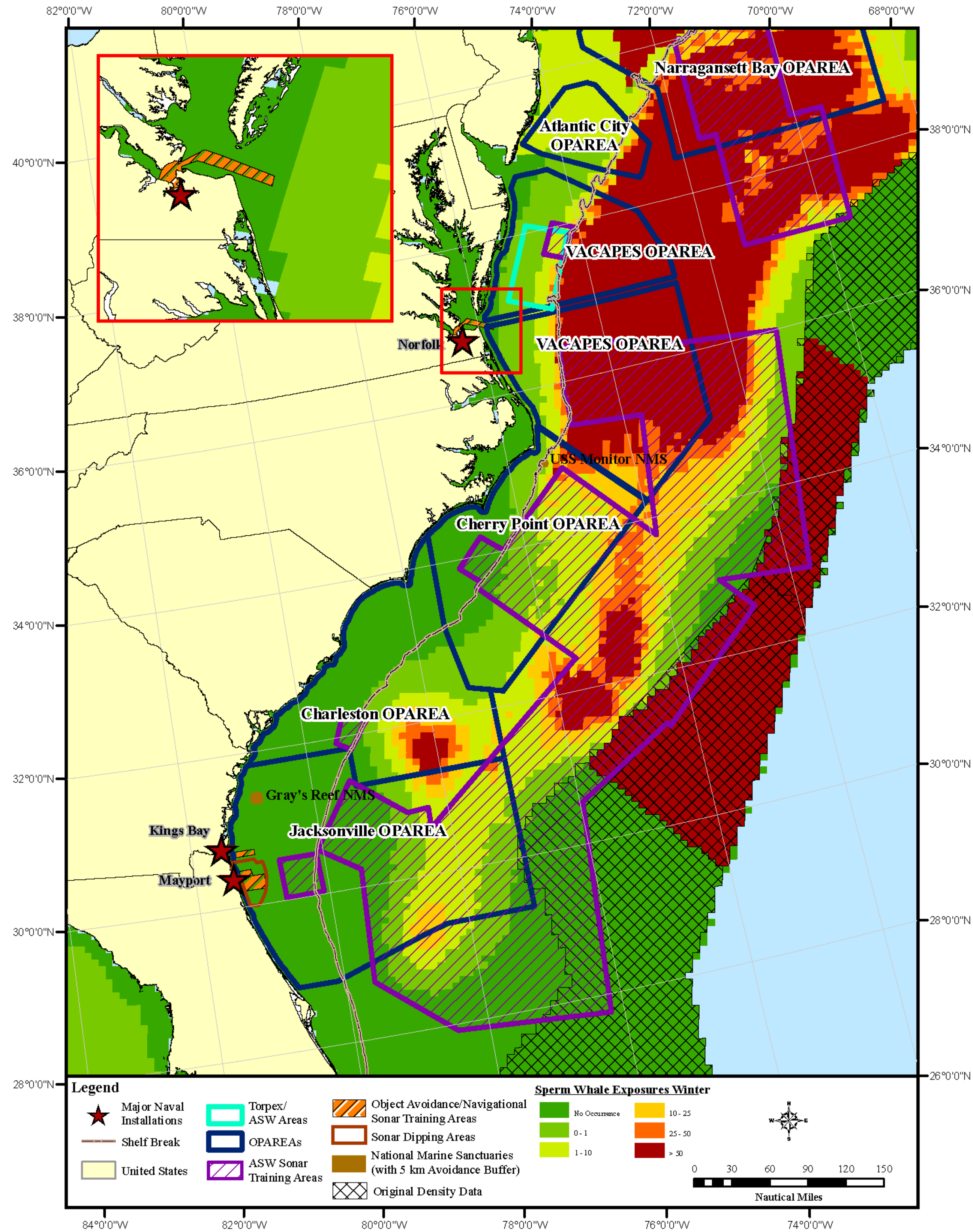

Figure D-21. Alternative 1, SE Sperm Whale-Winter

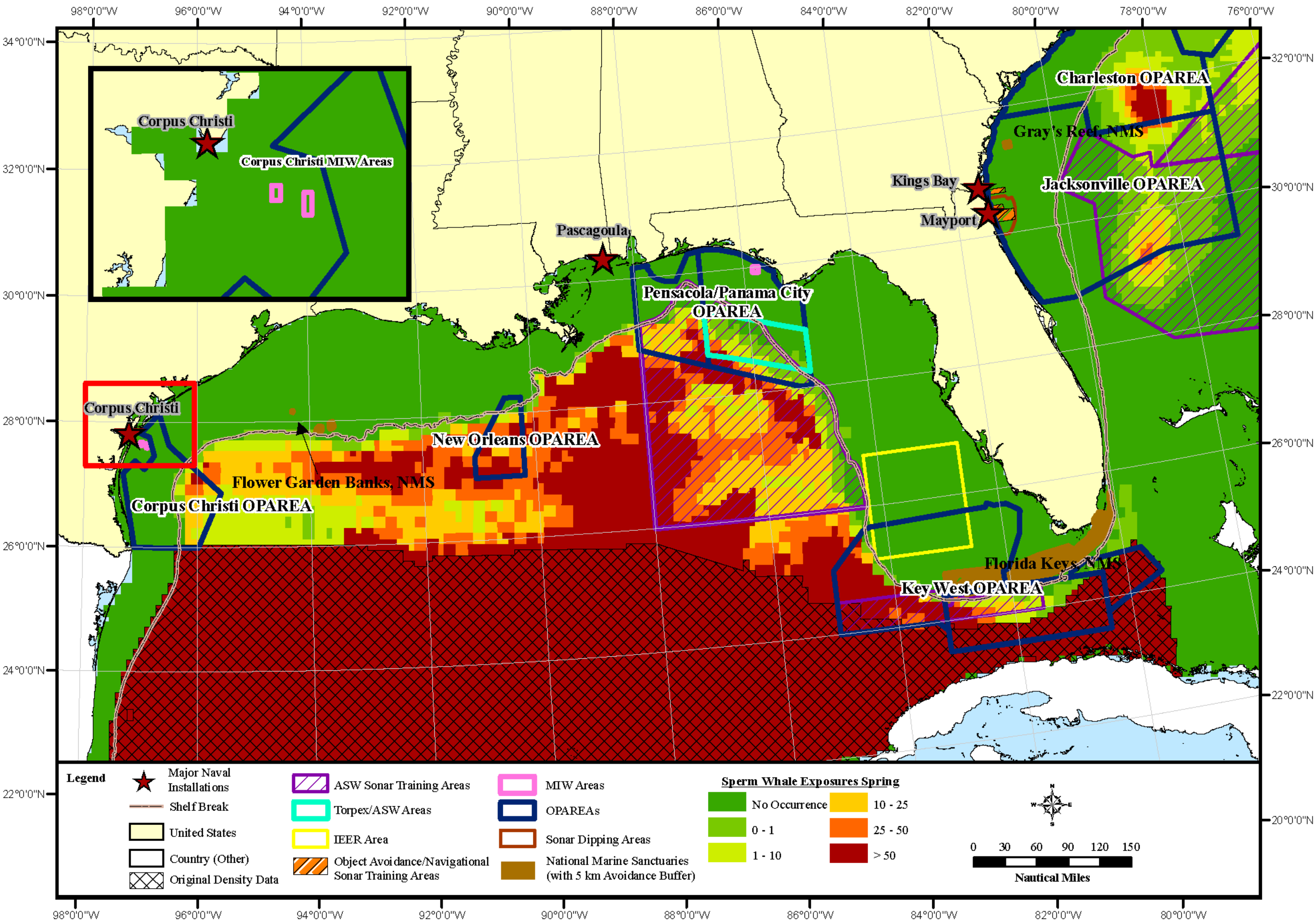

Figure D-22. Alternative 1, GOMEX Sperm Whale-Spring

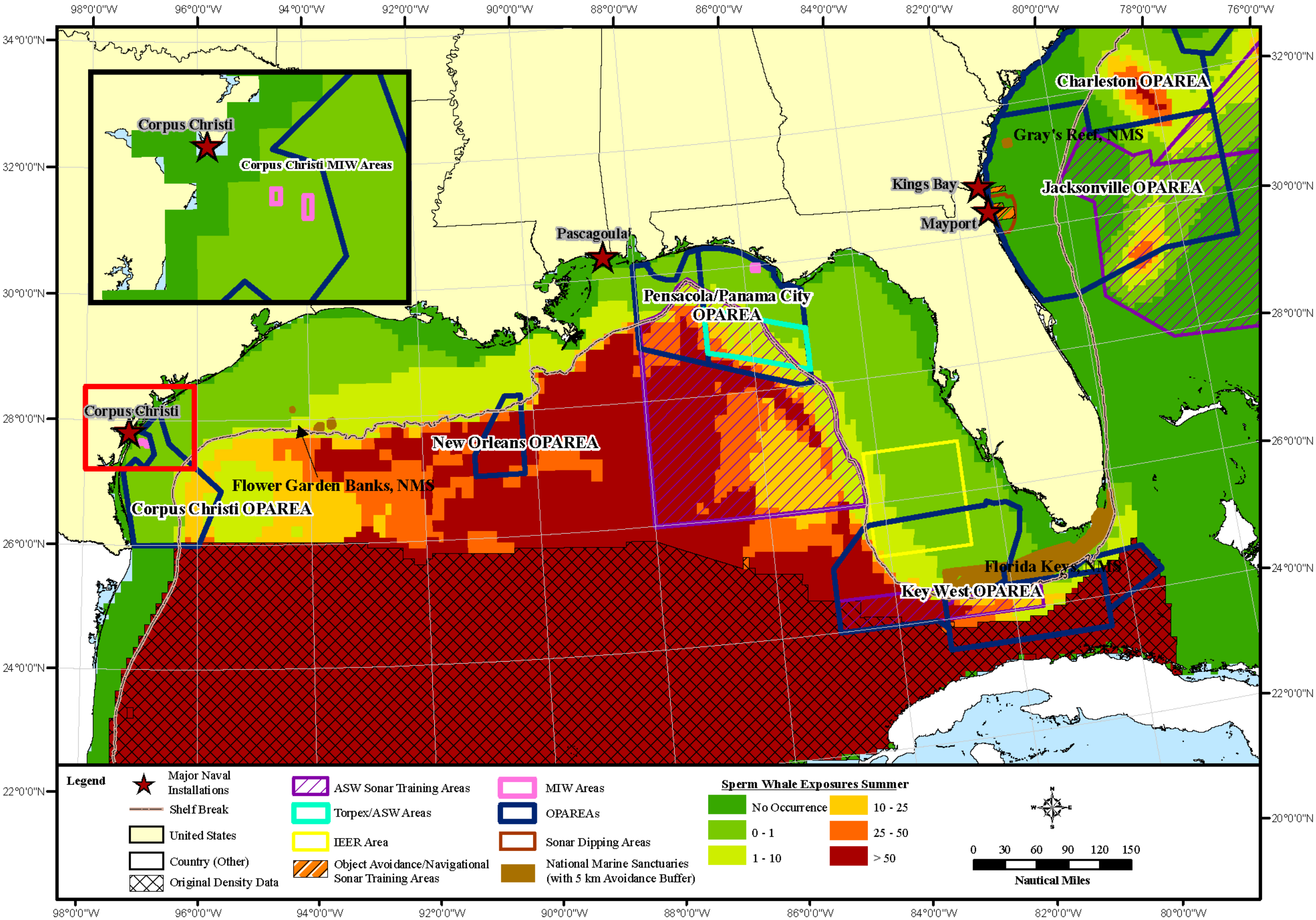

Figure D-23. Alternative 1, GOMEX Sperm Whale-Summer

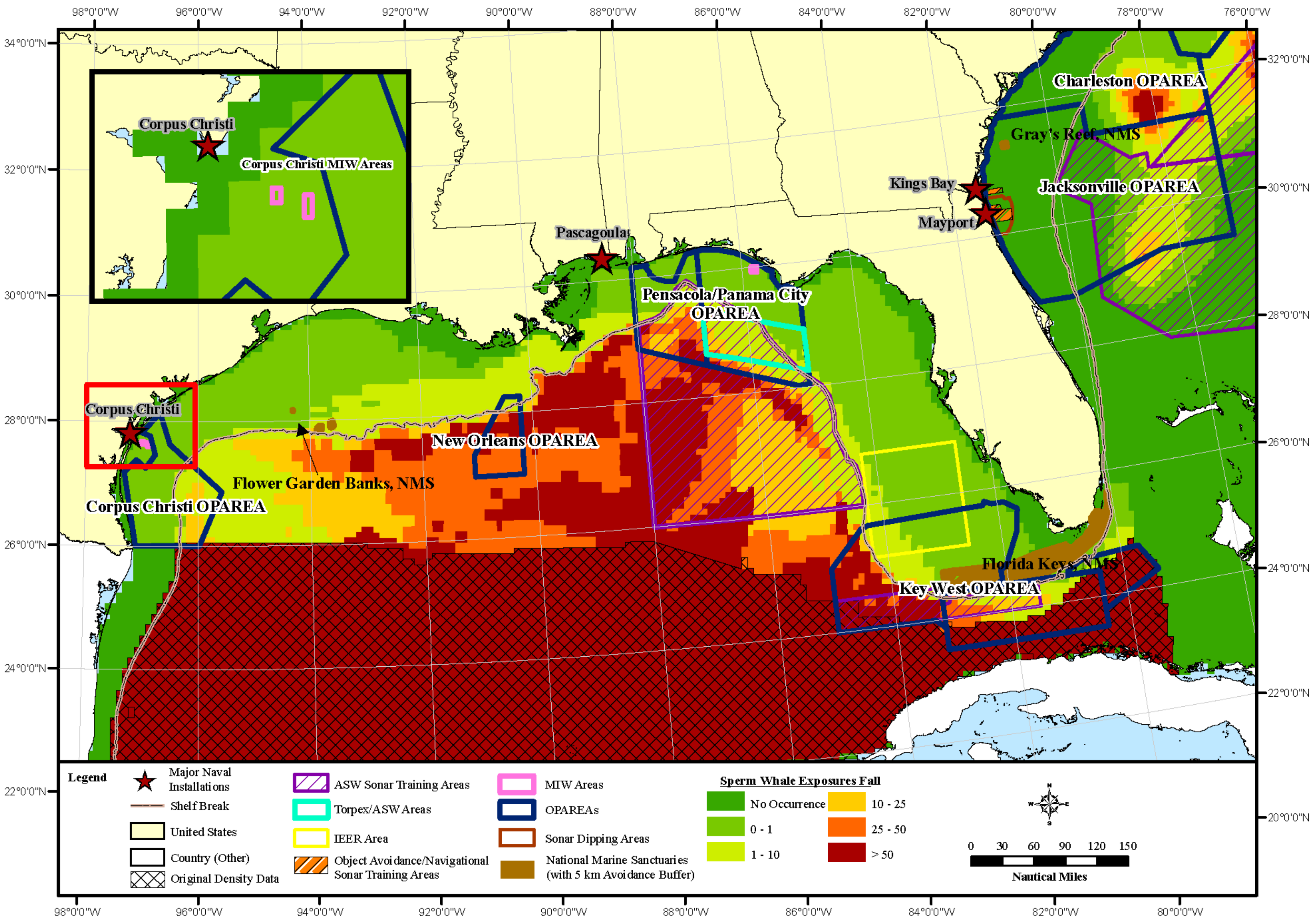

Figure D-24. Alternative 1, GOMEX Sperm Whale-Fall

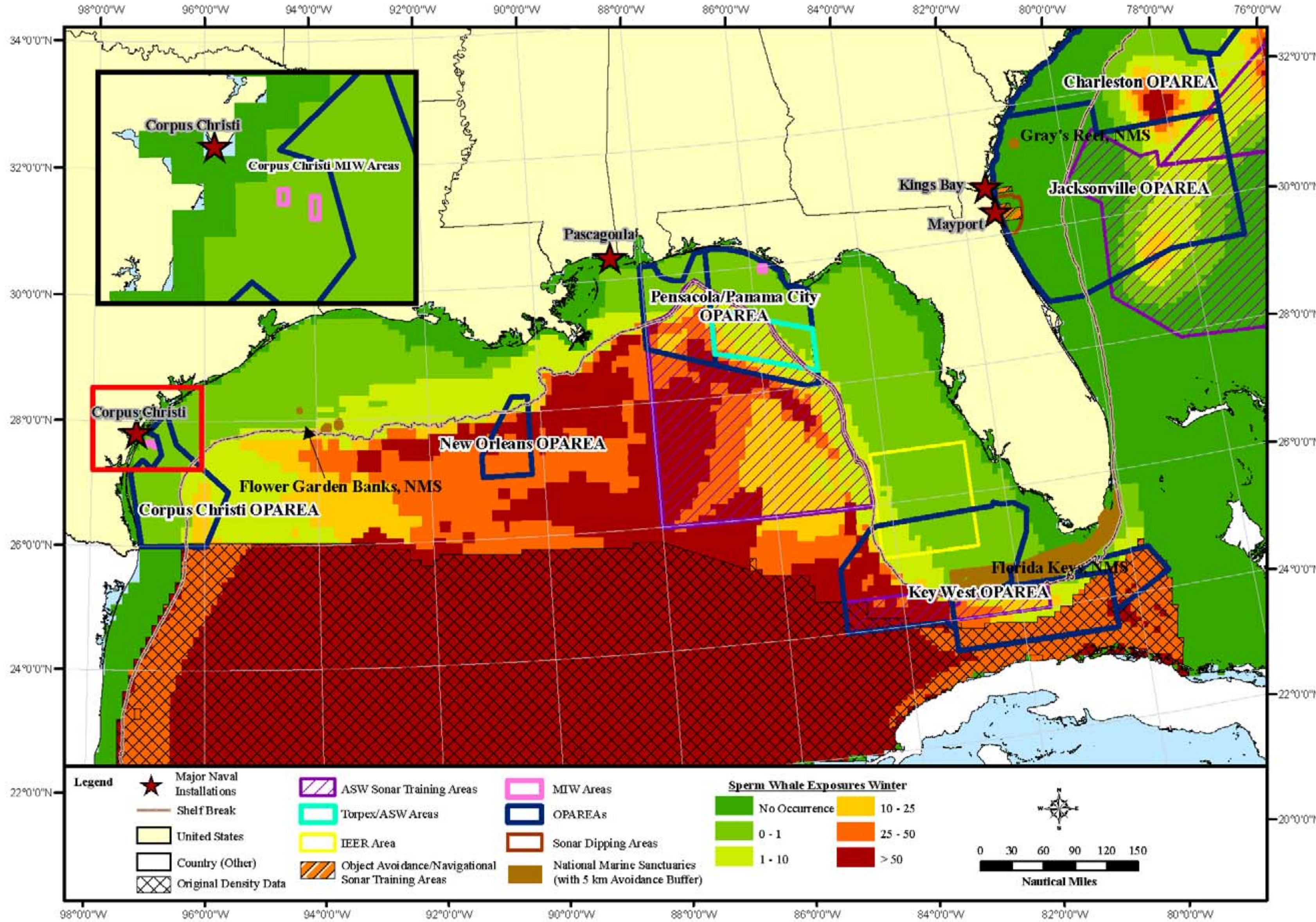

Figure D-25. Alternative 1, GOMEX Sperm Whale-Winter

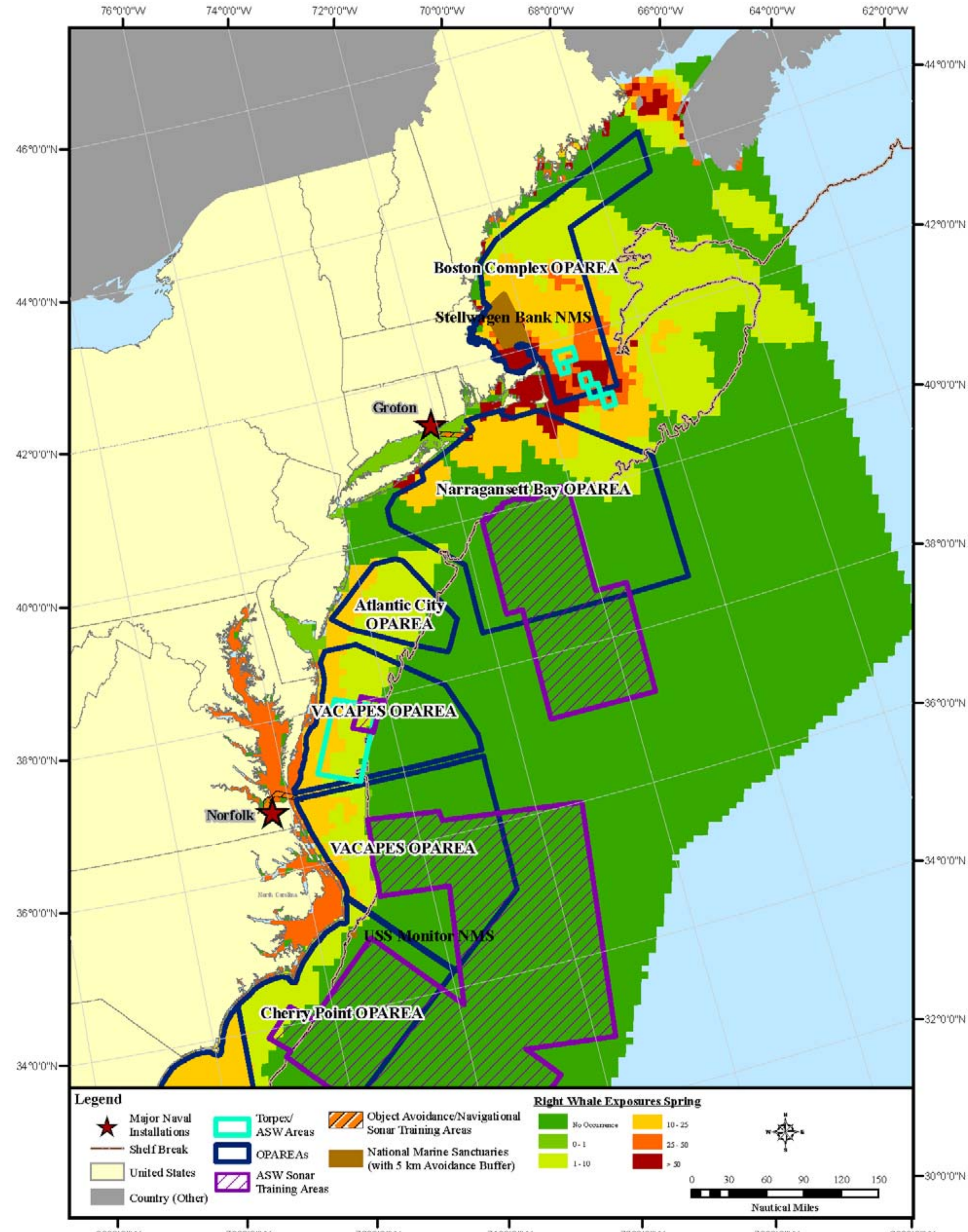

Figure D-26. Alternative 1, NE Right Whale-Spring

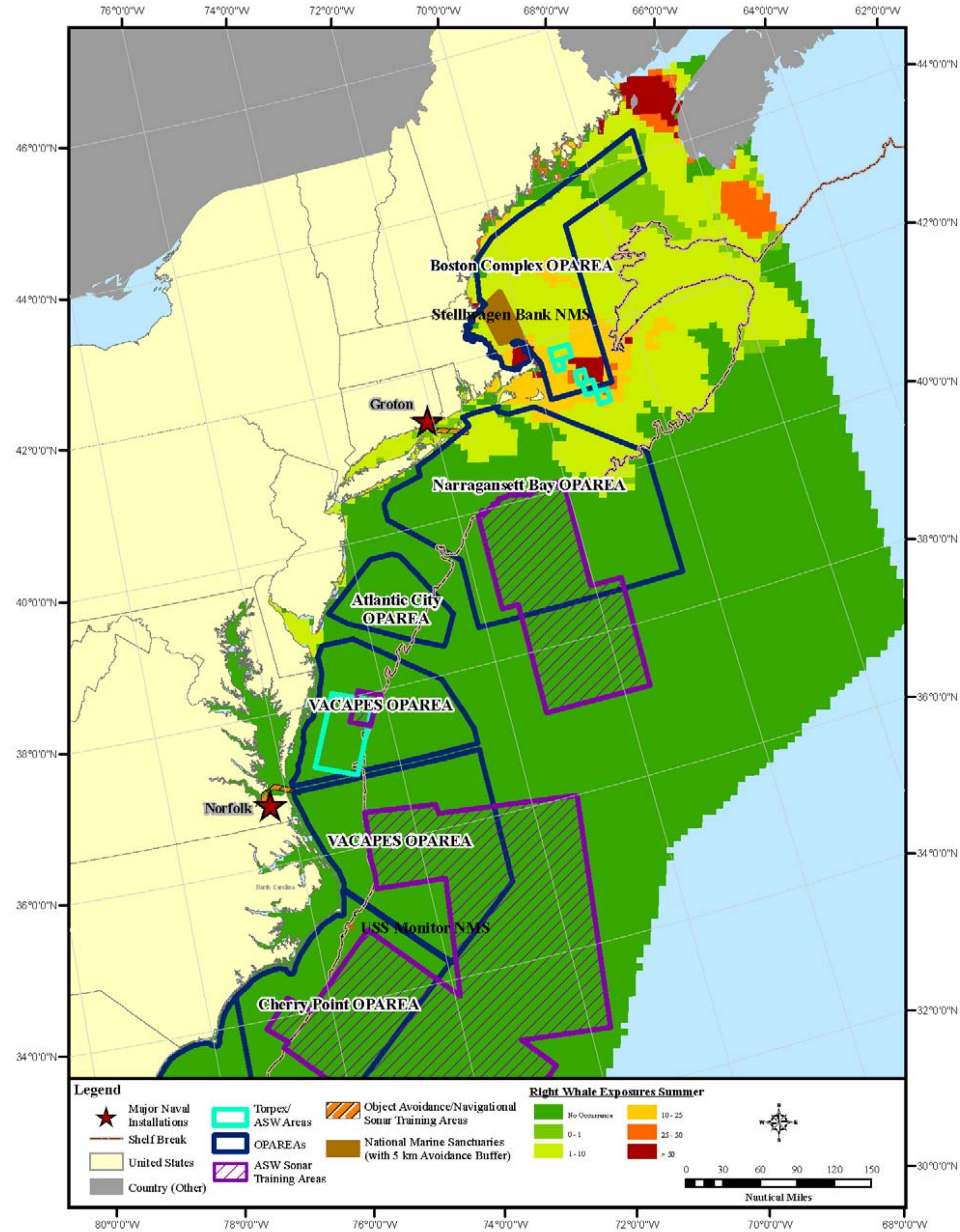

Figure D-27. Alternative 1, NE Right Whale-Summer

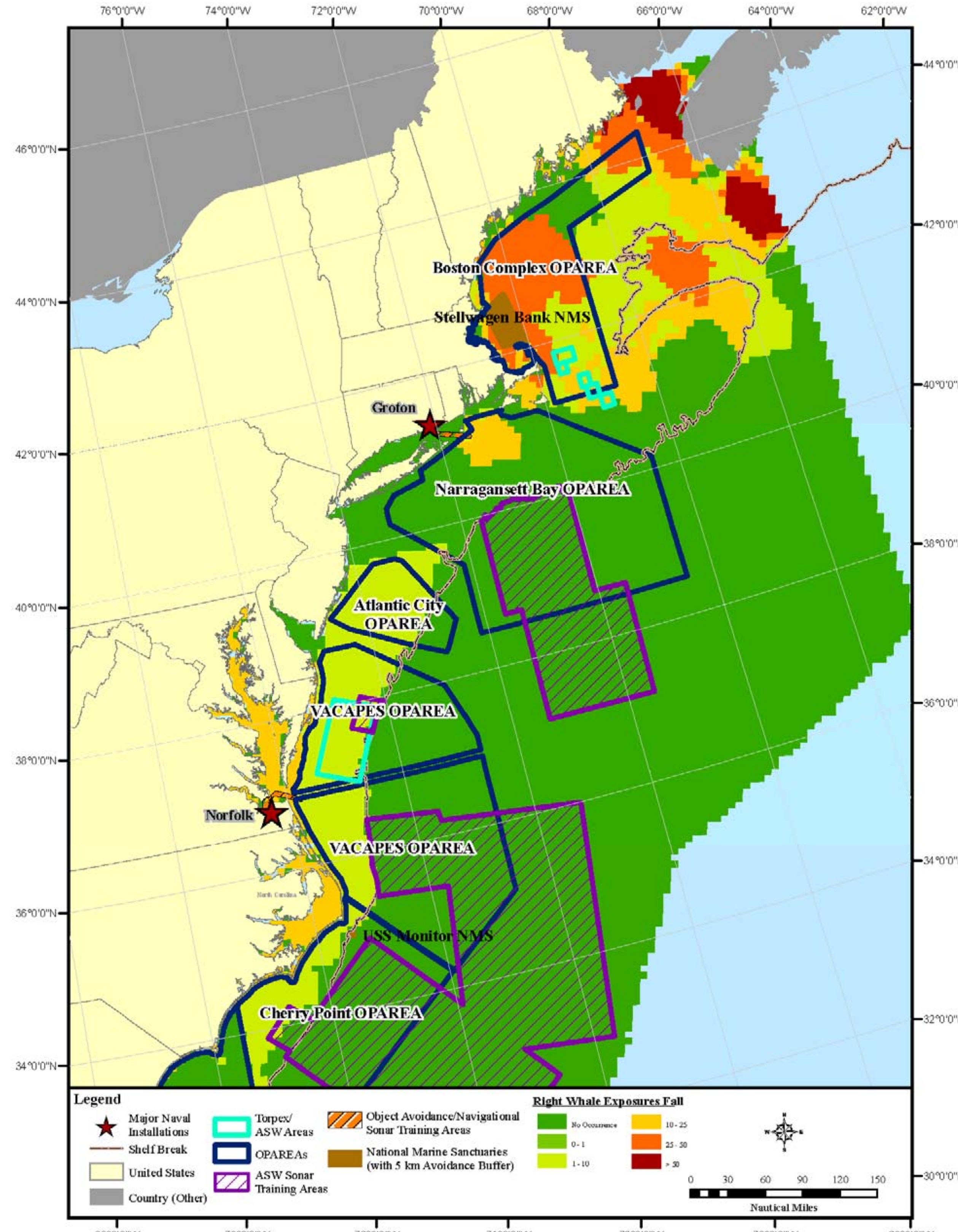

Figure D-28. Alternative 1, NE Right Whale-Fall

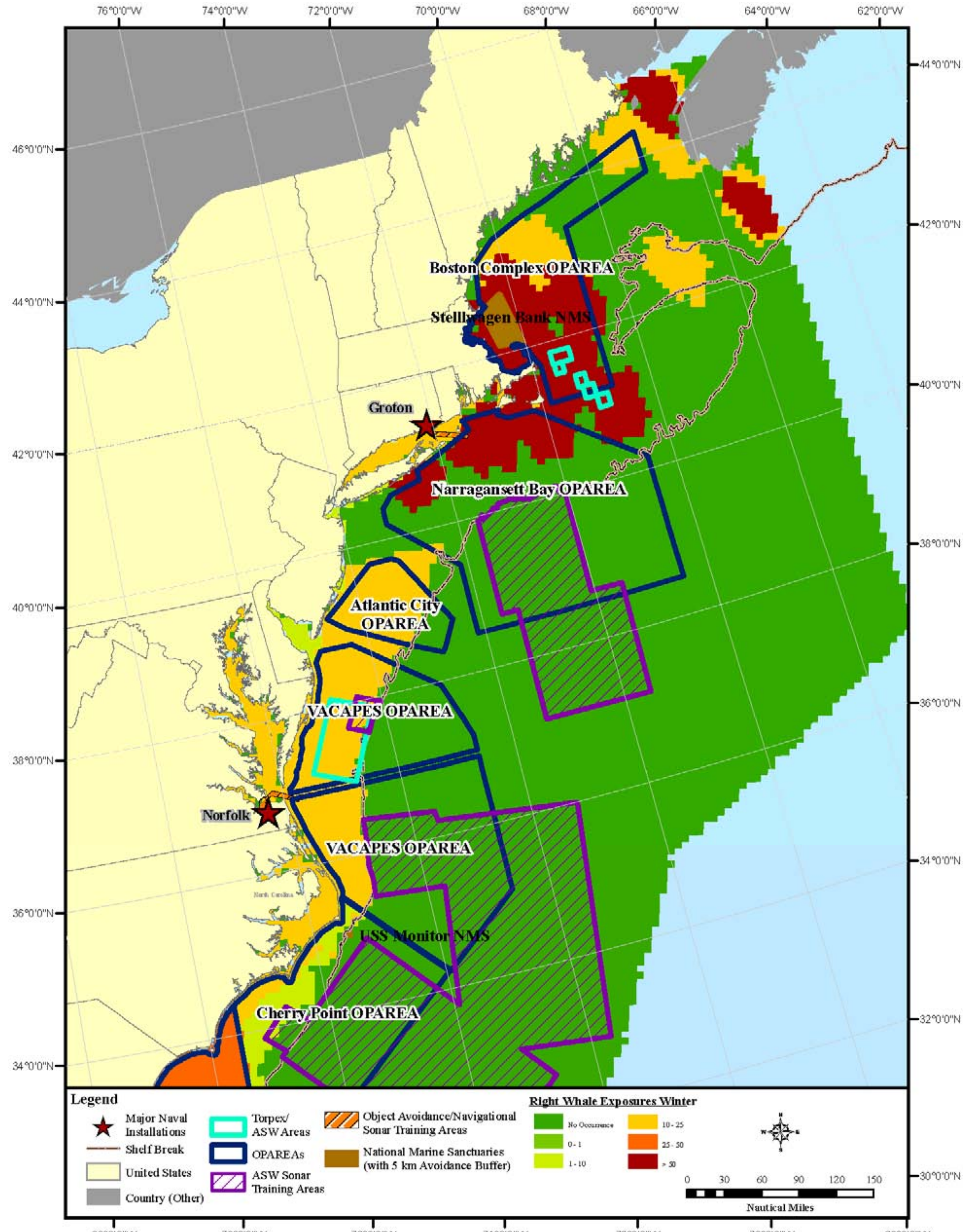

Figure D-29. Alternative 1, NE Right Whale-Winter

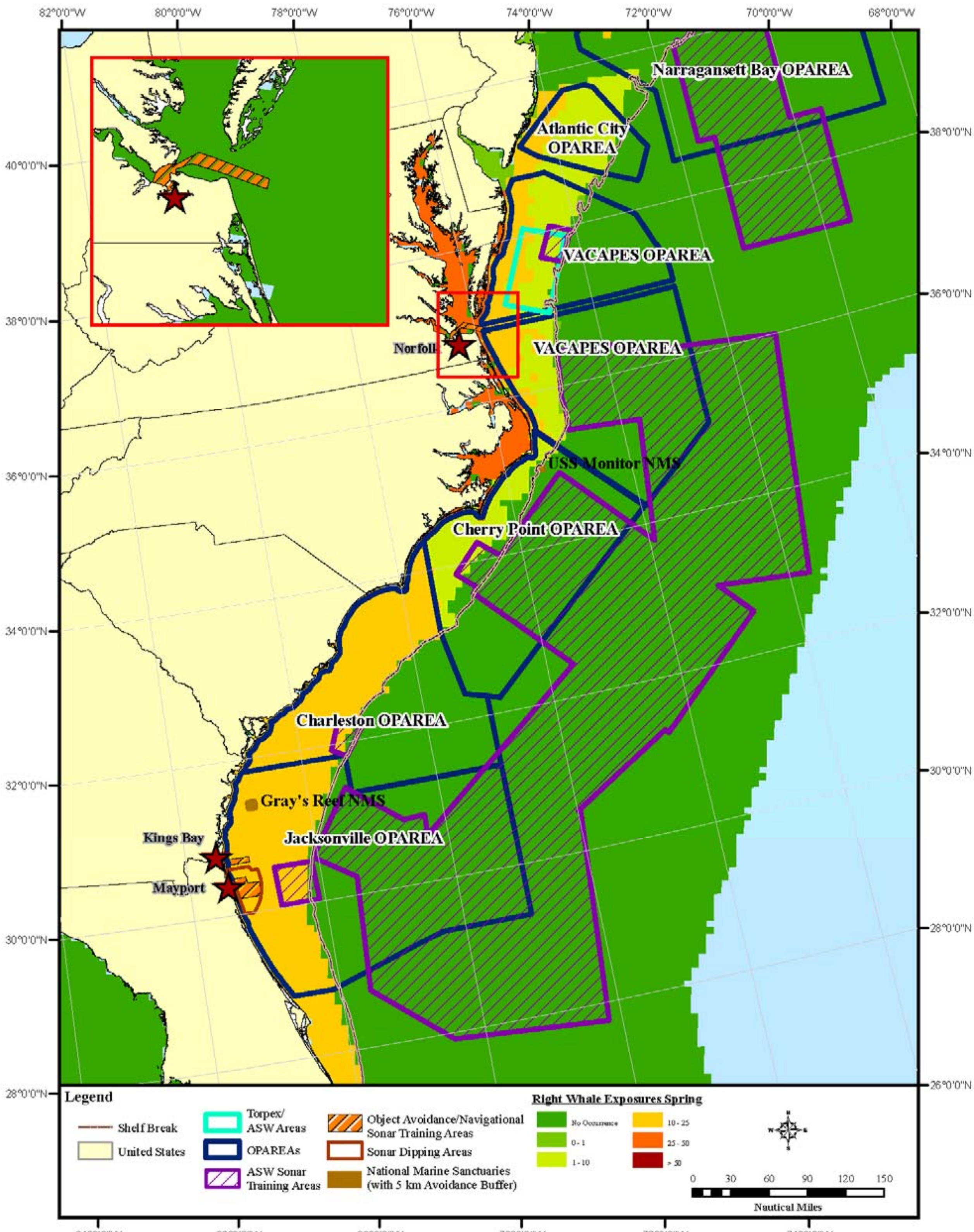

Figure D-30. Alternative 1, SE Right Whale-Spring

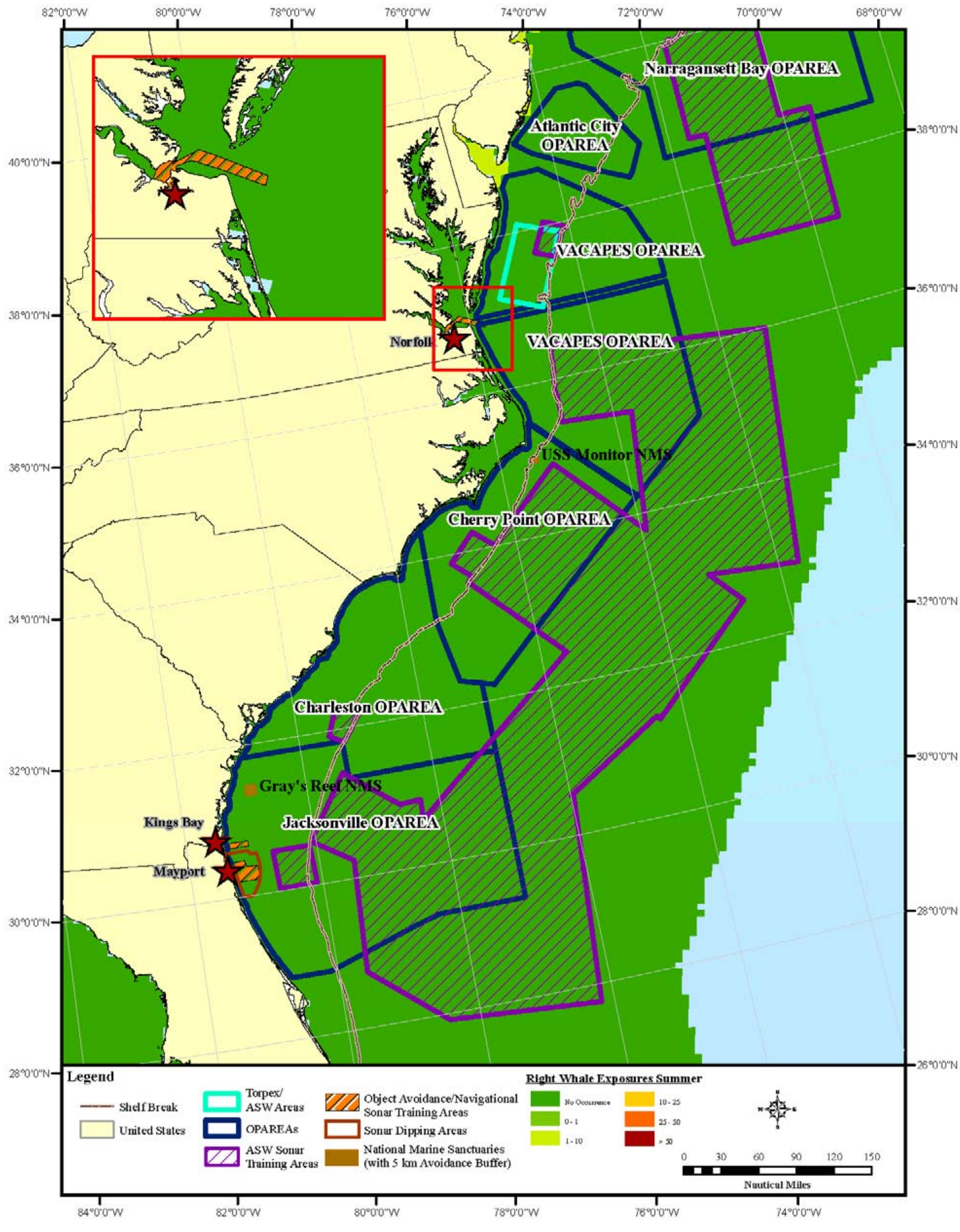

Figure D-31. Alternative 1, SE Right Whale-Summer

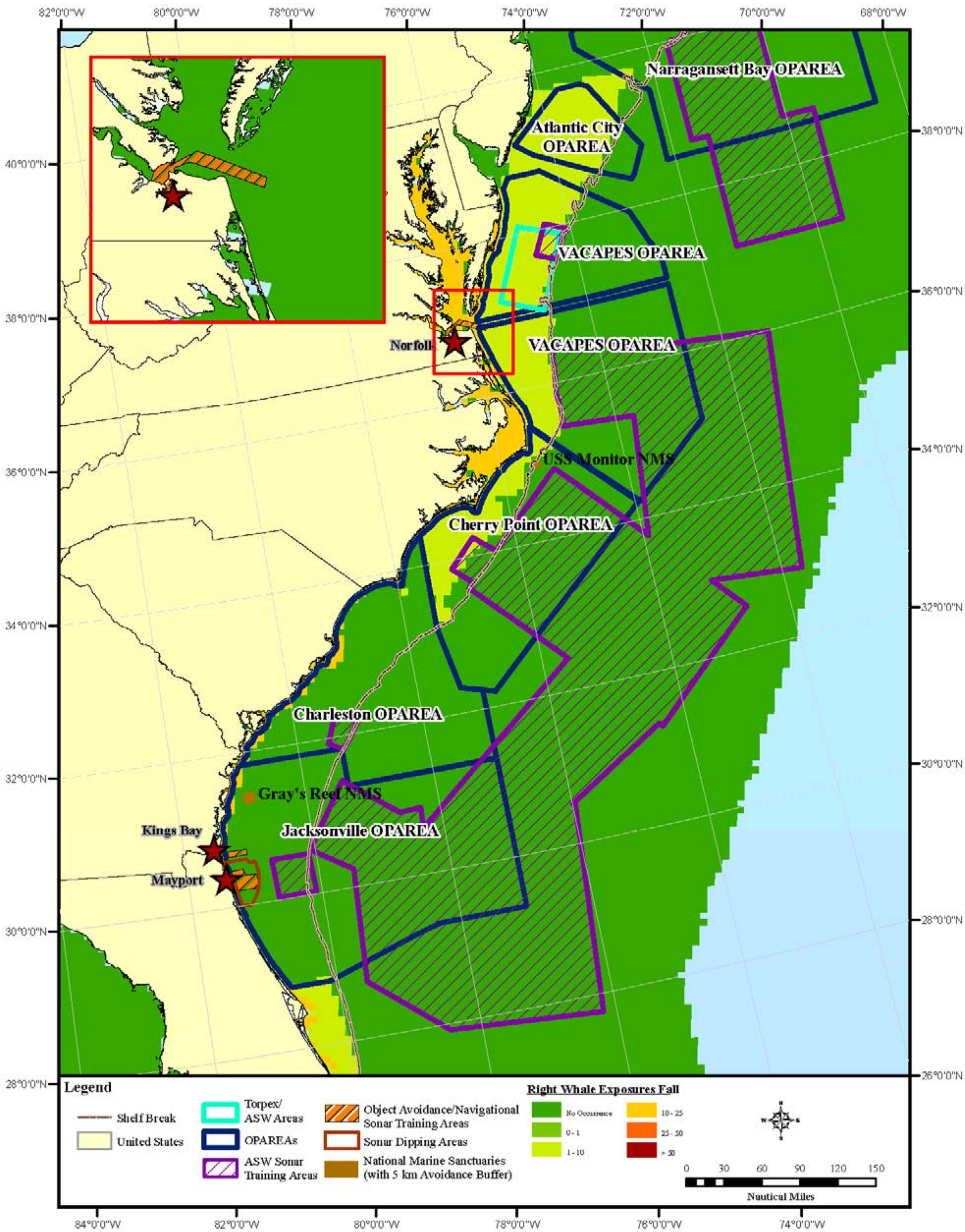

Figure D-32. Alternative 1, SE Right Whale-Fall

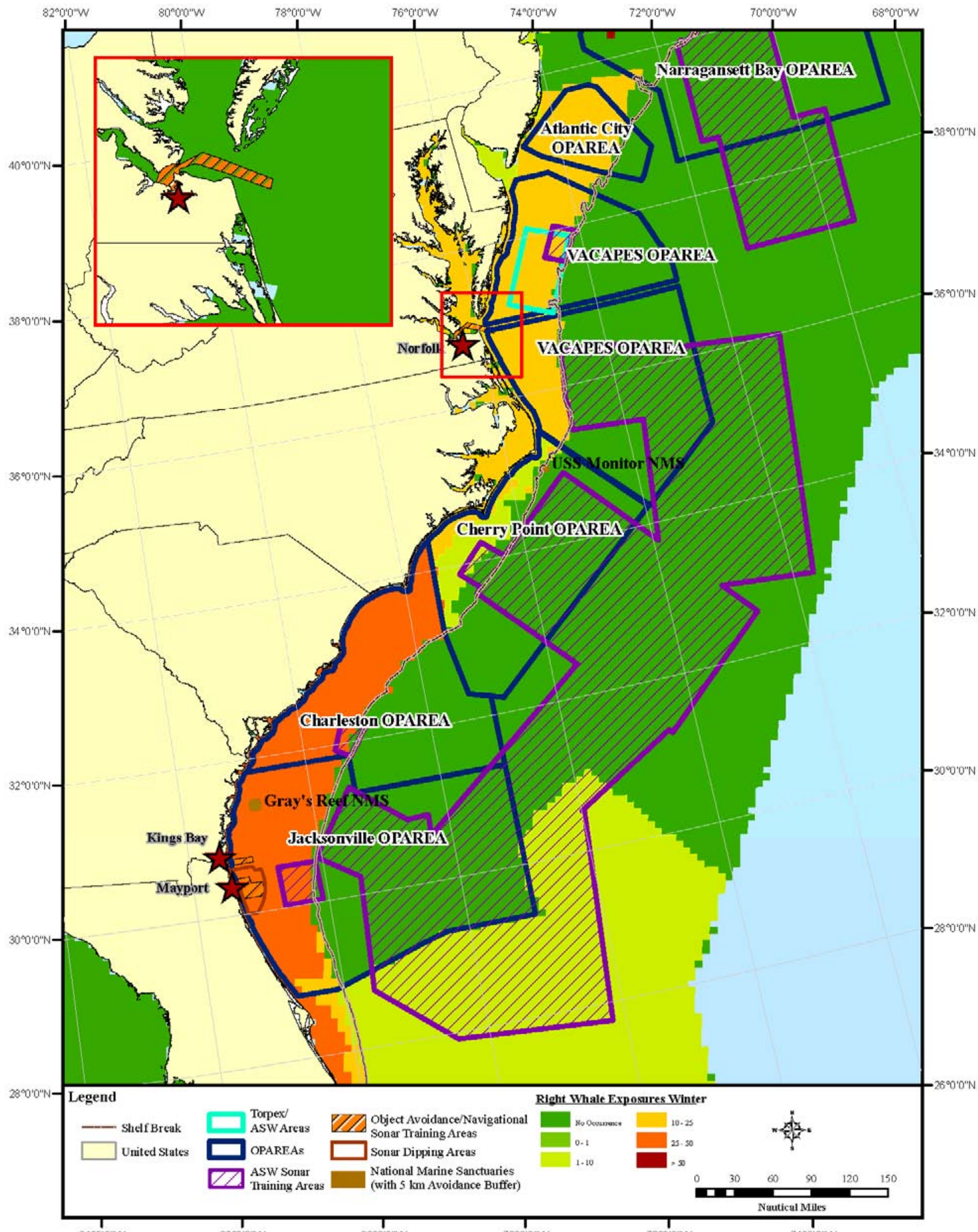

Figure D-33. Alternative 1, SE Right Whale-Winter

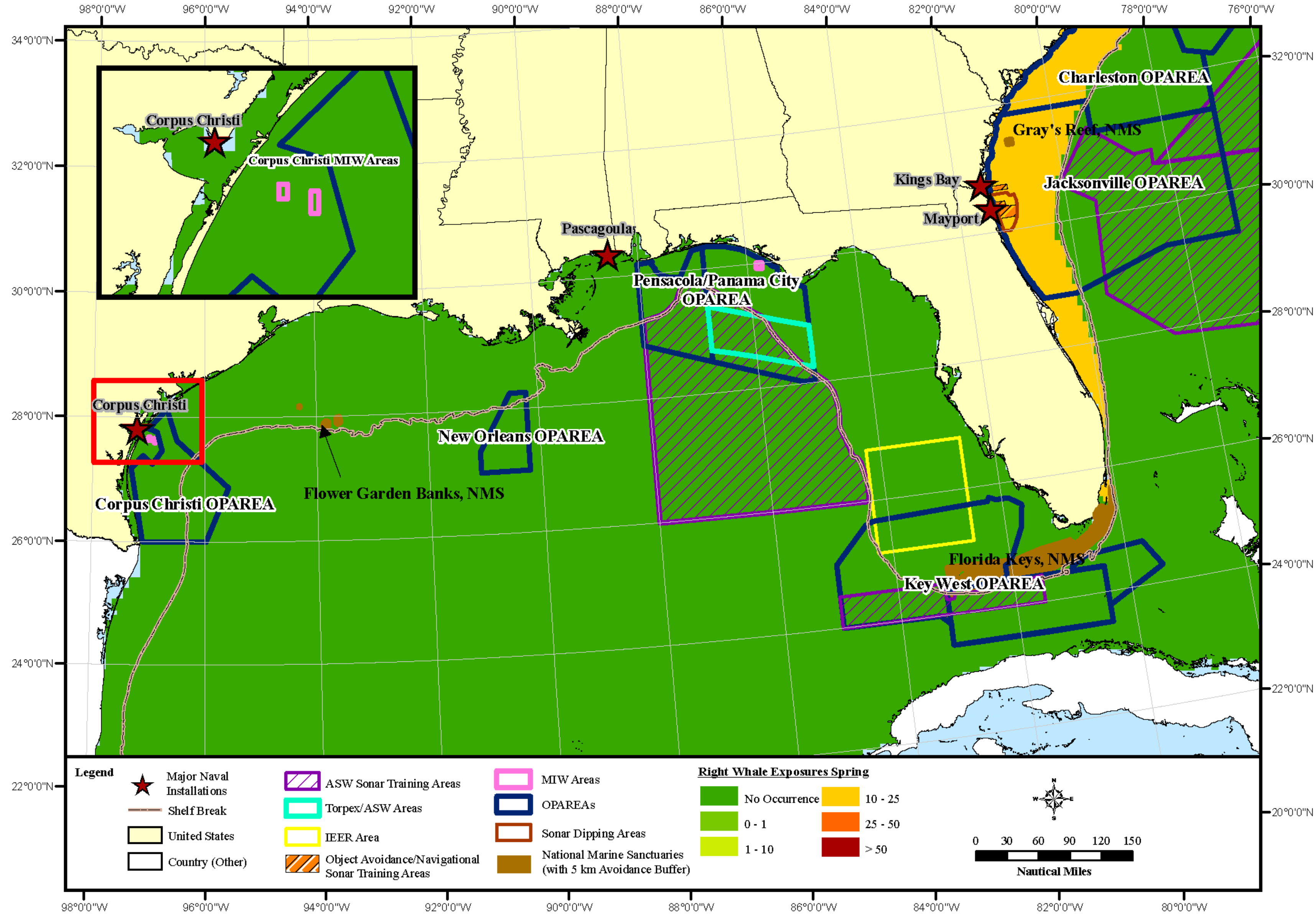

Figure D-34. Alternative 1, GOMEX Right Whale-Spring

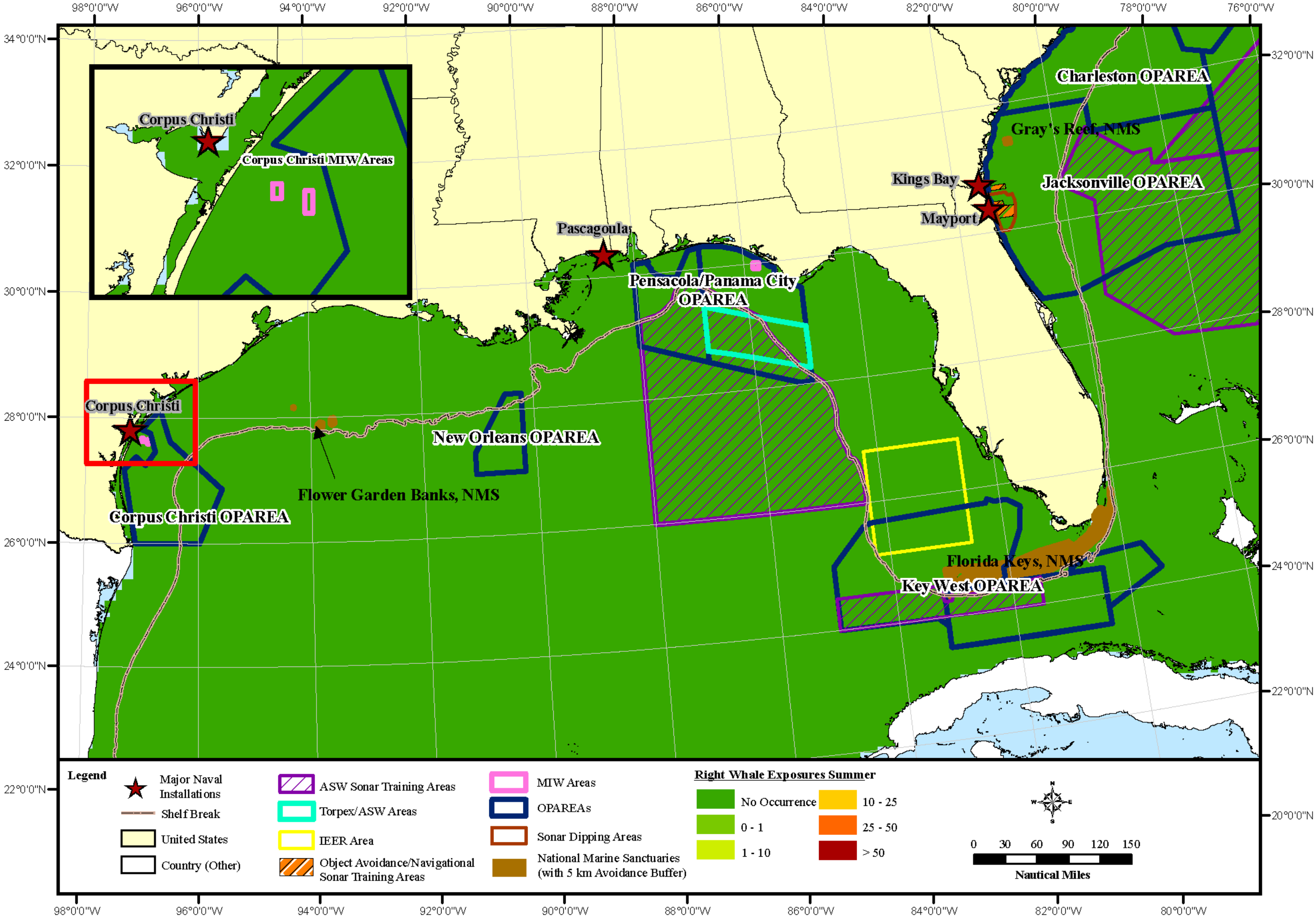

Figure D-35. Alternative 1, GOMEX Right Whale-Summer

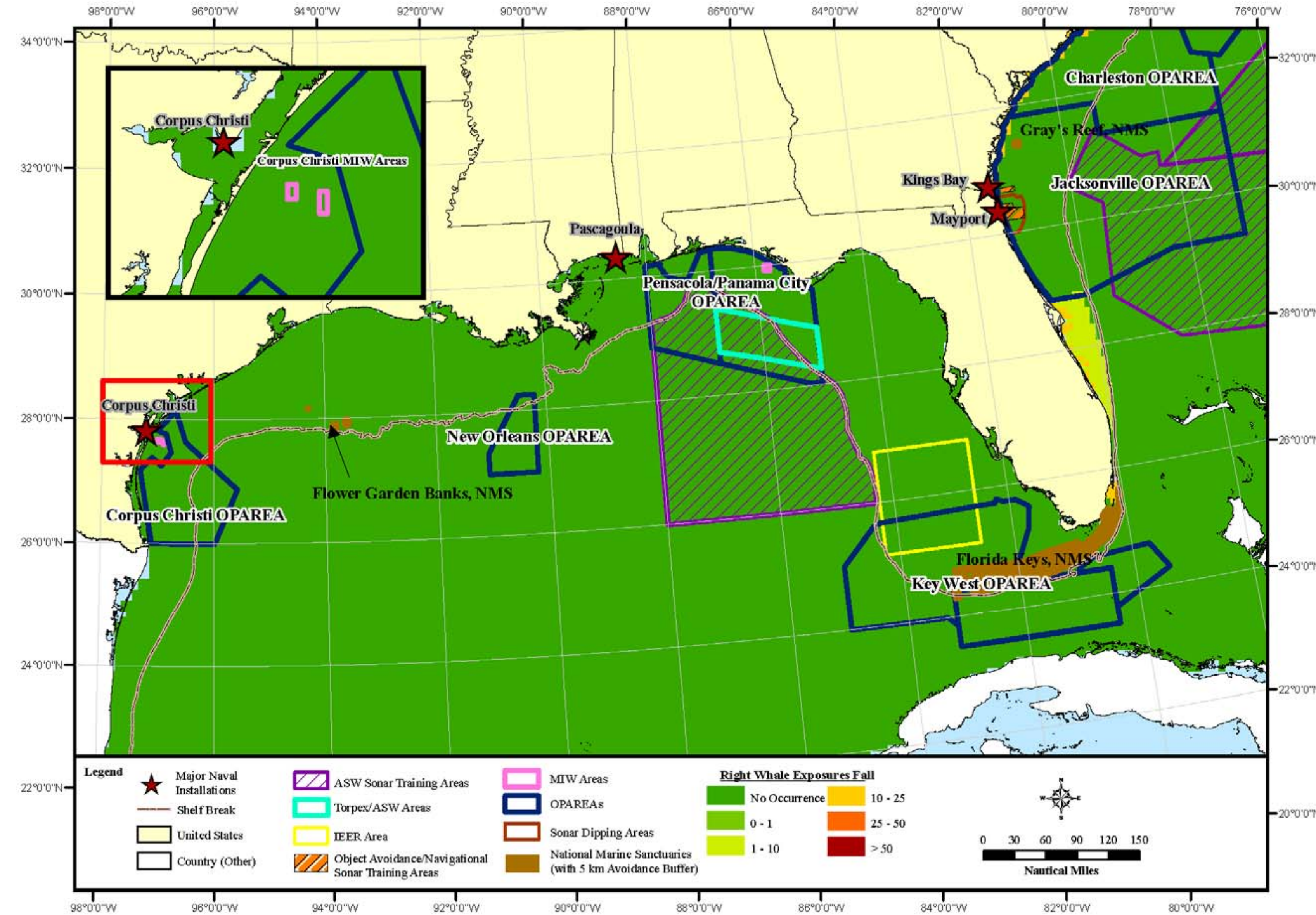

Figure D-36. Alternative 1, GOMEX Right Whale-Fall

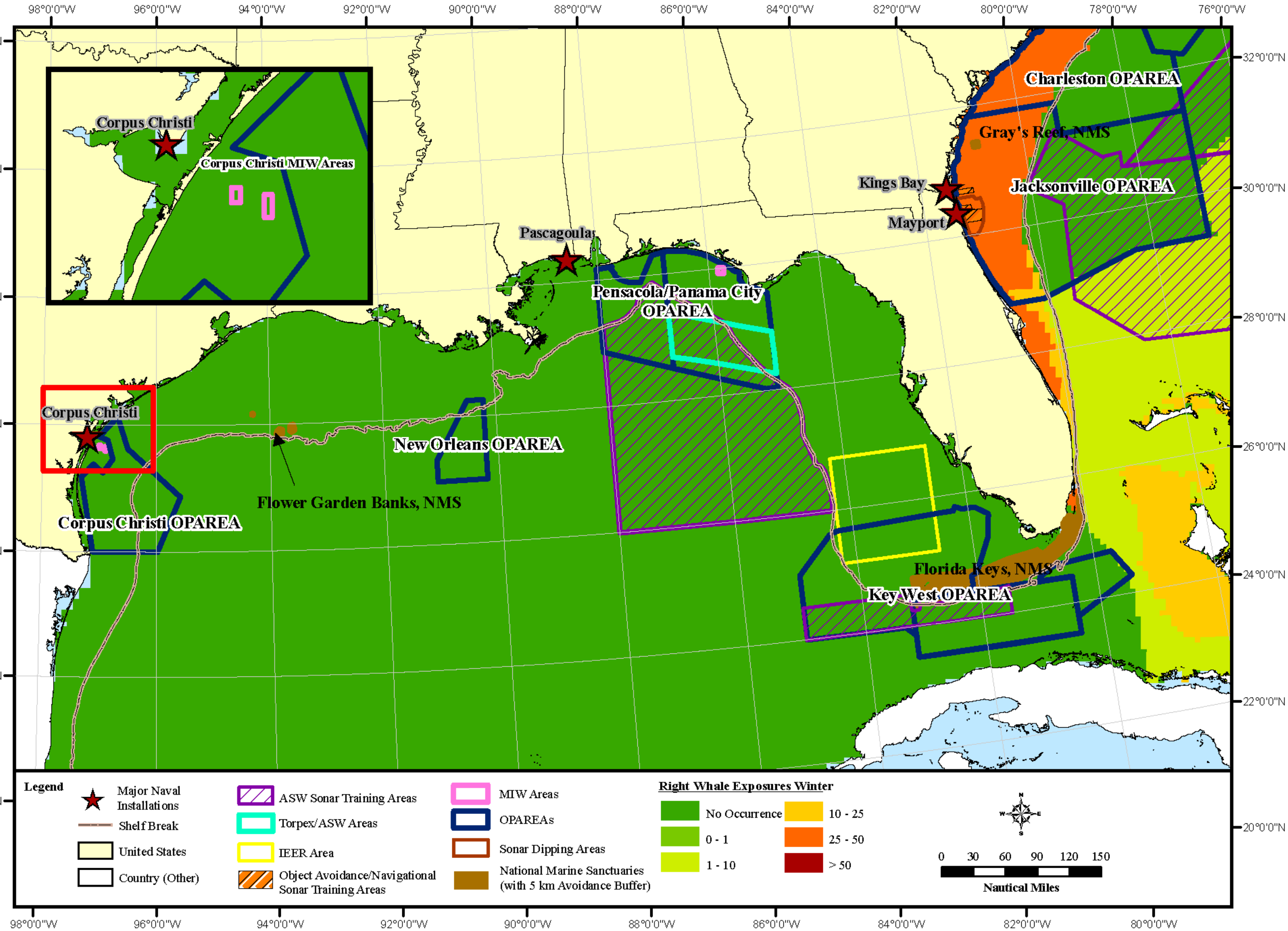

Figure D-37. Alternative 1, GOMEX Right Whale-Winter

D.3 ALTERNATIVE 2: DESIGNATED SEASONAL ACTIVE SONAR AREAS

In the development of Alternative 2, the Geographic Information System (GIS) layers containing the proposed training areas designated under Alternative 1 were uploaded into a map for easy viewing. Then the gridded layers containing the estimated exposures for beaked, northern right, and sperm whales were uploaded under the Alternative 1 designated training areas. Each individual estimated exposure grid for each season per species was viewed under the proposed Alternative 1 designated training areas as a means of identifying any seasonal areas within or directly adjacent to Alternative 1 designated training areas that showed a seasonal spike or decrease in densities or exposures for any of the three whale species.

If an exposure or density spike was identified during any of the four seasons for any of the three species within or adjacent to the Alternative 1 designated training areas, the suspect area was marked for removal from the Alternative 1 training area for that season. Likewise, if the comparison identified a specific area adjacent to Alternative 1 training areas showing a reduction in the exposure potential for a specific season for all three whale species, it was marked as a seasonal area to be added to the applicable designated Alternative 1 training area.

Based on the results of the surrogate environmental analysis, it was determined that there are no seasonal changes for the GOMEX and Northeast OPAREAs. Seasonal changes do exist for the VACAPES and JAX/CHASN OPAREAs. To account for these seasonal changes, modifications were made to the following active sonar areas:

- Section of ASW training box removed in VACAPES OPAREA during winter.
- Summer entry boxes to the SEASWITI area moved in JAX OPAREA.
- Summer and Fall SEASWITI corridor added to JAX/CHASN and CHPT OPAREAS.

Thus, the following sections only address the specific seasonal changes to the Alternative 1 designated training areas. These changes equate to the only differences between proposed Alternative 1 and Alternative 2 training areas.

D.3.1 Seasonal Changes Within the Jacksonville/Charleston and Cherry Point Operating Areas

The majority of the ASW surface ship Coordinated ULT areas designated under Alternative 1 remain geographically unchanged under Alternative 2 as shown in Figures D-38 through D-73. However, based on the results of the seasonal comparisons, the SEASWITI entry box shown in Figures D-41 through D-43, D-50 through D-52, D-60 through D-62, and D-68 through D-70 is shifted southward during the summer but remains geographically unchanged throughout the remaining seasons. In addition, a small triangular portion along the northeast boundary of the SEASWITI entry box is removed during the winter season.

The seasonal comparison also identified an area of low density and exposure potential for all three whale species that would provide a transit corridor between the OPAREAs, located along the shelf break between the JAX/CHASN and CHPT OPAREAs. Under Alternative 2, this area would be added to the overall ASW ULT areas during the summer and fall seasons, as shown in Figures D-50 through D-52 and D-60 through D-62, respectively.

D.3.2 Seasonal Changes Within the Virginia Capes Operating Area

The proposed ASW training areas designated within the VACAPES OPAREA remain unchanged for all seasons except winter. The comparison of the estimated exposure grids with the Alternative 1 designated training areas determined that the portion of the training areas bordering the shelf break contained high levels of potential beaked whale exposures during the winter season. As a result, the southern portion of the training area was removed during the winter season as shown in Figures D-66 through D-71.

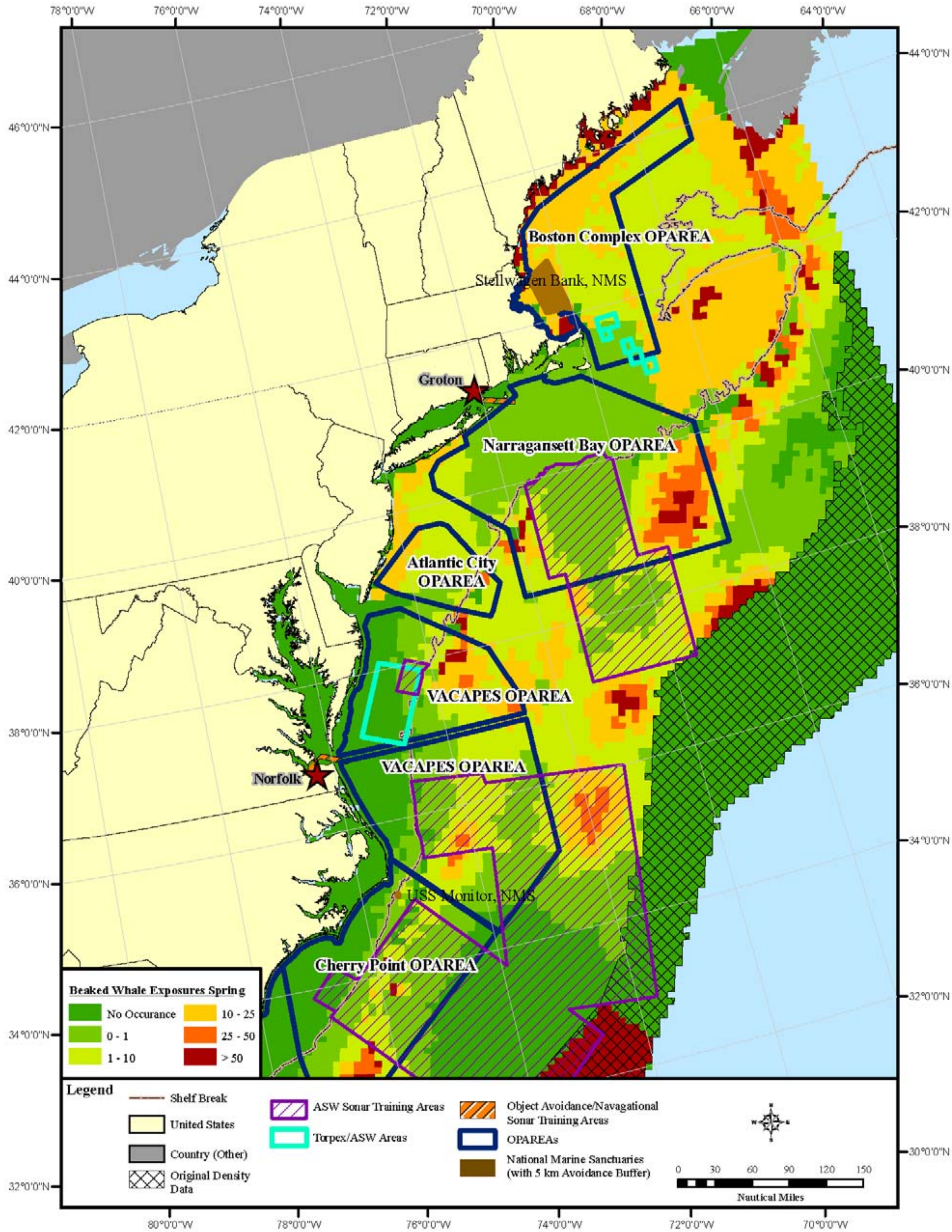

Figure D-38. Alternative 2, NE Beaked Whale-Spring

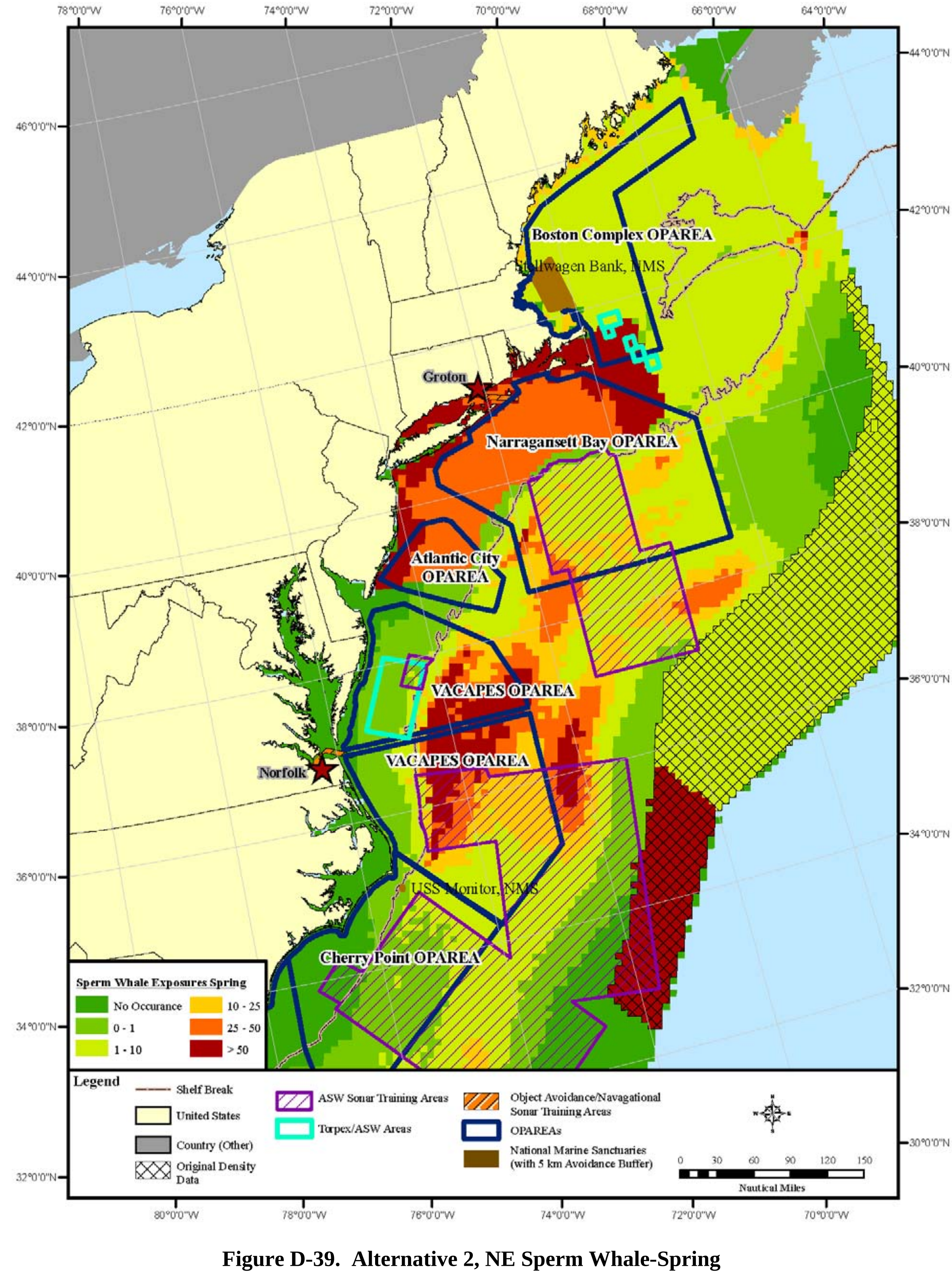

Figure D-39. Alternative 2, NE Sperm Whale-Spring

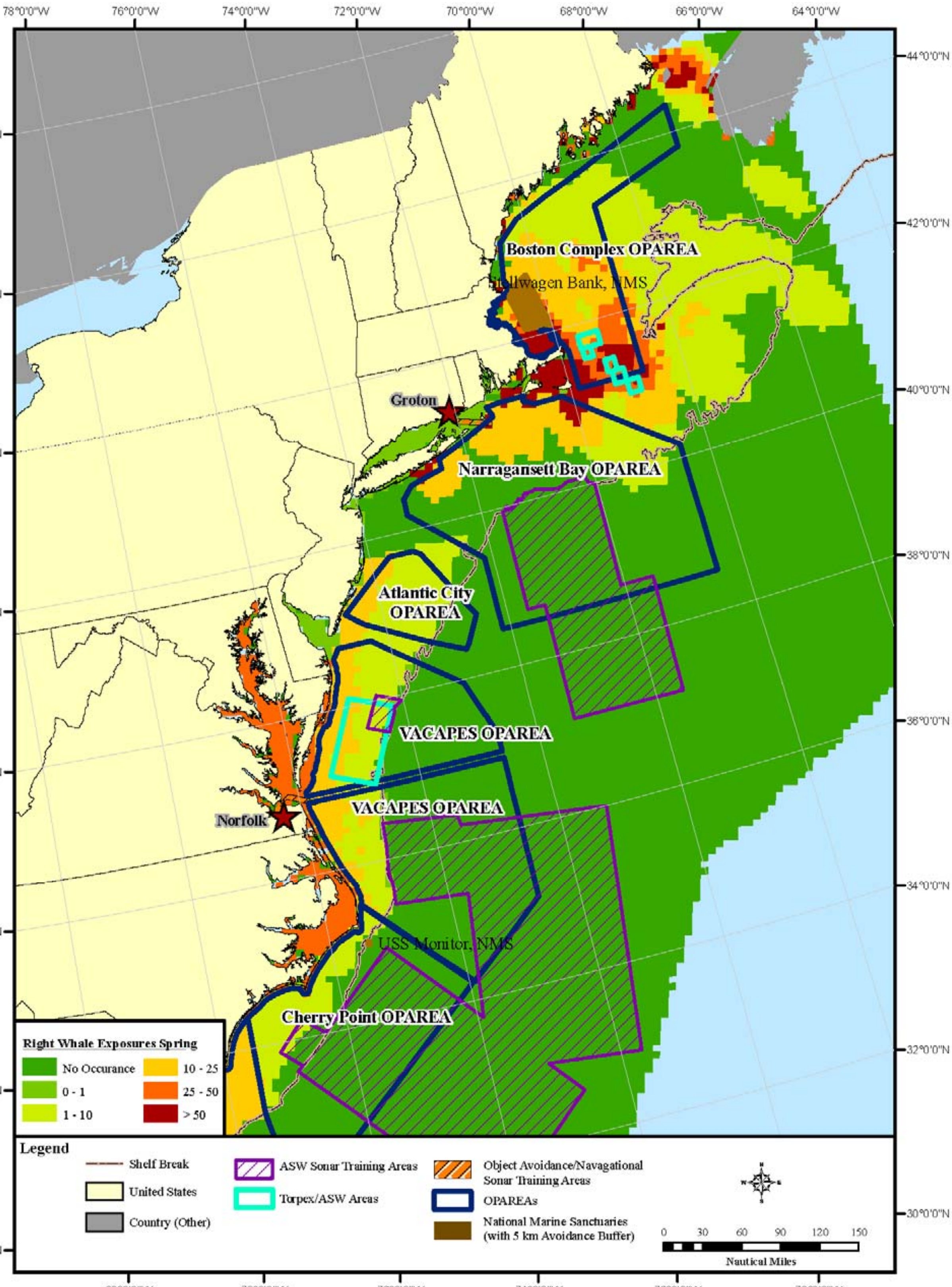

Figure D-40. Alternative 2, NE Right Whale-Spring

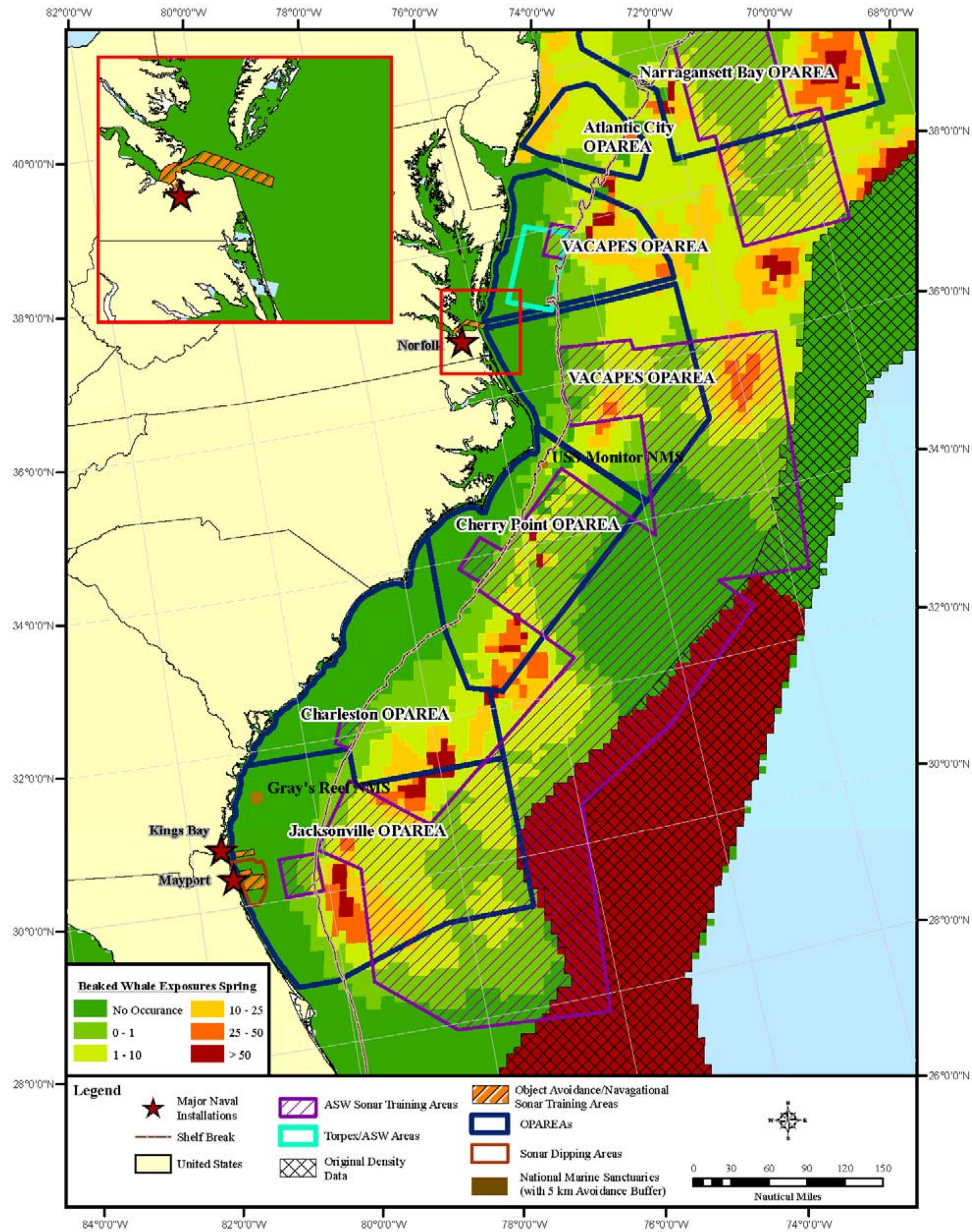

Figure D-41. Alternative 2, SE Beaked Whale-Spring

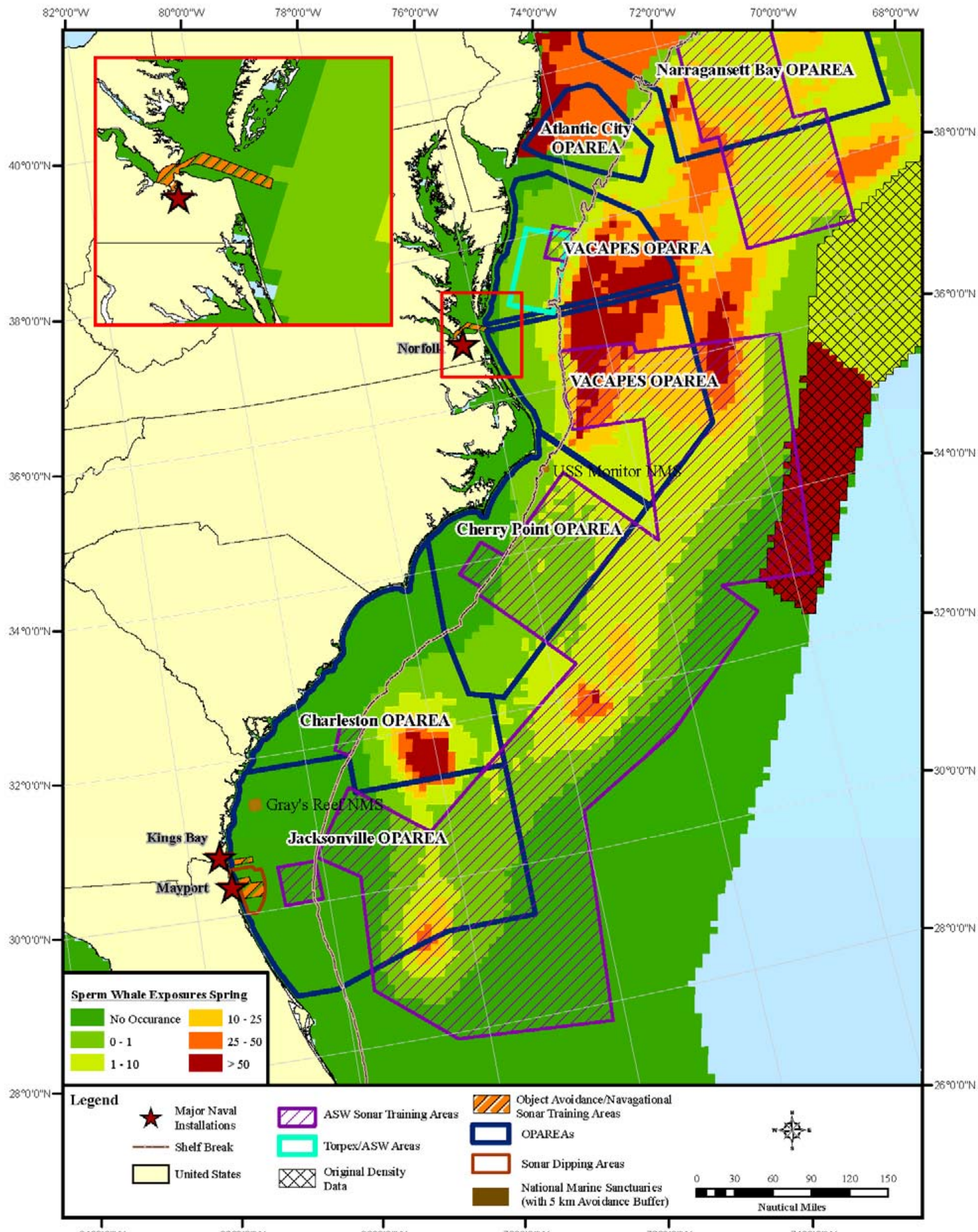

Figure D-42. Alternative 2, SE Sperm Whale-Spring

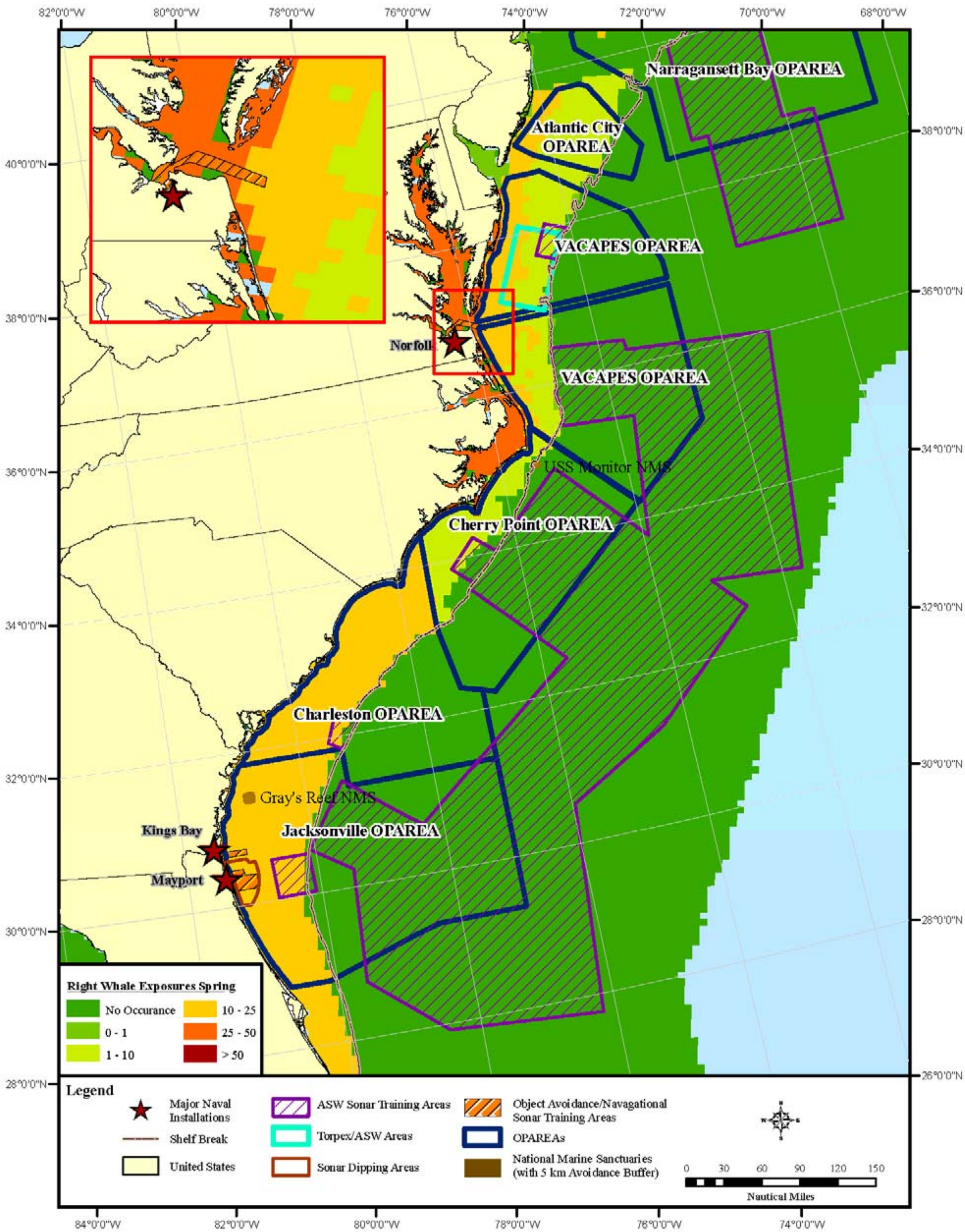

Figure D-43. Alternative 2, SE Right Whale-Spring

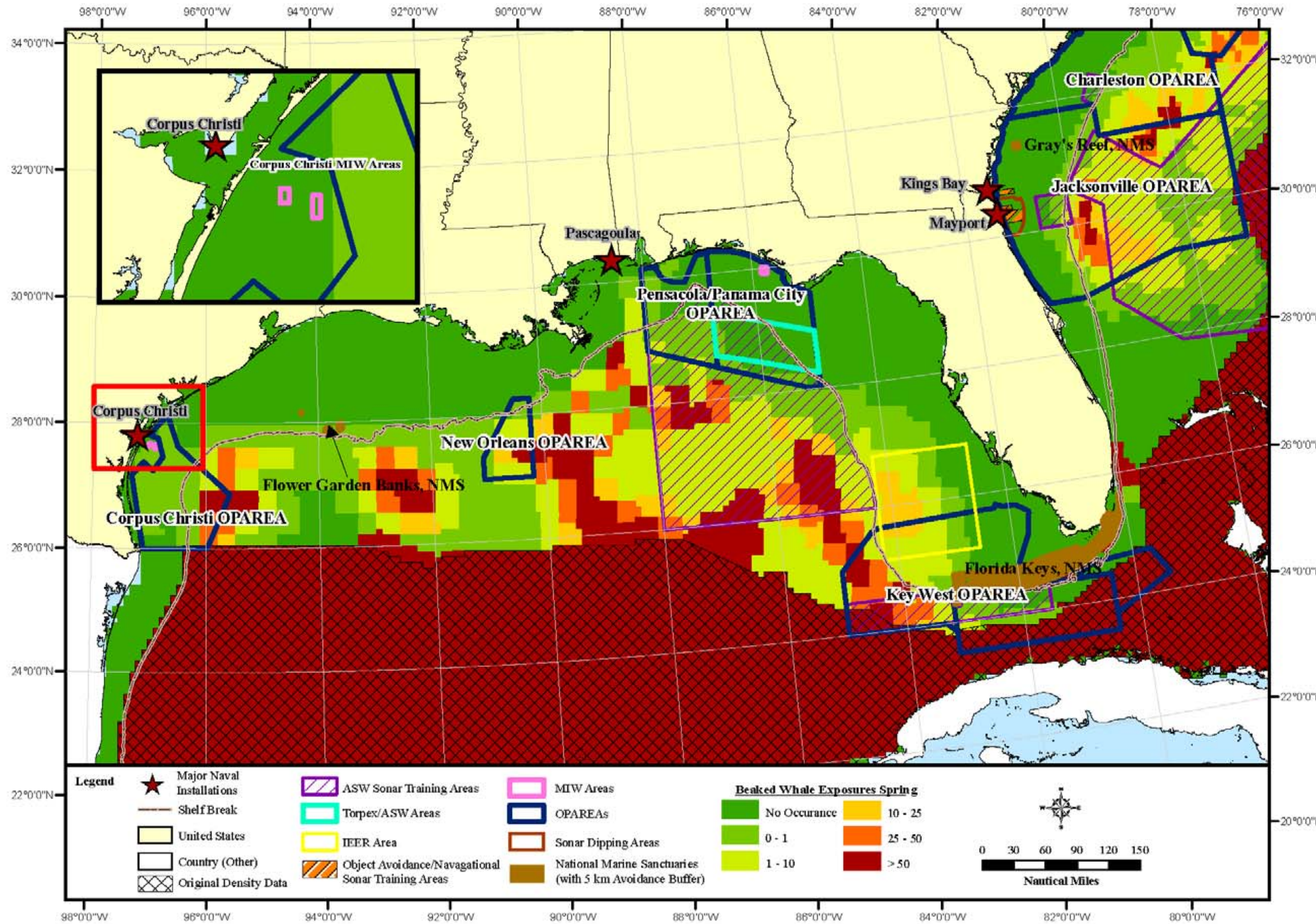

Figure D-44. Alternative 2, GOMEX Beaked Whale-Spring

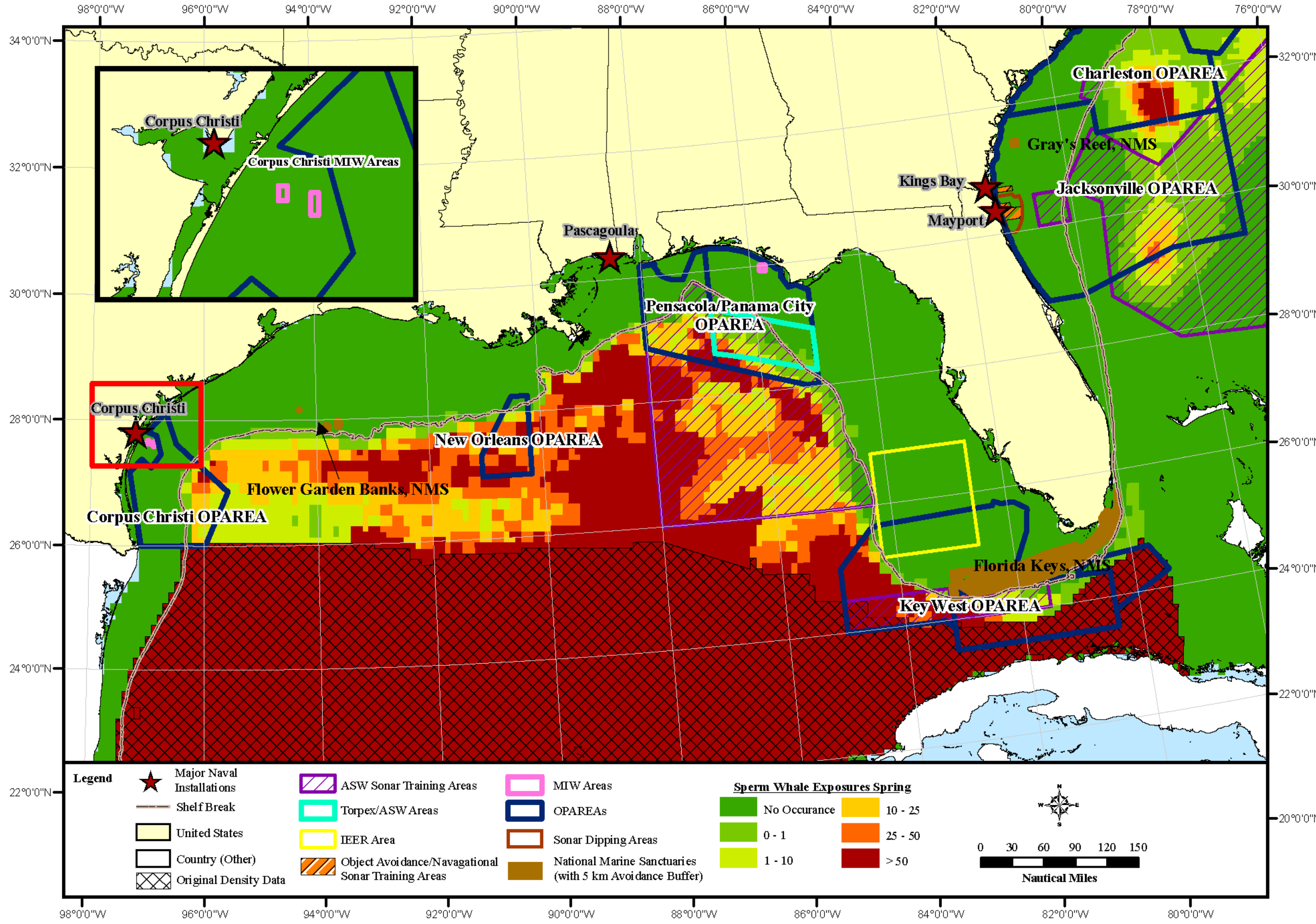

Figure D-45. Alternative 2, GOMEX Sperm Whale-Spring

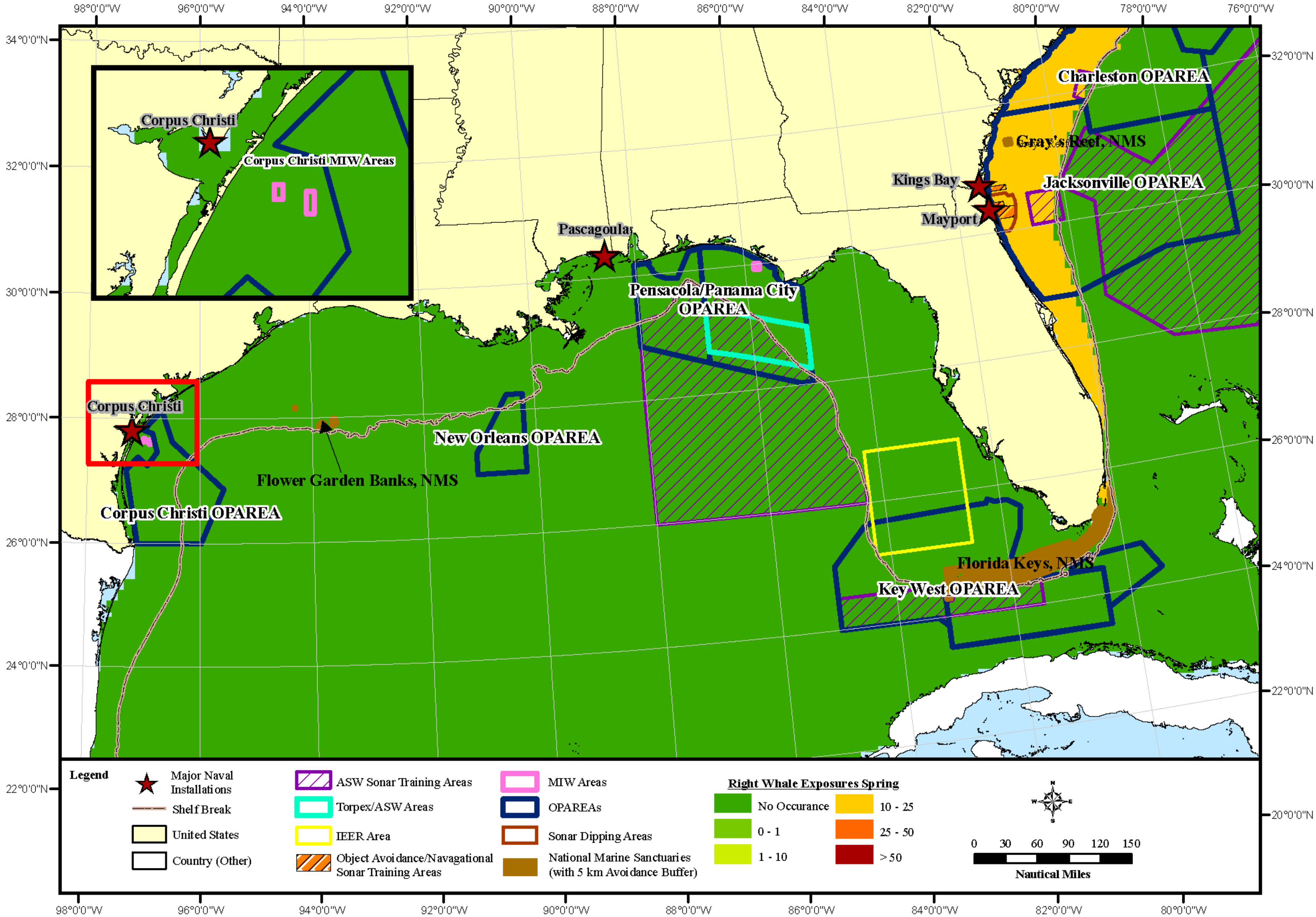

Figure D-46. Alternative 2, GOMEX Right Whale-Spring

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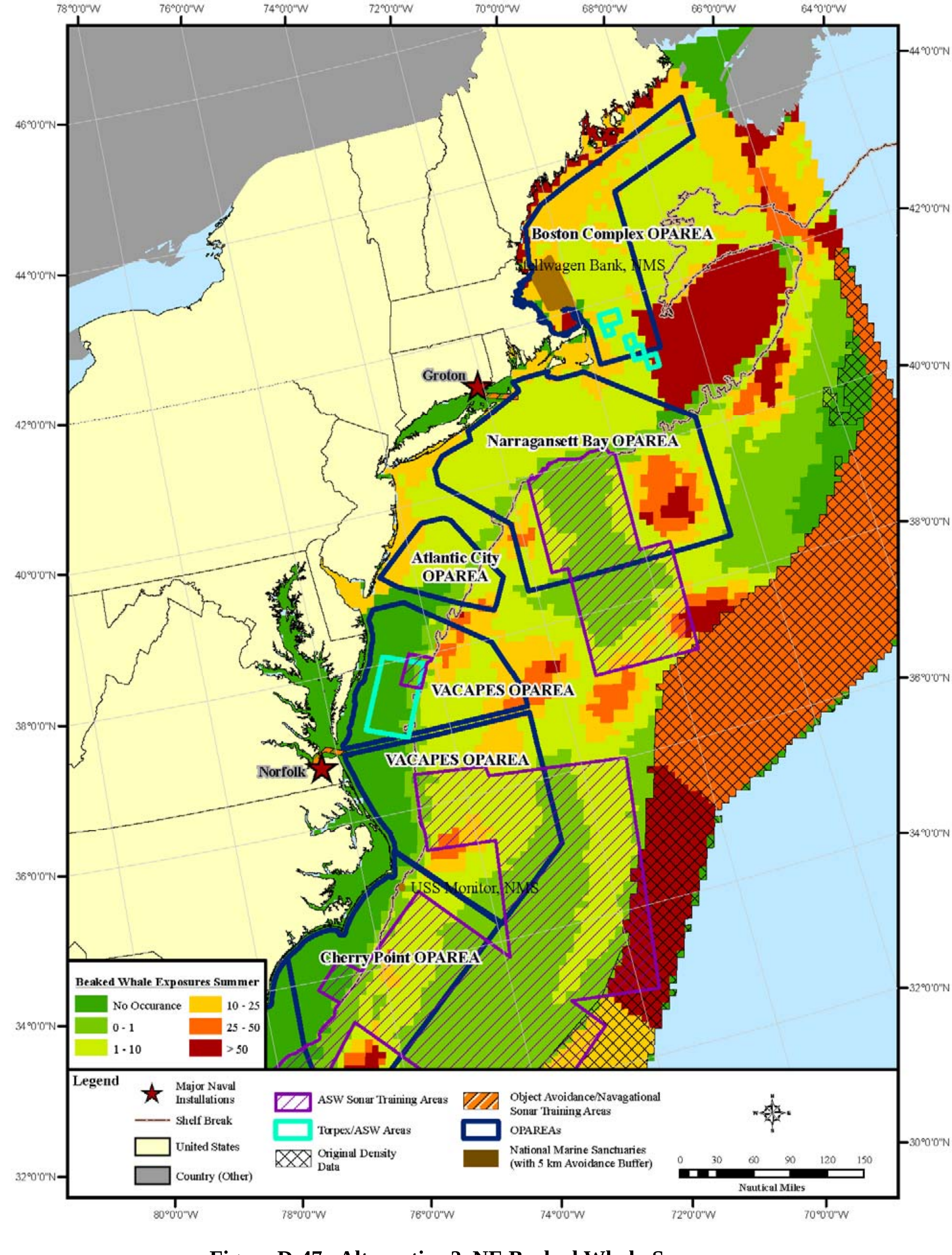

Figure D-47. Alternative 2, NE Beaked Whale-Summer

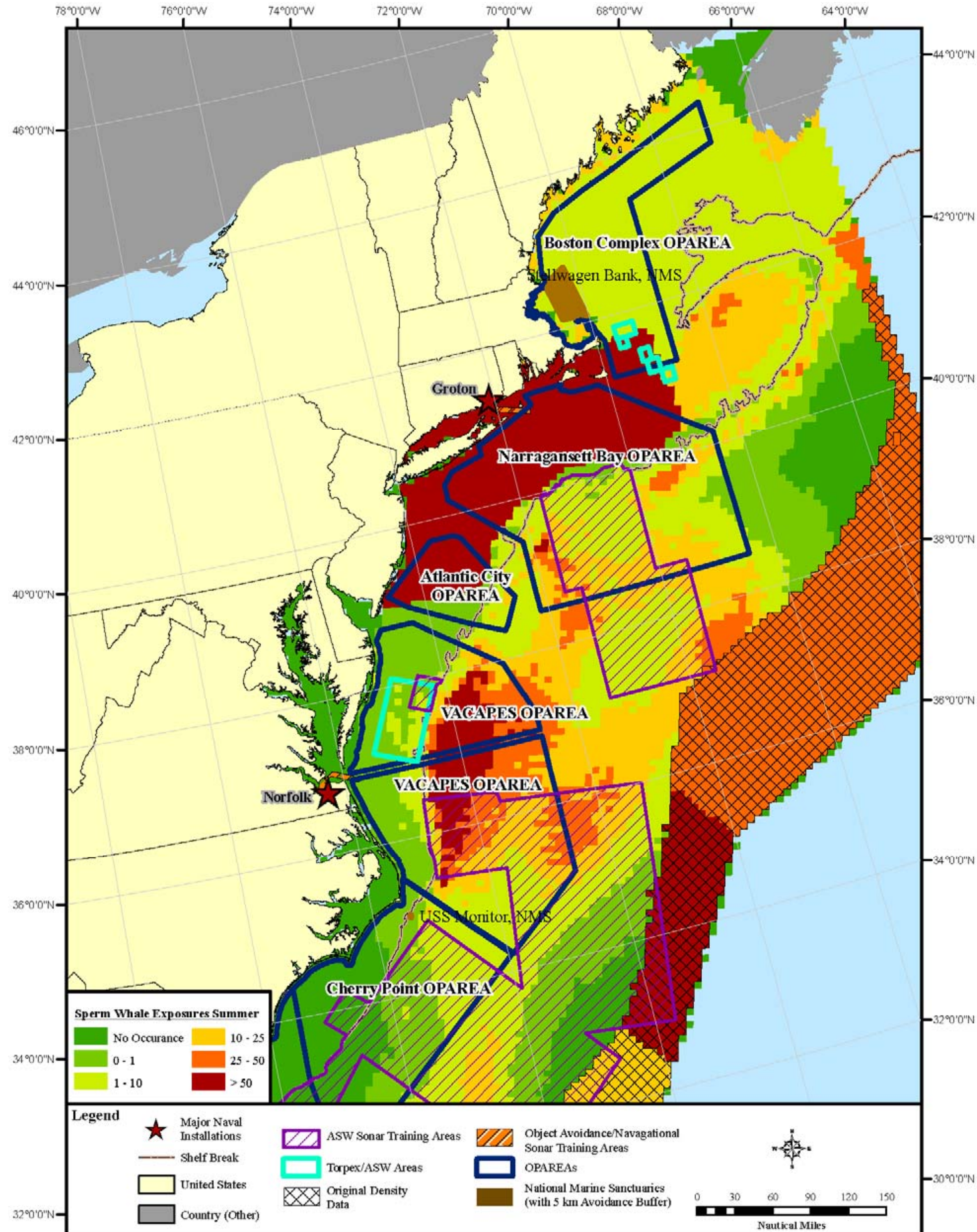

Figure D-48. Alternative 2, NE Sperm Whale-Summer

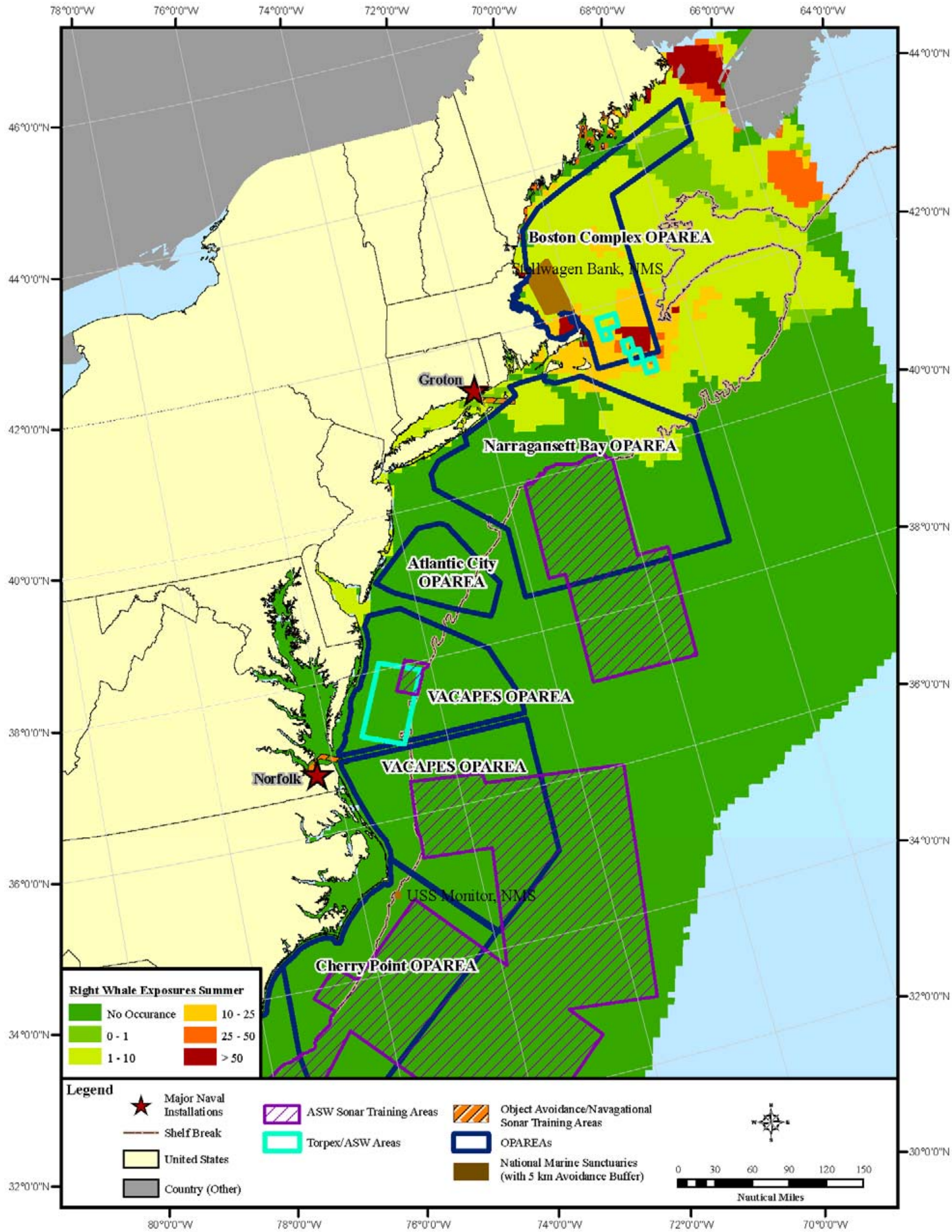

Figure D-49. Alternative 2, NE Right Whale-Summer

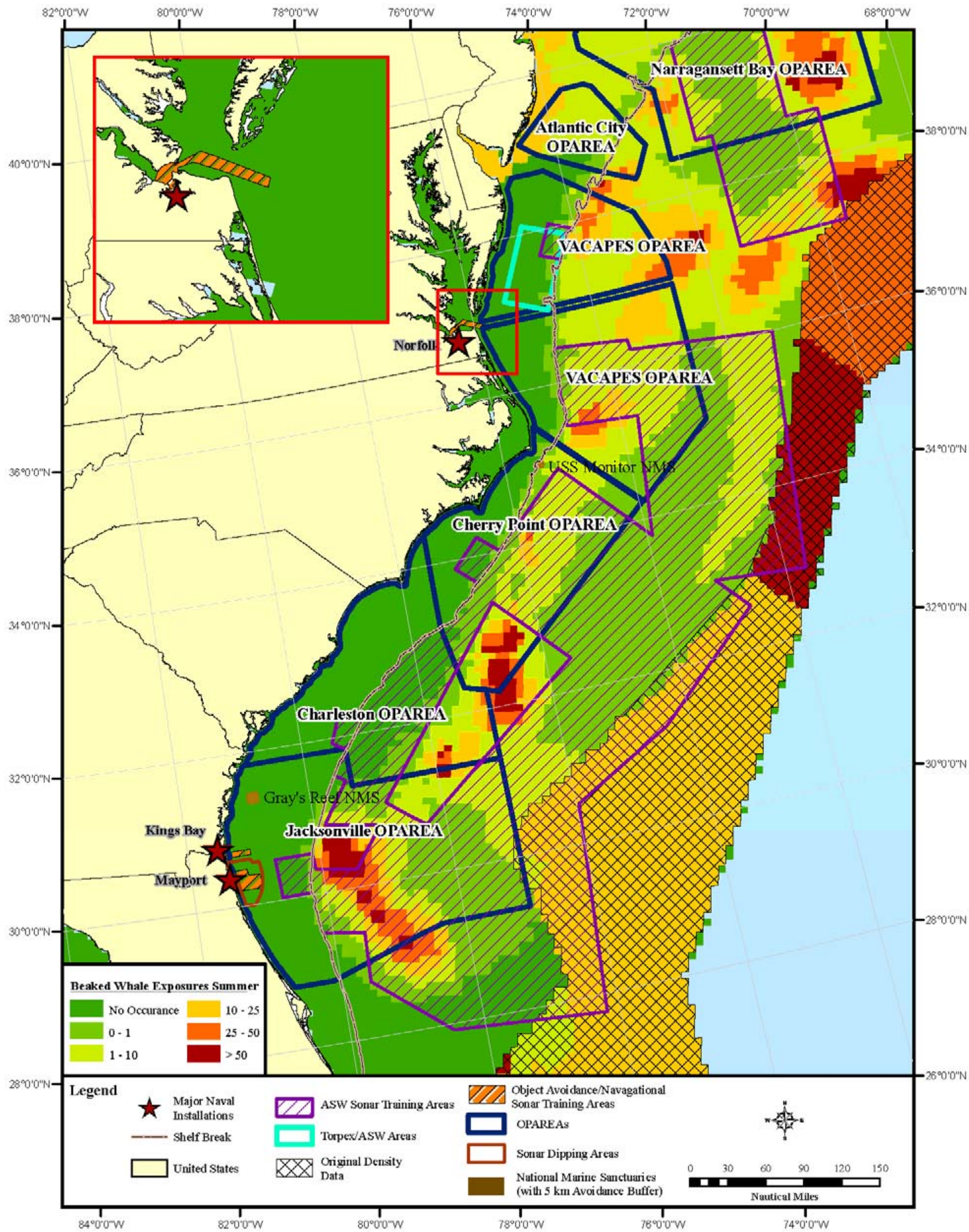

Figure D-50. Alternative 2, SE Beaked Whale-Summer

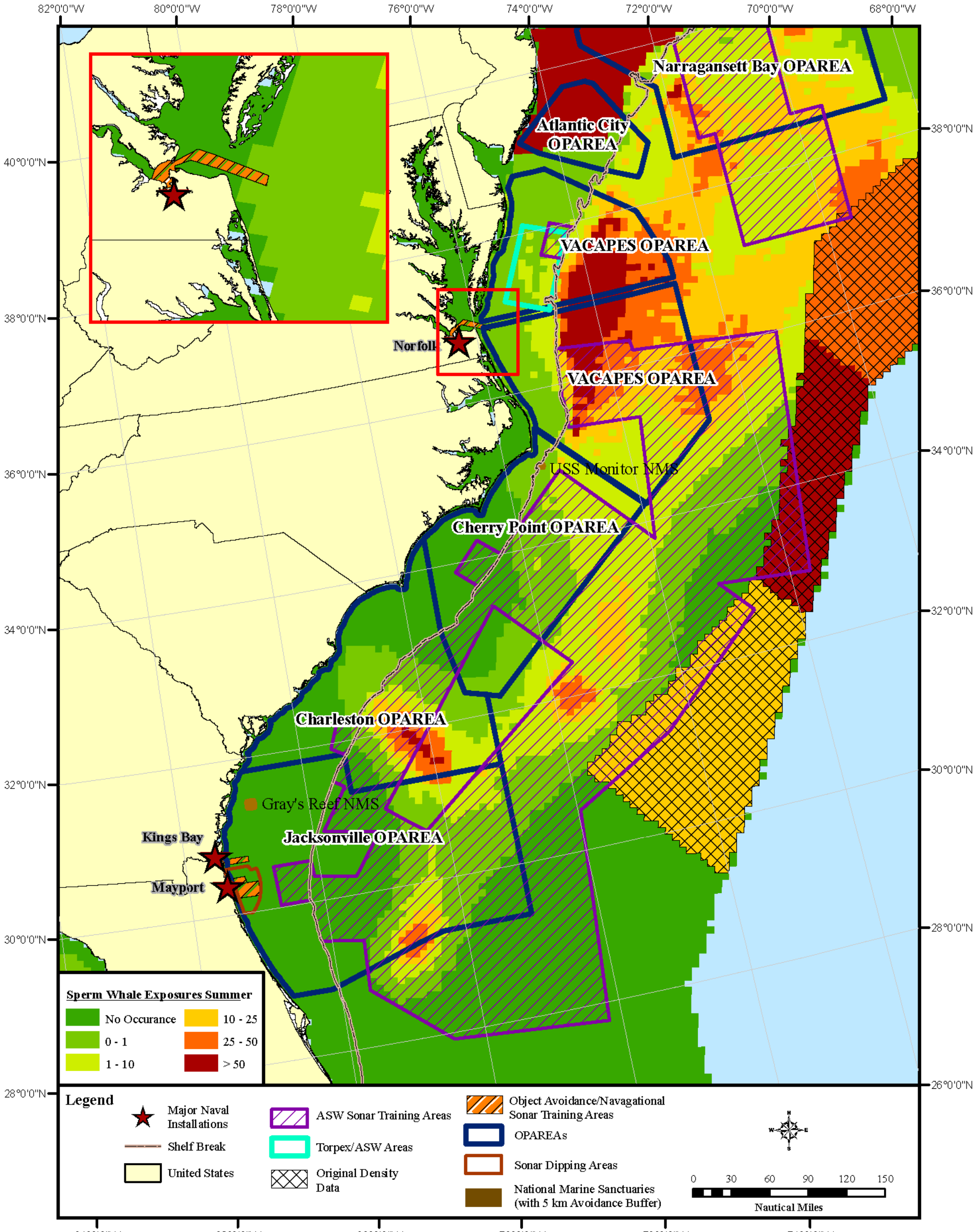

Figure D-51. Alternative 2, SE Sperm Whale-Summer

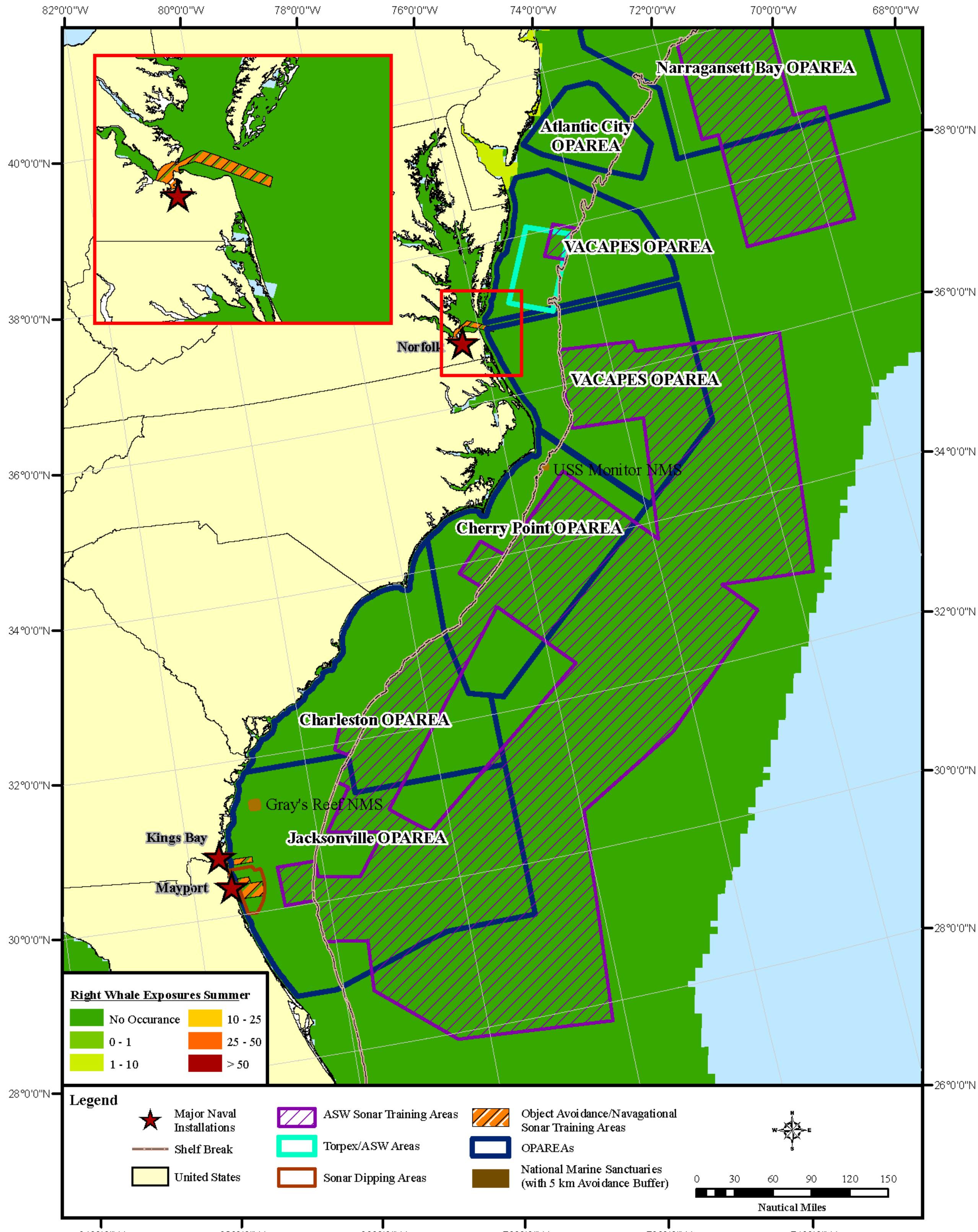

Figure D-52. Alternative 2, SE Right Whale-Summer

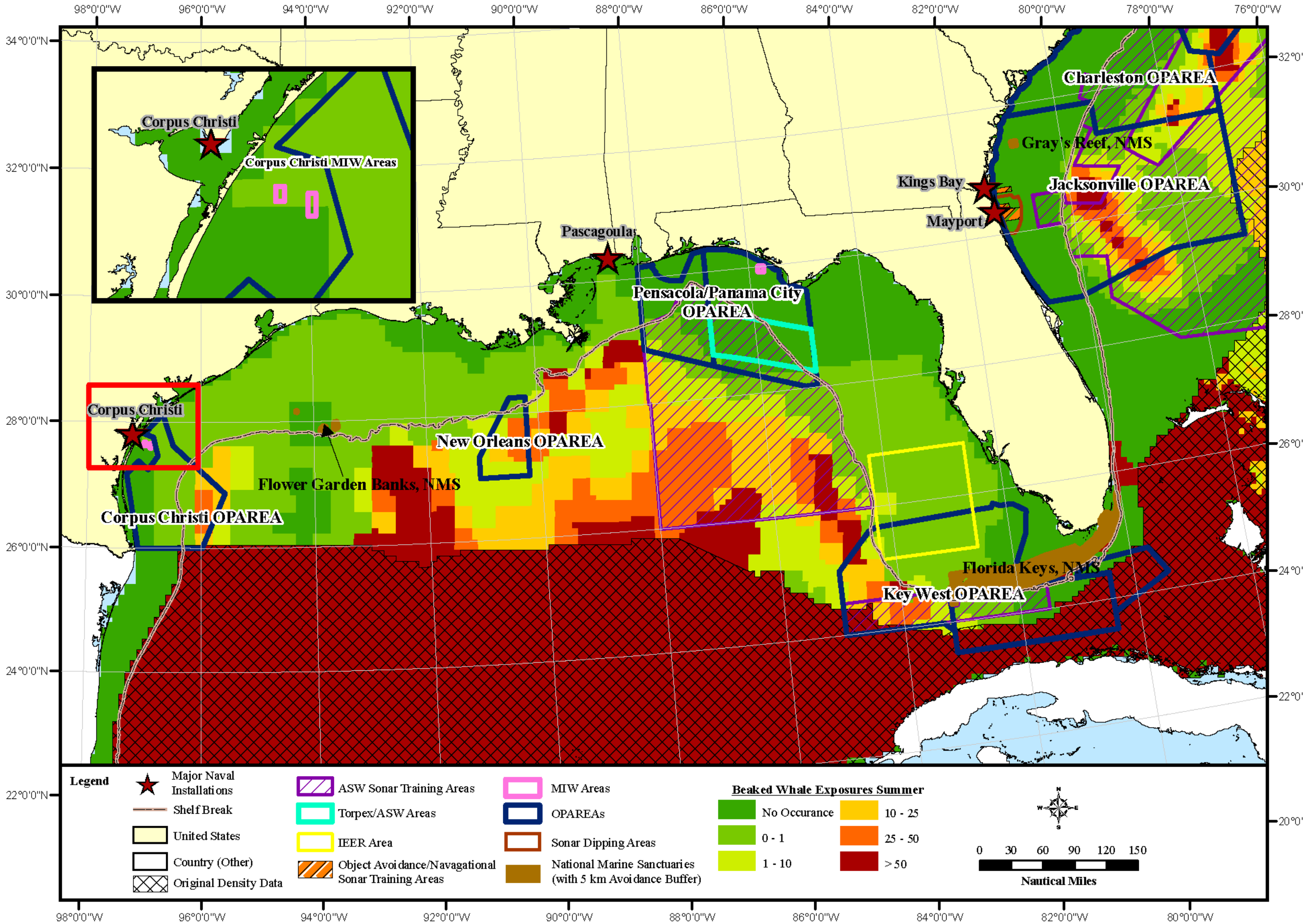

Figure D-53. Alternative 2, GOMEX Beaked Whale-Summer

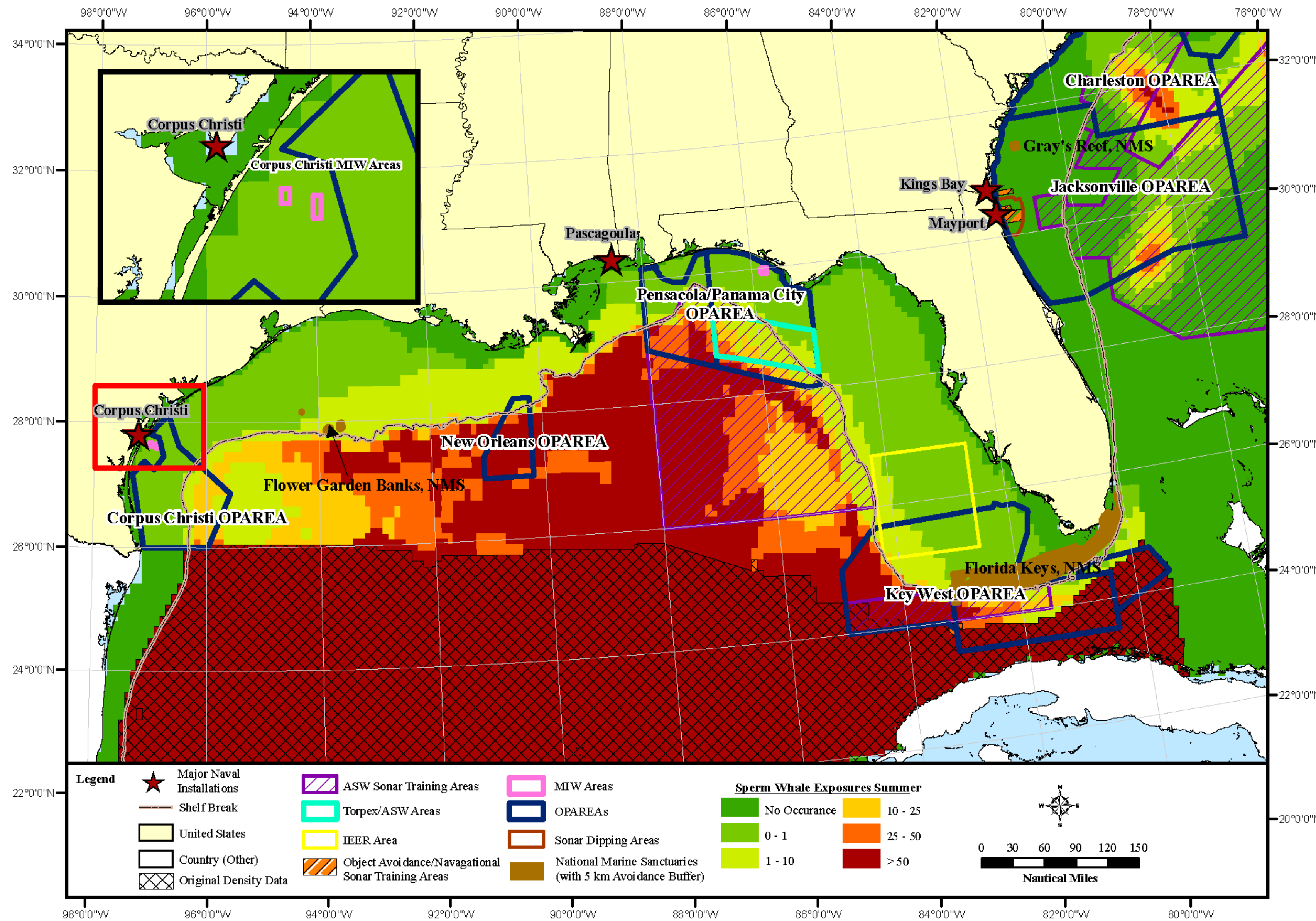

Figure D-54. Alternative 2, GOMEX Sperm Whale-Summer

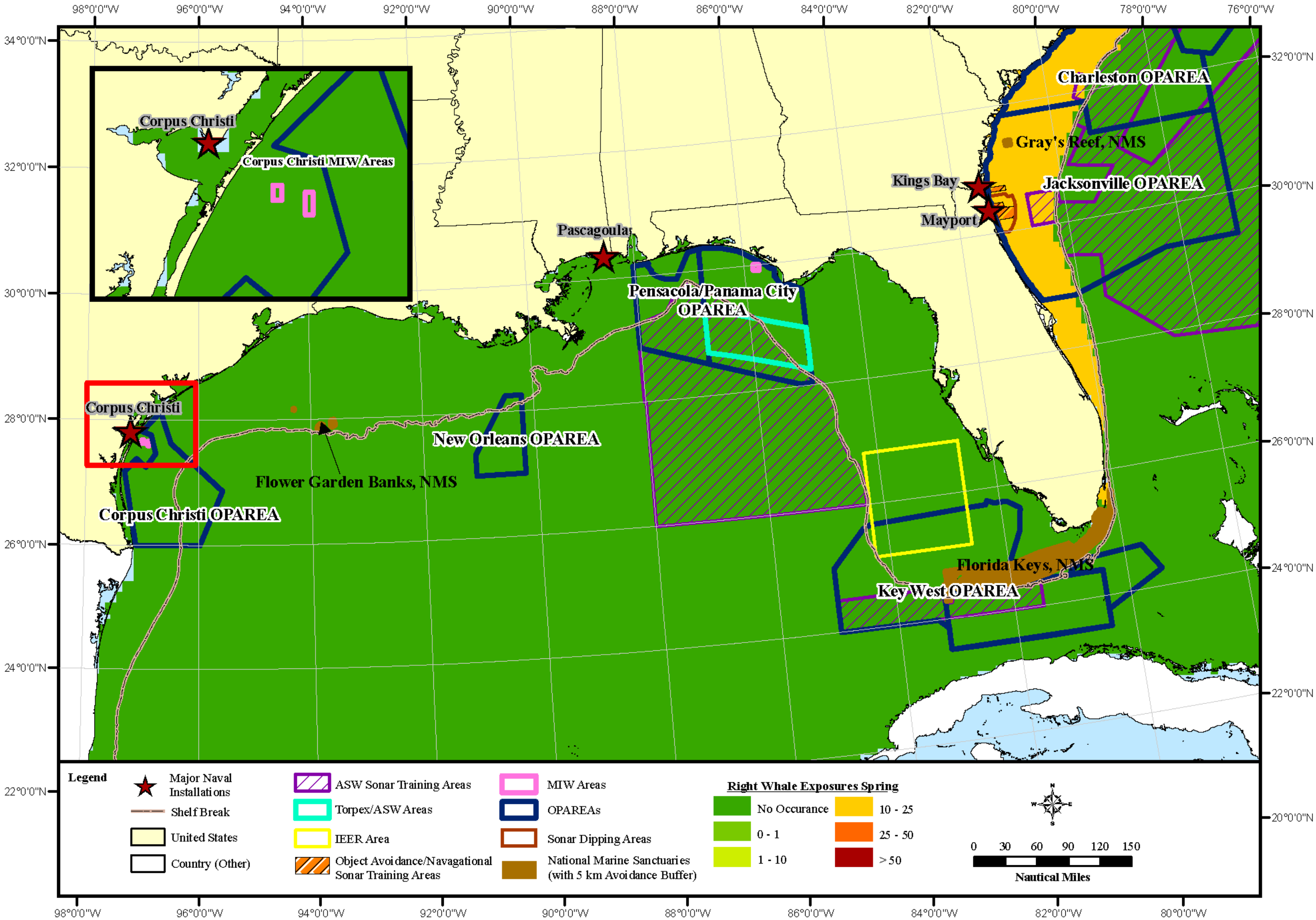

Figure D-55. Alternative 2, GOMEX Right Whale-Spring

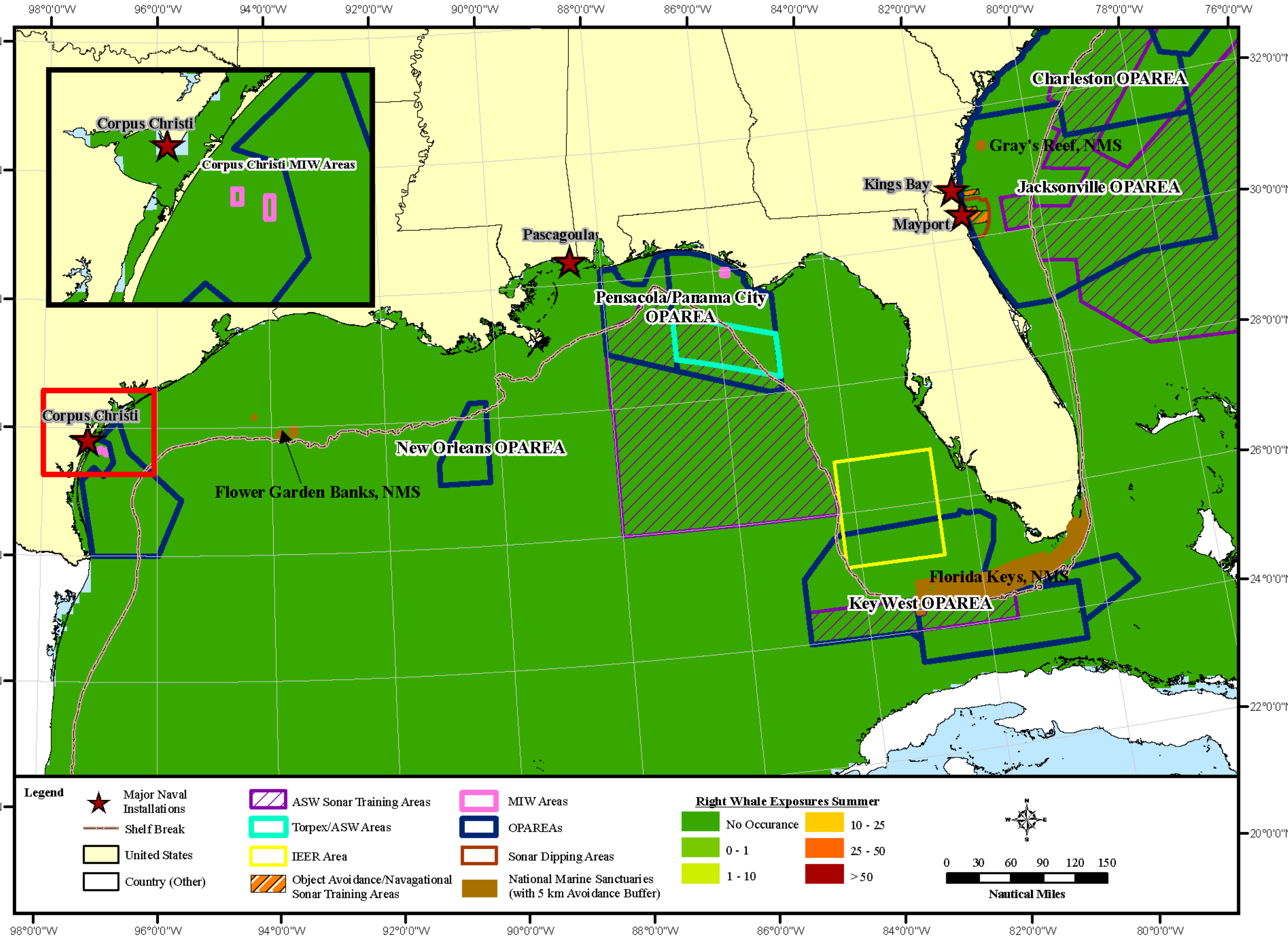

Figure D-56. Alternative 2, GOMEX Right Whale-Summer

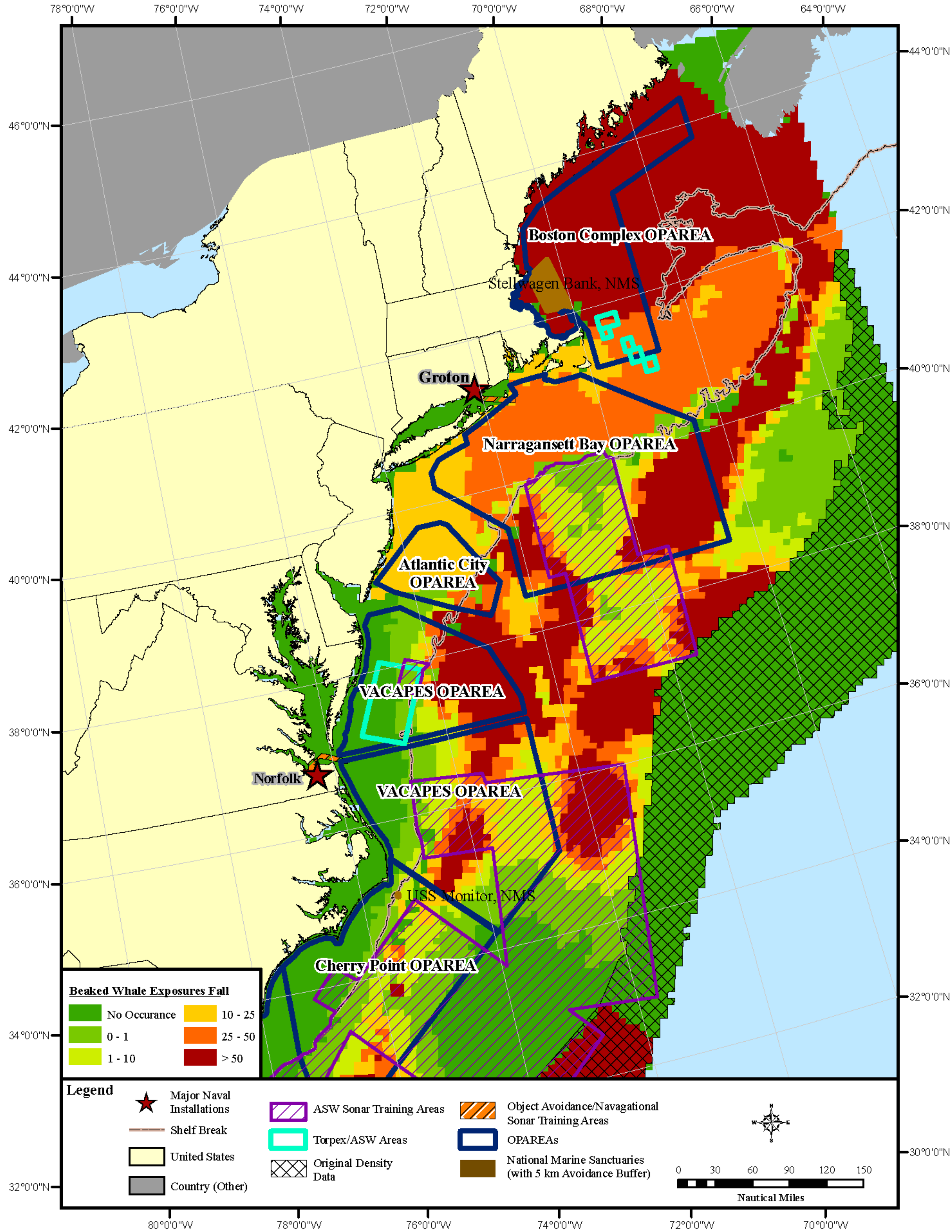

Figure D-57. Alternative 2, NE Beaked Whale-Fall

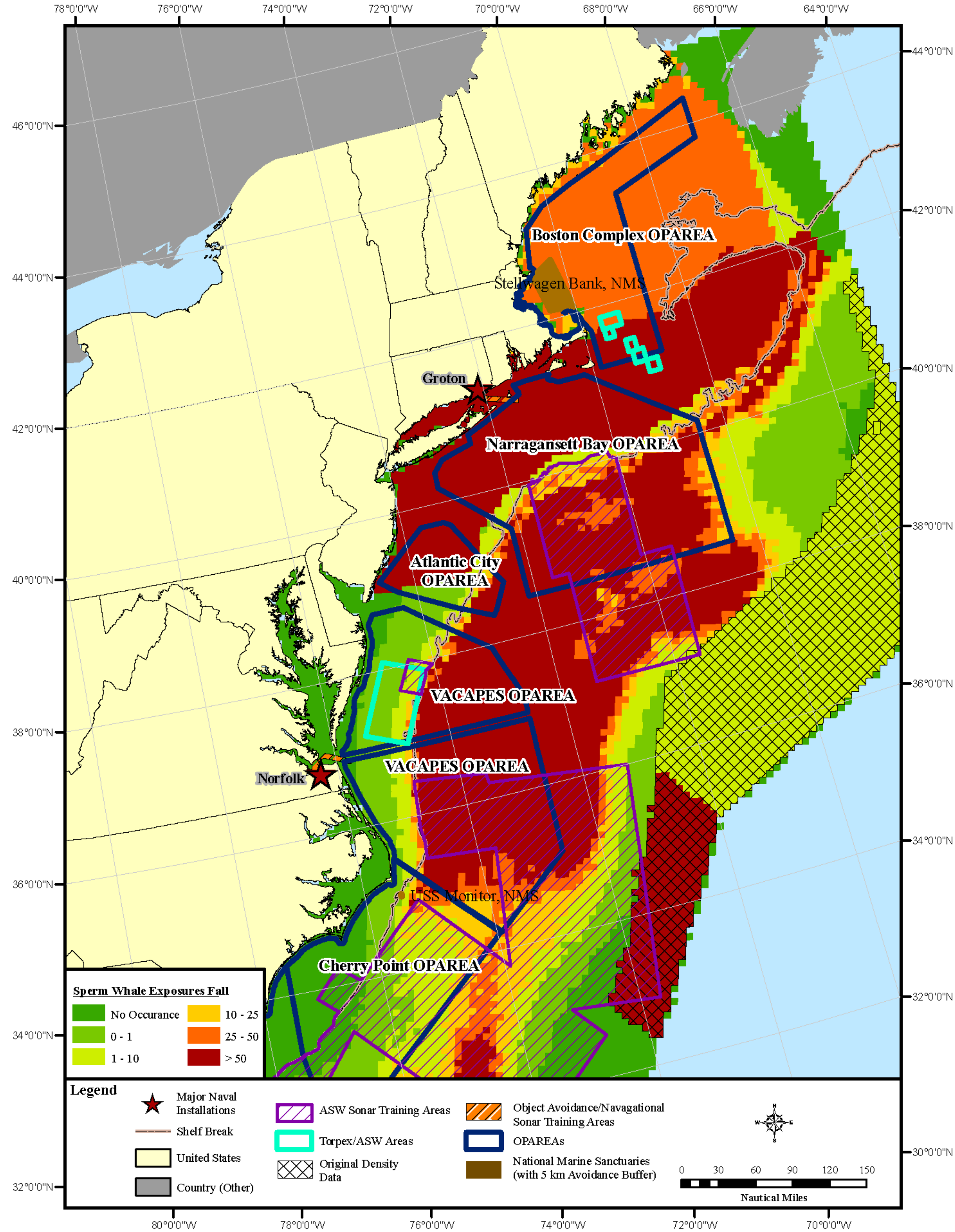

Figure D-58. Alternative 2, NE Sperm Whale-Fall

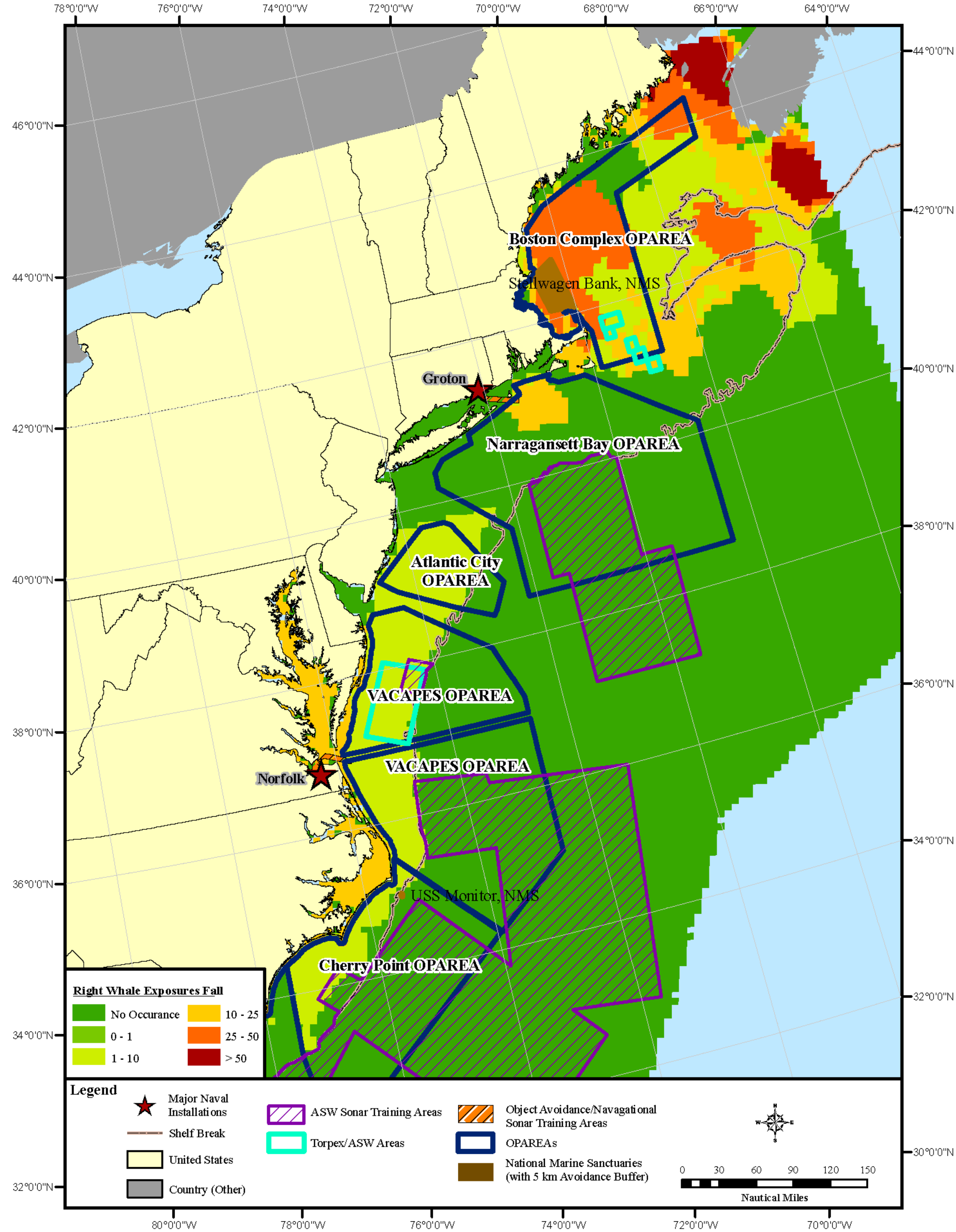

Figure D-59. Alternative 2, NE Right Whale-Fall

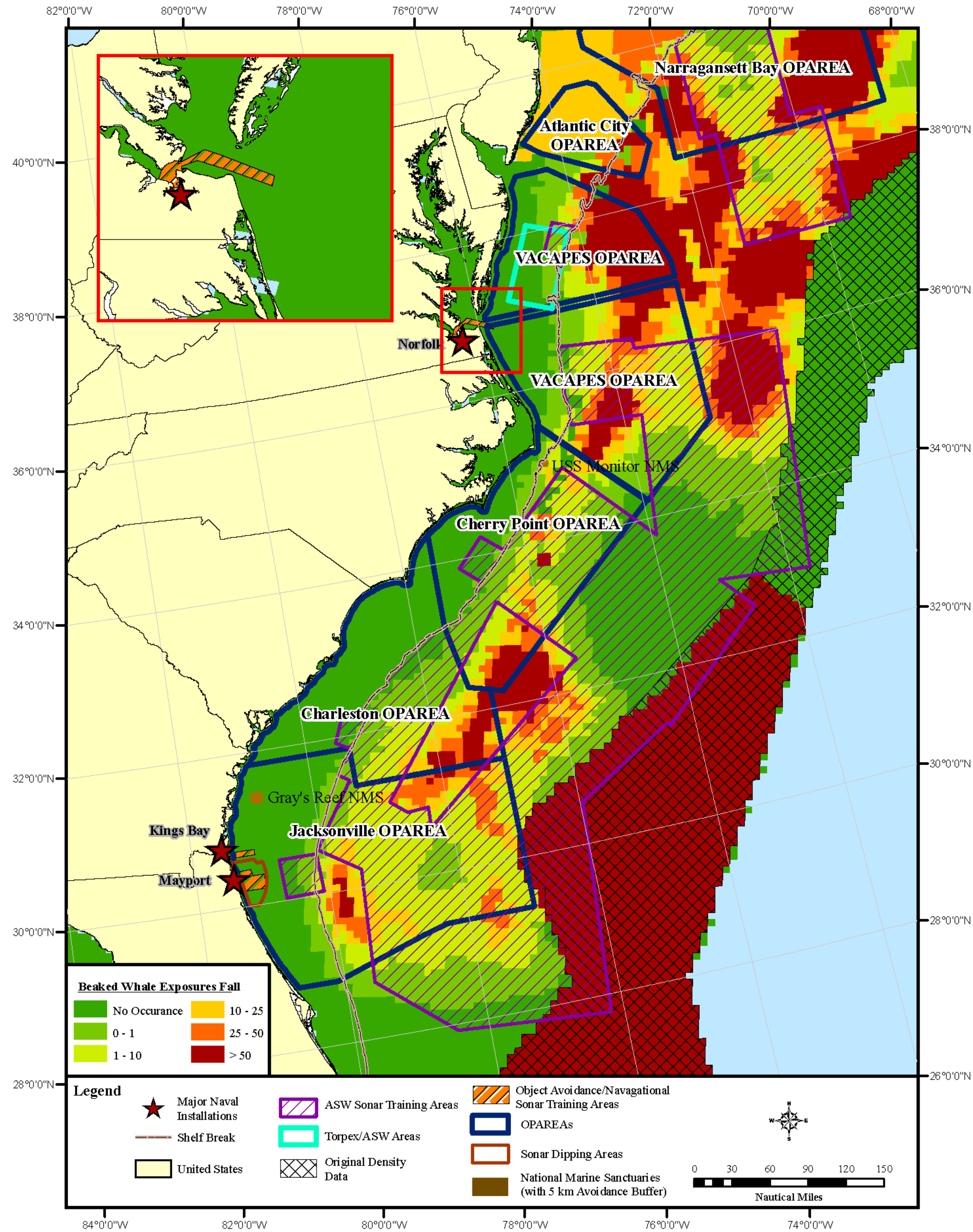

Figure D-60. Alternative 2, SE Beaked Whale-Fall

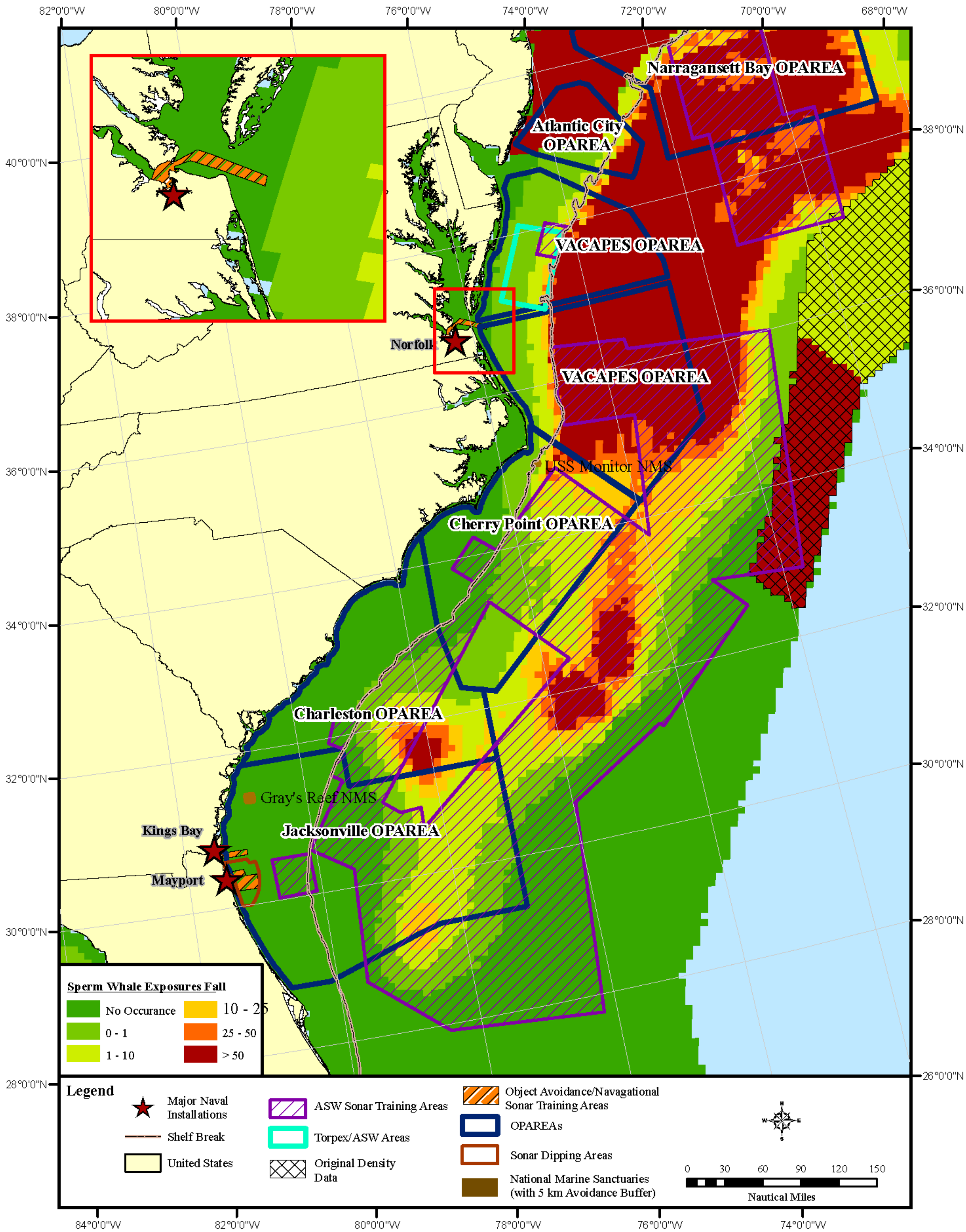

Figure D-61. Alternative 2, SE Sperm Whale-Fall

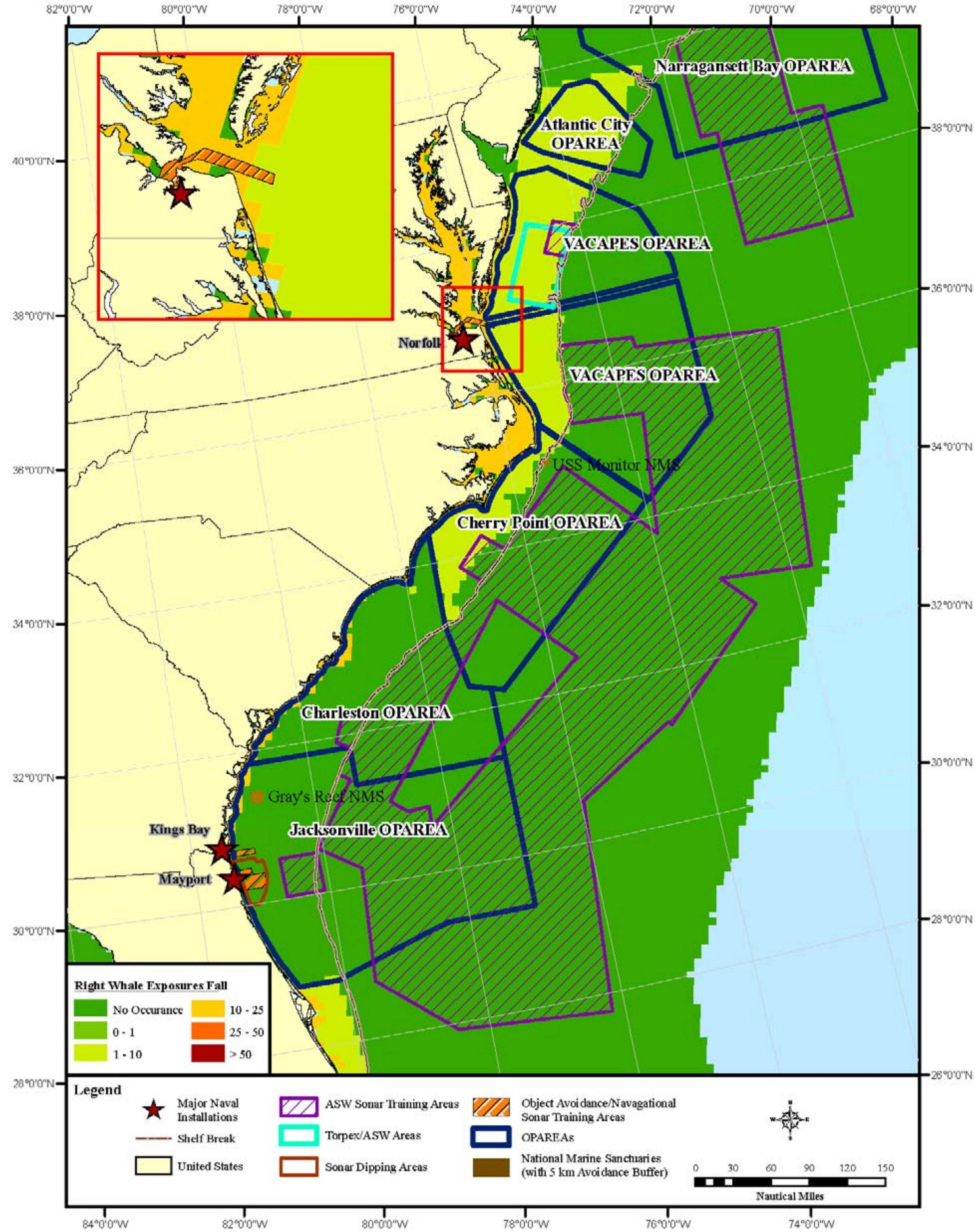

Figure D-62. Alternative 2, SE Right Whale-Fall

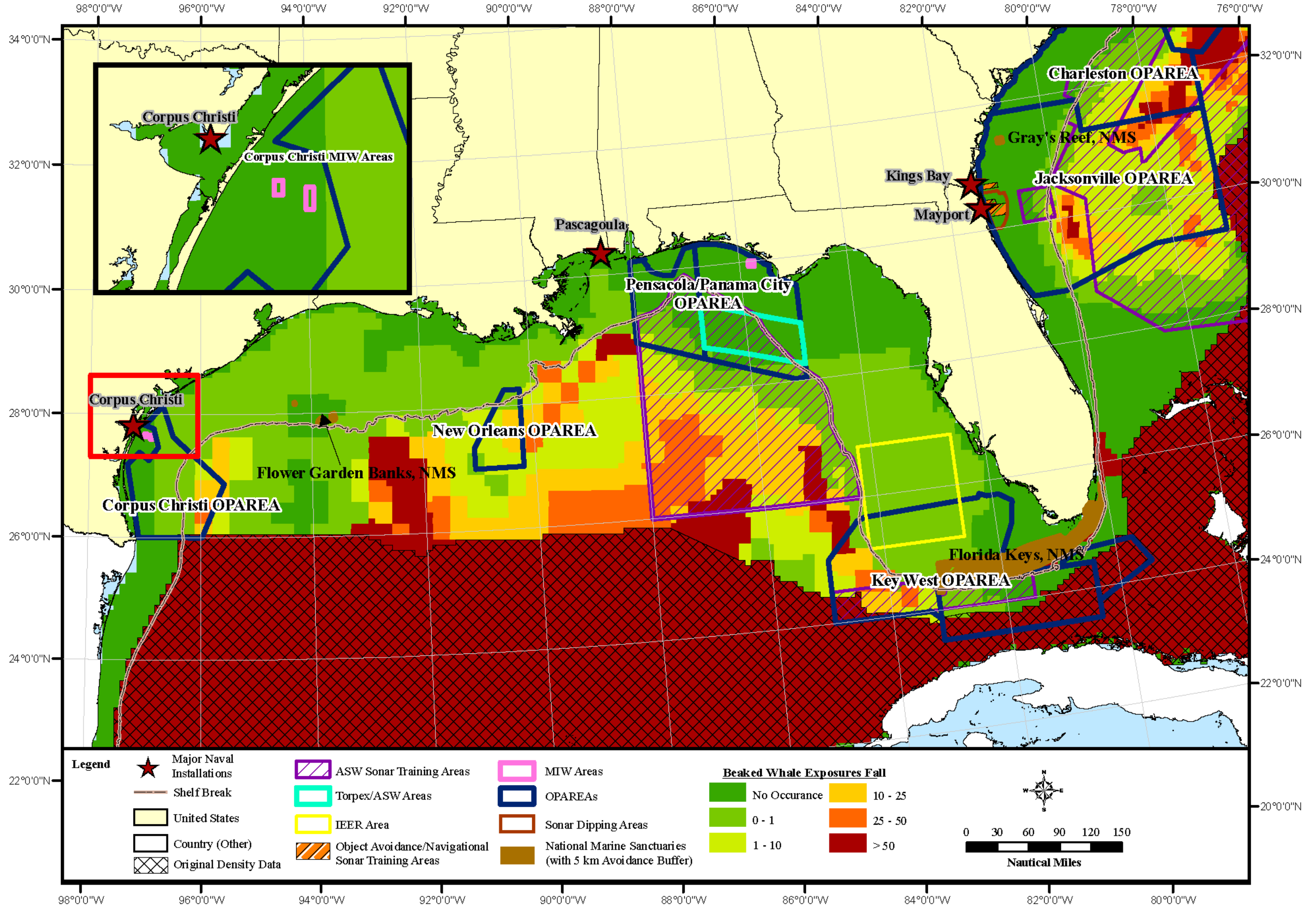

Figure D-63. Alternative 2, GOMEX Beaked Whale-Fall

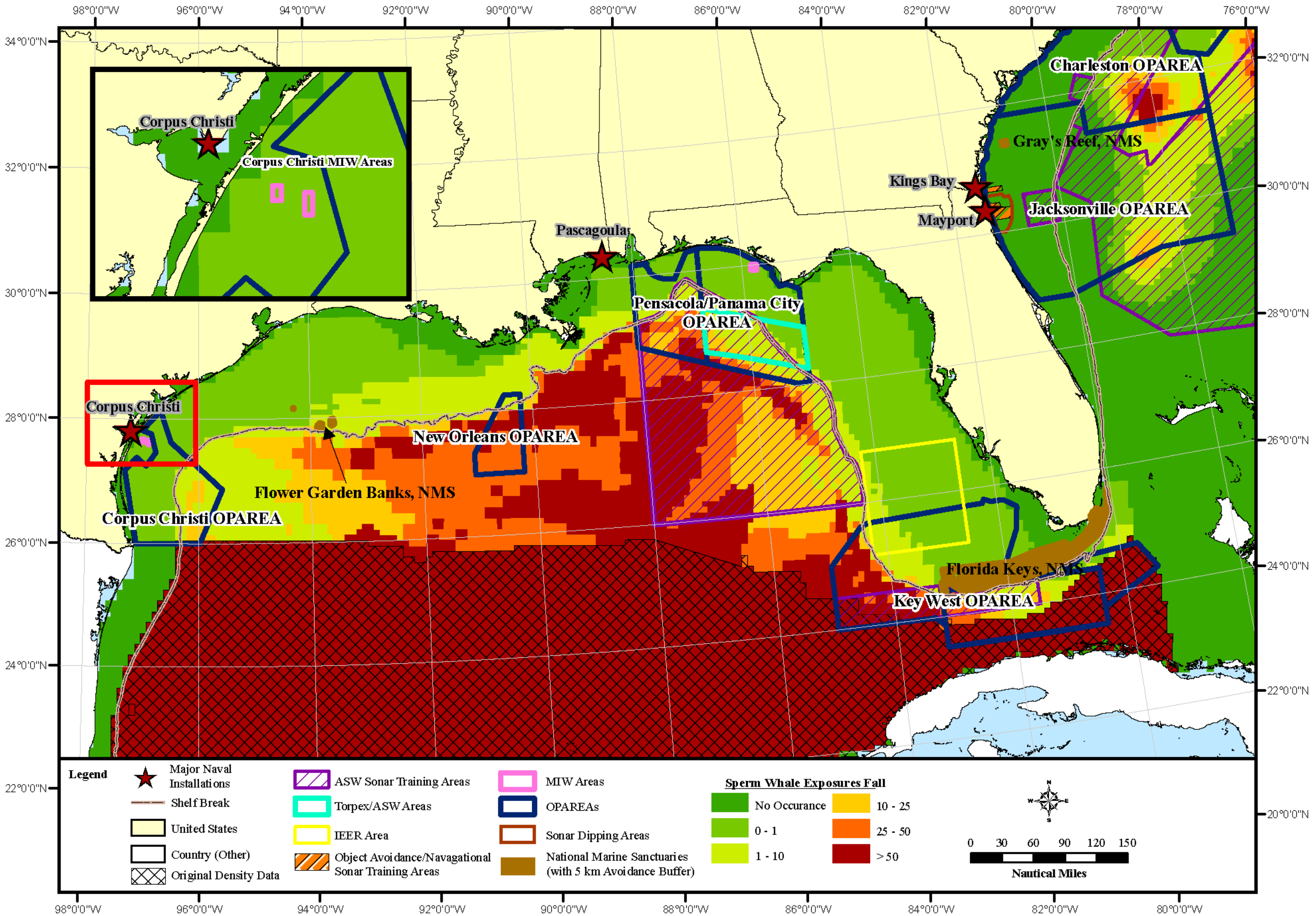

Figure D-64. Alternative 2, GOMEX Sperm Whale-Fall

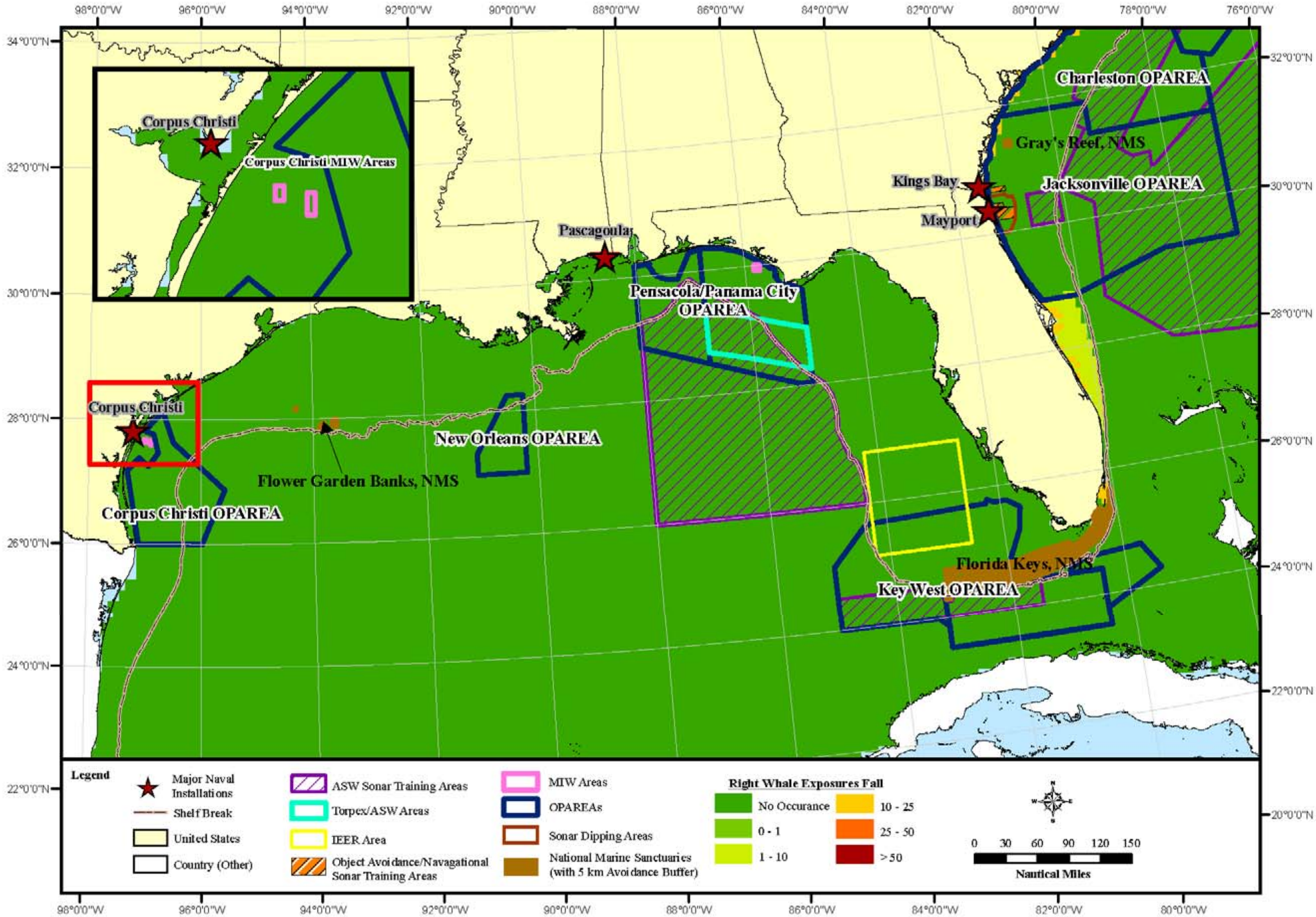

Figure D-65. Alternative 2, GOMEX Right Whale-Fall

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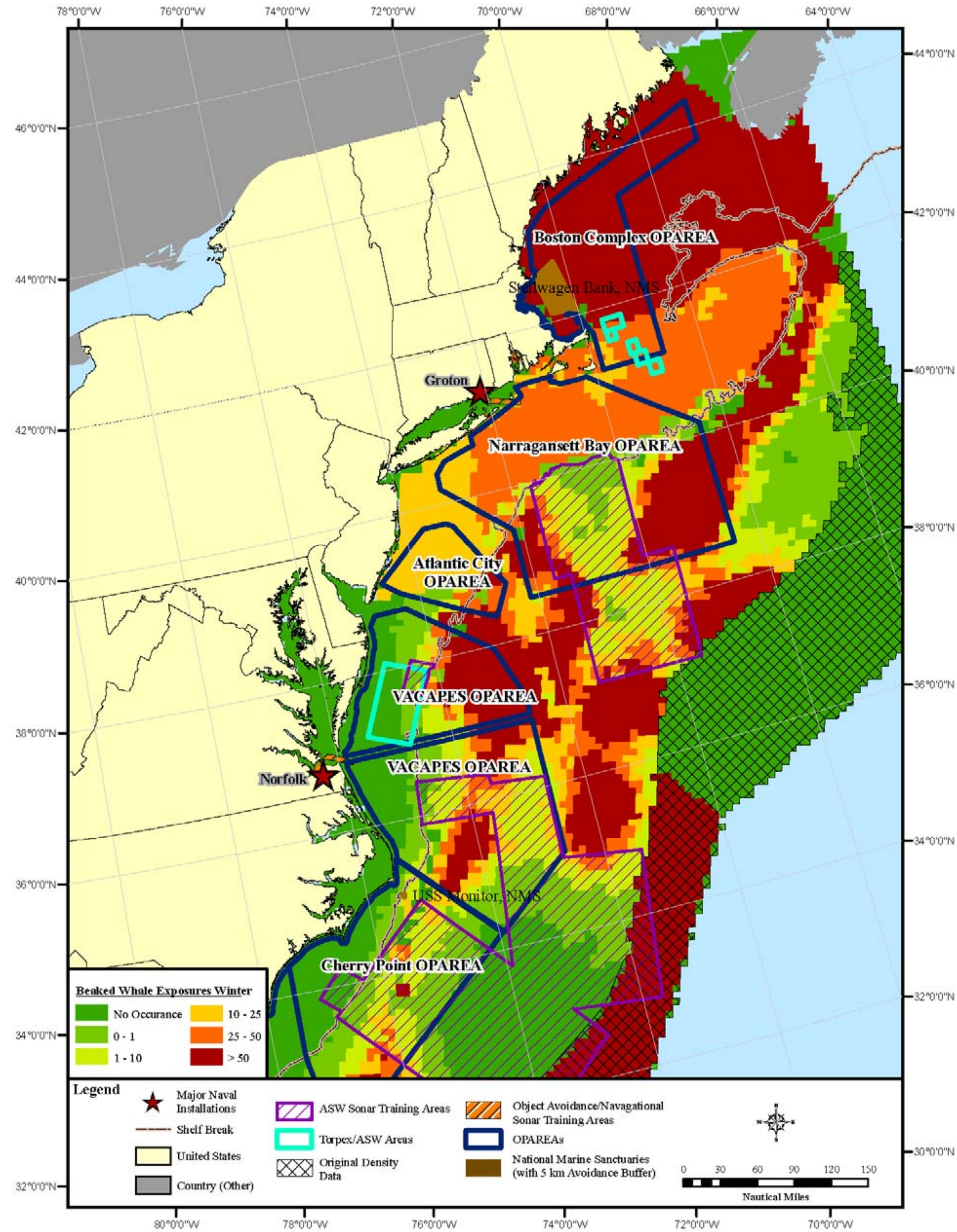

Figure D-66. Alternative 2, NE Beaked Whale-Winter

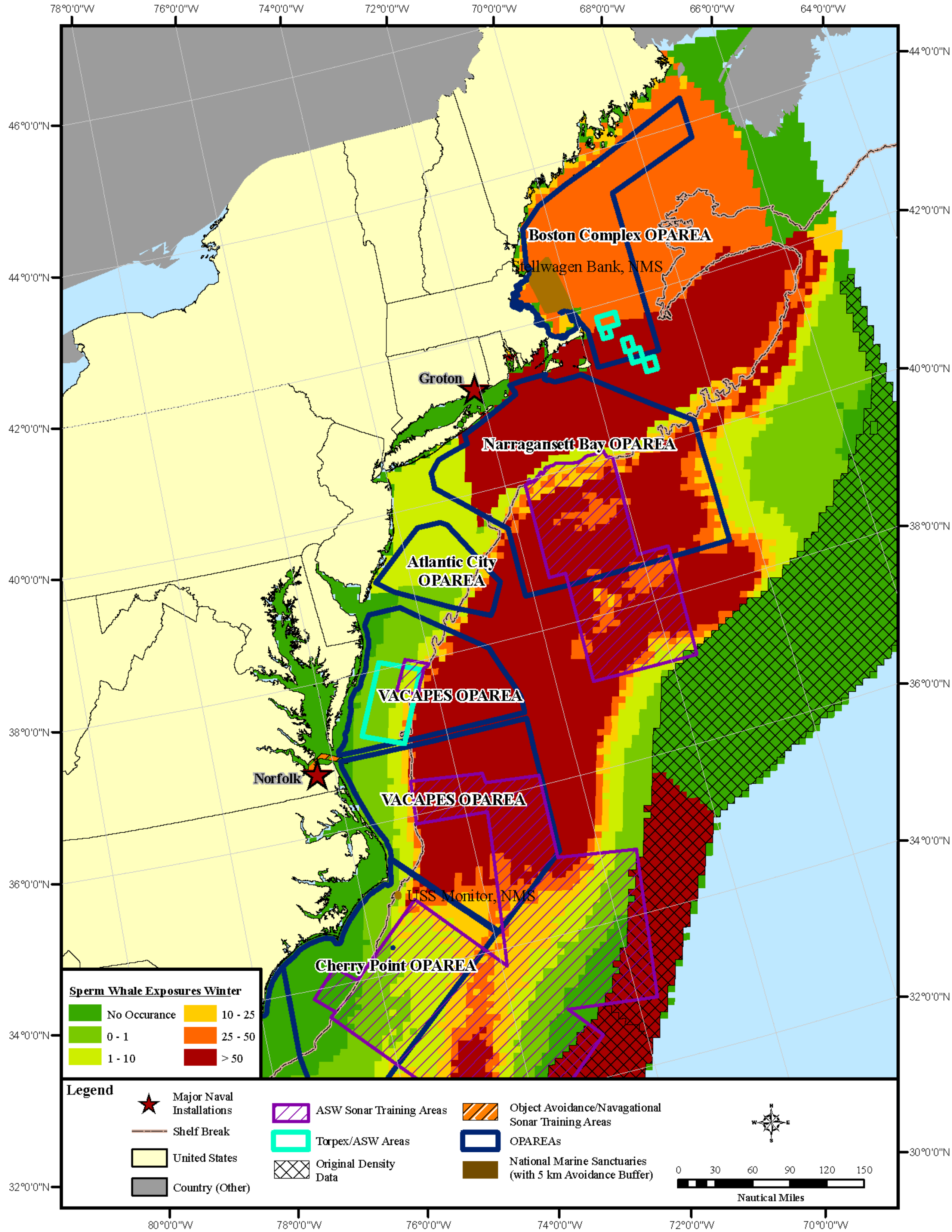

Figure D-67. Alternative 2, NE Sperm Whale-Winter

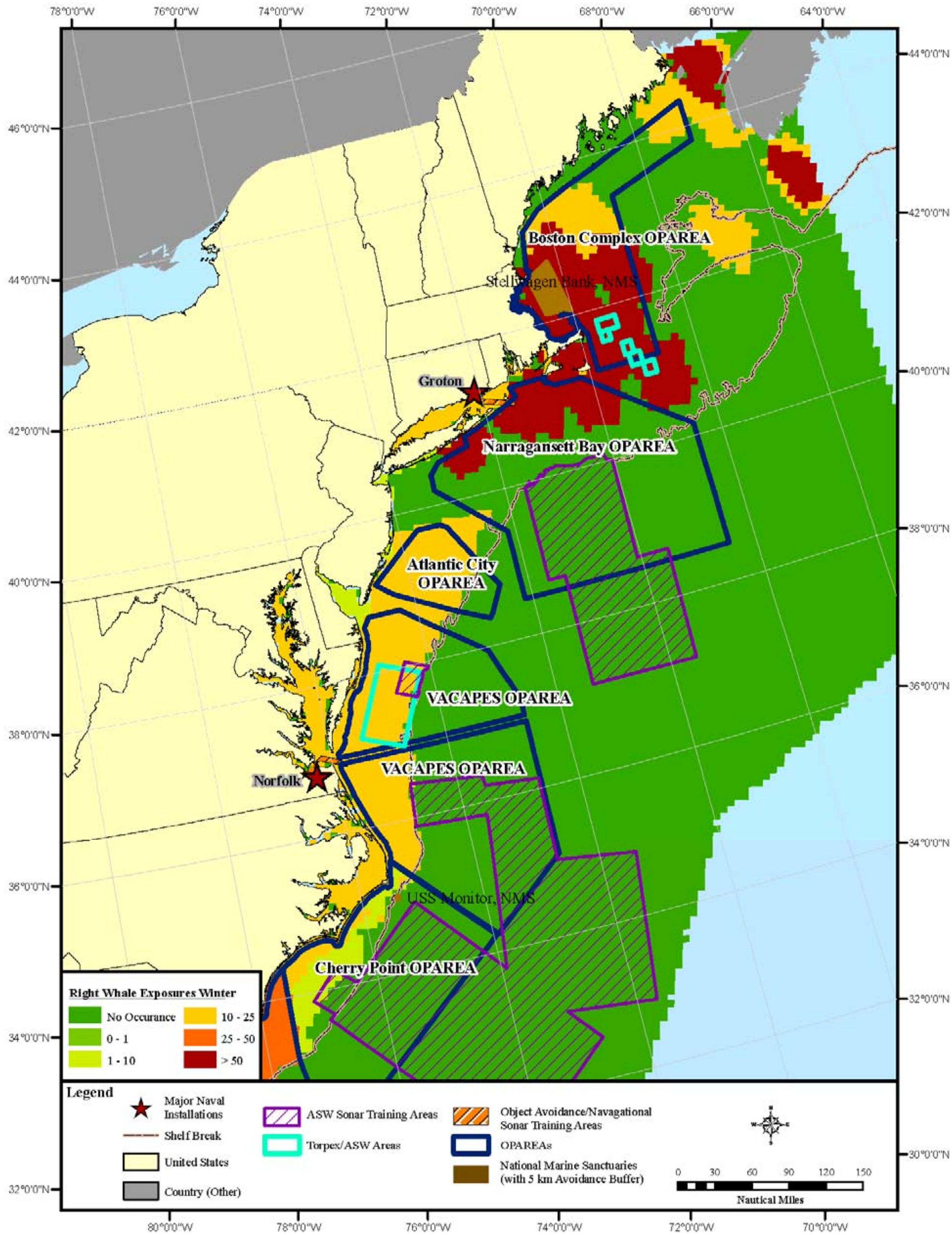

Figure D-68. Alternative 2, NE Right Whale-Winter

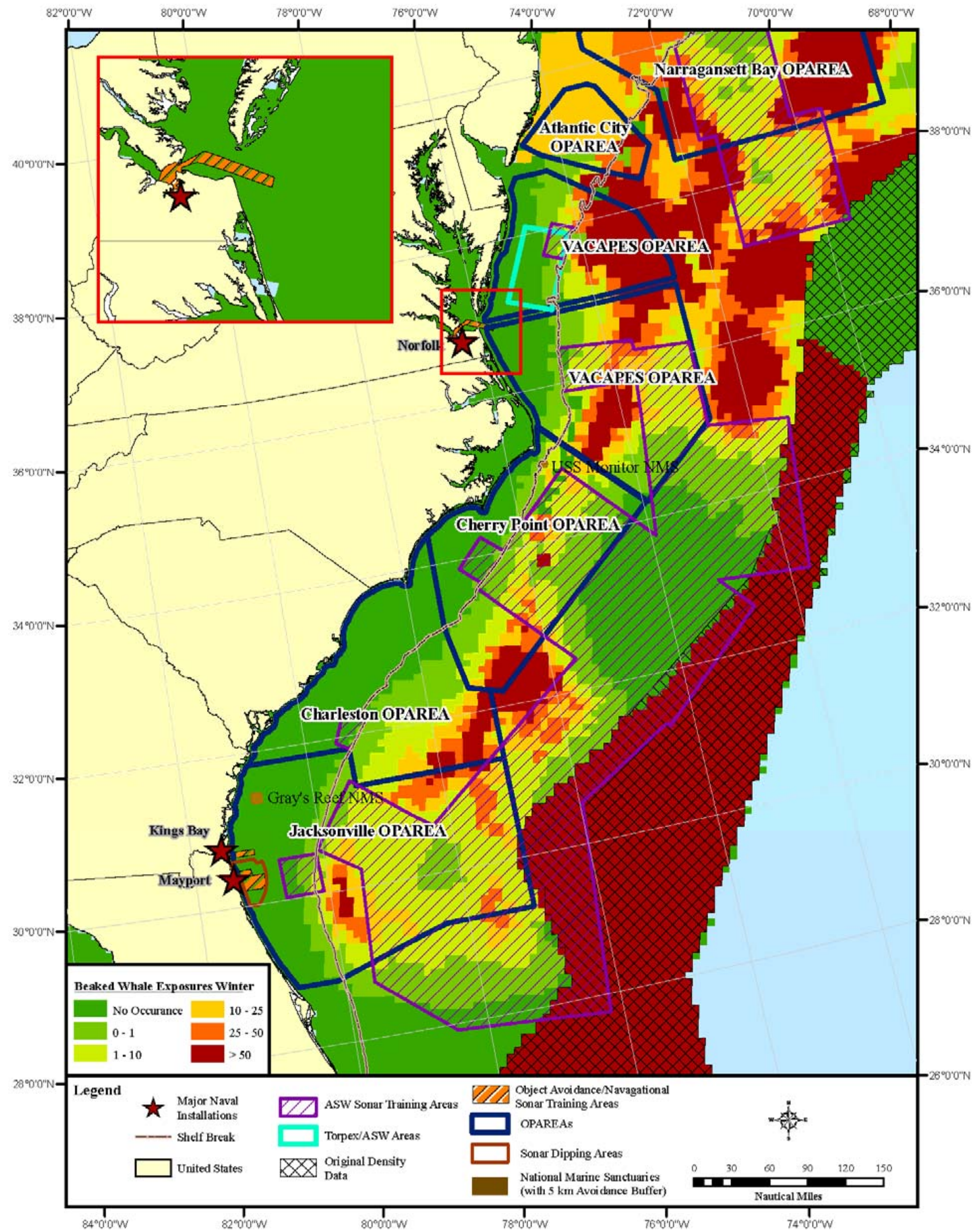

Figure D-69. Alternative 2, SE Beaked Whale-Winter

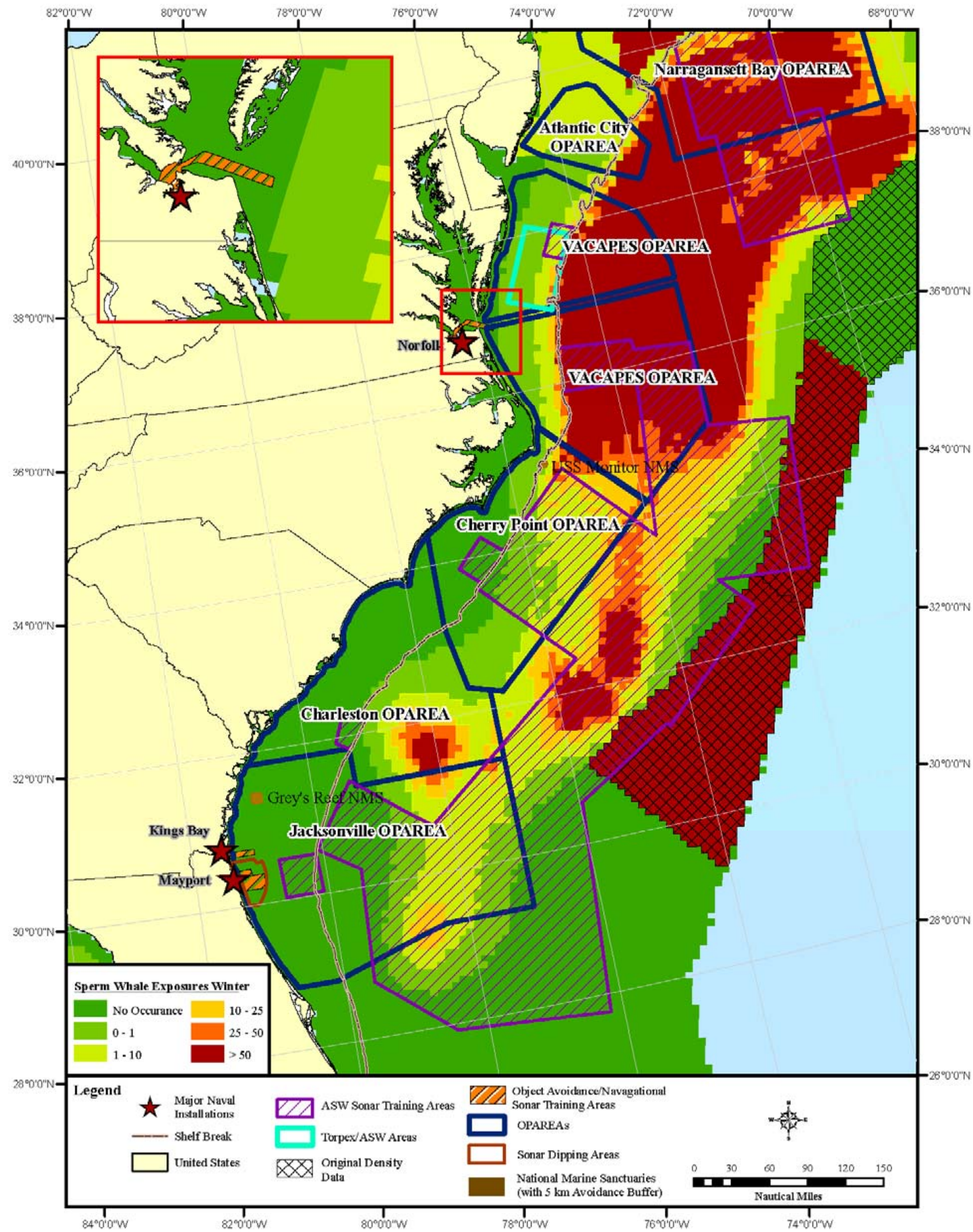

Figure D-70. Alternative 2, SE Sperm Whale-Winter

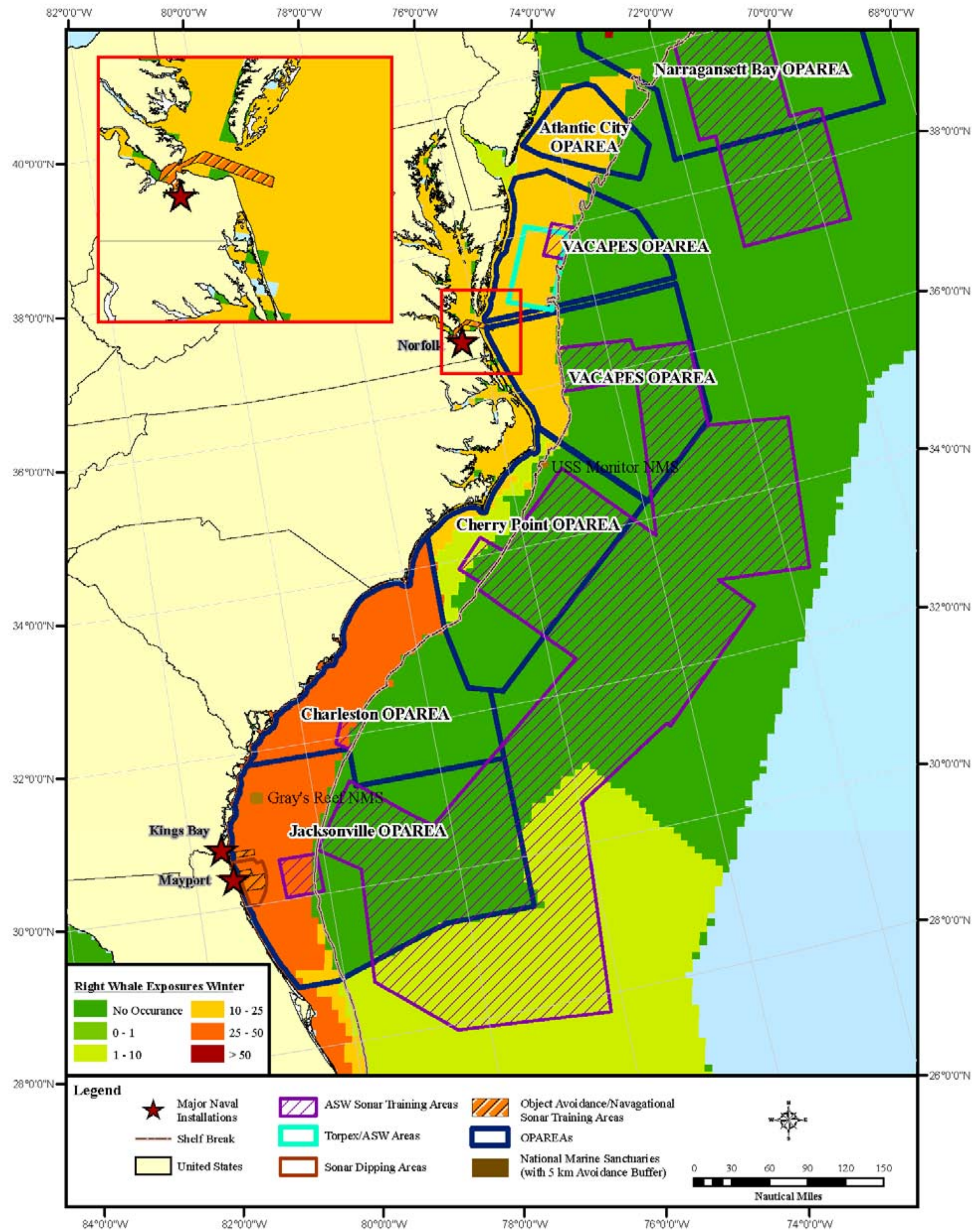

Figure D-71. Alternative 2, SE Right Whale-Winter

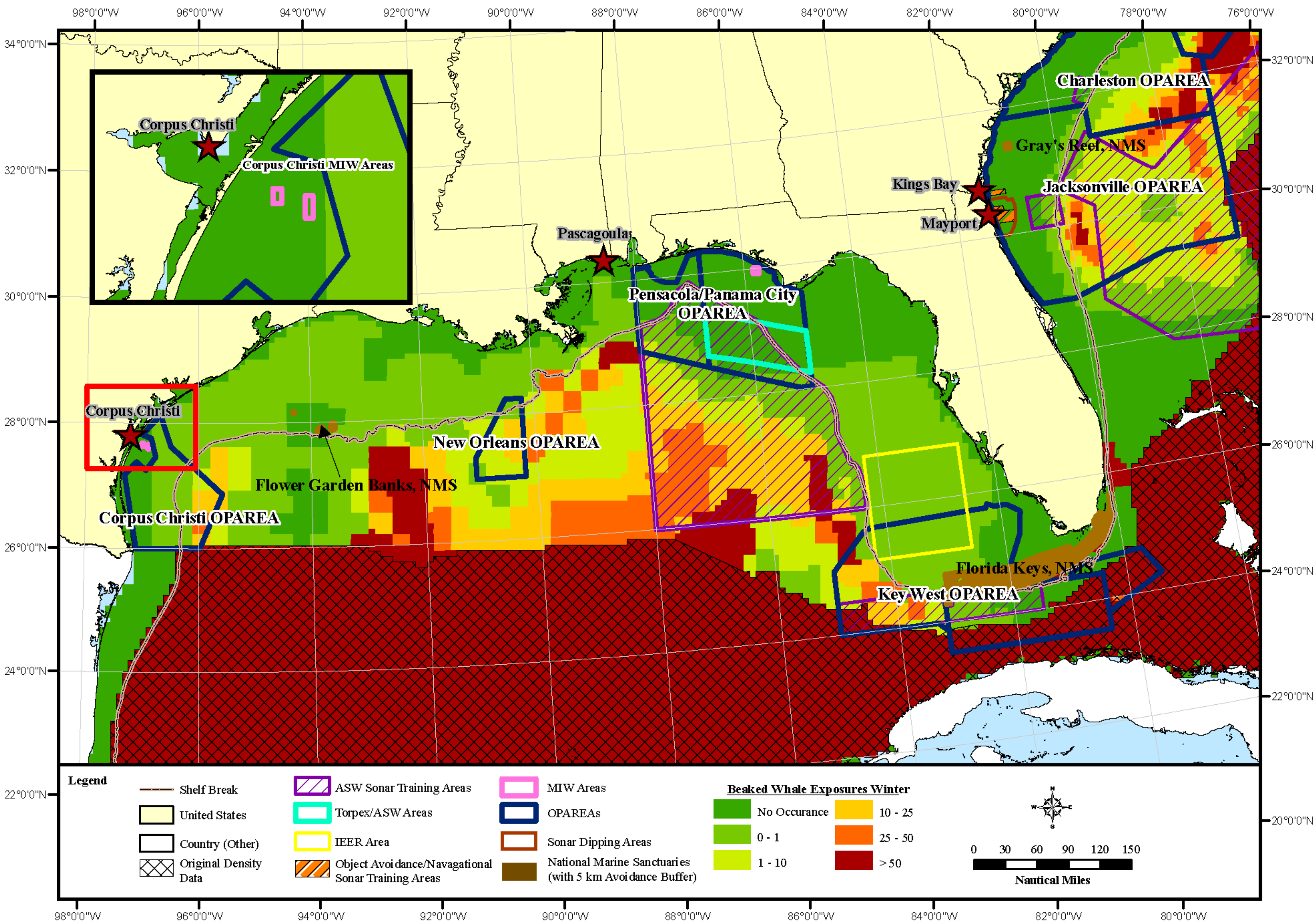

Figure D-72. Alternative 2, GOMEX Beaked Whale-Winter

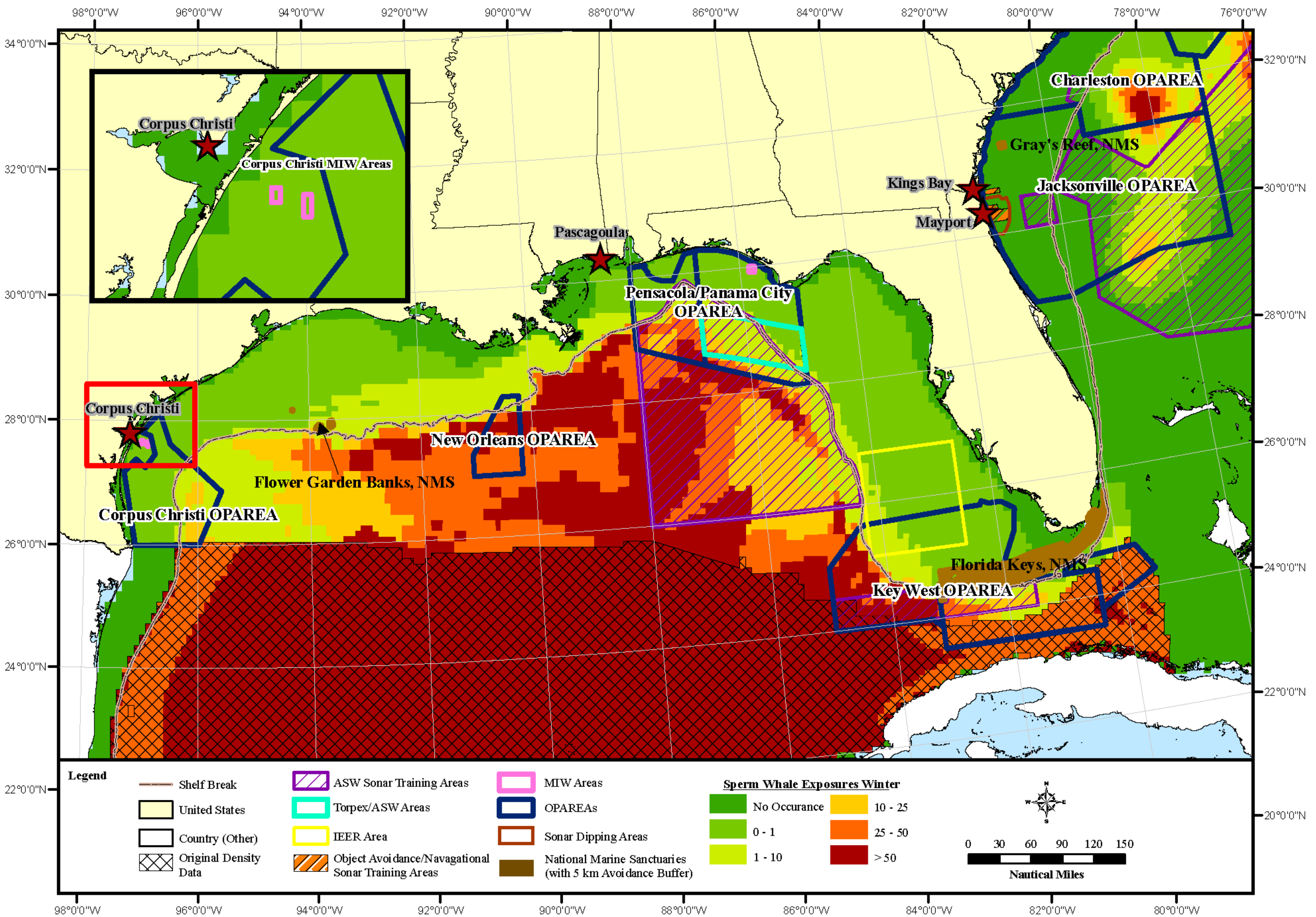

Figure D-73. Alternative 2, GOMEX Sperm Whale-Winter

D.4 ALTERNATIVE 3: AREAS OF INCREASED AWARENESS

Under Alternative 3 all marine waters within the AFAST Study Area, but outside the environmentally sensitive areas identified in Figures D-74 through D-109, would be open to active sonar activities. A description of these areas is provided in subsequent sections. Under Alternative 3, the identified environmentally sensitive areas would be avoided to the greatest extent possible while conducting active training activities that involved a mid-frequency acoustic source.

D.4.1 Alternative 3 Development

The development of Alternative 3 involved conducting a qualitative analysis to identify environmentally sensitive areas offshore of the U.S. East Coast and within the Gulf of Mexico. These environmentally sensitive areas typically indicate higher concentrations of marine species and include the following features:

- Bathymetric features such as canyons, steep walls, and sea mounts
- North Atlantic right whale critical habitat areas
- River and bay mouths
- Designated marine sanctuaries (i.e., Monitor, Gray's Reef, Stellwagen Bank, Florida Keys, and Flower Gardens). A 5 km (2.7 NM) buffer was designated around marine sanctuaries within the Study Area to ensure that all training activities occurred outside the designated marine sanctuaries.

In addition, the exposure maps and density graphics generated during Alternative 1 development were reviewed in an effort to identify any additional areas of potential high marine mammal densities that fell outside the identified environmentally sensitive areas. These areas of high marine mammal density were then included as additional areas of environmental awareness. The following sections discuss each of the identified environmentally sensitive areas.

D.4.1.1 Bathymetric Features (i.e., Canyons, Steep Walls, and Seamounts)

Canyon areas and steep walls are very productive areas for marine life and provide the required deep-water habitat required to sustain deep-diving marine mammals such as sperm and beaked whales. Based on sensitivity of the marine mammals known to inhabit these deep-water areas, it was decided that the associated areas of increased awareness for canyons should begin at the shelf break and extend seaward until the outer canyon wall reaches an approximate 2 percent slope.

Thus, it was decided that areas of increased awareness associated with canyons located along the shelf break in the western Atlantic Ocean offshore of the U.S. East Coast would extend from the shelf break seaward to the 1,500-m (4,921-ft) bathymetry curve and to the 1,600-m (5,249-ft) bathymetry curve for canyon areas occurring with the Gulf of Mexico. An additional buffer of 10 km (5.4 NM) shoreward and 5 km (2.7 NM) seaward was added to the designated canyon areas to delineate the active sonar training avoidance areas. Based on operational requirements, however, a section of the GOMEX OPAREA near DeSoto Canyon is required for Strike Group training.

In addition, the area containing the deep-water trench located along the eastern portion of the Gulf of Mexico was identified as an area of increased awareness. The area of increased awareness associated with this deep-water trench would extend from the shelf break seaward to the 1,600-m (5,249-ft) bathymetry curve. To remain consistent with the methodology utilized to designate similar areas of increased awareness (i.e., Gulf of Mexico canyon areas), a 10 km (5.4 NM) buffer was added to the active sonar training avoidance area shoreward of the shelf break and a 5 km (2.7 NM) buffer was added seaward of the 1,600-m (5,249-ft) bathymetry curve.

D.4.1.2 Northern Right Whale Critical Habitat Areas

Critical habitat for the North Atlantic population of the North Atlantic right whale exists along the western Atlantic Ocean offshore of the U.S. East Coast. The following three areas occur in U.S. waters and were designated by the National Marine Fisheries Service (NMFS) as critical habitat in June 1994 (NMFS, 2005b).

1. Coastal Florida and Georgia (Sebastian Inlet, Florida, to the Altamaha River, Georgia)
2. The Great South Channel, east of Cape Cod
3. Cape Cod and Massachusetts Bays

It was determined that each of these critical habitat areas would be considered as areas of increased awareness.

D.4.1.3 Areas of Persistent Oceanographic Features

The Gulf Stream Current is part of the larger Gulf Stream System that includes the Loop Current in the Gulf of Mexico and the Florida Current in the Florida Straits. The Gulf Stream is a powerful surface current that carries warm equatorial waters into the cooler North Atlantic. The Gulf Stream flows roughly parallel to the coastline from the Florida Straits to Cape Hatteras, where it is deflected from the North American continent and flows northeastward past the Grand Banks. This front is a watermass boundary separating cooler and fresher shelf waters from saltier and warmer slope waters (Graziano and Gawarkiewicz, 2005). As with other oceanographic fronts, the convergence of the different water masses concentrates prey species such as plankton and zooplankton. Because prey is abundant, predators including larger fish, marine mammals, and birds may also occur in increased numbers (NMFS, 2005a). Haney and McGillavery (1985) suggested increased numbers of Cory's shearwaters observed along the Gulf Stream western front was a result of increased food availability created by physical conditions of the front. The attraction between predators and prey created by the frontal conditions provide for increased commercial and recreational fishing opportunities (NMFS, 2005a). Thus, the area offshore of North Carolina, beginning at the Cape Hatteras Horn and running south along the shelf break midway through the CHPT OPAREA was included as an area of increased awareness.

D.4.1.4 River and Bay Mouths

Bay and river mouths are areas where low-salinity waters meet high-salinity ocean waters. These areas are called mixing zones or the convergence zone. Mixing zones occur when the front of the salt wedge meets lower salinity waters flowing out of a bay or river. Mixing zones are typically characterized as areas containing increased levels of suspended particles (i.e., turbidity). The characteristic of increased suspended particles plays a significant role in retaining planktonic organisms, thus creating productive larval fish nursery areas (Chesapeake Biological Laboratory, 2006). This increased production of larval and juvenile fish provides a natural feeding ground for predatory fish. Thus, the increase in predator fish attracts marine mammals that feed on these large species of fish.

Based on the highly productive nature of these mixing zone areas (i.e., convergence zone), a 35-km (19-NM) buffer around the mouth of bays and rivers was utilized in designating these areas of increased awareness. To delineate these areas, a 35 km (19 NM) arc was digitized into the active sonar training avoidance GIS layer (Figure D-74 through D-109) around major river and bay mouths.

D.4.1.5 Designated Marine Sanctuaries

The following marine sanctuaries located within the western Atlantic Ocean offshore of the U.S. East Coast and the Gulf of Mexico fall outside already designated habitat avoidance areas. Based on their ecological, cultural, and conservation importance, these marine sanctuaries would be avoided, including a 5-km (2.7-NM) buffer zone:

- Monitor
- Gray’s Reef
- Stellwagen Bank
- Florida Keys
- Flower Garden Banks

The following paragraphs discuss each of the identified marine sanctuaries.

Monitor National Marine Sanctuary

The Monitor National Marine Sanctuary was established in 1975 in order to preserve the historical and cultural artifacts of one of the most famous ships that have ever been built for naval warfare, the USS Monitor. The location of the sanctuary is defined by the shipwreck and the surrounding area, which is comprised of a column of water extending from the ocean’s surface to the seabed and is one nautical mile in diameter. The small size of the sanctuary limits the number of marine life that permanently inhabits the area. However, many species pass through the area and a small ecosystem has developed around the wreck site following the permanent establishment of several organisms on the wreck (NMSP, 2007d).

Gray's Reef National Marine Sanctuary

Gray's Reef became a national marine sanctuary in 1981 and is one of the three marine sanctuaries that make up the Southeast Region. It is one of the largest nearshore sandstone reefs in the Southeastern United States and is an important calving ground for the endangered Northern right whale. The 58 km² (17 NM^2) that make up Gray's Reef are located 32 km (17.5 NM) off Sapelo Island, Georgia. The area that makes up Gray's Reef is the only natural area protected off the Georgia Coast.

Gray's Reef is popular for recreational fishing and diving because of its "live bottom habitat" that supports an unusual assemblage of organisms and temperate and tropical marine flora and fauna that attach to the rocky platform. The area is characterized by a series of rock ledges and sand expanses that have created deep burrows, troughs, and caves that attract an array of different species including black sea bass, snapper, grouper, and mackerel. Since the reef lies in a transition area between temperate and tropical waters, the composition of the fish population changes seasonally. Dominant invertebrates that inhabit the area include sponges, barnacles, sea fans, hard coral, crabs, lobsters, and snails. The area supports endangered and threatened species such as Loggerhead turtles which are present year round. The reef is also part of the only known winter calving grounds for the Northern right whale (NMSP, 2007c).

Sport fishing and diving occurs year round at Gray's Reef. However, certain types of equipment, such as wire fish traps, bottom trawls, and explosives, are restricted in the area. Commercial fishing, military activities, mineral extraction, and ocean dumping are restricted. Also, any alteration of the seabed is prohibited in the area, including removal or damage to bottom formations and other natural or cultural resources, as well as and disposal of materials or substances (NMSP, 2007c).

Stellwagen Bank National Marine Sanctuary

Stellwagen Bank is located on the eastern edge of Massachusetts Bay, which lies between Cape Ann and Cape Cod, in the southwest corner of the Gulf of Maine. The bank is characterized as shallow sandy feature that extends for nearly 30.6 km (6.5 NM) and is approximately 9.7 km (5.2 NM) across at is widest point. It is the bay's most prominent feature and the centerpiece of the Stellwagen Bank National Marine Sanctuary.

As a result of the 1992 reauthorization and amendment to Title III of the Marine Protection, Research and Sanctuaries Act (MPRSA), the Stellwagen Bank National Marine Sanctuary was established. Stellwagen Bank is New England's first sanctuary and is the nation's 12th sanctuary. It encompasses a total of 2,191 km² (638 NM^2), and occurs entirely within federal waters. Stellwagen Bank was designated a national marine sanctuary for a variety of reasons, the most notable of which is the two distinct peak productivity periods that result in a complex system of midwater and benthic habitats. The area provides cover and anchoring locations for invertebrates and also provides feeding and nursery grounds for other types of species, particularly a variety of endangered species such as leatherback and Kemp's ridley sea turtles, and the humpback, Northern right, sei, and fin whales (NMSP, 2007e). The abundant variety of species supports a variety of activities, including whale watching, bird watching, boating, and commercial and sport fishing.

Another important feature of the Stellwagen Bank National Marine Sanctuary is the presence of nearly 50 shipwrecks. Major shipping lanes to Boston go through the sanctuary, creating a constant flow of large-vessel traffic. However, a shift in the shipping lanes will take effect on July 1, 2007. The International Maritime Organization approved a 12-degree northward adjustment in shipping lanes through the sanctuary in order to reduce the threat of ship strikes to endangered whales in the sanctuary. The relocation will avoid popular right, fin, and humpback whale feeding grounds. Further, it is expected to reduce the risk of ship strikes to right whales by 58 percent and up to 81 percent for all other large whale species (Smrcina, 2006).

The NOAA's office of Law Enforcement, the U.S. Coast Guard, and the Massachusetts Environmental Police are responsible for enforcing federal laws in the sanctuary. Recreational fishing, whale watching, and diving are regulated activities in the sanctuary. There is no permit required for fishing; however, regulations govern the number and type of species caught. There are three sanctuary-specific regulations for diving, which include no alteration to seabed, no transportation of a historical resource, and no possession of a historical or natural resource (Smrcina, 2006).

Florida Keys National Marine Sanctuary

The Florida Keys National Marine Sanctuary was designated in 1990 over concerns for the health of the coral reefs. The Florida Keys National Marine Sanctuary encompasses 9,959 km^2 (2,900 NM^2) which surrounds the entire chain of islands and includes the Florida Bay, the Gulf of Mexico, and the Atlantic Ocean (NMSP, 2007a).

There are sanctuary-wide regulations as well as regulations by zone. Sanctuary-wide regulations focus on reducing direct and indirect threats to the reef by focusing on protecting critical habitats and resources and improving water quality. The zones in the sanctuary include the Western Sambo Ecological Reserve (ER), 18 Sanctuary Preservation Areas (SPA), 27 Wildlife Management Areas (WMA), 4 special use areas, and existing management areas (NMSP, 2007a).

Flower Garden Banks National Marine Sanctuary

The Flower Garden Banks National Marine Sanctuary is located in the northwestern Gulf of Mexico nearly 177 km (96 NM) off the coast of Texas and Louisiana and harbors the northernmost coral reefs in the United States. The area serves as a regional reservoir of shallow-water Caribbean reef fish and invertebrates, making it one of the premier diving destinations around the world.

Designated in 1992, the sanctuary serves to protect the coral reef ecosystem and its associated biological communities from increasing human activities such as oil and gas exploration. The sanctuary is made up of three separate areas, known as East Flower Garden, West Flower Garden, and Stetson Banks. The total area of the sanctuary is approximately 144 km^2 (42 NM^2) and supports nearly 280 documented fish species, loggerhead and hawksbill sea turtles, and a variety of shark and ray species (NMSP, 2007b).

The Flower Garden Banks National Marine Sanctuary is internationally recognized as a no-anchoring area which minimizes damage from commercial shipping. The area is also protected by mooring buoys which prevent anchor damage to the habitats. Other activities that are regulated in the area include discharges, taking of marine mammals and sea turtles, injury or possession of sanctuary resources, and fishing and related activities (NMSP, 2007b).

The Navy will not conduct active sonar activities within the Stellwagen Bank, Monitor, Gray's Reef, Flower Garden Banks, and Florida Keys National Marine Sanctuaries and will avoid these sanctuaries by observing a 5 km (2.7 NM) buffer. At all times, the Navy will conduct AFAST activities in a manner that avoids to the maximum extent practicable any adverse impacts on sanctuary resources. In the event the Navy determines AFAST activities, due to operational requirements, are likely to destroy, cause the loss of, or injure any sanctuary resource (for Stellwagen Bank National Marine Sanctuary, the threshold is "may" destroy, cause the loss of, or injure), the Navy would first consult with the Director, Office of National Marine Sanctuaries in accordance with 16 U.S.C. 1434(d).

D.4.2 Active Sonar Training Areas

Under Alternative 3 the majority of active sonar activities would occur outside the previously discussed areas of increased awareness. However, there were a few active sonar activities that could not be conducted outside the areas of increased awareness due to less flexible operational training requirements.

D.4.3 Active Sonar Training to Occur within the Areas of Increased Awareness

D.4.3.1 Anti-Submarine Warfare Helicopter Dipping Sonar Unit Level Training Areas

The ASW helicopter-dipping sonar ULT activities occurring out of Mayport, Florida, are conducted within the TACAN located within W-158. Based on training requirements, these training activities are typically conducted between 7 and 37 km (4 and 20 NM) off shore.

However, based on the qualitative environmental analysis, the location of the ASW helicopter-dipping sonar ULT activities would be located within an area designated as an area of increased awareness. The ASW helicopter dipping sonar ULT area is currently located near the outflow of the St. Johns River and North Atlantic right whale critical habitat. Based on limited operational flexibility, the current location of the ASW Dipping Sonar ULT area off the shore of Mayport, Florida will remain unchanged under Alternative 3.

D.4.3.2 Object Detection Sonar Training Areas

Under Alternative 3, the Object Detection and Navigational Sonar training areas discussed under the No Action Alternative would remain unchanged, as shown in Figures D-182 through D-217. Even though the qualitative environmental analysis identified the mouth of rivers and bays as areas of increased awareness, the Object Detection and Navigational Sonar training activities are directly tied to the port location of the ship and or submarine. Therefore, no flexibility exists associated with conducting Object Detection and Navigational Sonar training elsewhere without defeating the purpose of the training.

D.4.3.3 Active Sonar Maintenance Areas

Active sonar maintenance areas associated with surface ship and submarine sonars occurring under Alternative 3 would remain consistent with those areas discussed under the No Action Alternative. The majority of active sonar maintenance occurs at pier side. The pier side maintenance areas occur within the homeports of the surface ships or submarines. Thus, Norfolk and Mayport are designated as surface ship sonar (i.e., AN/SQS-53 and AN/SQS-56) maintenance areas. Kings Bay, Norfolk, and Groton ports are identified as the primary maintenance areas for submarine sonars (AN/BQQ-10).

Thus, under Alternative 3 no flexibility exists associated with conducting required pier side active sonar maintenance elsewhere.

D.4.3.4 Torpedo Exercises

ASW training involving torpedo firing would occur within the VACAPES and GOMEX OPAREAs outside of areas of increased awareness, however designated TORPEX boxes within and adjacent to the Northeast OPAREA would reside within areas of increased awareness that are based on North Atlantic right whale critical habitat. These training areas were established during prior consultations with NMFS.

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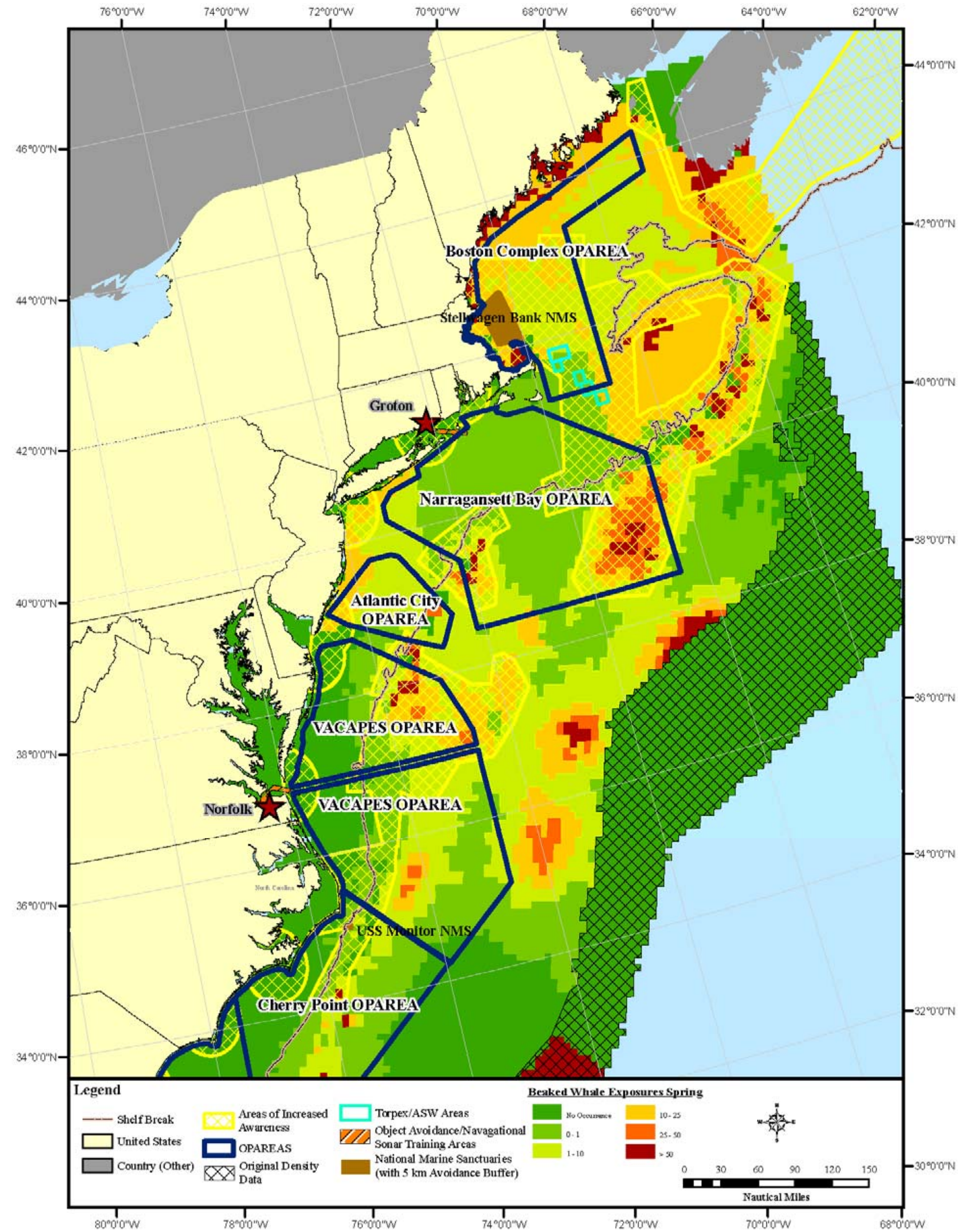


Figure D-74. Alternative 3, NE Beaked Whale-Spring

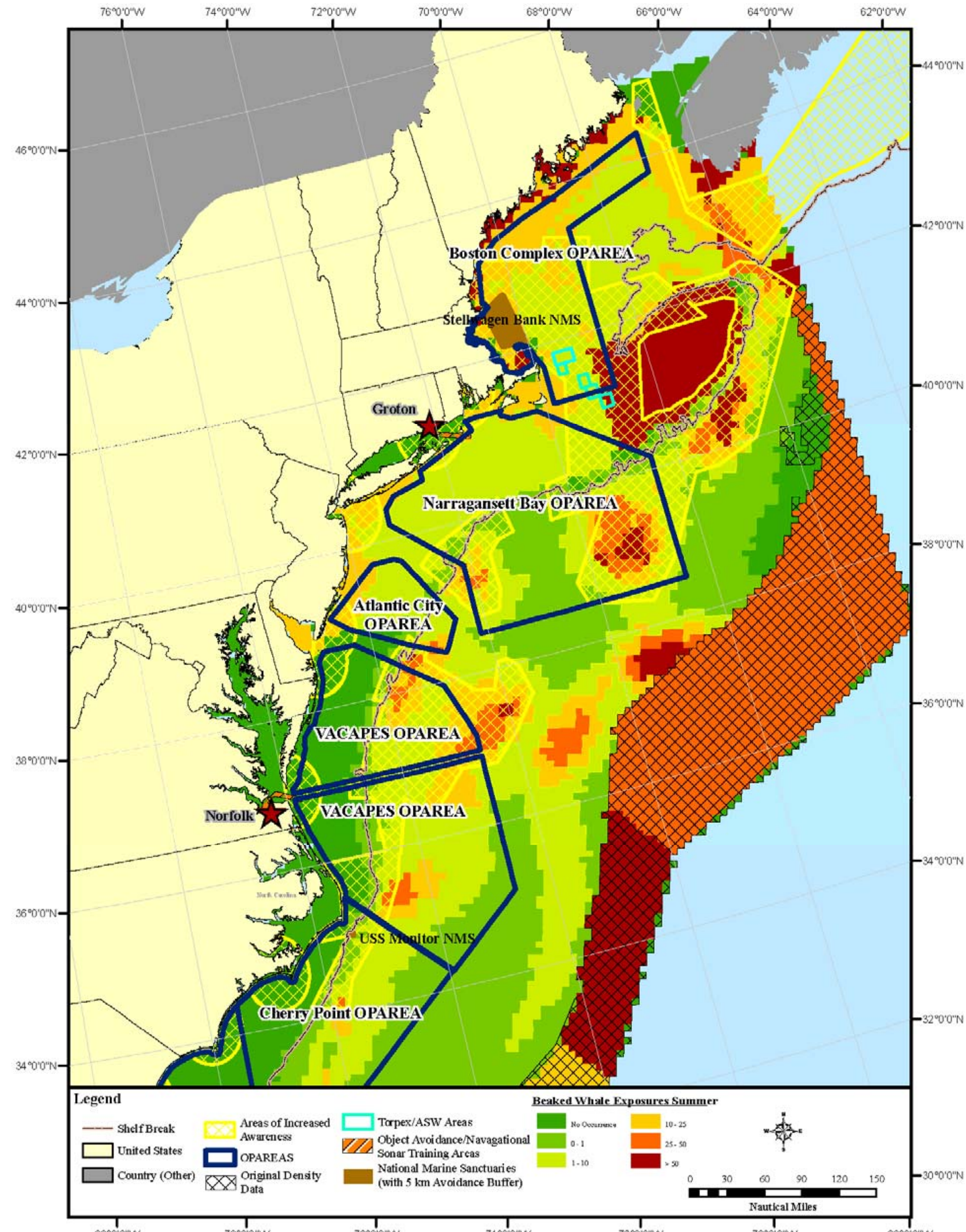


Figure D-75. Alternative 3, NE Beaked Whale-Summer

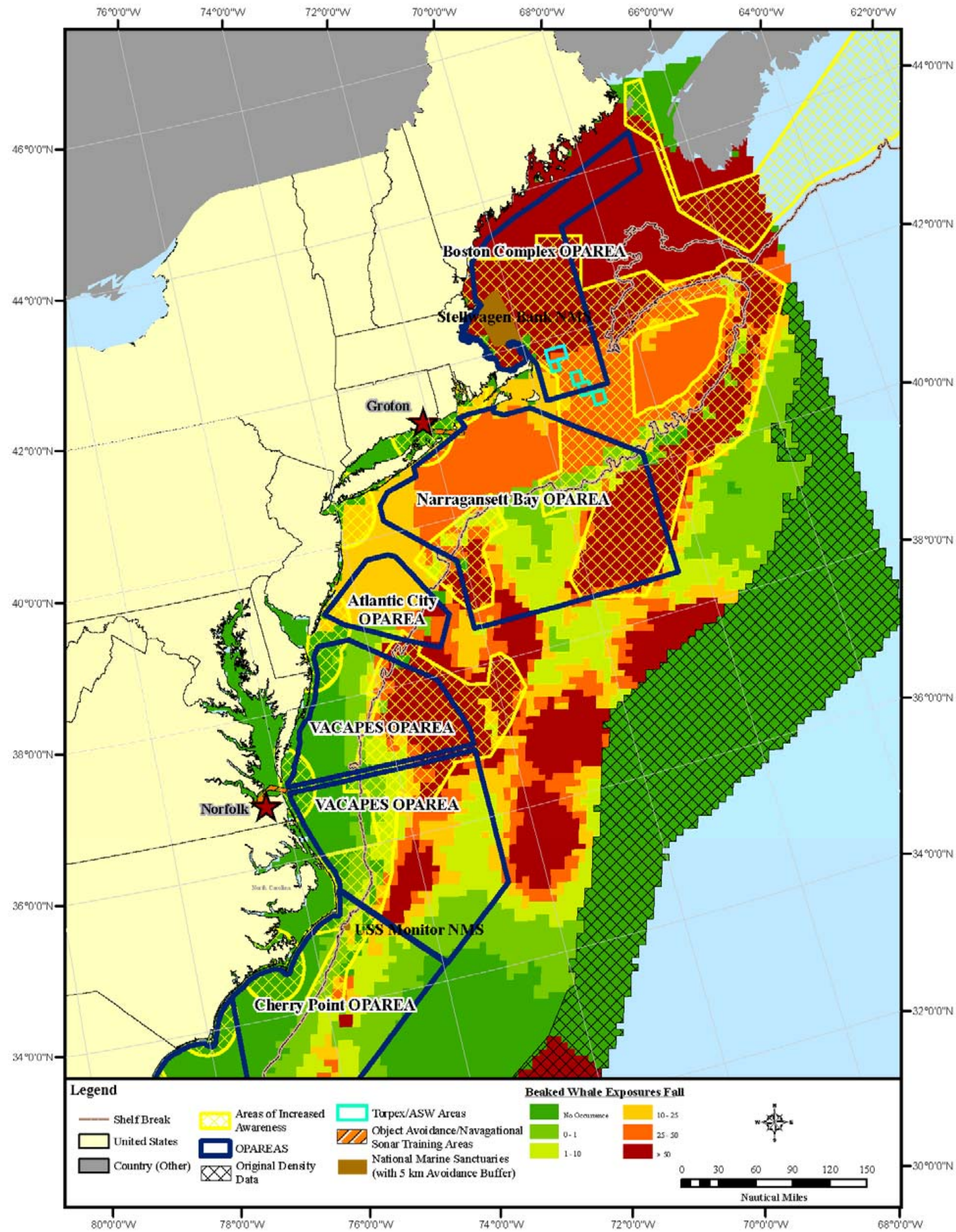


Figure D-76. Alternative 3, NE Beaked Whale-Fall

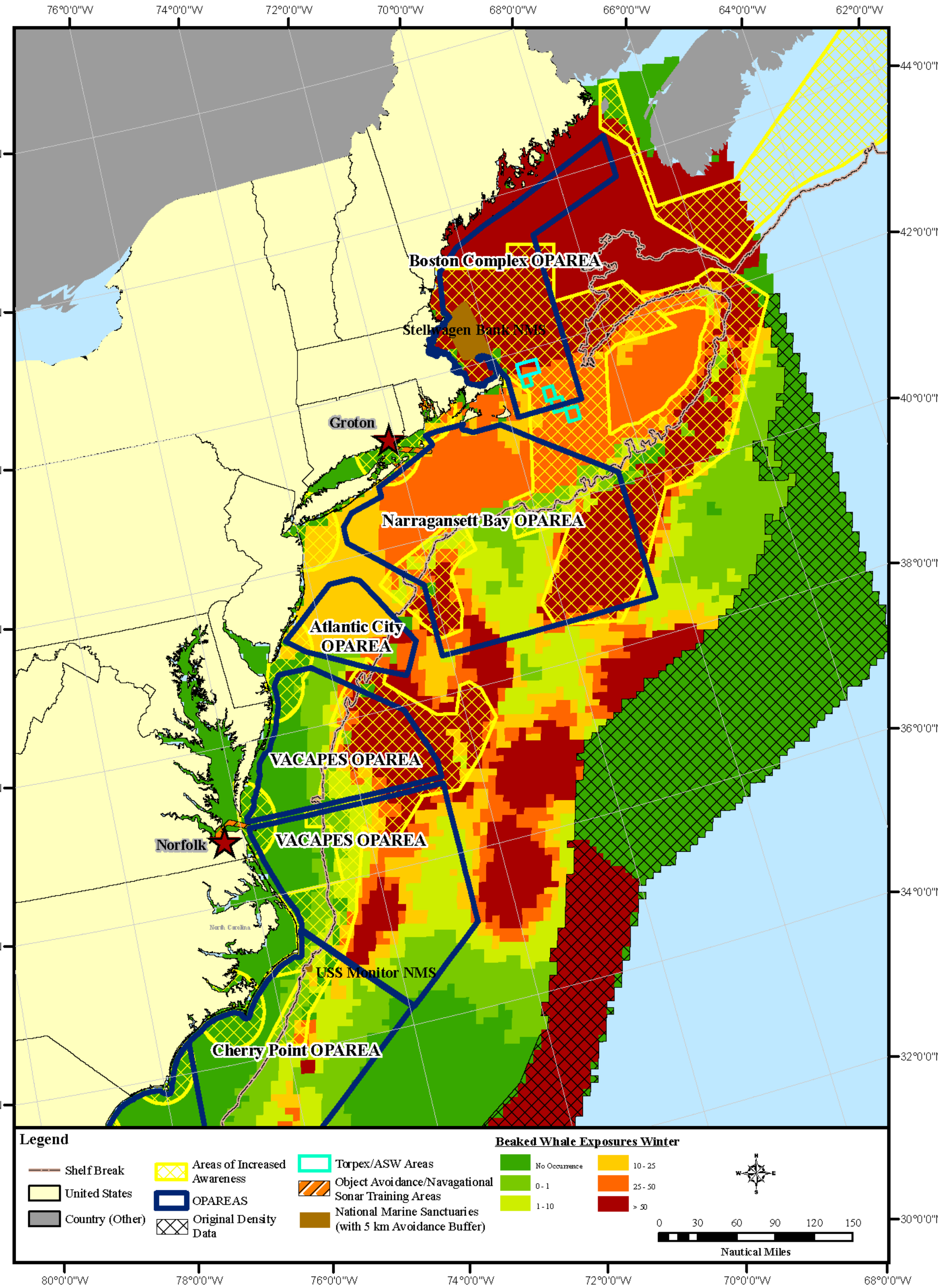


Figure D-77. Alternative 3, NE Beaked Whale-Winter

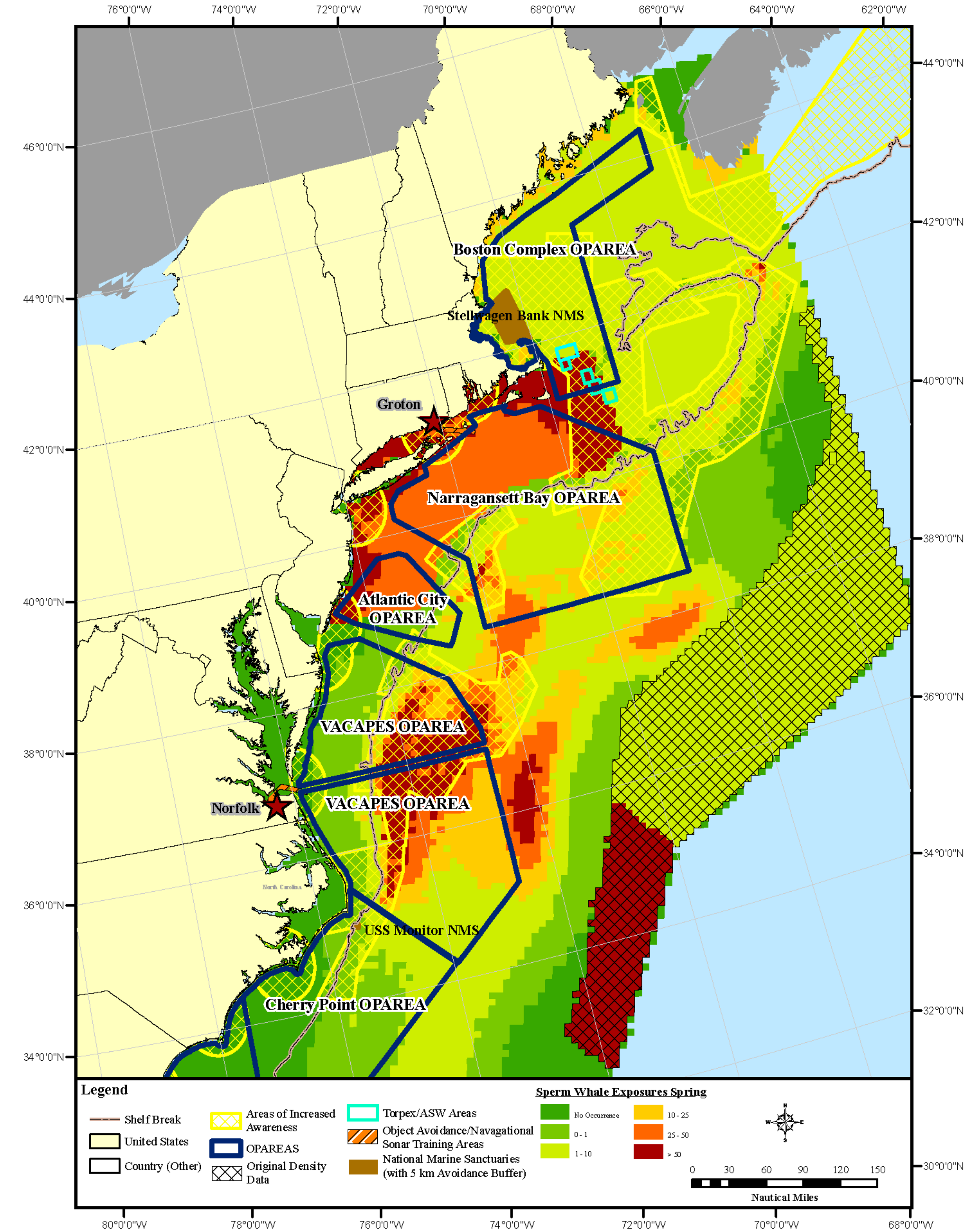


Figure D-78. Alternative 3, NE Sperm Whale-Spring

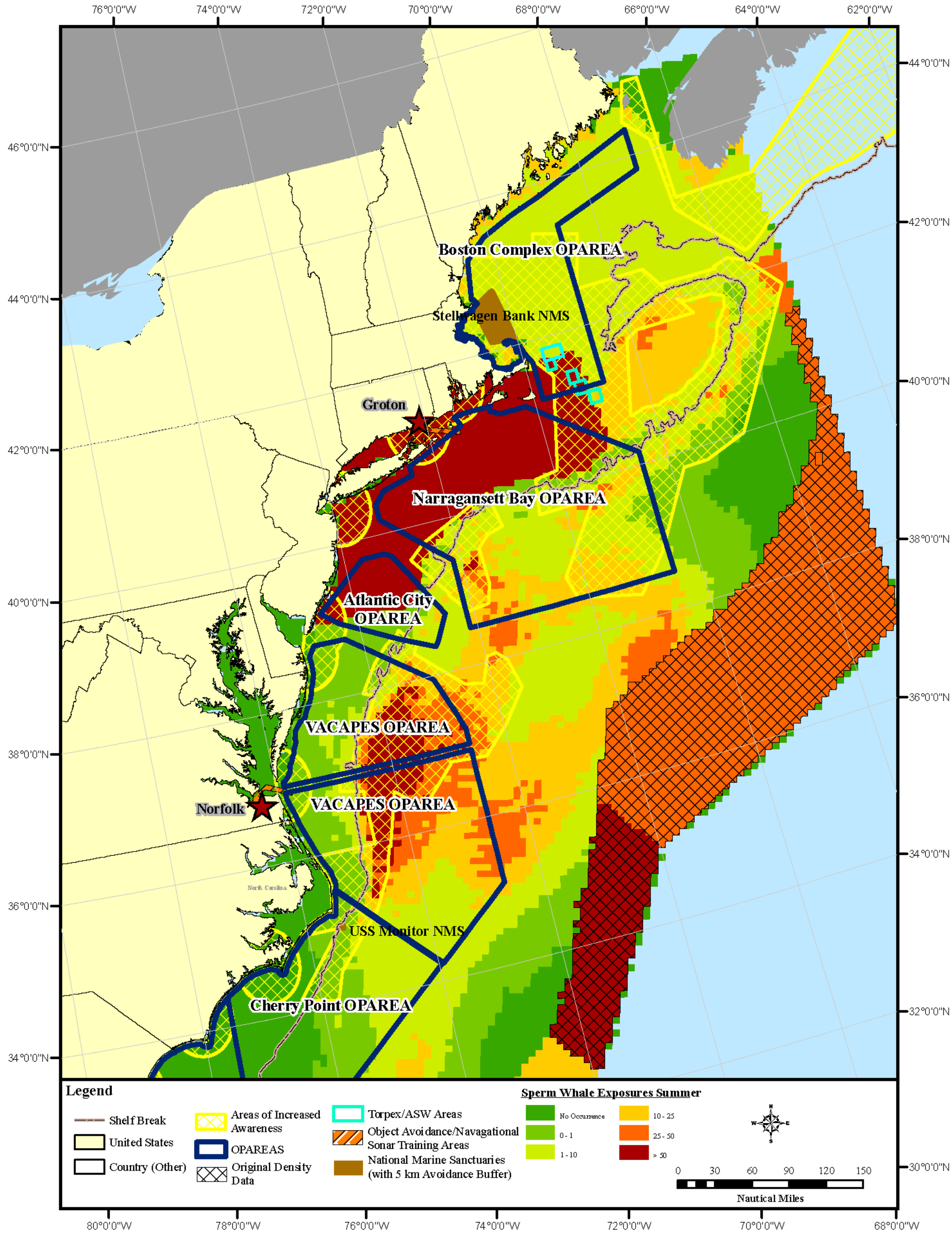


Figure D-79. Alternative 3, NE Sperm Whale-Summer

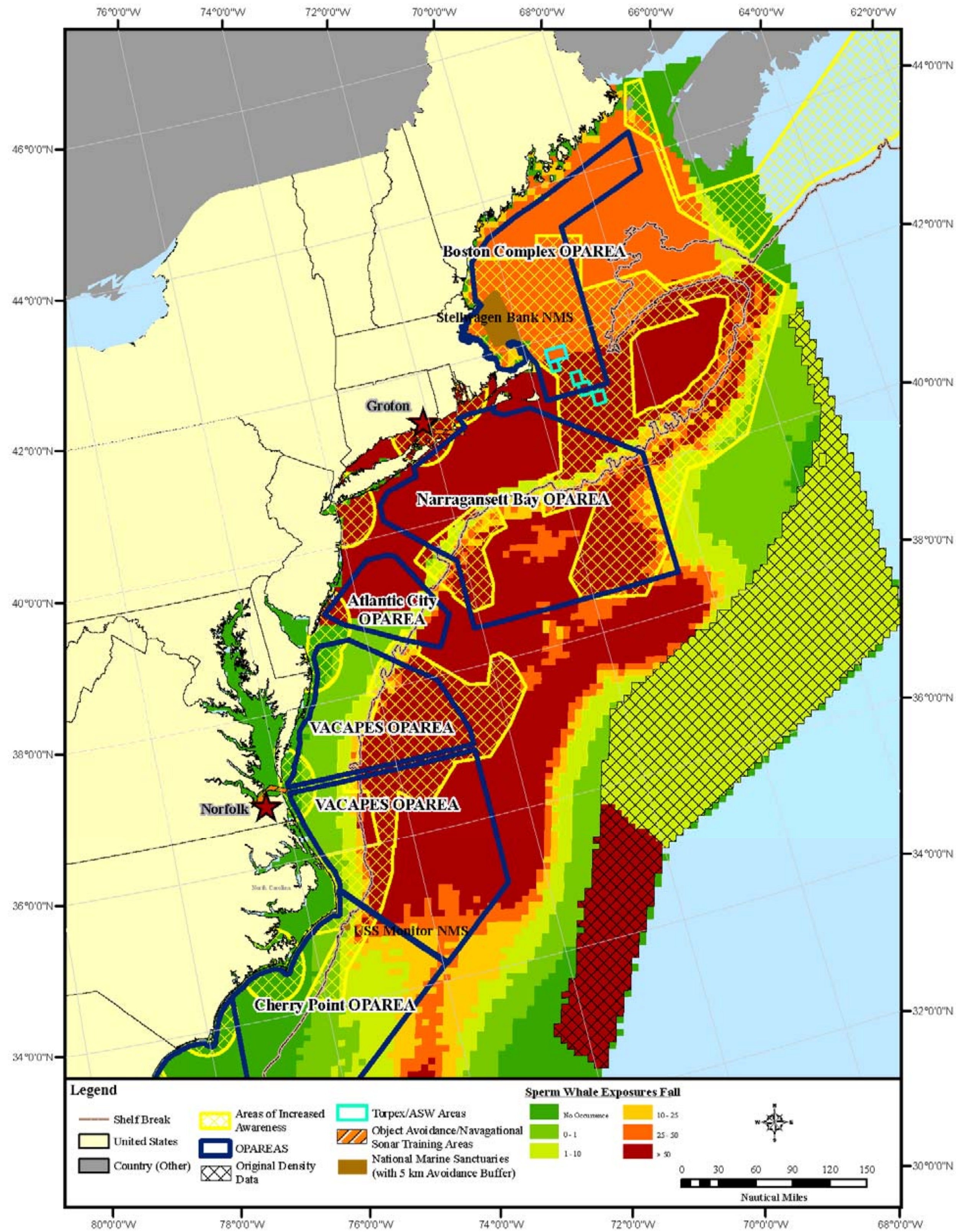


Figure D-80. Alternative 3, NE Sperm Whale-Fall

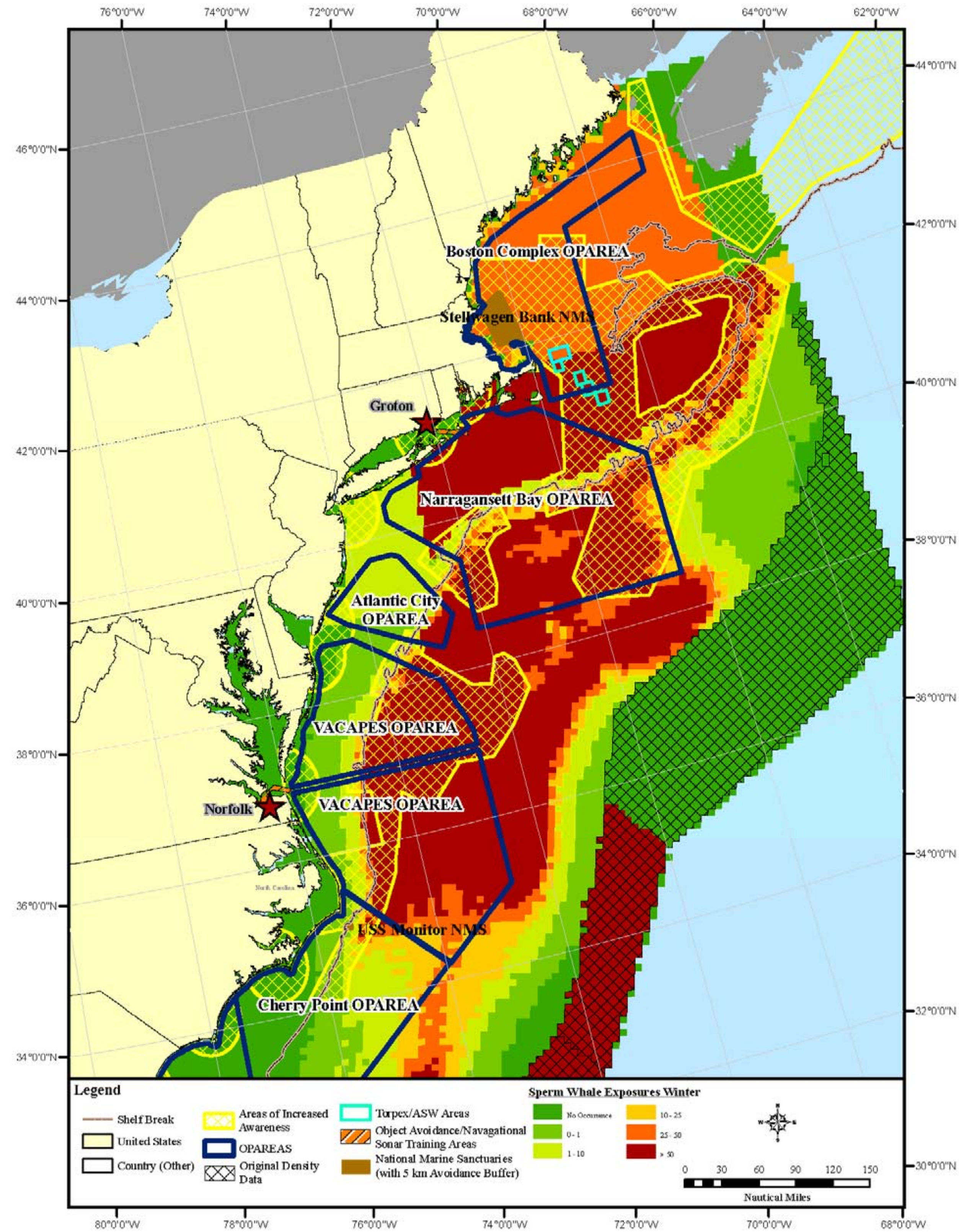


Figure D-81. Alternative 3, NE Sperm Whale-Winter

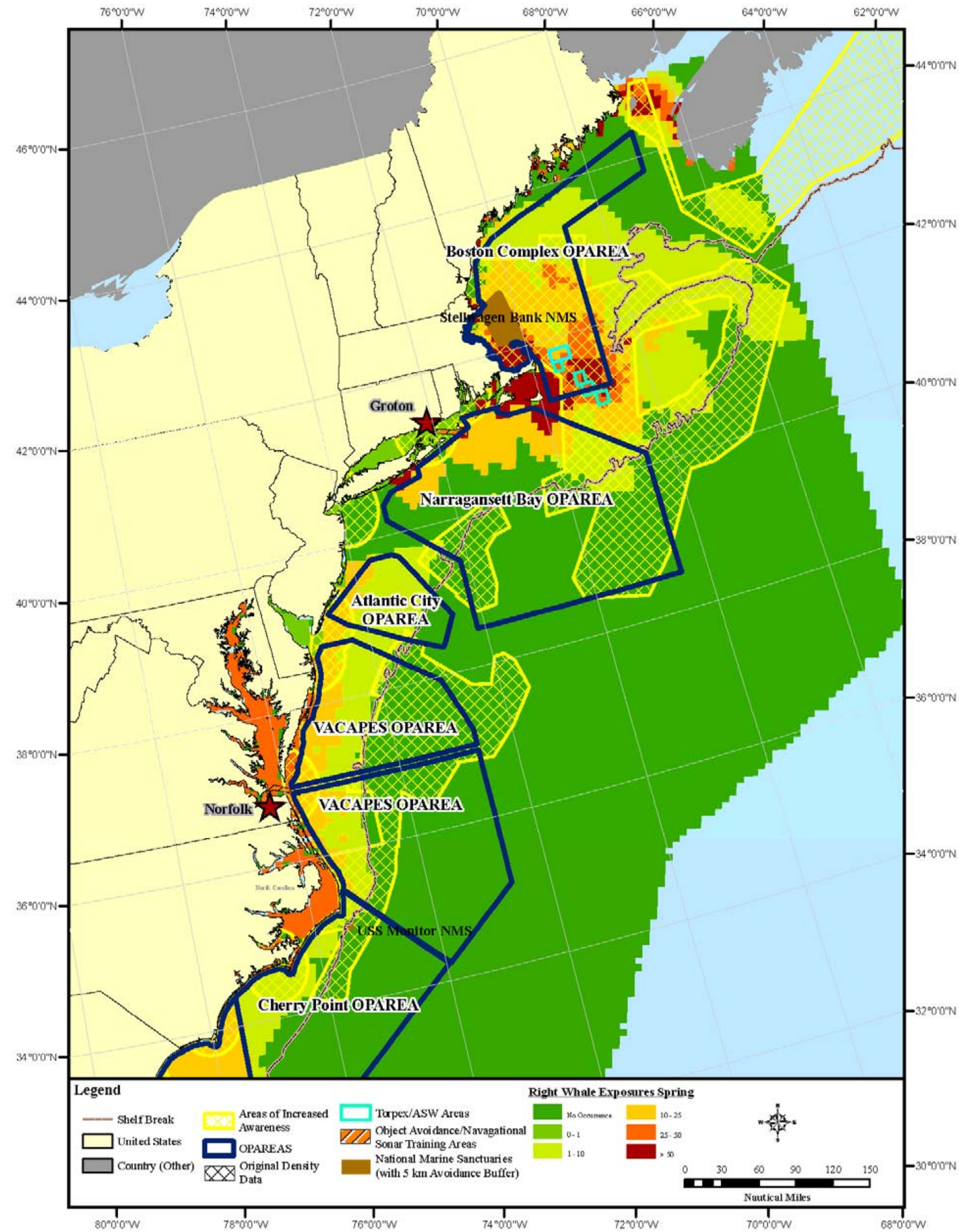


Figure D-82. Alternative 3, NE Right Whale-Spring

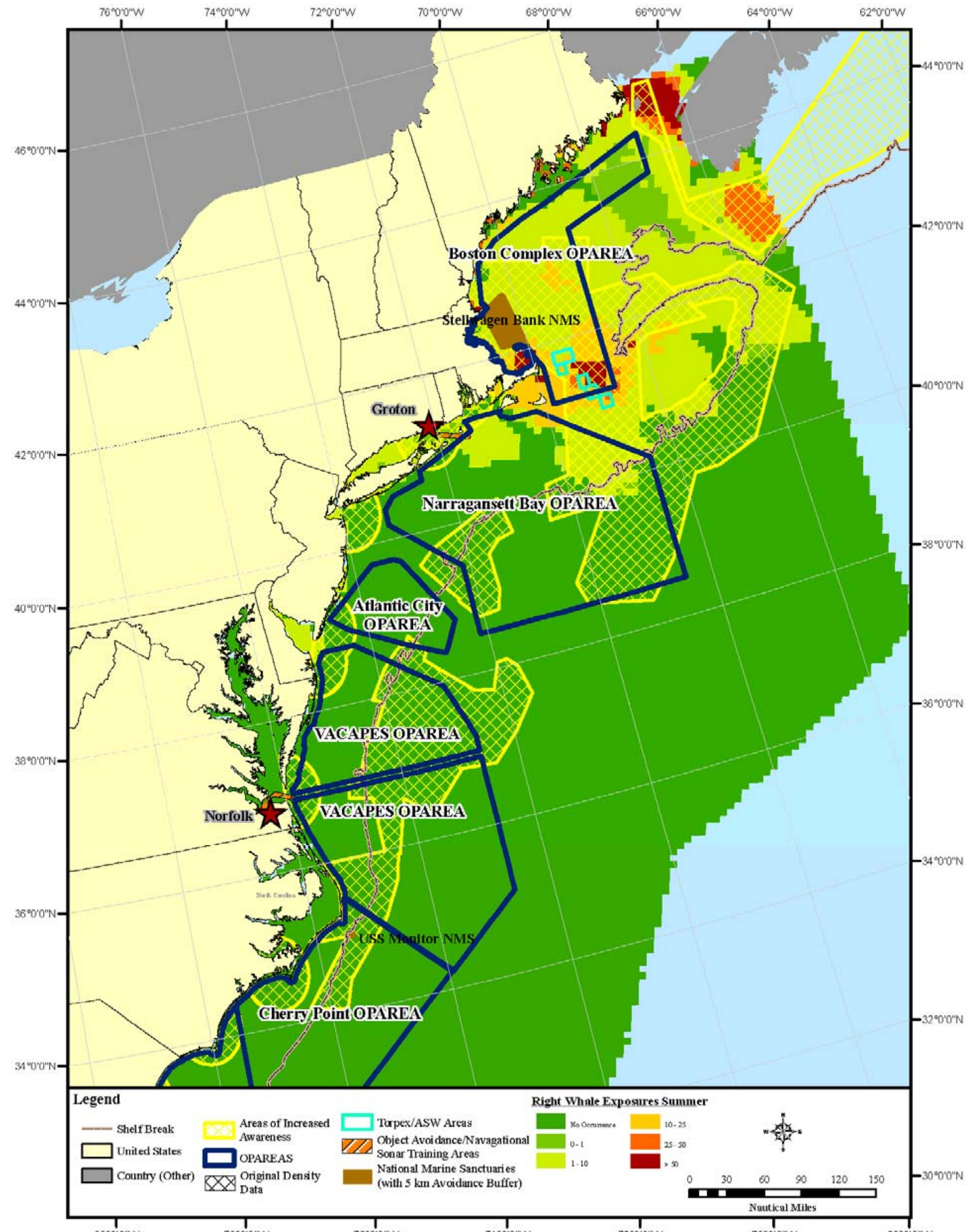


Figure D-83. Alternative 3, NE Right Whale-Summer

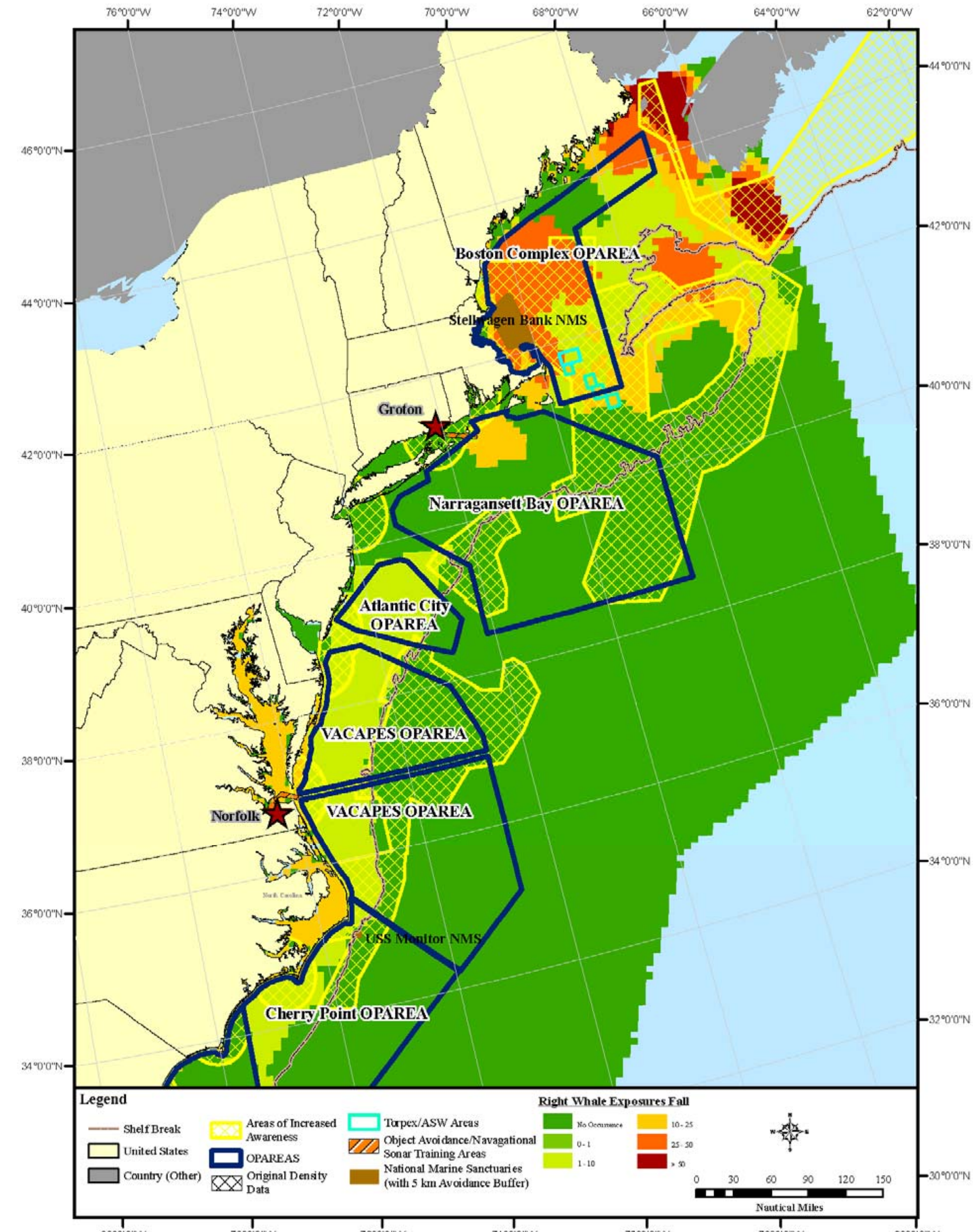
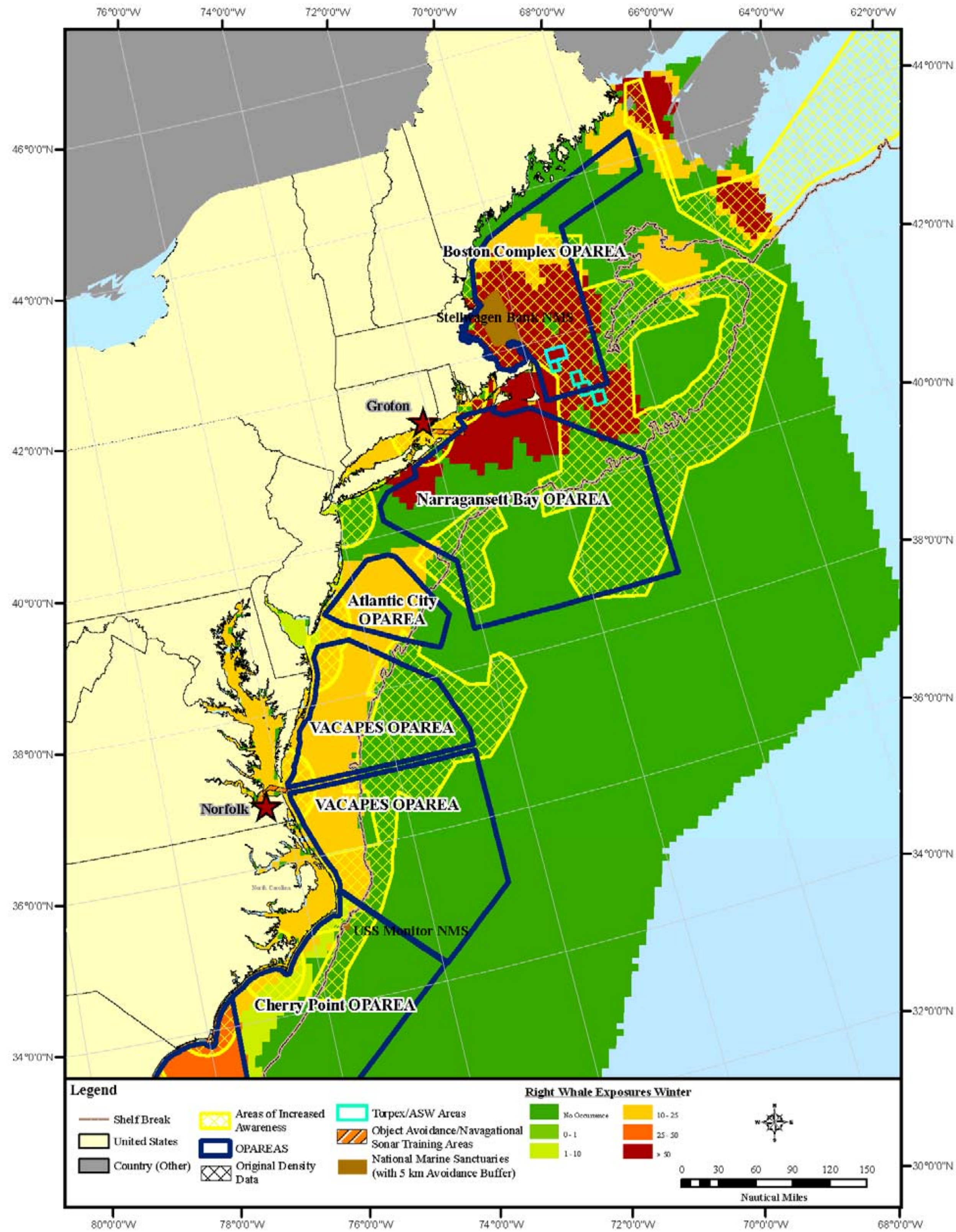


Figure D-84. Alternative 3, NE Right Whale-Fall



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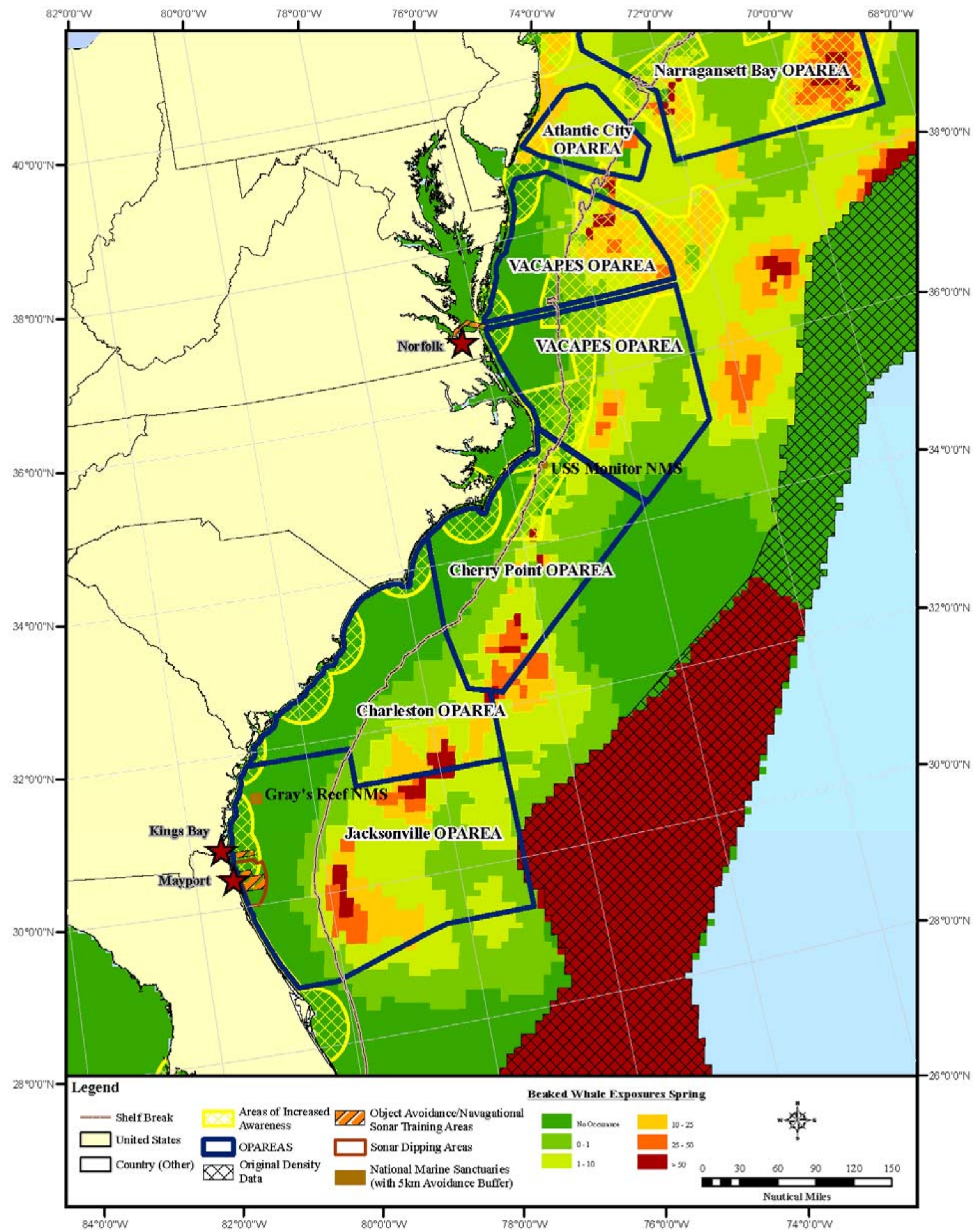


Figure D-86. Alternative 3, SE Beaked Whale-Spring

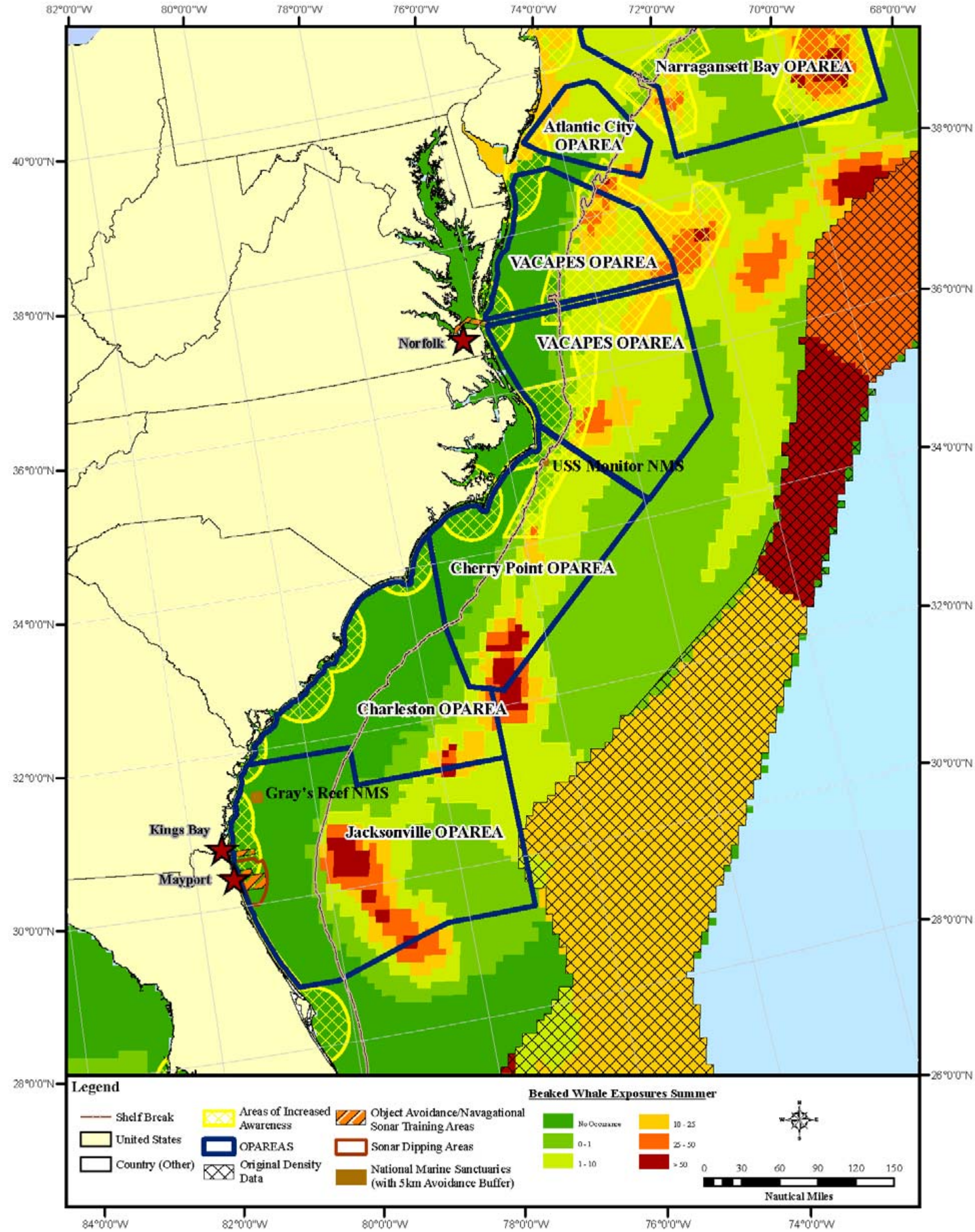


Figure D-87. Alternative 3, SE Beaked Whale-Summer

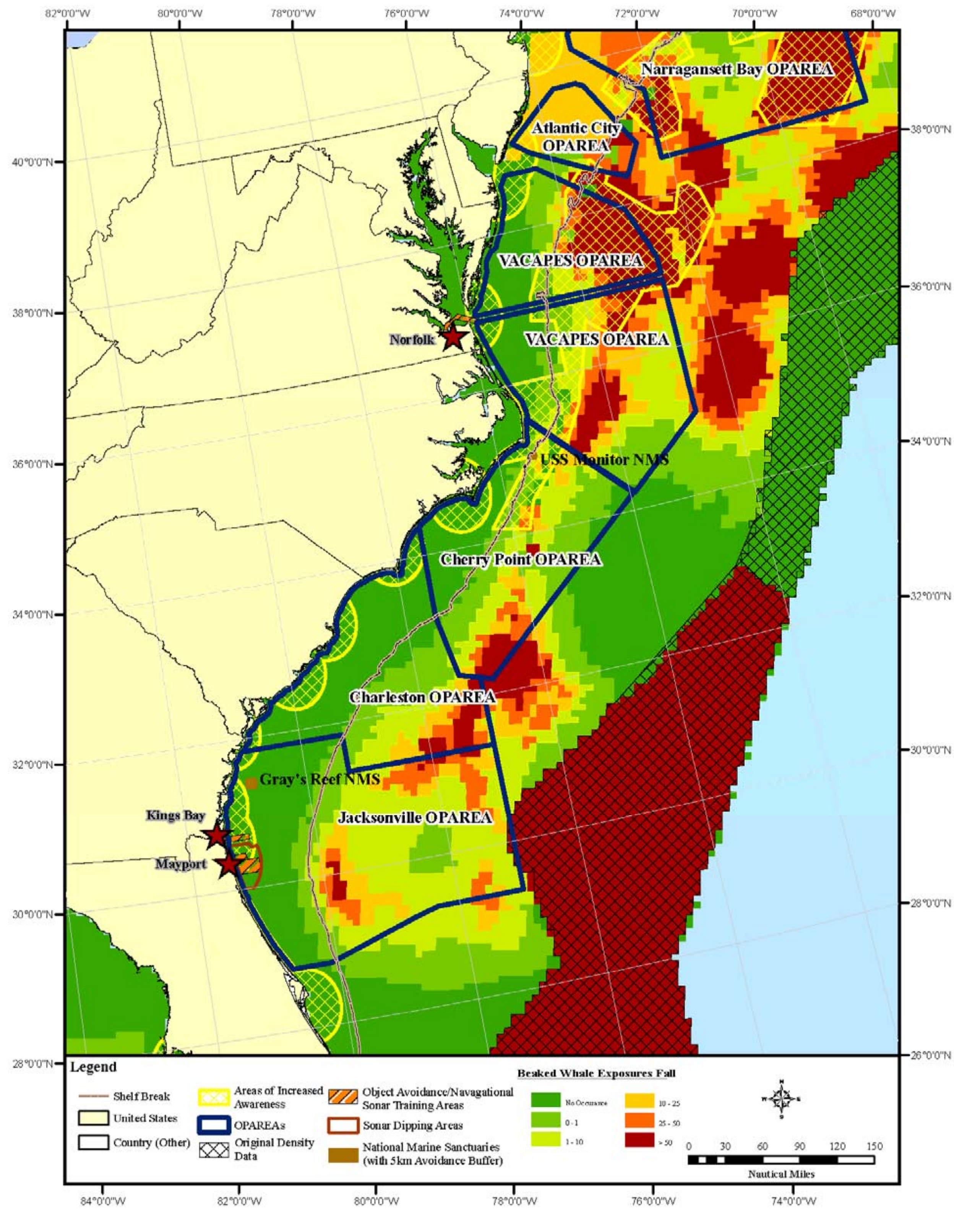


Figure D-88. Alternative 3, SE Beaked Whale-Fall

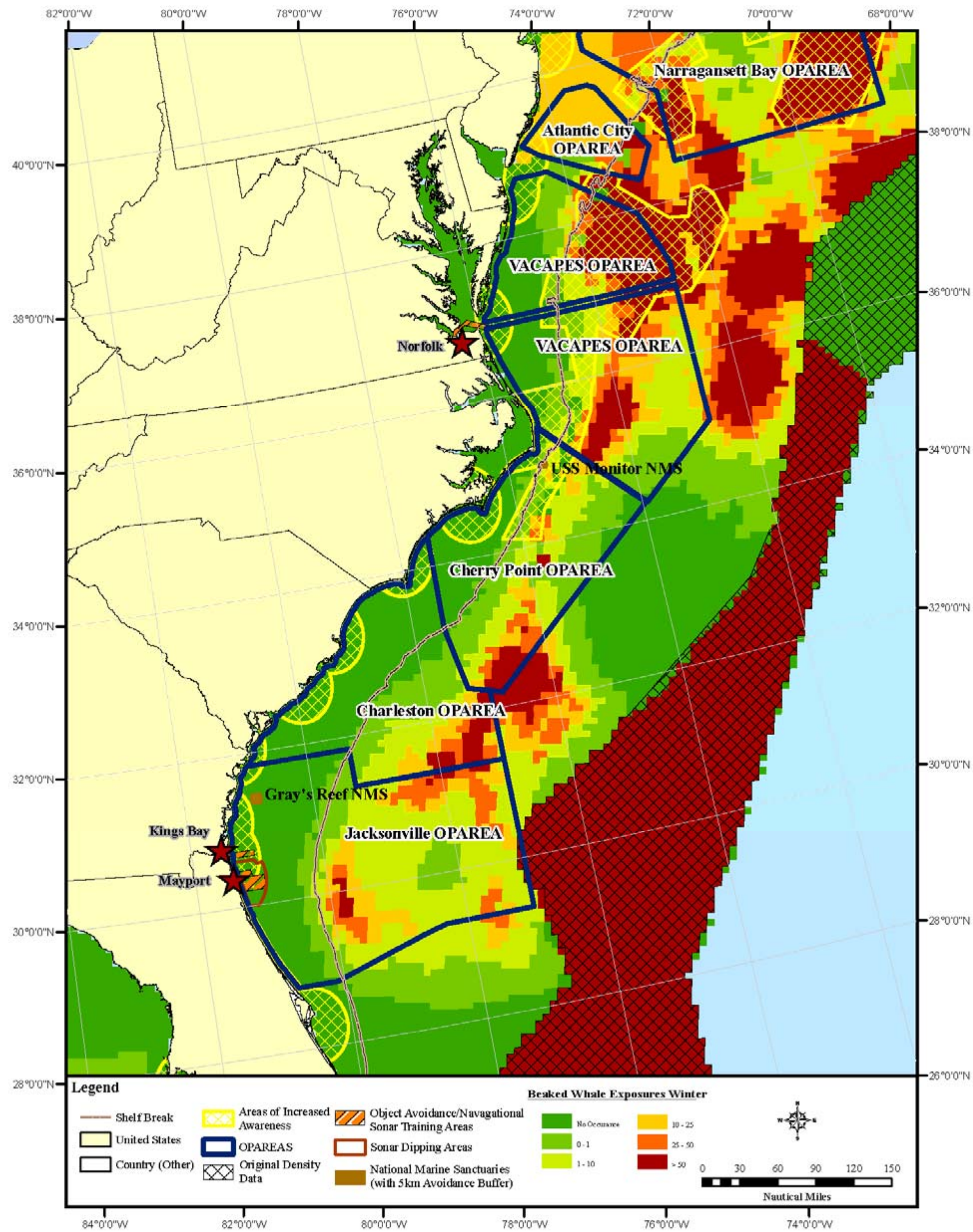


Figure D-89. Alternative 3, SE Beaked Whale-Winter

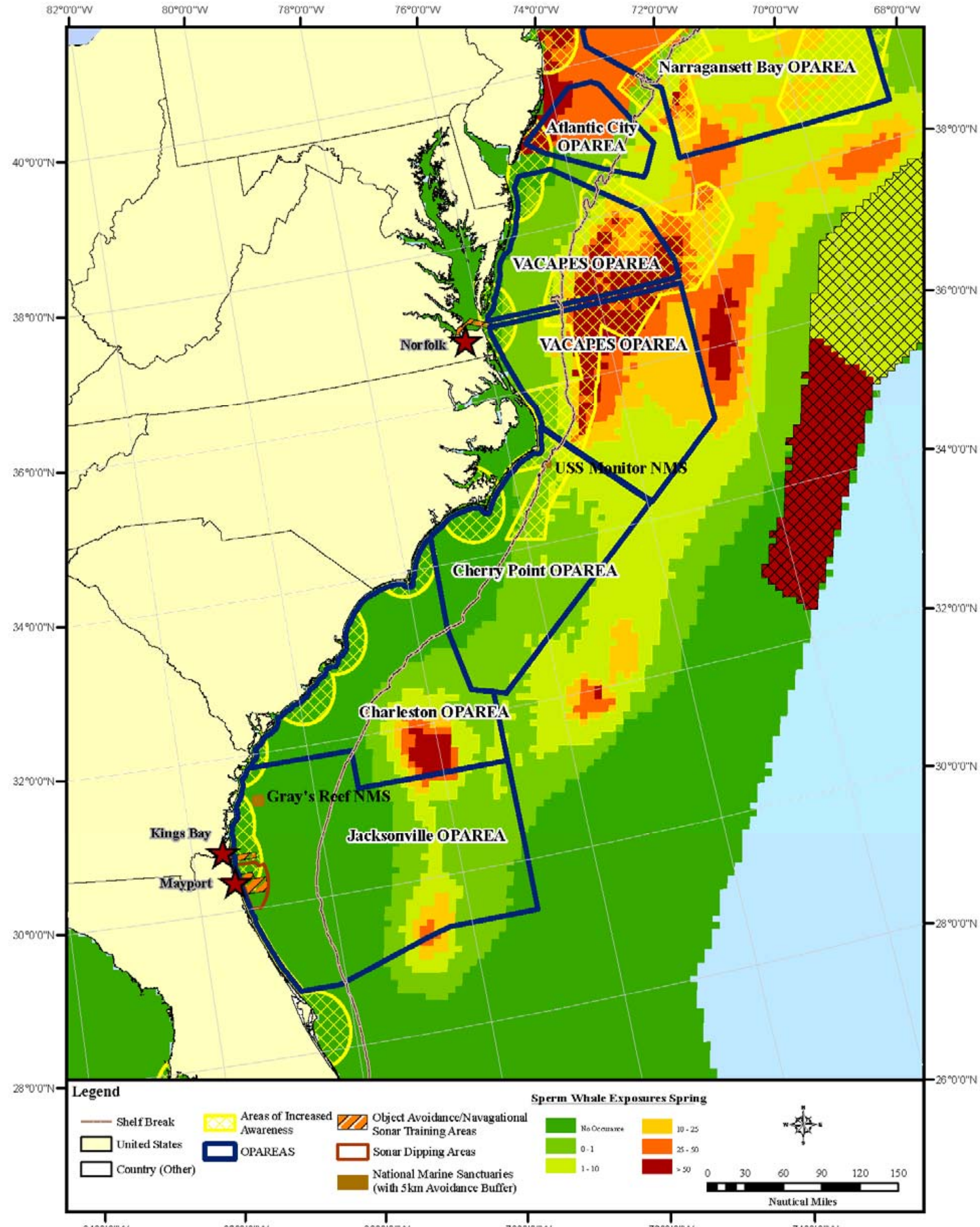


Figure D-90. Alternative 3, SE Sperm Whale-Spring

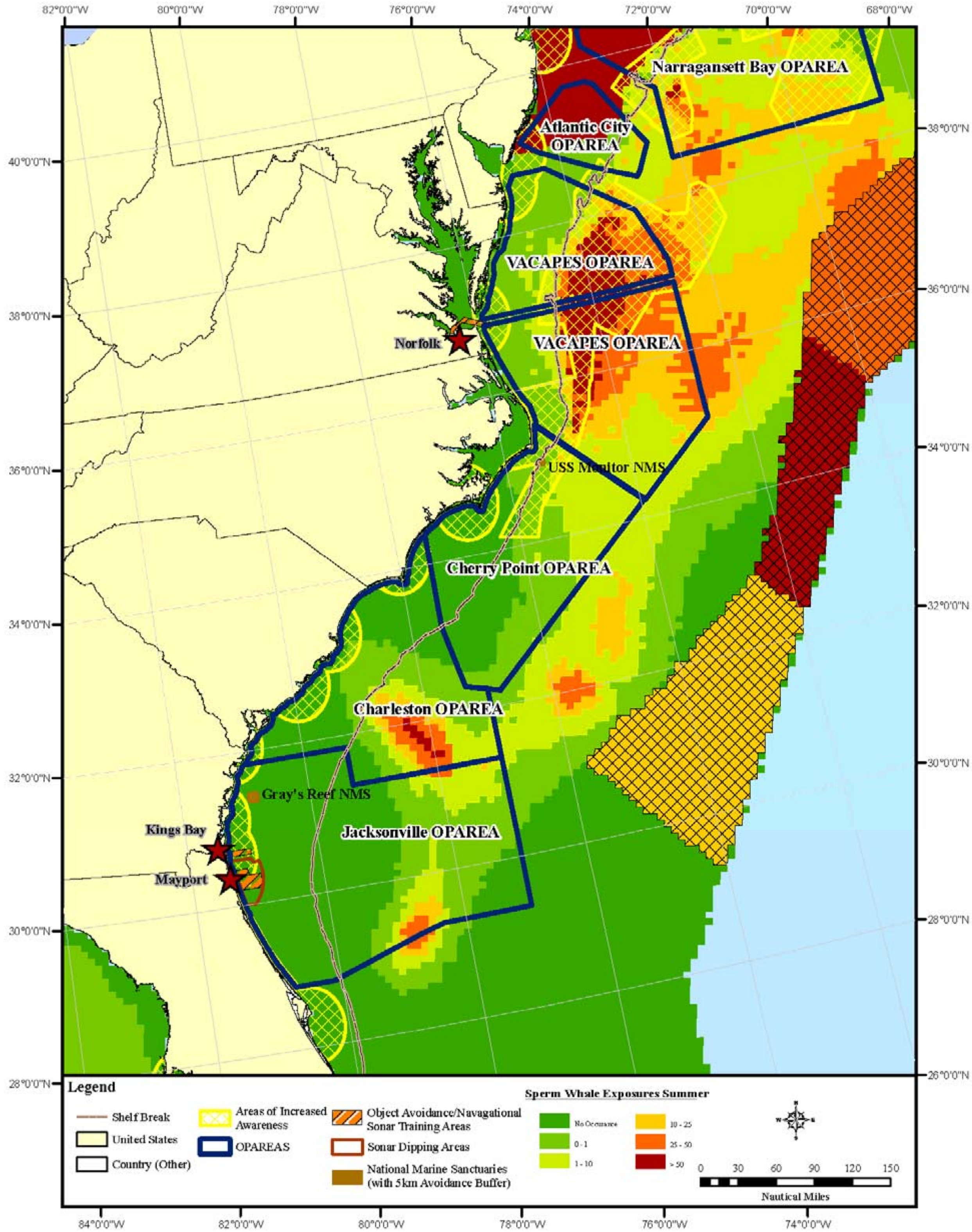


Figure D-91. Alternative 3, SE Sperm Whale-Summer

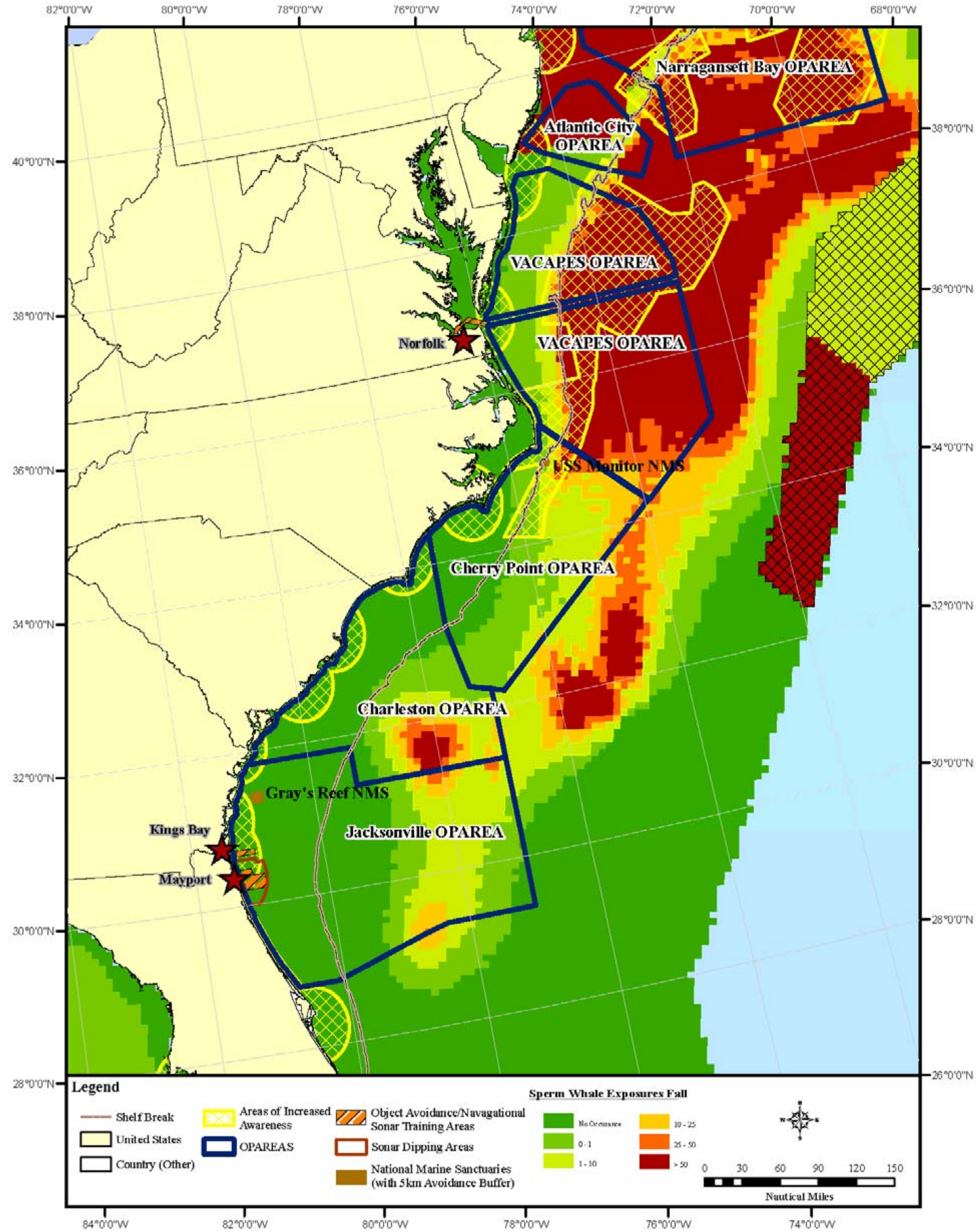


Figure D-92. Alternative 3, SE Sperm Whale-Fall

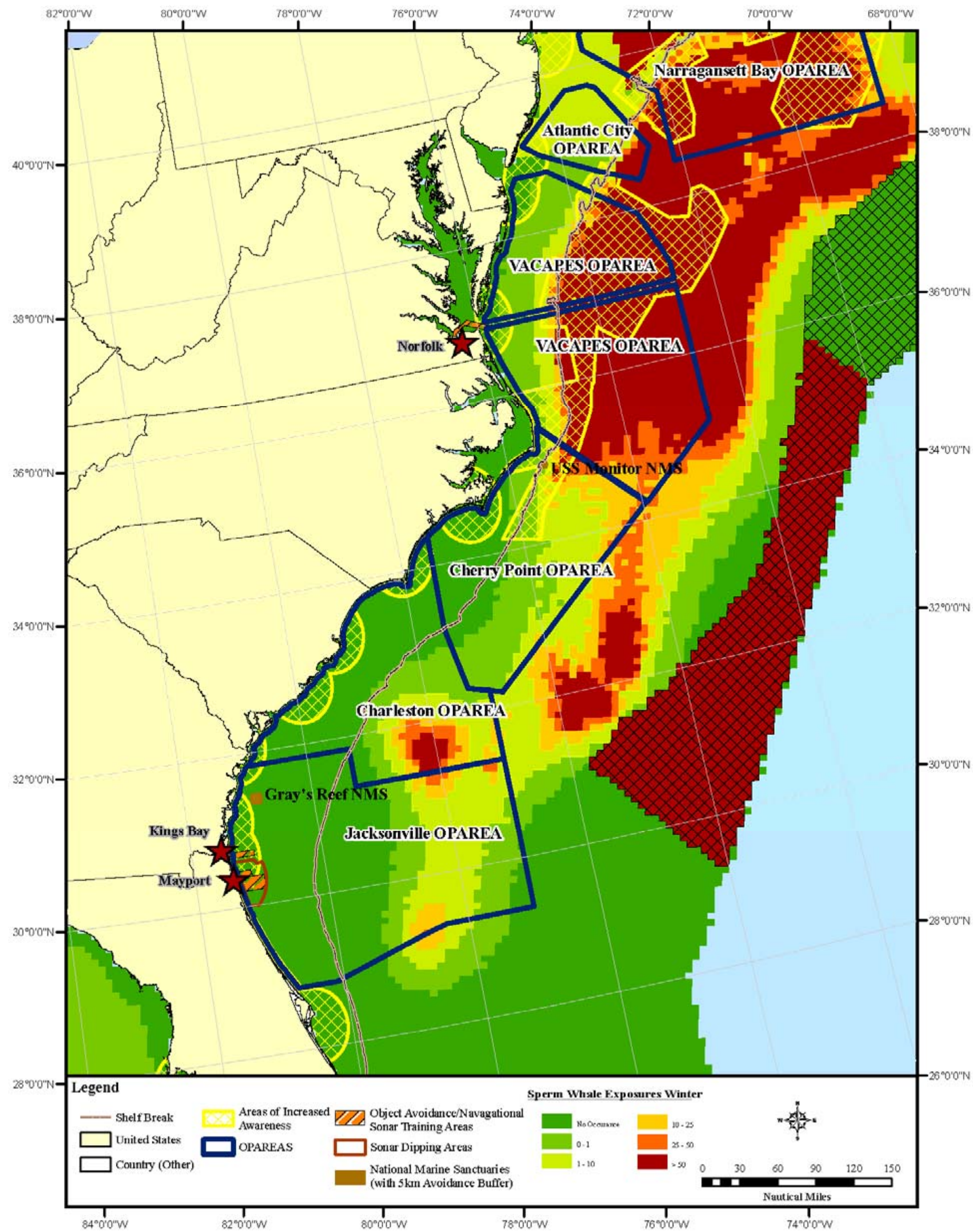


Figure D-93. Alternative 3, SE Sperm Whale-Winter

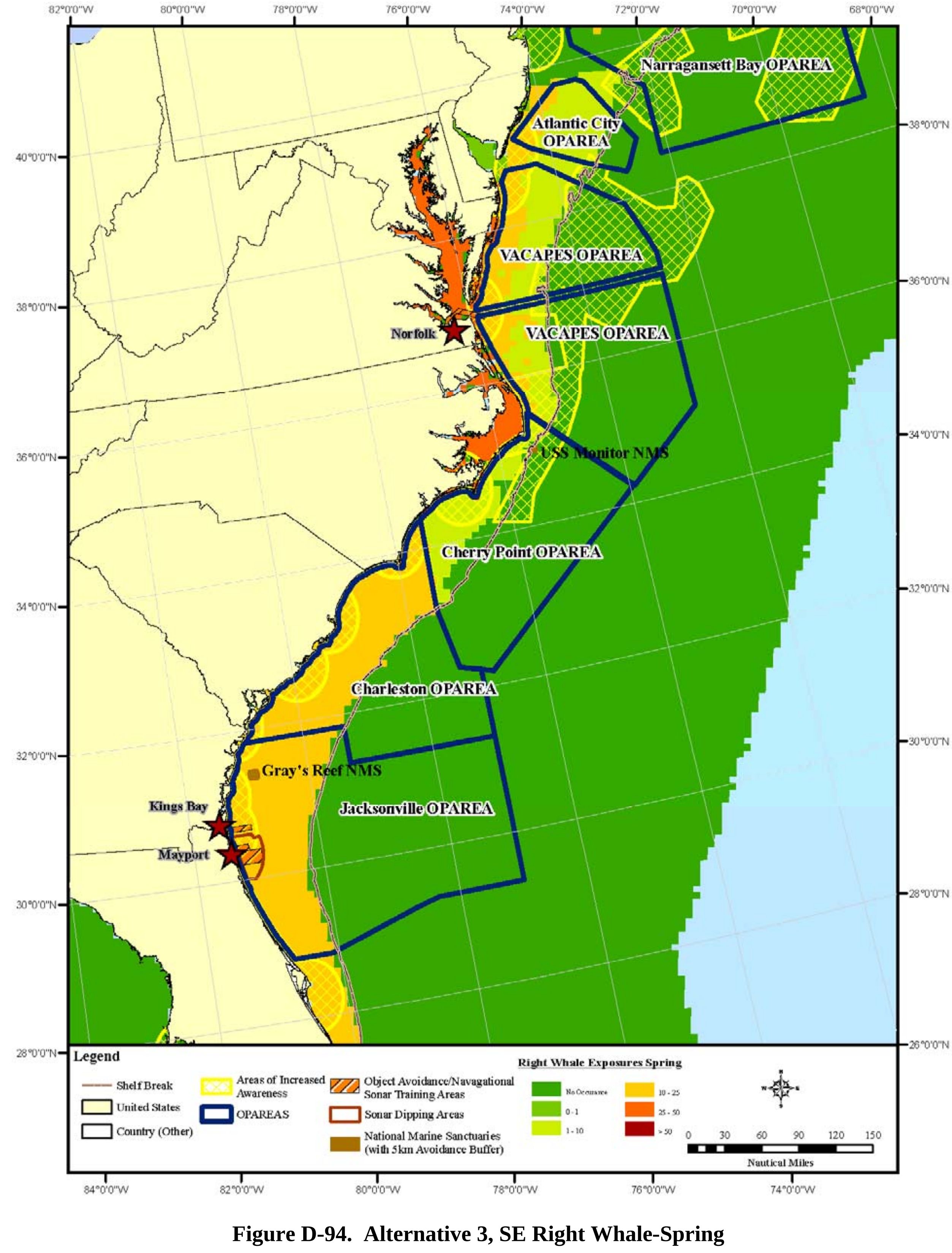


Figure D-94. Alternative 3, SE Right Whale-Spring

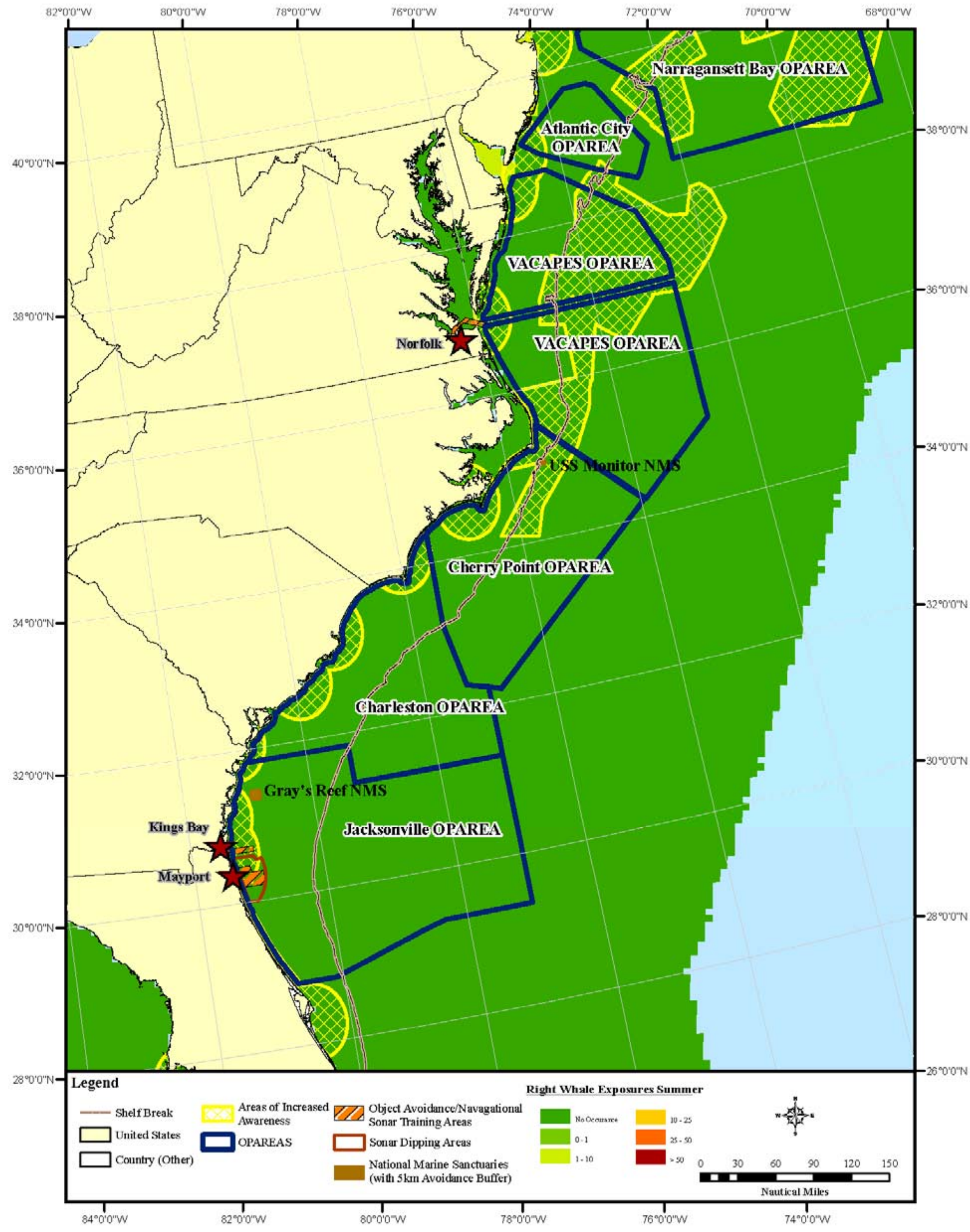
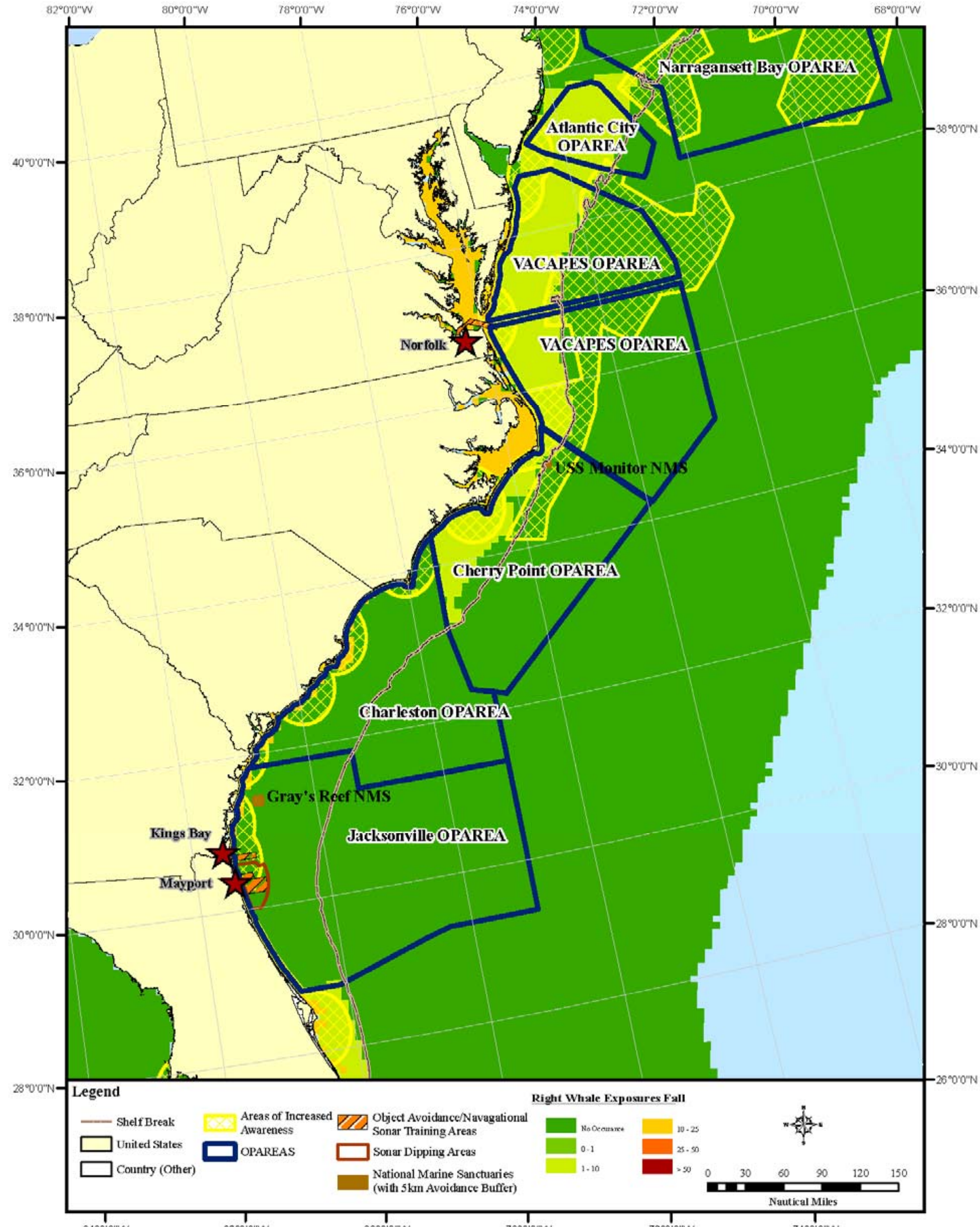


Figure D-95. Alternative 3, SE Right Whale-Summer



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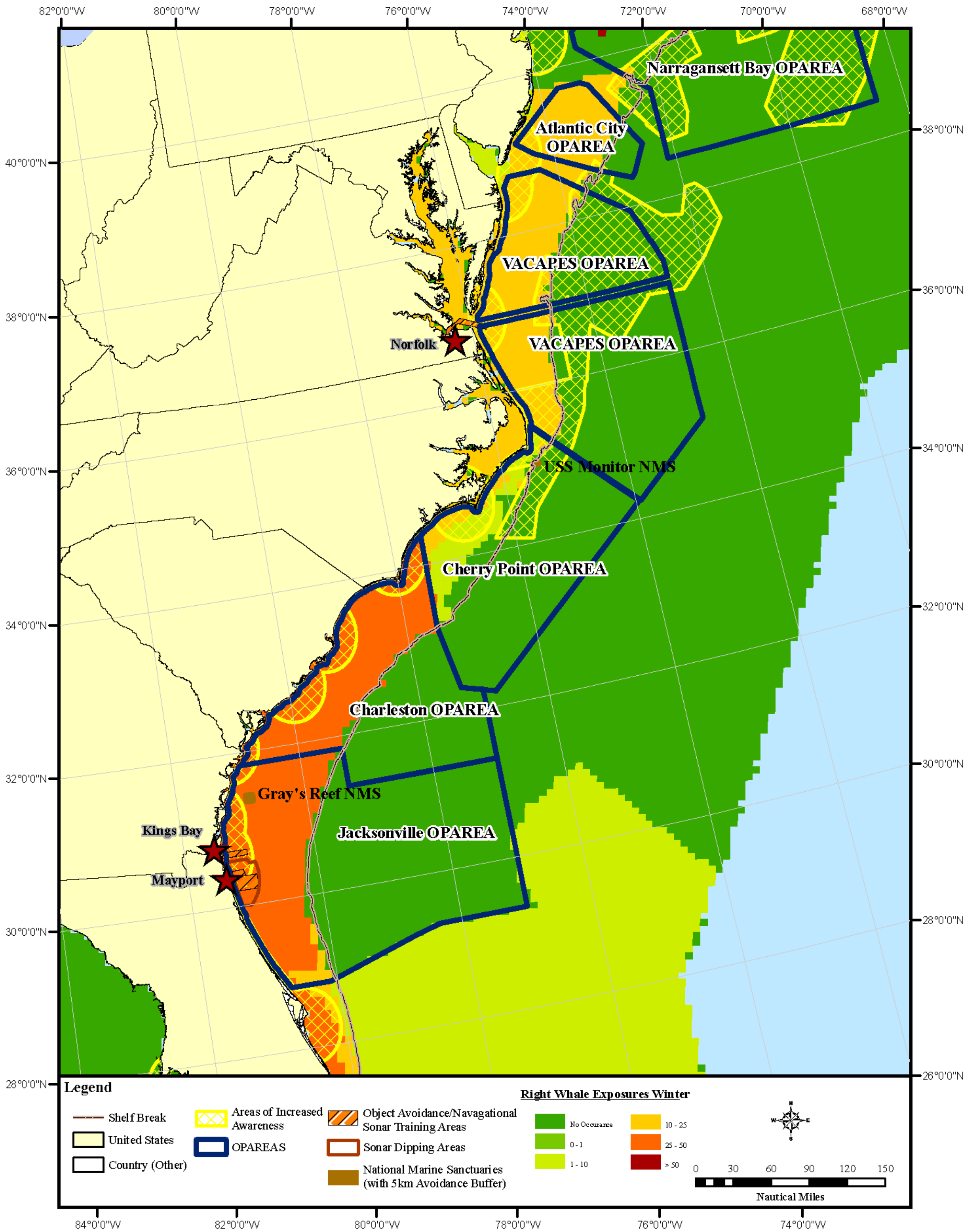

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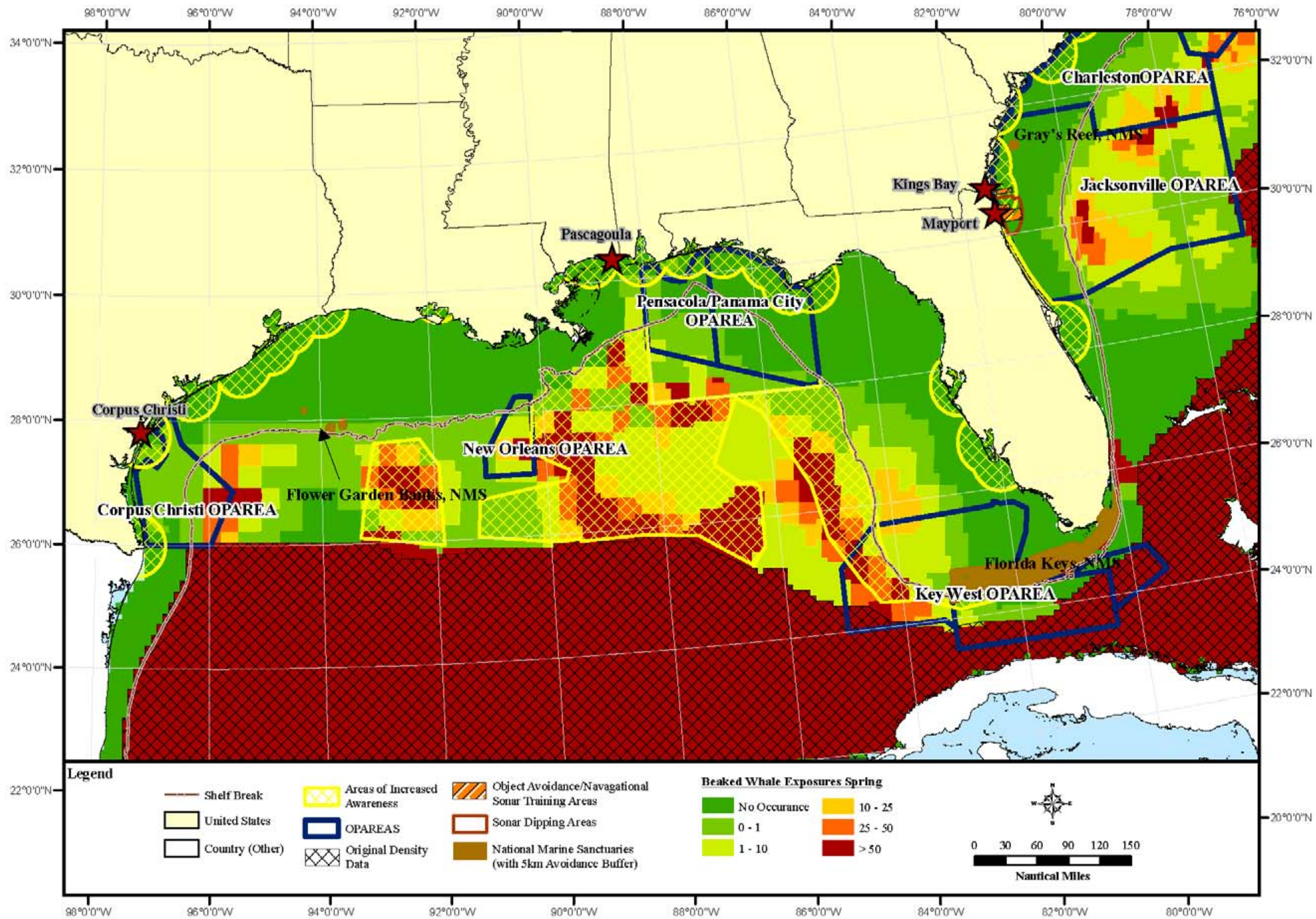

Figure D-98. Alternative 3, GOMEX Beaked Whale-Spring

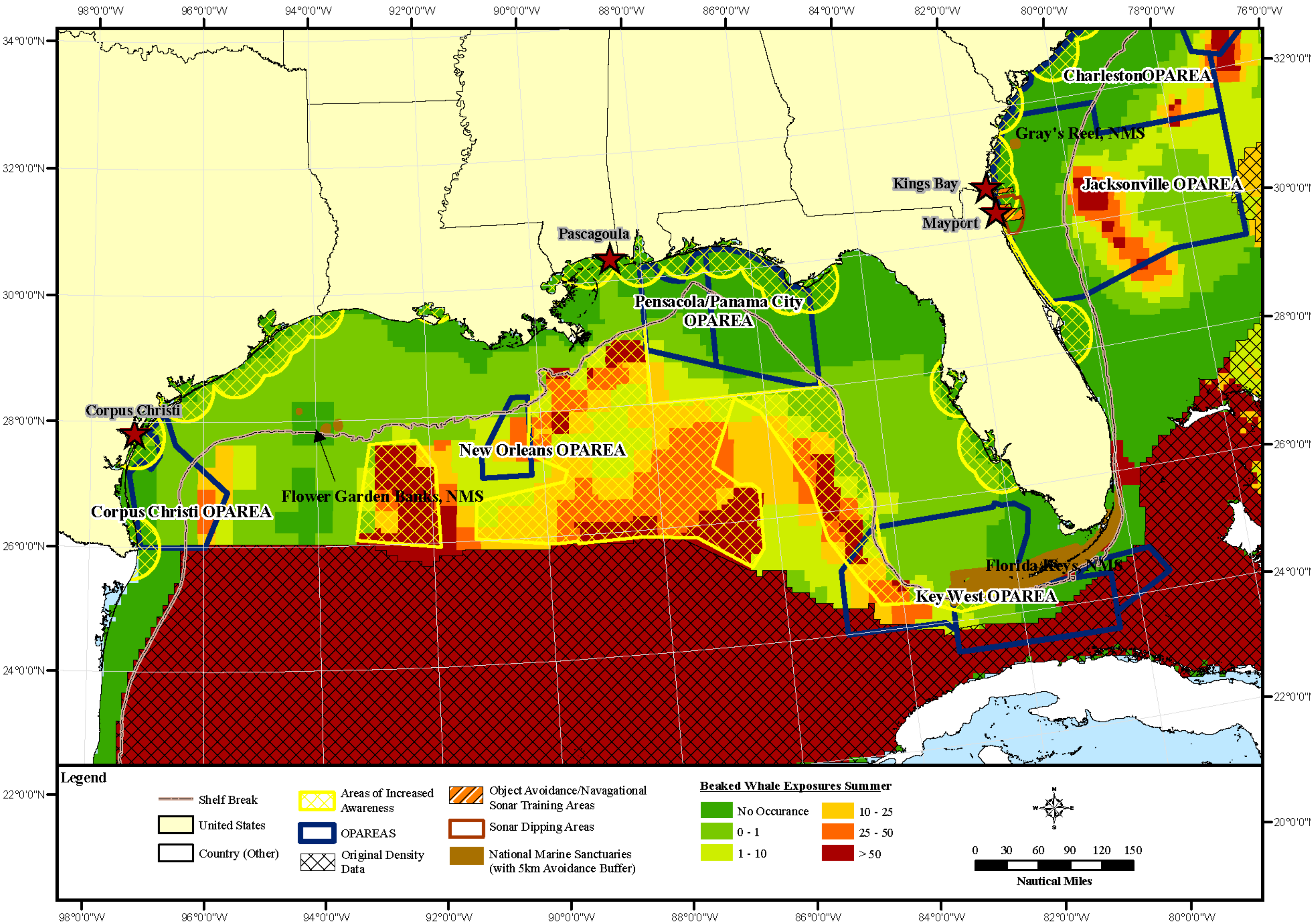

Figure D-99. Alternative 3, GOMEX Beaked Whale-Summer

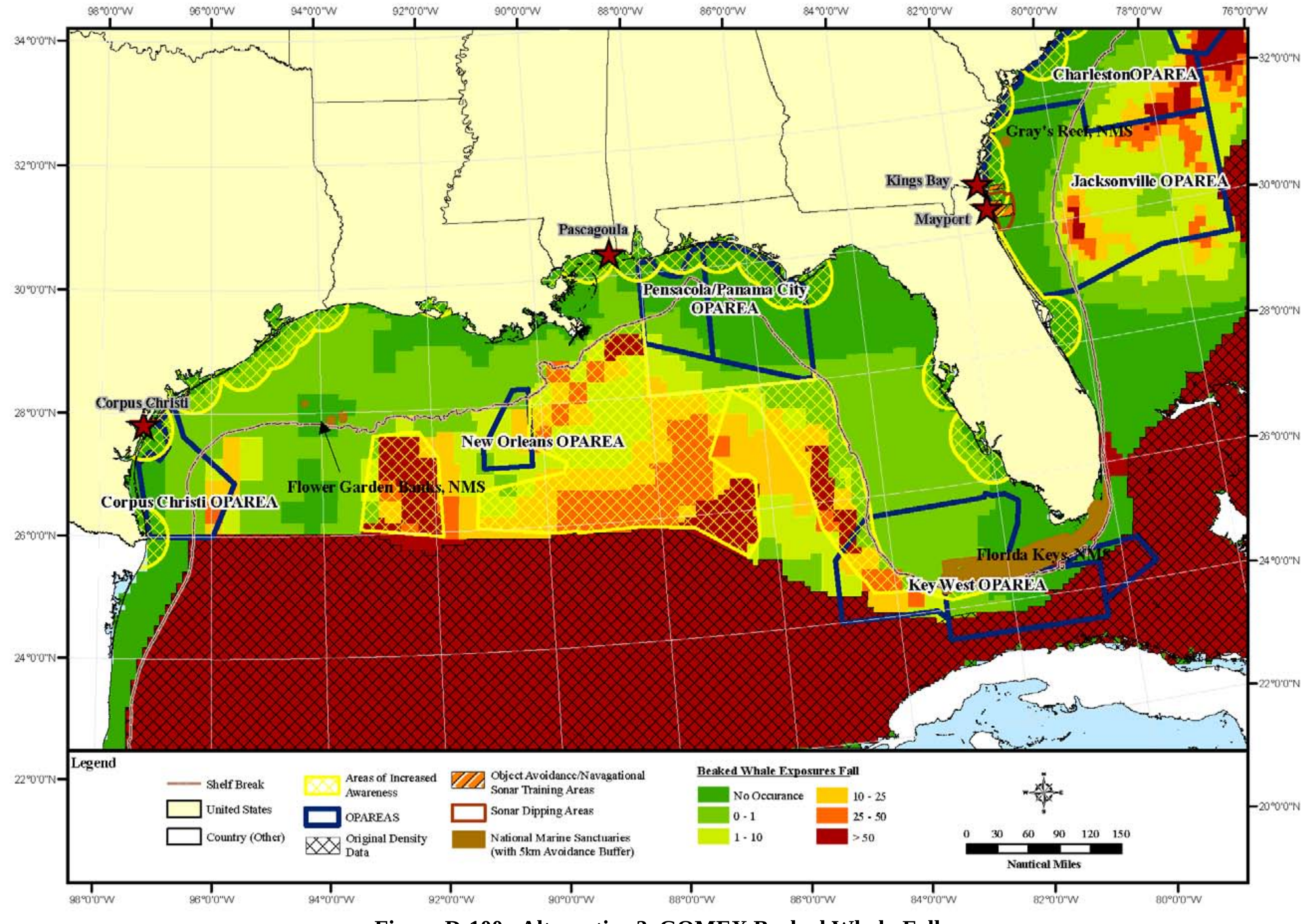

Figure D-100. Alternative 3, GOMEX Beaked Whale-Fall

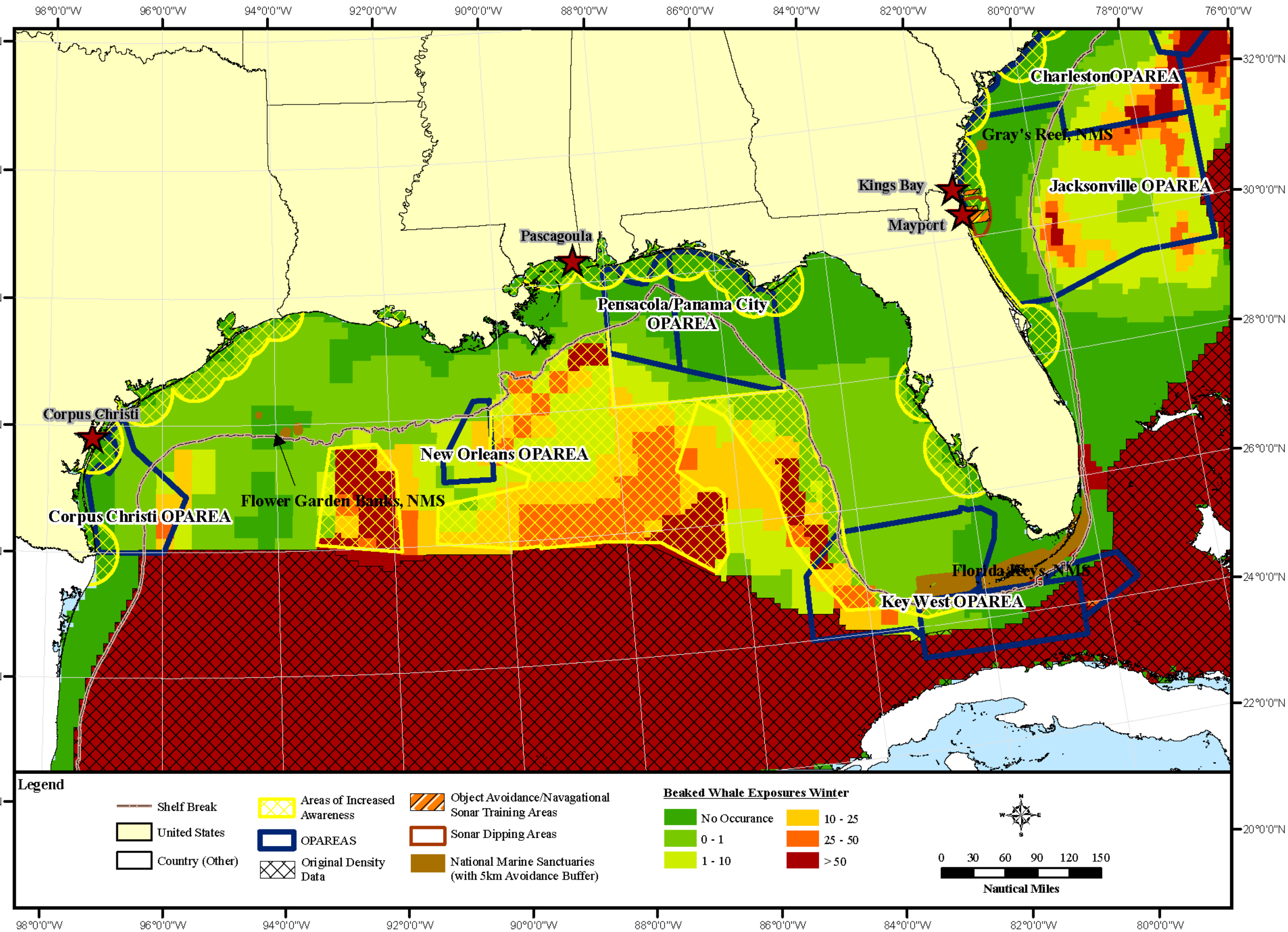

Figure D-101. Alternative 3, GOMEX Beaked Whale-Winter

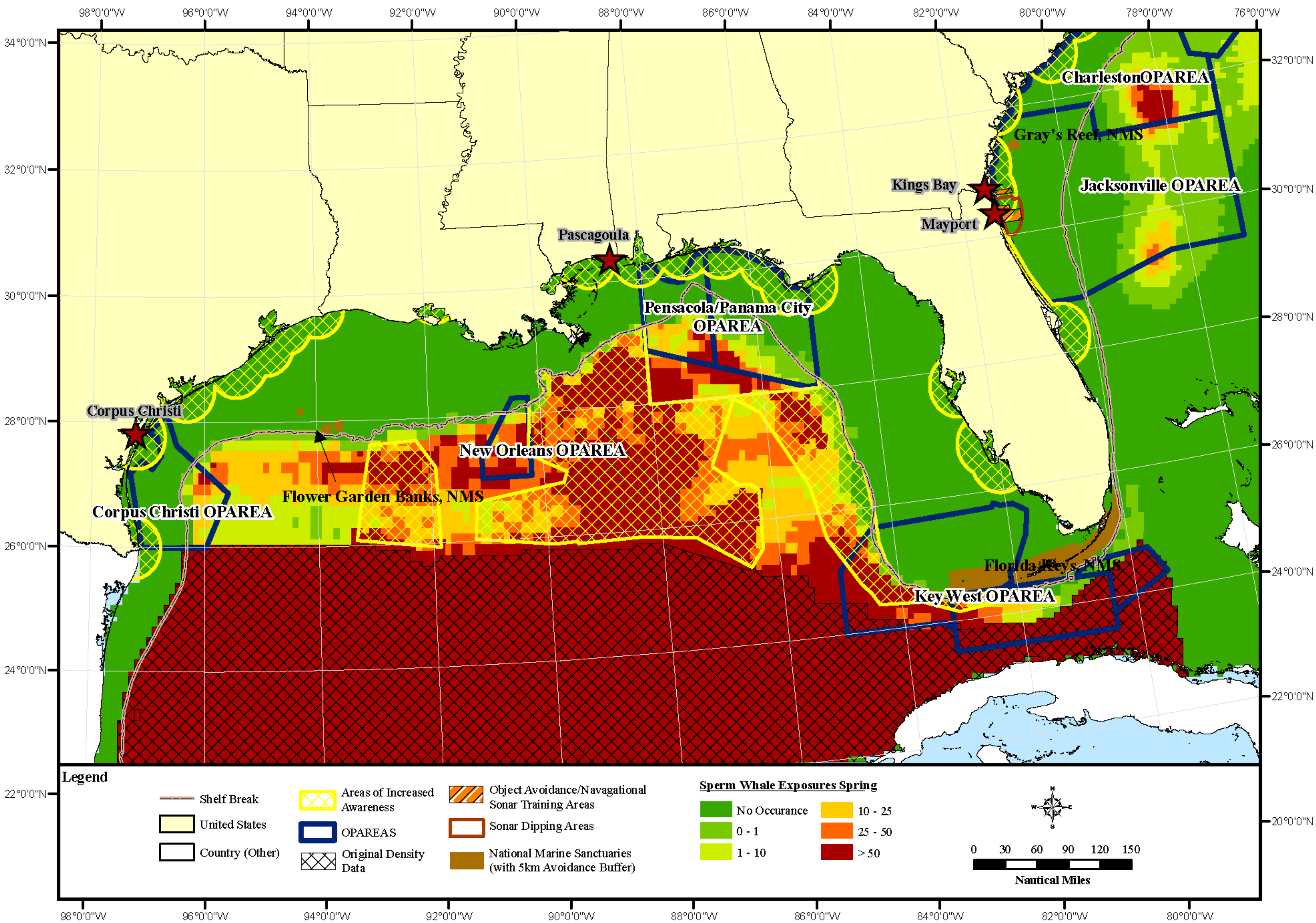

Figure D-102. Alternative 3, GOMEX Sperm Whale-Spring

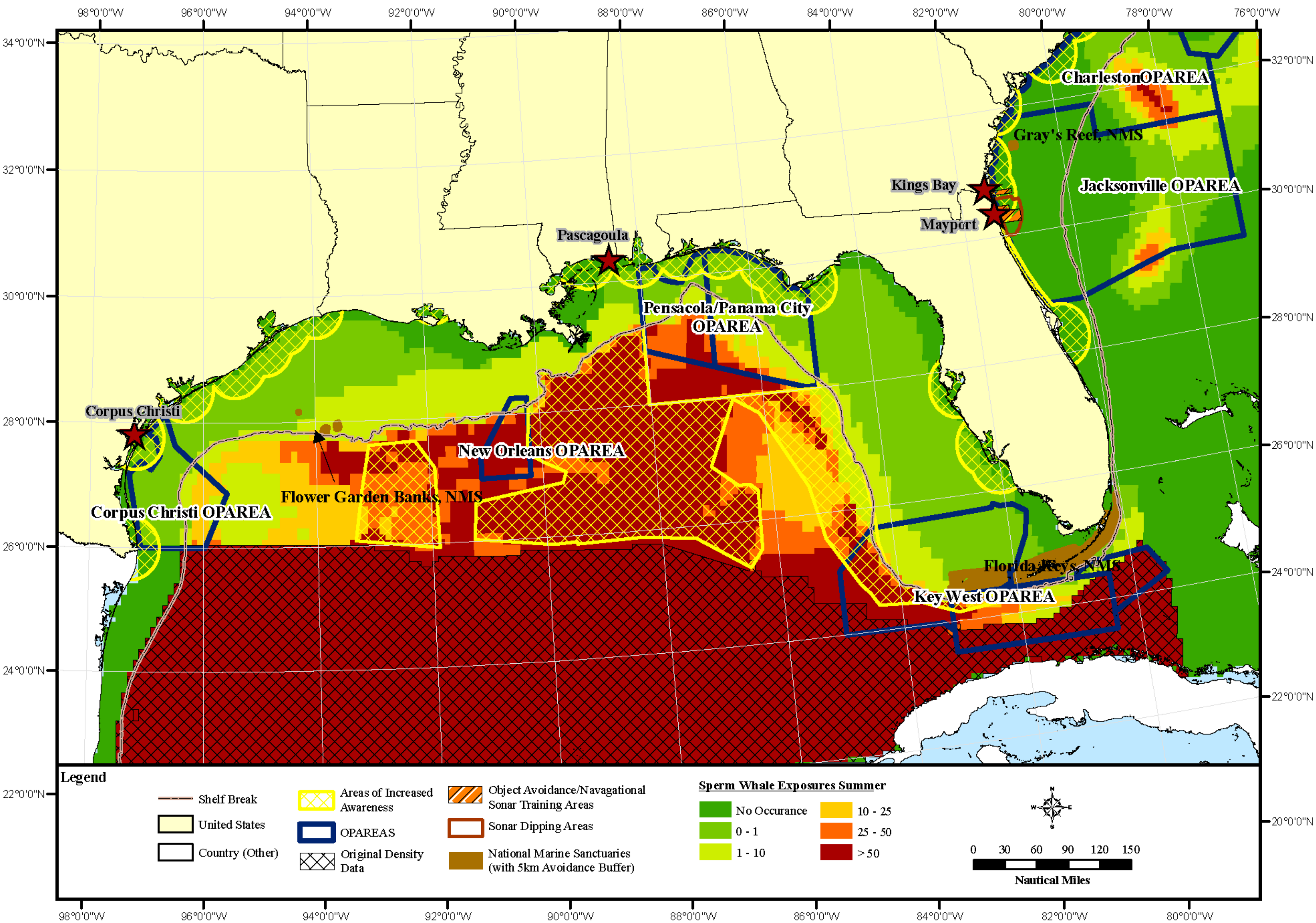

Figure D-103. Alternative 3, GOMEX Sperm Whale-Summer

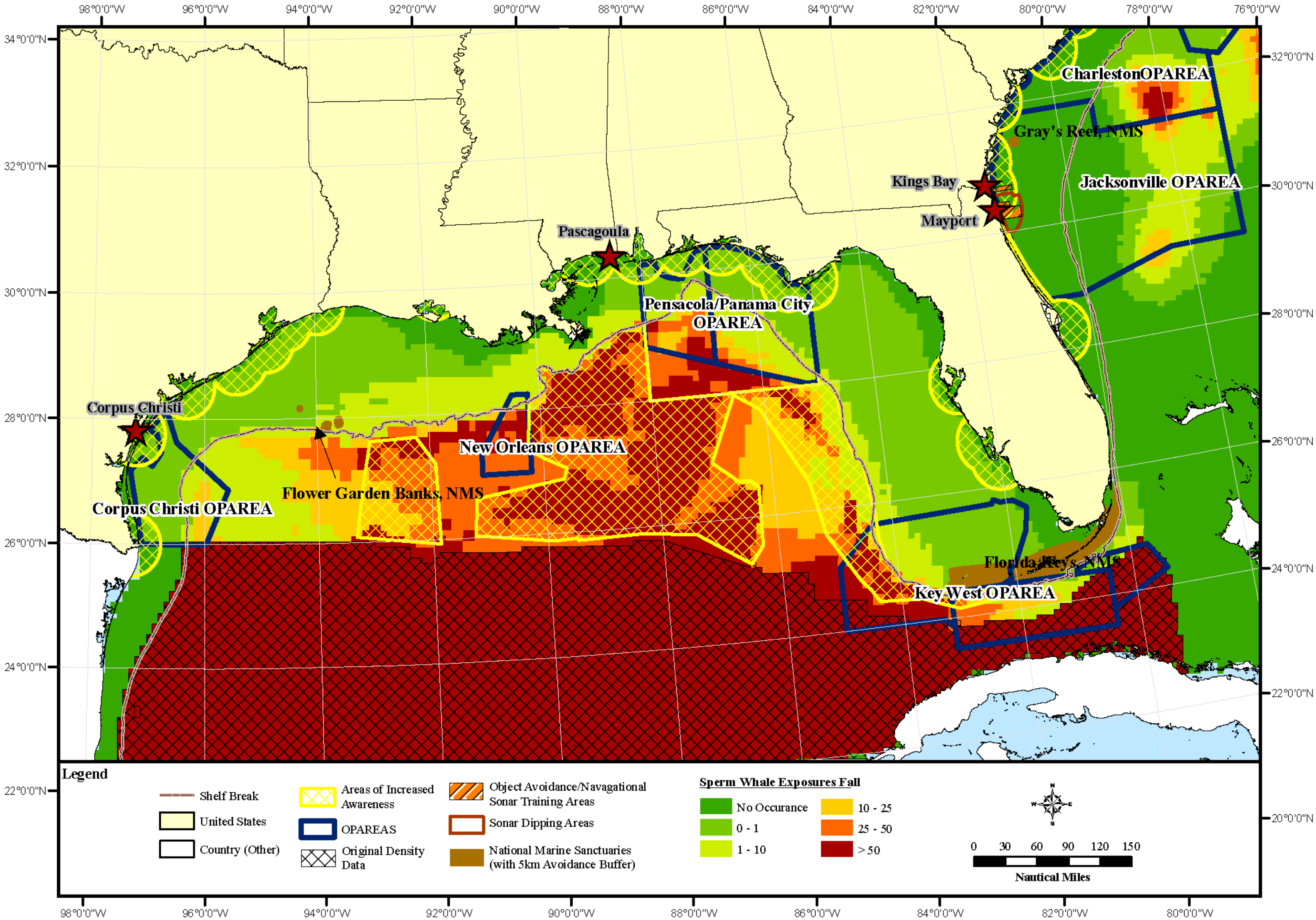

Figure D-104. Alternative 3, GOMEX Sperm Whale-Fall

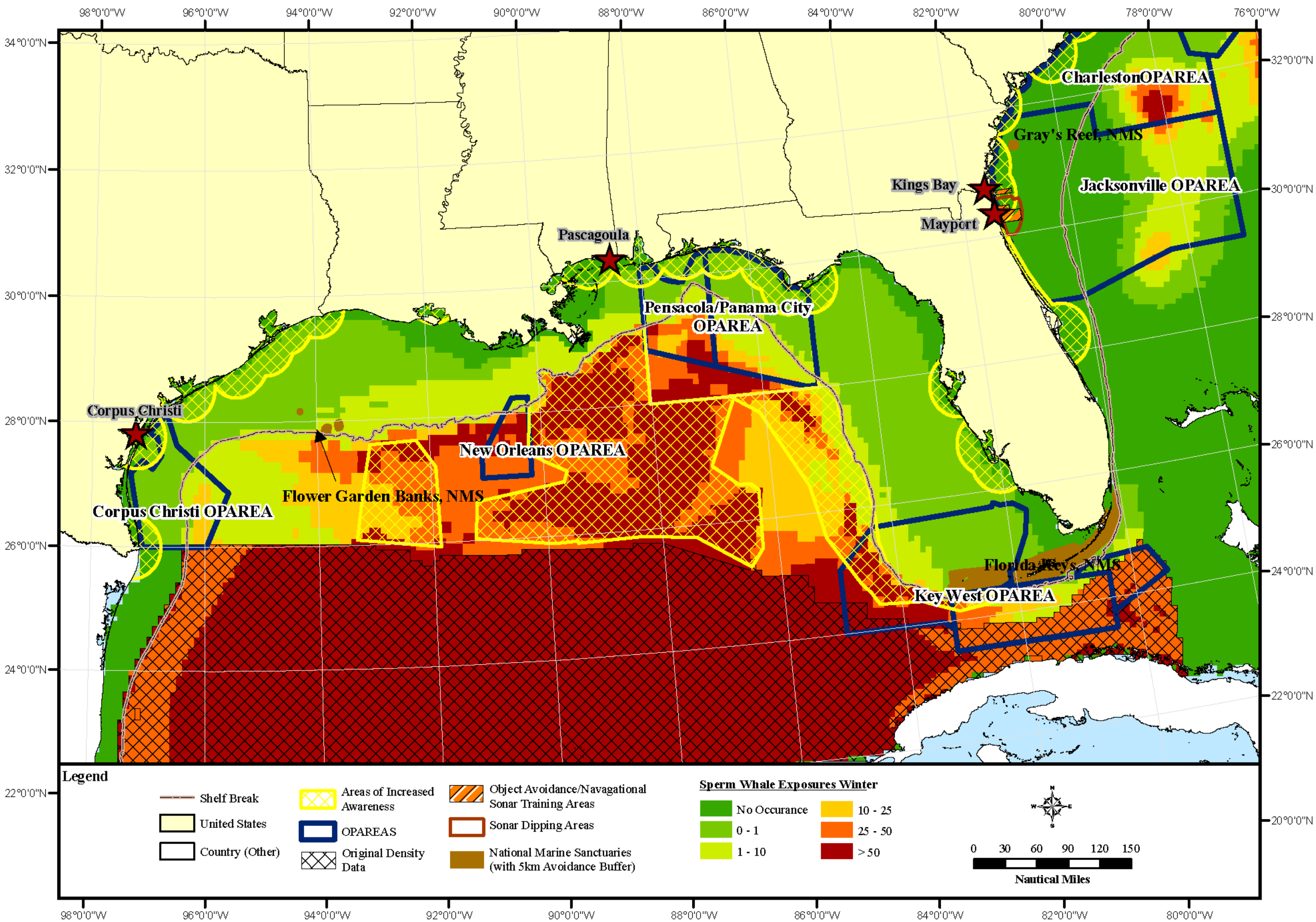

Figure D-105. Alternative 3, GOMEX Sperm Whale-Winter

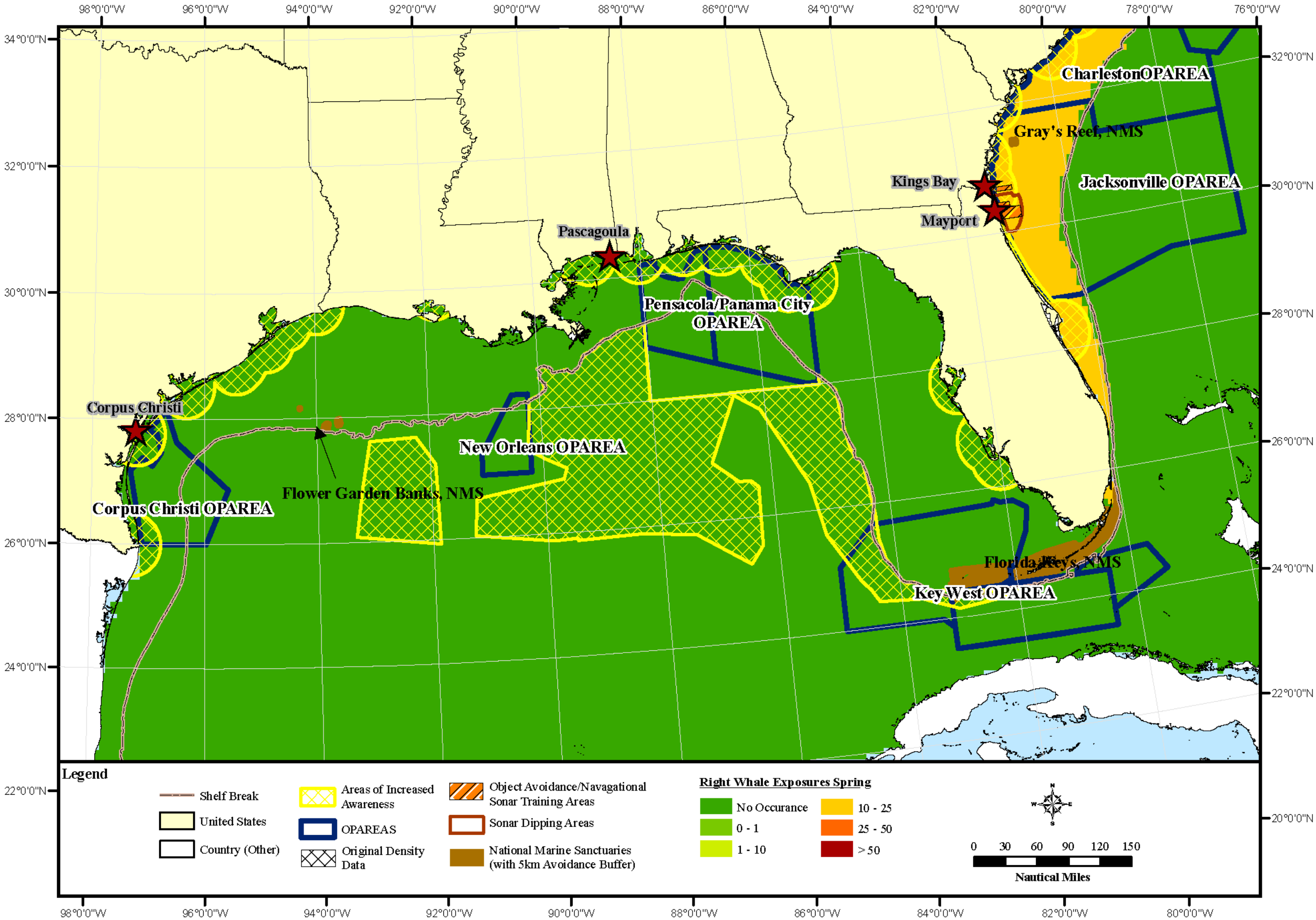

Figure D-106. Alternative 3, GOMEX Right Whale-Spring

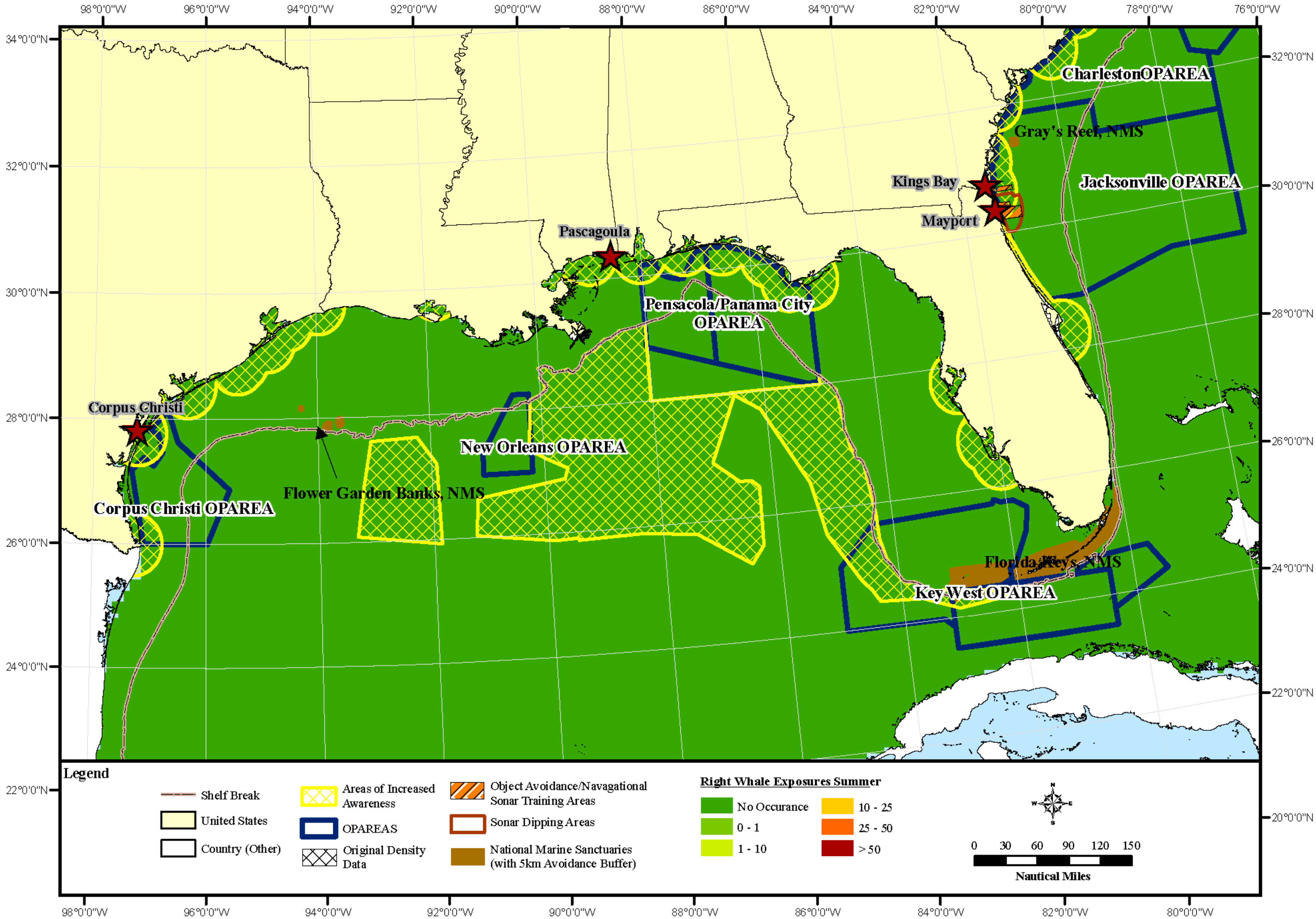

Figure D-107. Alternative 3, GOMEX Right Whale-Summer

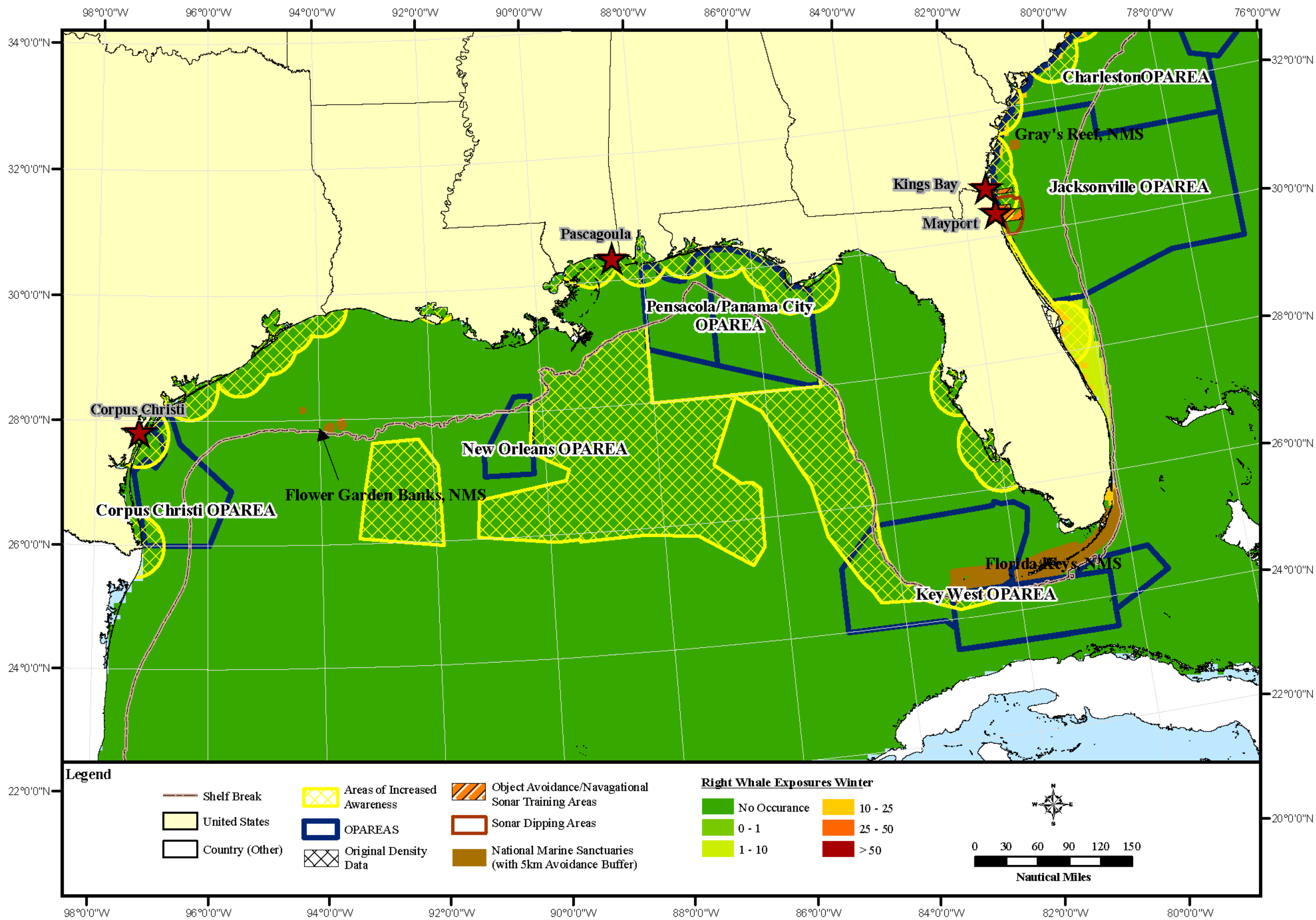

Figure D-108. Alternative 3, GOMEX Right Whale-Fall

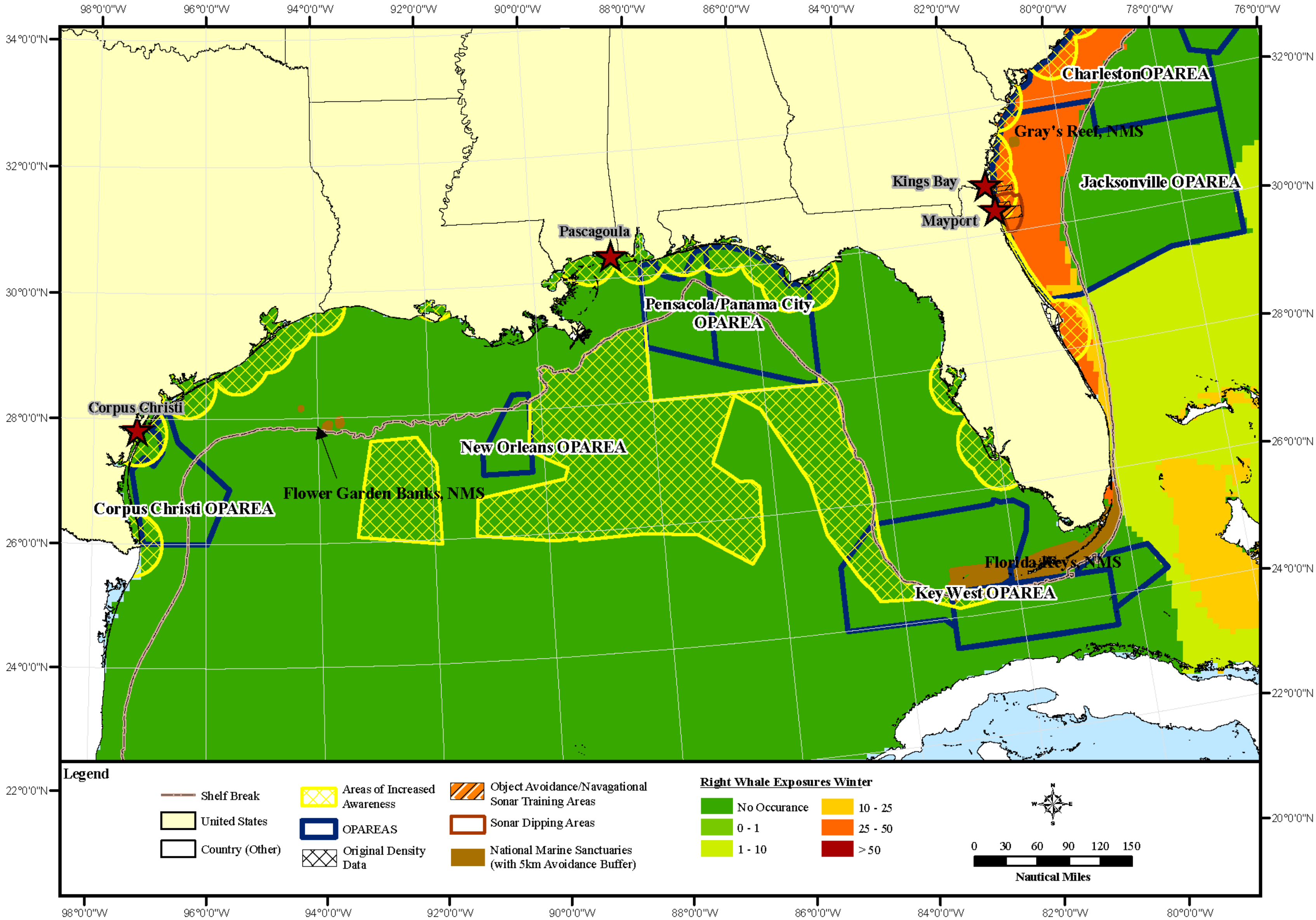

Figure D-109. Alternative 3, GOMEX Right Whale-Winter

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APPENDIX E

CETACEAN STRANDING REPORT

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CETACEAN STRANDING REPORT

E.1 WHAT IS A STRANDED MARINE MAMMAL?

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

The majority of animals that strand are dead or moribund (NMFS, 2007). For those that are alive, human intervention through medical aid and/or guidance seaward may be required for the animal to return to the sea. If unable to return to sea, rehabilitation at an appropriate facility may be determined as the best opportunity for animal survival.

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

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

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

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

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

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

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

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

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

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

Unusual environmental conditions are probably responsible for most UMEs and marine mammal die-offs (Vidal and Gallo-Reynoso, 1996; Geraci et al., 1999; Walsh et al., 2001; Gulland and Hall, 2005). Table E-1 provides an overview of documented UMEs attributable to natural causes over the past four decades worldwide.

Table E-1. Marine mammal unusual mortality events attributed to or suspected from natural causes 1978-2005

Year	Species and number	Location	Cause
1978	Hawaiian monk seals (50)	NW Hawaiian Islands	Ciguatoxin and maitotoxin
1979-80	Harbor seals (400)	Massachusetts	Influenza A
1982	Harbor seals	Massachusetts	Influenza A
1983	Multiple pinniped species	West coast of US, Galapagos	El Nino
1984	California sea lions (226)	California	Leptospirosis
1987	Sea otters (34)	Alaska	Saxitoxin
1987	Humpback whales (14)	Massachusetts	Saxitoxin
1987-88	Bottlenose dolphins (645)	Eastern seaboard (New Jersey to Florida)	Morbillivirus; Brevetoxin
1987-88	Baikal seals (80-100,000)	Lake Baikal, Russia	Canine distemper virus
1988	Harbor seals (approx 18,000)	Northern Europe	Phocine distemper virus
1990	Striped dolphins (550)	Mediterranean Sea	Dolphin morbillivirus
1990	Bottlenose dolphins (146)	Gulf Coast, US	Unknown; unusual skin lesions observed
1994	Bottlenose dolphins (72)	Texas	Morbillivirus
1995	California sea lions (222)	California	Leptospirosis
1996	Florida manatees (149)	West Coast Florida	Brevetoxin
1996	Bottlenose dolphins (30)	Mississippi	Unknown; Coincident with algal bloom

Table E-1. Marine mammal unusual mortality events attributed to or suspected from natural causes 1978-2005 Cont'd

Year	Species and number	Location	Cause
1997	Mediterranean monk seals (150)	Western Sahara, Africa	Harmful algal bloom; Morbillivirus
1997-98	California sea lions (100s)	California	El Nino
1998	California sea lions (70)	California	Domoic acid
1998	Hooker's sea lions (60% of pups)	New Zealand	Unknown, bacteria likely
1999	Harbor porpoises	Maine to North Carolina	Oceanographic factors suggested
2000	Caspian seals (10,000)	Caspian Sea	Canine distemper virus
1999-2000	Bottlenose dolphins (115)	Panhandle of Florida	Brevetoxin
1999-2001	Gray whales (651)	Canada, US West Coast, Mexico	Unknown; starvation involved
2000	California sea lions (178)	California	Leptospirosis
2000	California sea lions (184)	California	Domoic acid
2000	Harbor seals (26)	California	Unknown; Viral pneumonia suspected
2001	Bottlenose dolphins (35)	Florida	Unknown
2001	Harp seals (453)	Maine to Massachusetts	Unknown
2001	Hawaiian monk seals (11)	NW Hawaiian Islands	Malnutrition
2002	Harbor seals (approx. 25,000)	Northern Europe	Phocine distemper virus
2002	Multispecies (common dolphins, California sea lions, sea otters) (approx. 500)	California	Domoic acid
2002	Hooker's sea lions	New Zealand	Pneumonia
2002	Florida manatee	West Coast of Florida	Brevetoxin
2003	Multispecies (common dolphins, California sea lions, sea otters) (approx. 500)	California	Domoic acid
2003	Beluga whales (20)	Alaska	Ecological factors
2003	Sea otters	California	Ecological factors
2003	Large whales (16 humpback, 1 fine, 1 minke, 1 pilot, 2 unknown)	Maine	Unknown; Saxitoxin and domoic acid detected in 2 of 3 humpbacks
2003-2004	Harbor seals, minke whales	Gulf of Maine	Unknown
2003	Florida manatees (96)	West Coast of Florida	Brevetoxin
2004	Bottlenose dolphins (107)	Florida Panhandle	Brevetoxin
2004	Small cetaceans (67)	Virginia	Unknown
2004	Small cetaceans	North Carolina	Unknown
2004	California sea lions (405)	Canada, US West Coast	Leptospirosis
2005	Florida manatees, bottlenose dolphins (ongoing Dec 2005)	West Coast of Florida	Brevetoxin
2005	Harbor porpoises	North Carolina	Unknown
2005	California sea lions; Northern fur seals	California	Domoic acid
2005	Large whales	Eastern North Atlantic	Domoic acid suspected
2005-2006	Bottlenose dolphins	Florida	Brevetoxin suspected

Note: Data from Gulland and Hall (2007): citations for each event contained in Gulland and Hall (2007).

E.2 UNITED STATES STRANDING RESPONSE ORGANIZATION

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

In 1992, Congress passed the Marine Mammal Health and Stranding Response Act (MMHSRA) which authorized the Marine Mammal Health and Stranding Response Program (MMHSRP) under authority of the Department of Commerce, National Marine Fisheries Service. The MMHSRP was created because of public concern over marine mammal mortalities. Its objectives are twofold: to formalize the response process and to focus efforts being initiated by numerous local stranding organizations.

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

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

The United States has a well-organized network in coastal states to respond to marine mammal strandings. Overseen by the NMFS, the National Marine Mammal Stranding Network is comprised of smaller organizations manned by professionals and volunteers from nonprofit organizations, aquaria, universities, and state and local governments trained in stranding response. Currently, more than 400 organizations are authorized by NMFS to respond to marine mammal strandings (NMFS, 2007).

The following is a list of NMFS Regions and Associated States and Territories:

- NMFS Northeast Region- ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, VA
- NMFS Southeast Region- NC, SC, GA, FL, AL, MS, LA, TX, PR, VI
- NMFS Southwest Region- CA
- NMFS Northwest Region- OR, WA
- NMFS Alaska Region- AK

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

Stranding reporting and response efforts over time have been inconsistent, although effort and data quality within the United States have been improving within the last 20 years (NMFS, 2007). Given the historical inconsistency in response and reporting, however, interpretation of long-term trends in marine mammal stranding is difficult (NMFS, 2007). During the past decade (1995 to 2004), approximately 40,000 stranded marine mammals (about 12,400 were cetaceans) have been reported by the regional stranding networks, averaging 3,600 reported strandings per year (Figure E-1; NMFS, 2007). The highest number of strandings was reported between the years 1998 and 2003. Detailed regional stranding information including most commonly stranded species can be found in Zimmerman (1991), Geraci and Lounsbury (2005), and NMFS (2007).

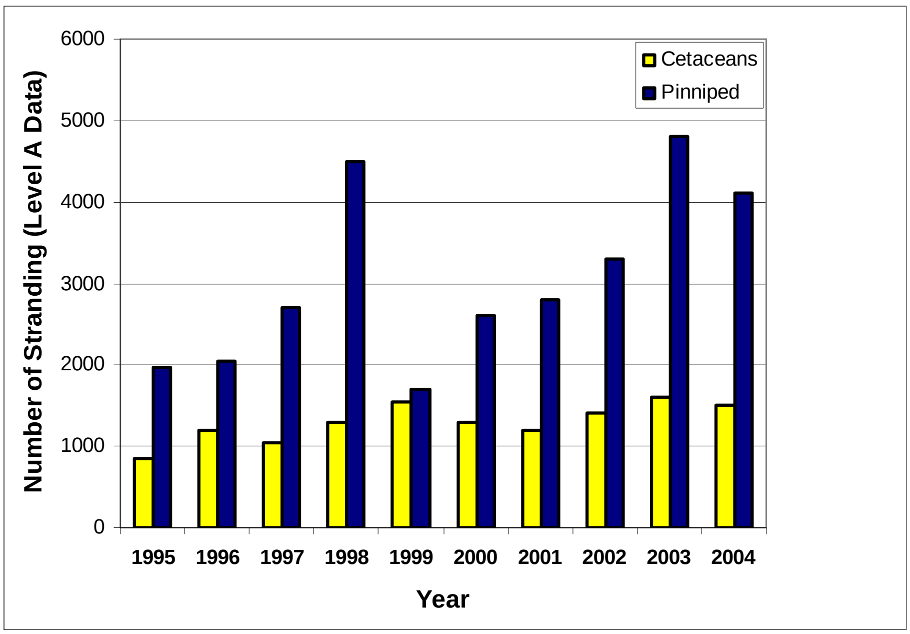

Figure E-1. United States annual cetacean and pinniped stranding events from 1995-2004.
(Source: NMFS 2007)

E.3 THREATS TO MARINE MAMMALS AND POTENTIAL CAUSES FOR STRANDING

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

- Natural causes
  - Disease
  - Natural toxins
  - Weather and climatic influences
  - Navigation errors
  - Social cohesion
  - Predation
- Anthropogenic (human influenced) causes
  - Fisheries interaction
  - Vessel strike
  - Pollution and ingestion
  - Noise

E.4 NATURAL THREATS/STRANDING CAUSES

E.4.1 Overview

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

E.4.2 Disease

Like other mammals, marine mammals frequently suffer from a variety of diseases of viral, bacterial, and fungal origin (Visser et al., 1991; Dunn et al., 2001; Harwood, 2002). Gulland and Hall (2005; 2007) provide a more detailed summary of individual and population effects of marine mammal diseases.

Microparasites such as bacteria, viruses, and other microorganisms are commonly found in marine mammal habitats and usually pose little threat to a healthy animal (Geraci et al., 1999). For example, long-finned pilot whales that inhabit the waters off of the northeastern coast of the

United States are carriers of the morbillivirus, yet have grown resistant to its usually lethal effects (Geraci et al., 1999). Since the 1980s, however, virus infections have been strongly associated with marine mammal die-offs (Domingo et al., 1992; Geraci and Lounsbury, 2005). Morbillivirus is the most significant identified marine mammal virus and suppresses a host's immune system and increases risk of secondary infection (Harwood, 2002). The largest bottlenose dolphin die-off associated with morbillivirus occurred in 1987, when hundreds of coastal dolphins succumbed to the virus (Lipscomb et al., 1994). A bottlenose dolphin UME in 1993 and 1994 was caused by morbillivirus. Die-offs ranged from northwestern Florida to Texas, with an increased number of deaths as it spread (NMFS, 2007). A 2004 UME in Florida was also associated with dolphin morbillivirus (NMFS, 2004). Influenza A was responsible for the first reported mass mortality in the U.S., occurring along the coast of New England in 1979-1980 (Geraci et al., 1999; Harwood, 2002). Canine distemper virus has been responsible for large scale pinniped mortalities and die-offs (Grachev et al., 1989; Kennedy et al., 2000; Gulland and Hall, 2005), while a bacteria, *Leptospira pomona*, is responsible for periodic die-offs in California sea lions about every four years (Gulland et al., 1996; Gulland and Hall, 2005). It is difficult to determine whether microparasites commonly act as a primary pathogen, or whether they show up as a secondary infection in an already weakened animal (Geraci et al., 1999). Most marine mammal die-offs from infectious disease in the last 25 years, however, have had viruses associated with them (Simmonds and Mayer, 1997; Geraci et al., 1999; Harwood, 2002).

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

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

E.4.3 Naturally Occurring Marine Neurotoxins

Some single cell marine algae common in coastal waters, such as dinoflagellates and diatoms, produce toxic compounds that can accumulate (termed bioaccumulation) in the flesh and organs of fish and invertebrates (Geraci et al., 1999; Harwood, 2002). Marine mammals become exposed to these compounds when they eat prey contaminated by these naturally produced toxins (Van Dolah, 2005). Figure E-2 shows U.S. animal mortalities from 1997-2006 resulting from toxins produced during harmful algal blooms.

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

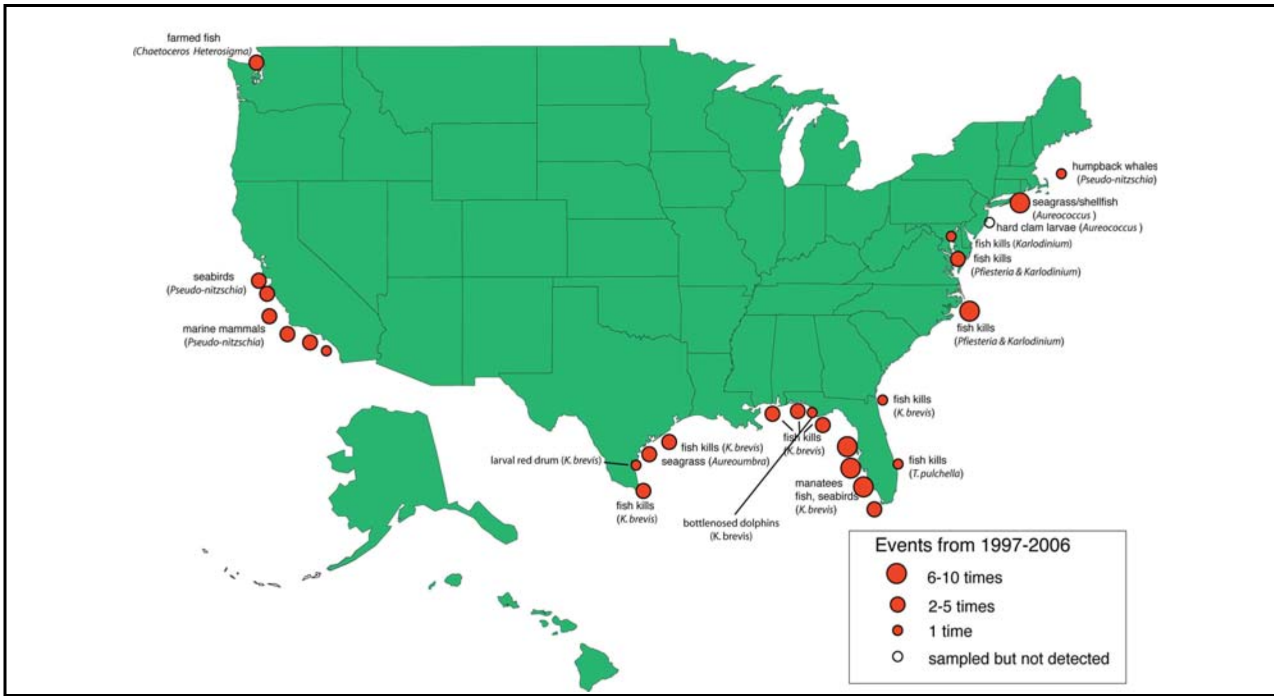

Figure E-2. Animal Mortalities from harmful algal blooms within the United States from 1997-2006.
(Source: Woods Hole Oceanographic Institute (WHO) http://www.whoi.edu/redtide/HABdistribution/HABmap.html)

E.4.4 Weather events and climate influences

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

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

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

E.4.5 Navigational Error

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

Echolocation Disruption in Shallow Water- Some researchers believe stranding may result from reductions in the effectiveness of echolocation within shallow water, especially with the pelagic species of odontocetes who may be less familiar with coastline (Dudok van Heel, 1966;

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

E.4.6 Social cohesion

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

E.5 ANTHROPOGENIC THREATS/STRANDING CAUSES

E.5.1 Overview

With the exception of historic whaling in the 19th and early part of the 20th century, during the past few decades there has been an increase in marine mammal mortalities associated with a variety of human activities (Geraci et al., 1999; NMFS, 2007). These include fisheries interactions (bycatch and directed catch), pollution (marine debris, toxic compounds), habitat modification (degradation, prey reduction), vessel strikes (Laist et al., 2001), and gunshots. Figure E-3 shows potential worldwide risk to small-toothed cetaceans by source.

E.5.2 Fisheries Interaction: By-Catch and Entanglement

The incidental catch of marine mammals in commercial fisheries is a significant threat to the survival and recovery of many populations of marine mammals (Geraci et al., 1999; Baird, 2002; Culik, 2002; Carretta et al., 2004; Geraci and Lounsbury, 2005; NMFS, 2007). Interactions with fisheries and entanglement in discarded or lost gear continue to be a major factor in their deaths worldwide (Geraci et al., 1999; Nieri et al., 1999; Geraci and Lounsbury, 2005; Read et al., 2006; Zeeber et al., 2006).

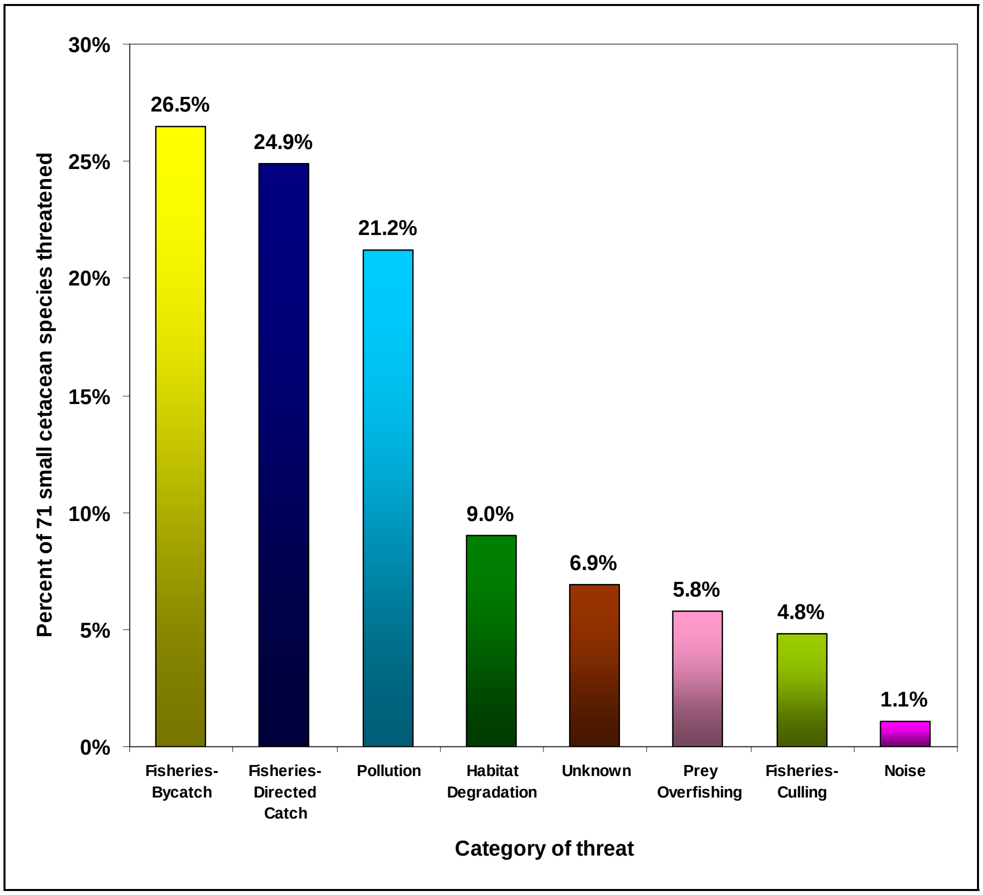

Figure E-3. Human threats to world wide small cetacean populations.
(Source: Culik 2002)
*The Navy realizes that the total percentages add up to 100.2 percent;
However, this figure is referenced directly from the aforementioned report.

By-catch- By-catch is the catching of non-target species within a given fishing operation and can include non-commercially used invertebrates, fish, sea turtles, birds, and marine mammals (NRC, 2006). Read et al. (2006) estimated the magnitude of marine mammal by-catch in U.S. and global fisheries. Data for the United States was obtained from fisheries observer programs, reports of entangled stranded animals, and fishery logbooks. In U.S. fisheries, the mean annual by-catch of marine mammals between 1990 and 1999 was 6,215 animals (SE = +/- 448). Eighty-four percent of cetacean by-catch occurred in gill-net fisheries, with dolphins and porpoises constituting the majority of these. The authors noted a 40 percent decline in marine mammal by-catching the years 1995 through 1999 compared to 1990 through 1994, and suggested that effective conservation measures implemented during the later time period played a significant role.

To estimate annual global by-catch, Read et al. (2006) used U.S. vessel by-catch data from 1990-1994 and extrapolated to the world's vessels for the same time period. They calculated an estimate of 653,365 of marine mammals caught annually around the world, again with most occurring in gill-net fisheries. The authors concluded that with global marine mammal by-catch likely to be in the hundreds of thousands every year, by-catch in fisheries will be the single greatest threat to many marine mammal populations around the world.

Entanglement- Active and discarded fishing gear pose a major threat to marine mammals. Entanglement can lead to drowning and/or impairment in activities such as diving, swimming, feeding and breeding. Stranded marine mammals frequently exhibit signs of previous fishery interaction, such as scarring or gear still attached to their bodies, and the cause of death for many stranded marine mammals is often attributed to such interactions (Baird and Gorgone, 2005; Geraci et al., 1999; Campagna et al., 2007). Because marine mammals that die or are injured in fisheries may not wash ashore and not all animals that do wash ashore exhibit clear signs of interactions, stranding data probably underestimate fishery-related mortality and serious injury (NMFS, 2005a).

Various accounts of fishery-related stranding deaths have been reported over the last several decades along the U.S. coast. From 1993 through 2003, 1,105 harbor porpoises were reported stranded from Maine to North Carolina, many of which had cuts and body damage suggestive of net entanglement (NMFS, 2005d). In 1999, it was possible to determine that the cause of death for 38 of the stranded porpoises was from fishery interactions (NMFS, 2005d). An estimated 78 baleen whales were killed annually in the offshore southern California/Oregon drift gillnet fishery during the 1980s (Heyning and Lewis 1990). From 1998-2005, based on observer records, five fin whales (CA/OR/WA stock), 12 humpback whales (ENP stock), and six sperm whales (CA/OR/WA stock) were either seriously injured or killed in fisheries off the mainland U.S. West Coast (California Marine Mammal Stranding Network Database 2006).

E.5.3 Ship Strike

Marine mammals sometimes come into physical contact with oceangoing vessels, which can lead to injury or death and cause subsequent stranding (Laist et al. 2001; Geraci and Lounsbury, 2005; de Stephanis and Urquiola, 2006). These events, termed “ship strikes,” occur when an animal at the surface is struck directly by a vessel, when a surfacing animal hits the bottom of a vessel, or when an animal just below the surface is cut by a vessel’s propeller. The severity of injuries typically depends on the size and speed of the vessel (Knowlton and Kraus, 2001; Laist et al., 2001; Vanderlaan and Taggart 2007).

The growth in civilian commercial ports has been accompanied by a large increase in commercial vessel traffic. This has, in turn, expanded the threat of ship strikes to marine mammals in recent decades. The Final Report of the NOAA International Symposium on “Shipping Noise and Marine Mammals: A Forum for Science, Management, and Technology” stated that the worldwide commercial fleet has grown from approximately 30,000 vessels in 1950 to over 85,000 vessels in 1998 (NRC, 2003; Southall, 2005). From 1985 to 1999, world seaborne trade doubled to 5 billion tons and currently includes 90 percent of the total world trade, with container shipping movements representing the largest volume of seaborne trade. Current statistics support the prediction that the international shipping fleet will continue to grow at current or greater rates. Vessel densities along existing coastal routes are expected to increase both domestically and internationally. New routes are expected to develop as new ports are opened and existing ports are expanded. Vessel propulsion systems are also advancing toward faster ships operating in higher sea states for lower operating costs; and container ships are expected to become larger along certain routes (Southall, 2005). Given the expected increase in vessel density and operational capability, a concomitant increase in marine mammal ship strikes can be expected.

E.5.4 Ingestion of Marine Debris and Exposure to Toxins

Debris in the marine environment poses a health hazard for marine mammals. Not only can they become entangled, but animals may ingest plastics and other debris that are indigestible, and which can contribute to illness or death through irritation or blockage of the stomach and intestines (Tarpley and Marwitz, 1993, Whitaker et al., 1994; Gorzelany, 1998; Secchi and Zarzur, 1999; Baird and Hooker, 2000). There are certain species of cetaceans (e.g. sperm whales) that are more likely to eat trash, especially plastics (Geraci et al., 1999; Evans et al., 2003; Whitehead, 2003).

For example, between 1990 and October 1998, 215 pygmy sperm whales stranded along the U.S. Atlantic coast from New York through the Florida Keys (NMFS, 2005a). Remains of plastic bags and other debris were found in the stomachs of 13 of these animals. In 1987, a pair of latex examination gloves was retrieved from the stomach of a stranded dwarf sperm whale (NMFS, 2005c). In one pygmy sperm whale found stranded in 2002, red plastic debris was found in the stomach along with squid beaks (NMFS, 2005a). Oliveira de Meirelles and Barros (2007) documented mortality to a rough-toothed dolphin in Brazil from plastic debris ingestion.

Chemical contaminants like organochlorines (PCBs, DDT) and heavy metals may pose potential health risks to marine mammals (Das et al., 2003; De Guise et al., 2003).Despite having been banned for decades, levels of organochlorines are still high in marine mammal tissue samples taken along U.S. coasts (Hickie et al. 2007; Krahn et al. 2007; NMFS, 2007a). These compounds are long-lasting, reside in marine mammal adipose tissues (especially in the blubber), and can be toxic. Contaminant levels in odontocetes (piscivorous animals) have been reported to be one to two orders of magnitude higher compared to mysticetes (planktivorous animals) (Borell, 1993; O’Shea and Brownell, 1994; O’Hara and Rice, 1996; O’Hara et al., 1999).

Chronic exposure to PCBs and/or DDT is immunosuppressive, as has been seen in bottlenose dolphins (Lahvis et al., 1995) and seals (p. vitulina) (Ross et al., 1996). Chronic exposure has been linked to infectious disease mortality in harbor porpoises stranded in the UK (Jepson et al., 1999; Jepson et al., 2005), carcinoma in California in sea lions (Ylitalo et al., 2005), and population reductions of Baltic seals (Bergman et al., 2001). High levels of PCBs in immature, pelagic dolphins has been observed (Struntz et al., 2004), raising concern about contaminant loads further offshore. Moderate levels of PCBs and chlorinated pesticides (such as DDT, DDE, and dieldrin) have been found in pilot whale blubber with bioaccumulation levels more similar in whales from the same stranding event than from animals of the same age or sex (NMFS, 2005b). Accumulation of heavy metals has also been documented in many cetaceans (Frodello and Marchand, 2001; Das et al., 2003; Wittnich et al., 2004), sometimes exceeding levels known to cause neurologic and immune system impairment in other mammals (Nielsen et al., 2000; Das et al., 2003; De Guise et al., 2003).

Other forms of habitat contamination and degradation may also play a role in marine mammal mortality and strandings. Some events caused by humans have direct and obvious effects on marine mammals, such as oil spills (Geraci et al., 1999). Oil spills can cause both short- and long-term medical problems for many marine mammal species through ingestion of tainted prey, coating of skin/fur, and adherence to oral and nasal cavities (Moeller, 2003). In most cases, the effects of contamination are likely to be indirect in nature; e.g. effects on prey species availability or an increase in disease susceptibility (Geraci et al., 1999).

E.5.5 Anthropogenic Sound

There is evidence that underwater man-made sounds, such as explosions, drilling, construction, and certain types of sonar (Southall et al., 2006), may be a contributing factor in some stranding events. Marine mammals may respond both behaviorally and physiologically to anthropogenic sound exposure, (e.g., Richardson et al., 1995; Finneran et al., 2000; Finneran et al., 2003; Finneran et al., 2005); however, the range and magnitude of the behavioral response of marine mammals to various sound sources is highly variable (Richardson et al., 1995) and appears to depend on the species involved, the experience of the animal with the sound source, the motivation of the animal (e.g., feeding, mating), and the context of the exposure.

Exposure to sonar signals has been postulated as being a specific cause of several stranding events. Given that it is likely that the frequency of certain sonar systems is within the range of hearing of many marine mammals, the consideration of sonar as a causative mechanism of stranding is warranted. In the following sections, specific stranding events that have been putatively linked to sonar operations are discussed.

E.6 STRANDING EVENT CASE STUDIES

Over the past two decades, several mass stranding events involving beaked whales have been documented. A review of historical data (mostly anecdotal) maintained by the Marine Mammal Program in the National Museum of Natural History, Smithsonian Institution reports 49 beaked whale mass stranding events between 1838 and 1999. The largest beaked whale mass stranding occurred in the 1870s in New Zealand when 28 Gray's beaked whales (*Mesoplodon grayi*) stranded. Blainsville's beaked whale (*Mesoplodon densirostris*) strandings are rare, and records show that they were involved in one mass stranding in 1989 in the Canary Islands. Cuvier's beaked whales (*Ziphius cavirostris*) are the most frequently reported beaked whale to strand, with at least 19 stranding events from 1804 through 2000 (DoC and DoN, 2001; Smithsonian Institution, 2000). While beaked whale strandings have occurred since the 1800s (Geraci and Lounsbury, 1993; Cox et al., 2006; Podesta et al., 2006), several mass strandings have been temporally and spatially associated with naval operations utilizing mid-frequency active (MFA) sonar (Simmonds and Lopez-Jurado, 1991; Frantzis, 1998; Jepson et al., 2003; Cox et al., 2006).

E.6.1 Beaked Whale Case Studies

In the following sections, specific stranding events that have been putatively linked to potential sonar operations are discussed. These events represent a small overall number of animals over an 11 year period (40 animals) and not all worldwide beaked whale strandings can be linked to naval activity (ICES, 2005a; 2005b; Podesta et al., 2006). Four of the five events occurred during NATO exercises or events where DON presence was limited (Greece, Portugal, and Spain). One of the five events involved only DON ships (Bahamas). These events are given specific consideration in the case studies that follow.

Beaked whale stranding events associated with naval operations.

1996	May	Greece (NATO/US)
2000	March	Bahamas (US)
2000	May	Portugal, Madeira Islands (NATO/US)
2002	September	Spain, Canary Islands (NATO/US)
2006	January	Spain, Mediterranean Sea coast (NATO/US)

1996 Greece Beaked Whale Mass Stranding (May 12 – 13, 1996)

Description: Twelve Cuvier's beaked whales (*Ziphius cavirostris*) stranded along a 38.2-km (20.6-NM) strand of the coast of the Kyparissiakos Gulf on May 12 and 13, 1996 (Frantzis, 1998). From May 11 through May 15, the NATO research vessel Alliance was conducting sonar tests with signals of 600 Hz and 3 kHz and root-mean-squared (rms) sound pressure levels (SPL) of 228 and 226 dB re: 1 μPa, respectively (D'Amico and Verboom, 1998; D'Spain et al., 2006). The timing and the location of the testing encompassed the time and location of the whale strandings (Frantzis, 1998).

Findings: Partial necropsies of eight of the animals were performed, including external assessments and the sampling of stomach contents. No abnormalities attributable to acoustic exposure were observed, but the stomach contents indicated that the whales were feeding on cephalods soon before the stranding event. No unusual environmental events before or during the stranding event could be identified (Frantzis, 1998).

Conclusions: The timing and spatial characteristics of this stranding event were atypical of stranding in Cuvier's beaked whale, particularly in this region of the world. No natural phenomenon that might contribute to the stranding event coincided in time with the mass stranding. Because of the rarity of mass strandings in the Greek Ionian Sea, the probability that the sonar tests and stranding coincided in time and location, while being independent of each other, was estimated as being extremely low (Frantzis, 1998). However, because information for the necropsies was incomplete and inconclusive, the cause of the stranding cannot be precisely determined.

2000 Bahamas Marine Mammal Mass Stranding (March 15-16, 2000)

Description: Seventeen marine mammals comprised of nine Cuvier's beaked whales, three Blainville's beaked whales (*Mesoplodon densirostris*), two unidentified beaked whales, two minke whales (*Balaenoptera acutorostrata*), and one spotted dolphin (*Stenella frontalis*), stranded along the Northeast and Northwest Providence Channels of the Bahamas Islands on March 15-16, 2000 (Evans and England, 2001). The strandings occurred over a 36-hour period and coincided with DON use of mid-frequency active sonar within the channel. Navy ships were involved in tactical sonar exercises for approximately 16 hours on March 15. The ships, which operated the AN/SQS-53C and AN/SQS-56, moved through the channel while emitting sonar pings approximately every 24 seconds. The timing of pings was staggered between ships and average source levels of pings varied from a nominal 235 dB SPL (AN/SQS-53C) to 223 dB SPL (AN/SQS-56). The center frequency of pings was 3.3 kHz and 6.8 to 8.2 kHz, respectively.

Seven of the animals that stranded died, while ten animals were returned to the water alive. The animals known to have died included five Cuvier's beaked whales, one Blainville's beaked whale, and the single spotted dolphin. Six necropsies were performed and three of the six necropsied whales (one Cuvier's beaked whale, one Blainville's beaked whale, and the spotted dolphin) were fresh enough to permit identification of pathologies by computerized tomography (CT). Tissues from the remaining three animals were in a state of advanced decomposition at the time of inspection.

<u>Findings</u>: All five necropsied beaked whales were in good body condition and did not show any signs of external trauma or disease. In the two best preserved whale specimens, hemorrhage was associated with the brain and hearing structures. Specifically, subarachnoid hemorrhage within the temporal region of the brain and intracochlear hemorrhages were noted. Similar findings of bloody effusions around the ears of two other moderately decomposed whales were consistent with the same observations in the freshest animals. In addition, three of the whales had small hemorrhages in their acoustic fats, which are fat bodies used in sound production and reception (i.e., fats of the lower jaw and the melon). The best-preserved whale demonstrated acute hemorrhage within the kidney, inflammation of the lung and lymph nodes, and congestion and mild hemorrhage in multiple other organs.

Other findings were consistent with stresses and injuries associated with the stranding process. These consisted of external scrapes, pulmonary edema and congestion. The spotted dolphin demonstrated poor body condition and evidence of a systemic debilitating disease. In addition, since the dolphin stranding site was isolated from the acoustic activities of Navy ships, it was determined that the dolphin stranding was unrelated to the presence of Navy active sonar.

<u>Conclusions</u>: The post-mortem analyses of stranded beaked whales led to the conclusion that the immediate cause of death resulted from overheating, cardiovascular collapse and stresses associated with being stranded on land. However, the presence of subarachnoid and intracochlear hemorrhages were believed to have occurred prior to stranding and were hypothesized as being related to an acoustic event. Passive acoustic monitoring records demonstrated that no large scale acoustic activity besides the Navy sonar exercise occurred in the times surrounding the stranding event. The mechanism by which sonar could have caused the observed traumas or caused the animals to strand was undetermined. The spotted dolphin was in overall poor condition for examination, but showed indications of long-term disease. No analysis of baleen whales (minke whale) was conducted.

2000 Madeira Island, Portugal Beaked Whale Strandings (May 10 – 14, 2000)

<u>Description</u>: Three Cuvier's beaked whales stranded on two islands in the Madeira Archipelago, Portugal, from May 10–14, 2000 (Cox et al., 2006). A joint NATO amphibious training exercise,

named "Linked Seas 2000," which involved participants from 17 countries, took place in Portugal during May 2–15, 2000. The timing and location of the exercises overlapped with that of the stranding incident.

Findings: Two of the three whales were necropsied. Two heads were taken to be examined. One head was intact and examined grossly and by CT; the other was only grossly examined because it was partially flensed and had been seared from an attempt to dispose of the whale by fire (Ketten, 2005). No blunt trauma was observed in any of the whales. Consistent with prior CT scans of beaked whales stranded in the Bahamas 2000 incident, one whale demonstrated subarachnoid and peribullar hemorrhage and blood within one of the brain ventricles. Post-cranially, the freshest whale demonstrated renal congestion and hemorrhage, which was also consistent with findings in the freshest specimens in the Bahamas incident.

Conclusions: The pattern of injury to the brain and auditory system were similar to those observed in the Bahamas strandings, as were the kidney lesions and hemorrhage and congestion in the lungs (Ketten, 2005). The similarities in pathology and stranding patterns between these two events suggested a similar causative mechanism. Although the details about whether or how sonar was used during "Linked Seas 2000" is unknown, the presence of naval activity within the region at the time of the strandings suggested a possible relationship to Navy activity.

2002 Canary Islands Beaked Whale Mass Stranding (24 September 2002)

Description: On September 24, 2002, 14 beaked whales stranded on Fuerteventura and Lanzaote Islands in the Canary Islands (Jepson et al., 2003). Seven of the 14 whales died on the beach and the 7 were returned to the ocean. Four beaked whales were found stranded dead over the next three days either on the coast or floating offshore (Fernández et al., 2005). At the time of the strandings, an international naval exercise called Neo-Tapon, involving numerous surface warships and several submarines was being conducted off the coast of the Canary Islands. Tactical mid-frequency active sonar was utilized during the exercises, and strandings began within hours of the onset of the use of mid-frequency sonar (Fernández et al., 2005).

Findings: Eight Cuvier's beaked whales, one Blainville's beaked whale, and one Gervais' beaked whale were necropsied; six of them within 12 hours of stranding (Fernández et al., 2005). The stomachs of the whales contained fresh and undigested prey contents. No pathogenic bacteria were isolated from the whales, although parasites were found in the kidneys of all of the animals. The head and neck lymph nodes were congested and hemorrhages were noted in multiple tissues and organs, including the kidney, brain, ears, and jaws. Widespread fat emboli were found throughout the carcasses, but no evidence of blunt trauma was observed in the whales. In addition, the parenchyma of several organs contained macroscopic intravascular bubbles and lesions, putatively associated with nitrogen off-gassing.

Conclusions: The association of NATO mid-frequency sonar use close in space and time to the beaked whale strandings, and the similarity between this stranding event and previous beaked whale mass strandings coincident with sonar use, suggests that a similar scenario and causative mechanism of stranding may be shared between the events. Beaked whales stranded in this event demonstrated brain and auditory system injuries, hemorrhages, and congestion in multiple organs, similar to the pathological findings of the Bahamas and Madeira stranding events. In addition, the necropsy results of Canary Islands stranding event lead to the hypothesis that the presence of disseminated and widespread gas bubbles and fat emboli were indicative of nitrogen bubble formation, similar to what might be expected in decompression sickness (Jepson et al., 2003; Fernández et al., 2005). Whereas gas emboli would develop from the nitrogen gas, fat emboli would enter the blood stream from ruptured fat cells (presumably where nitrogen bubble formation occurs) or through the coalescence of lipid bodies within the blood stream.

The possibility that the gas and fat emboli found by Fernández et al. (2005) was due to nitrogen bubble formation has been hypothesized to be related to either direct activation of the bubble by sonar signals or to a behavioral response in which the beaked whales flee to the surface following sonar exposure. The first hypothesis is related to rectified diffusion (Crum and Mao, 1996), the process of increasing the size of a bubble by exposing it to a sound field. This process is facilitated if the environment in which the ensonified bubbles exist is supersaturated with gas. Repetitive diving by marine mammals can cause the blood and some tissues to accumulate gas to a greater degree than is supported by the surrounding environmental pressure (Ridgway and Howard, 1979). Deeper and longer dives of some marine mammals, such as those conducted by beaked whales, are theoretically predicted to induce greater levels of supersaturation (Houser et al., 2001). If rectified diffusion were possible in marine mammals exposed to high-level sound, conditions of tissue supersaturation could theoretically speed the rate and increase the size of bubble growth. Subsequent effects due to tissue trauma and emboli would presumably mirror those observed in humans suffering from decompression sickness.

It is unlikely that the short duration of sonar pings would be long enough to drive bubble growth to any substantial size, if such a phenomenon occurs. However, an alternative but related hypothesis has also been suggested: stable bubbles could be destabilized by high-level sound exposures such that bubble growth then occurs through static diffusion of gas out of the tissues. In such a scenario the marine mammal would need to be in a gas-supersaturated state for a long enough period of time for bubbles to become of a problematic size. The second hypothesis speculates that rapid ascent to the surface following exposure to a startling sound might produce tissue gas saturation sufficient for the evolution of nitrogen bubbles (Jepson et al., 2003; Fernández et al., 2005). In this scenario, the rate of ascent would need to be sufficiently rapid to compromise behavioral or physiological protections against nitrogen bubble formation.

Although theoretical predictions suggest the possibility for acoustically mediated bubble growth, there is considerable disagreement among scientists as to its likelihood (Piantadosi and Thalmann, 2004). Sound exposure levels predicted to cause in vivo bubble formation within diving cetaceans have not been evaluated and are suspected as needing to be very high (Evans, 2002; Crum et al., 2005). Further, although it has been argued that traumas from recent beaked whale strandings are consistent with gas emboli and bubble-induced tissue separations (Jepson et al., 2003), there is no conclusive evidence supporting this hypothesis and there is concern that at least some of the pathological findings (e.g., bubble emboli) are artifacts of the necropsy. Currently, stranding networks in the United States have created a set of necropsy guidelines to determine, in part, the possibility and frequency with which bubble emboli can be introduced into marine mammals during necropsy procedures (Arruda et al., 2007).

2006 Spain, Gulf of Vera Beaked Whale Mass Stranding (26-27 January 2006)

Description: The Spanish Cetacean Society reported an atypical mass stranding of four beaked whales that occurred January 26, 2006, on the southeast coast of Spain near Mojacar (Gulf of Vera) in the Western Mediterranean Sea. According to the report, two of the whales were discovered the evening of January 26 and were found to be still alive. Two other whales were discovered during the day on January 27, but had already died. A following report stated that the first three animals were located near the town of Mojacar and were examined by a team from the University of Las Palmas de Gran Canarias, with the help of the stranding network of Ecologistas en Acción Almería-PROMAR and others from the Spanish Cetacean Society. The fourth animal was found dead on the afternoon of May 27, a few kilometers north of the first three animals.

From January 25-26, 2006, a NATO surface ship group (seven ships including one U.S. ship under NATO operational command) conducted active sonar training against a Spanish submarine within 93 km (50 NM) of the stranding site.

Findings: Veterinary pathologists necropsied the two male and two female beaked whales (*Z. cavirostris*).
Conclusions: According to the pathologists, a likely cause of this type of beaked whale mass stranding event may have been anthropogenic acoustic activities. However, no detailed pathological results confirming this supposition have been published to date, and no positive acoustic link was established as a direct cause of the stranding.

Even though no causal link can be made between the stranding event and naval exercises, certain conditions may have existed in the exercise area that, in their aggregate, may have contributed to the marine mammal strandings (Freitas, 2004):

- Operations were conducted in areas of at least 1,000 m (3,281 ft) in depth near a shoreline where there is a rapid change in bathymetry on the order of 1,000 to 6,000 m (3,281 to 19,685 ft) occurring a cross a relatively short horizontal distance (Freitas, 2004).
- Multiple ships, in this instance, five MFA sonar equipped vessels, were operating in the same area over extended periods of time (20 hours) in close proximity.
- Exercises took place in an area surrounded by landmasses, or in an embayment. Operations involving multiple ships employing mid-frequency active sonar near land may produce sound directed towards a channel or embayment that may cut off the lines of egress for marine mammals (Freitas, 2004).

E.7 OTHER GLOBAL STRANDING DISCUSSIONS

In the following sections, stranding events that have been putatively linked to DON activity in popular press are presented. As detailed in the individual case study conclusions, the DON believes that there is enough to evidence available to refute allegations of impacts from mid-frequency sonar.

Stranding Events Case Studies

2003 Washington State Harbor Porpoise Strandings (May 2 – June 2, 2003)

<u>Description:</u> At 10:40 a.m. on May 5, 2003, the USS Shoup began the use of mid-frequency tactical active sonar as part of a naval exercise. At 2:20 p.m., the USS Shoup entered the Haro Strait and terminated active sonar use at 2:38 p.m., thus limiting active sonar use within the strait to less than 20 minutes. Between May 2 and June 2, 2003, approximately 16 strandings involving 15 harbor porpoises (*Phocoena phocoena*) and one Dall's porpoise (*Phocoenoides dalli*) were reported to the Northwest Marine Mammal Stranding Network. A comprehensive review of all strandings and the events involving USS Shoup on May 5, 2003, were presented in DON (2004). Given that the USS Shoup was known to have operated sonar in the strait on May 5, and that supposed behavioral reactions of killer whales (*Orcinus orca*) had been putatively linked to these sonar operations (NMFS Office of Protected Resources, 2005), NMFS undertook an analysis of whether sonar caused the strandings of the harbor porpoises.

Whole carcasses of ten of harbor porpoises and the head of an additional porpoise were collected for analysis. Necropsies were performed on ten of the harbor porpoises and six whole carcasses and two heads were selected for CT imaging. Gross examination, histopathology, age determination, blubber analysis, and various other analyses were conducted on each of the carcasses (Norman et al., 2004).

<u>Findings</u>: Post-mortem findings and analysis details are found in Norman et al. (2004). All of the carcasses suffered from some degree of freeze-thaw artifact that hampered gross and histological evaluations. At the time of necropsy, three of the porpoises were moderately fresh, whereas the remainder of the carcasses was considered to have moderate to advanced decomposition. None of the 11 harbor porpoises demonstrated signs of acoustic trauma. In contrast, a putative cause of death was determined for five of the porpoises; two animals had blunt trauma injuries and three animals had indication of disease processes (fibrous peritonitis, salmonellosis, and necrotizing pneumonia). A cause of death could not be determined in the remaining animals, which is consistent with expected percentage of marine mammal necropsies conducted within the northwest region.

<u>Conclusions</u>: NMFS concluded from a retrospective analysis of stranding events that the number of harbor porpoise stranding events in the approximate month surrounding the USS Shoup use of sonar was higher than expected based on annual strandings of harbor porpoises (Norman et al., 2004). It is important to note that the number of strandings in the May-June timeframe in 2003 was also higher for the outer coast, indicating a much wider phenemona than use of sonar by USS Shoup in Puget Sound for one day in May. The conclusion by NMFS that the number of strandings in 2003 was higher is also different from that of The Whale Museum, which has documented and responded to harbor porpoise strandings since 1980 (Osborne, 2003). According to The Whale Museum, the number of strandings as of May 15, 2003, was consistent with what was expected based on historical stranding records and was less than that occurring in certain years. For example, since 1992 the San Juan Stranding Network has documented an average of 5.8 porpoise strandings per year. In 1997, there were 12 strandings in the San Juan Islands with

more than 30 strandings throughout the general Puget Sound area. Disregarding the discrepancy in the historical rate of porpoise strandings and its relation to the USS Shoup, NMFS acknowledged that the intense level of media attention focused on the strandings likely resulted in an increased reporting effort by the public over that which is normally observed (Norman et al., 2004). NMFS also noted in its report that the "sample size is too small and biased to infer a specific relationship with respect to sonar usage and subsequent strandings."

Seven of the porpoises collected and analyzed died prior to Shoup departing to sea on May 5, 2003. Of these seven, one, discovered on May 5, 2003, was in a state of moderate decomposition, indicating it died before May 5; the cause of death was determined to be due, most likely, to salmonella septicemia. Another porpoise, discovered at Port Angeles on May 6, 2003, was in a state of moderate decomposition, indicating that this porpoise also died prior to May 5. One stranded harbor porpoise discovered fresh on May 6 is the only animal that could potentially be linked in time to the USS Shoup's May 5 active sonar use. Necropsy results for this porpoise found no evidence of acoustic trauma. The remaining eight strandings were discovered one to three weeks after the USS Shoup's May 5 transit of the Haro Strait, making it difficult to causally link the sonar activities of the USS Shoup to the timing of the strandings. Two of the eight porpoises died from blunt trauma injury and a third suffered from parasitic infestation, which possibly contributed to its death (Norman et al., 2004). For the remaining five porpoises, NMFS was unable to identify the causes of death.

The speculative association of the harbor porpoise strandings to the use of sonar by the USS Shoup is inconsistent with prior stranding events linked to the use of mid-frequency sonar. Specifically, in prior events, the stranding of whales occurred over a short period of time (less than 36 hours), stranded individuals were spatially co-located, traumas in stranded animals were consistent between events, and active sonar was known or suspected to be in use. Although mid-frequency active sonar was used by the USS Shoup, the distribution of harbor porpoise strandings by location and with respect to time surrounding the event do not support the suggestion that mid-frequency active sonar was a cause of harbor porpoise strandings. Rather, a complete lack of evidence of any acoustic trauma within the harbor porpoises, and the identification of probable causes of stranding or death in several animals, further supports the conclusion that harbor porpoise strandings were unrelated to the sonar activities of the USS Shoup (DON, 2004).

2004 Hawai'i Melon-Headed Whale Mass Stranding (July 3-4, 2004)

<u>Description</u>: The majority of the following information is taken from the NMFS report on the stranding event (Southall et al., 2006). On the morning of July 3, 2004, 150 to 200 melon-headed whales (*Peponocephala electra*) entered Hanalei Bay, Kauai. Individuals attending a canoe blessing ceremony observed the animals entering the bay at approximately 7 a.m. The whales were reported entering the bay in a "wave as if they were chasing fish" (Braun 2005). At 6:45 a.m. on July 3, 2004, approximately 46.3 km (25 NM) north of Hanalei Bay, active sonar was tested briefly prior to the start of an anti-submarine warfare exercise.

The whales stopped in the southwest portion of the bay, grouping tightly, and displayed spy-hopping and tail-slapping behavior. As people went into the water among the whales, the pod separated into as many as four groups, with individual animals moving among the clusters. This continued through most of the day, with the animals slowly moving south and then southeast within the bay. By about 3 p.m., police arrived and kept people from interacting with the animals. At 4:45 p.m. on July 3, 2004, the RIMPAC Battle Watch Captain received a call from a National Marine Fisheries representative in Honolulu, Hawaii, reporting the sighting of as many as 200 melon-headed whales in Hanalei Bay. At 4:47 p.m. the Battle Watch Captain directed all ships in the area to cease active sonar transmissions.

At 7:20 p.m. on July 3, 2004, the whales were observed in a tight single pod 68.6 m (75 yd) from the southeast side of the bay. The pod was circling in a group and displayed frequent tail slapping and whistle vocalizations and some spy hopping. No predators were observed in the bay and no animals were reported as having fresh injuries. The pod stayed in the bay through the night of July 3, 2004.

On the morning of July 4, 2004, the whales were observed to still be in the bay and collected in a tight group. A decision was made at that time to attempt to herd the animals out of the bay. A 213 to 244-m (700- to 800-ft) rope was constructed by weaving together beach morning glory vines. This vine rope was tied between two canoes and with the assistance of 30 to 40 kayaks, was used to herd the animals out of the bay. By approximately 11:30 a.m. on July 4, 2004, the pod was coaxed out of the bay.

A single neonate melon-headed whale was observed in the bay on the afternoon of July 4, after the whale pod had left the bay. The following morning on July 5, 2004, the neonate was found stranded on Lumahai Beach. It was pushed back into the water but was found stranded dead between 9 and 10 a.m. near the Hanalei pier. NMFS collected the carcass and had it shipped to California for necropsy, tissue collection, and diagnostic imaging.

Following the stranding event, NMFS undertook an investigation of possible causative factors of the stranding. This analysis included available information on environmental factors, biological factors, and an analysis of the potential for sonar involvement. The latter analysis included vessels that utilized mid-frequency active sonar on the afternoon and evening of July 2. These vessels were to the southeast of Kauai, on the opposite side of the island from Hanalei Bay.

<u>Findings</u>: NMFS concluded from the acoustic analysis that the melon-headed whales would have had to have been on the southeast side of Kauai on July 2 to have been exposed to sonar from naval vessels on that day (Southall et al., 2006). There was no indication whether the animals were in that region or whether they were elsewhere on July 2. NMFS concluded that the animals would have had to swim from 1.4 to 4.0 m/s (3 to 9 mi/hr) for 6.5 to 17.5 hours after sonar transmissions ceased to reach Hanalei Bay by 7 a.m. on July 3. Sound transmissions by ships to the north of Hanalei Bay on July 3 were produced as part of exercises between 6:45 a.m. and 4:47 p.m. Propagation analysis conducted by the 3rd Fleet estimated that the level of sound from these transmissions at the mouth of Hanalei Bay could have ranged from 138 to 149 dB re: 1 μPa.

NMFS was unable to determine any environmental factors (e.g., harmful algal blooms, weather conditions) that may have contributed to the stranding. However, additional analysis by Navy investigators found that a full moon occurred the evening before the stranding and was coupled with a squid run (Mobley et al., 2007). In addition, a group of 500 to 700 melon-headed whales were observed to come close to shore and interact with humans in Sasanhaya Bay, Rota, on the same morning as the whales entered Hanalei Bay (Jefferson et al., 2006). Previous records further indicated that, though the entrance of melon-headed whales into the shallows is rare, it is not unprecedented. A pod of melon-headed whales entered Hilo Bay in the 1870s in a manner similar to that which occurred at Hanalei Bay in 2004.

The necropsy of the melon-headed whale calf suggested that the animal died from a lack of nutrition, likely following separation from its mother. The calf was estimated to be approximately one week old. Although the calf appeared not to have eaten for some time, it was not possible to determine whether the calf had ever nursed after it was born. The calf showed no signs of blunt trauma or viral disease and had no indications of acoustic injury.

1. <u>Conclusions</u>: Although it is not impossible, it is unlikely that the sound level from the sonar caused the melon-headed whales to enter Hanalei Bay. This conclusion is based on a number of factors: The speculation that the whales may have been exposed to sonar the day before and then fled to the Hanalei Bay is not supported by reasonable expectation of animal behavior and swim speeds. The flight response of the animals would have had to persist for many hours following the cessation of sonar transmissions. Such responses have not been observed in marine mammals and no documentation of such persistent flight response after the cessation of a frightening stimulus has been observed in other mammals. The swim speeds, though feasible for the species, are highly unlikely to be maintained for the durations proposed, particularly since the pod was a mixed group containing both adults and neonates. Whereas Southall et al. (2006) suggest that the animals would have had to swim from 1.4 to 4.0 m/s (3 to 9 mi/hr) for 6.5 to 17.5 hours, it is improbable that a neonate could achieve the same for a period of many hours.

2. The area between the islands of Oahu and Kauai and the Pacific Missile Range Facility (PMRF) training range have been used in RIMPAC exercises for more than 20 years, and are used year-round for ASW training using mid frequency active sonar. Melon-headed whales inhabiting the waters around Kauai are likely not naive to the sound of sonar and there has never been another stranding event associated in time with ASW training at Kauai or in the Hawaiian Islands. Similarly, the waters surrounding Hawaii contain an abundance of marine mammals, many of which would have been exposed to the same sonar operations that were speculated to have affected the melon-headed whales. No other strandings were reported coincident with the RIMPAC exercises. This leaves it uncertain as to why melon-headed whales, and no other species of marine mammal, would respond to the sonar exposure by stranding.

3. At the nominal swim speed for melon-headed whales, the whales had to be within 2.8 and 3.7 km (1.5 and 2 NM) of Hanalei Bay before sonar was activated on July 3. The whales were not in their open ocean habitat but had to be close to shore at 6:45 a.m. when the sonar was activated to have been observed inside Hanalei Bay from the beach by 7 a.m.

(Hanalei Bay is very large area). This observation suggests that other potential factors could be causative of the stranding event (see below).

4. The simultaneous movement of 500 to 700 melon-headed whales and Risso's dolphins into Sasanhaya Bay, Rota, in the Northern Marianas Islands on the same morning as the 2004 Hanalei stranding (Jefferson et al., 2006) suggests that there may be a common factor which prompted the melon-headed whales to approach the shoreline. A full moon occurred the evening before the stranding and a run of squid was reported concomitant with the lunar activity (Mobley et al., 2007). Thus, it is possible that the melon-headed whales were capitalizing on a lunar event that provided an opportunity for relatively easy prey capture. A report of a pod entering Hilo Bay in the 1870s indicates that on at least one other occasion, melon-headed whales entered a bay in a manner similar to the occurrence at Hanalei Bay in July 2004. Thus, although melon-headed whales entering shallow embayments may be an infrequent event, and every such event might be considered anomalous, there is precedent for the occurrence.
5. The received noise sound levels at the bay were estimated to range from roughly 95 to 149 dB re: 1 μPa. Received levels as a function of time of day have not been reported, so it is not possible to determine when the presumed highest levels would have occurred and for how long. However, received levels in the upper range would have been audible by human participants in the bay. The statement by one interviewee that he heard "pings" that lasted an hour and that they were loud enough to hurt his ears is unreliable. Received levels necessary to cause pain over the duration stated would have been observed by most individuals in the water with the animals. No other such reports were obtained from people interacting with the animals in the water.

Although NMFS concluded that sonar use was a "plausible, if not likely, contributing factor in what may have been a confluence of events (Southall et al., 2006)," this conclusion was based primarily on the basis that there was an absence of any other compelling explanation. The authors of the NMFS report on the incident were unaware, at the time of publication, of the simultaneous event in Rota. In light of the simultaneous Rota event, the Hanalei stranding does not appear as anomalous as initially presented and the speculation that sonar was a causative factor is weakened. The Hanalei Bay incident does not share the characteristics observed with other mass strandings of whales coincident with sonar activity (e.g., specific traumas, species composition, etc.). In addition, the inability to conclusively link or exclude the impact of other environmental factors makes a causal link between sonar and the melon-headed whale strandings highly speculative at best.

1980- 2004 Beaked Whale Strandings in Japan (Brownell et al. 2004)

<u>Description</u>: Brownell et al. (2004) compared the historical occurrence of beaked whale strandings in Japan (where there are U.S. naval bases) with strandings in New Zealand (which lacks a U.S. naval base) and concluded the higher number of strandings in Japan may be related to the presence of U.S. Navy vessels using mid-frequency sonar. While the dates for the strandings were well documented, the authors of the study did not attempt to correlate the dates of any Navy activities or exercises with the dates of the strandings.

To fully investigate the allegation made by Brownell et al. (2004), the Center for Naval Analysis (CNA) looked at the past U.S. Naval exercise schedules from 1980 to 2004 for the water around Japan in comparison to the dates for the strandings provided by Brownell et al. (2004). None of the strandings occurred during or within weeks after any DON exercises. While the CNA analysis began by investigating the probabilistic nature of any co-occurrences, the results were a 100 percent probability that the strandings and sonar use were not correlated by time. Given there was no instance of co-occurrence in over 20 years of stranding data, it can be reasonably postulated that sonar use in Japanese waters by DON vessels did not lead to any of the strandings documented by Brownell et al. (2004).

2004 Alaska Beaked Whale Strandings (June 17 to July 19, 2004)

Description: Between June 17 and July 19, 2004, five beaked whales were discovered at various locations along 2,575 km (1,389.4 NM) of the Alaskan coastline, and one was found floating (dead) at sea. Because the DON exercise Alaska Shield/Northern Edge 2004 occurred within the approximate timeframe of these strandings, it has been alleged that sonar may have been the probable cause of these strandings.

The Alaska Shield/Northern Edge 2004 exercise consisted of a vessel-tracking event followed by a vessel-boarding search-and-seizure event. There was no ASW component to the exercise, no use of mid-frequency sonar, and no use of explosives in the water. There were no events in the Alaska Shield/Northern Edge exercise that could have caused any of the strandings over this 33 day period.

2005 North Carolina Marine Mammal Mass Stranding Event (January 15-16, 2005)

Description: On January 15 and 16, 2005, 36 marine mammals consisting of 33 short-finned pilot whales, one minke whale, and two dwarf sperm whales stranded alive on the beaches of North Carolina (Hohn et al., 2006a). The animals were scattered across a 111-km (59.9-NM) area from Cape Hatteras northward. Because of the live stranding of multiple species, the event was classified as a UME (Unusual Mortality Event). It is the only stranding on record for the region in which multiple offshore species were observed to strand within a two- to three-day period.

The DON indicated that from January 12 to 14, some unit level training with mid-frequency active sonar was conducted by vessels that were 93 to 185 km (50.2 to 99.8 NM) from Oregon Inlet. An expeditionary strike group was also conducting exercises to the southeast, but the closest point of active sonar transmission to the inlet was 650 km (350.7 NM) away. The unit level operations were not unusual for the area or time of year and the vessels were not involved in antisubmarine warfare exercises. Marine mammal observers on board the vessels did not detect any marine mammals during the period of unit level training. No sonar transmissions were made on January 15-16.

The National Weather Service reported that a severe weather event moved through North Carolina on January 13 and 14 (Figure E-4). The event was caused by an intense cold front that moved into an unusually warm and moist air mass that had been persisting across the eastern United States for about a week. The weather caused flooding in the western part of the state, considerable wind damage in central regions of the state, and at least three tornadoes that were reported in the north central part of the state. Severe, sustained (one to four days) winter storms are common for this region.

Over a two-day period (January 16-17), two dwarf sperm whales, 27 pilot whales, and one minke whale were necropsied and tissue samples collected. Twenty-five of the stranded cetacean heads were examined; two pilot whale heads and the heads of the dwarf sperm whales were analyzed by CT.

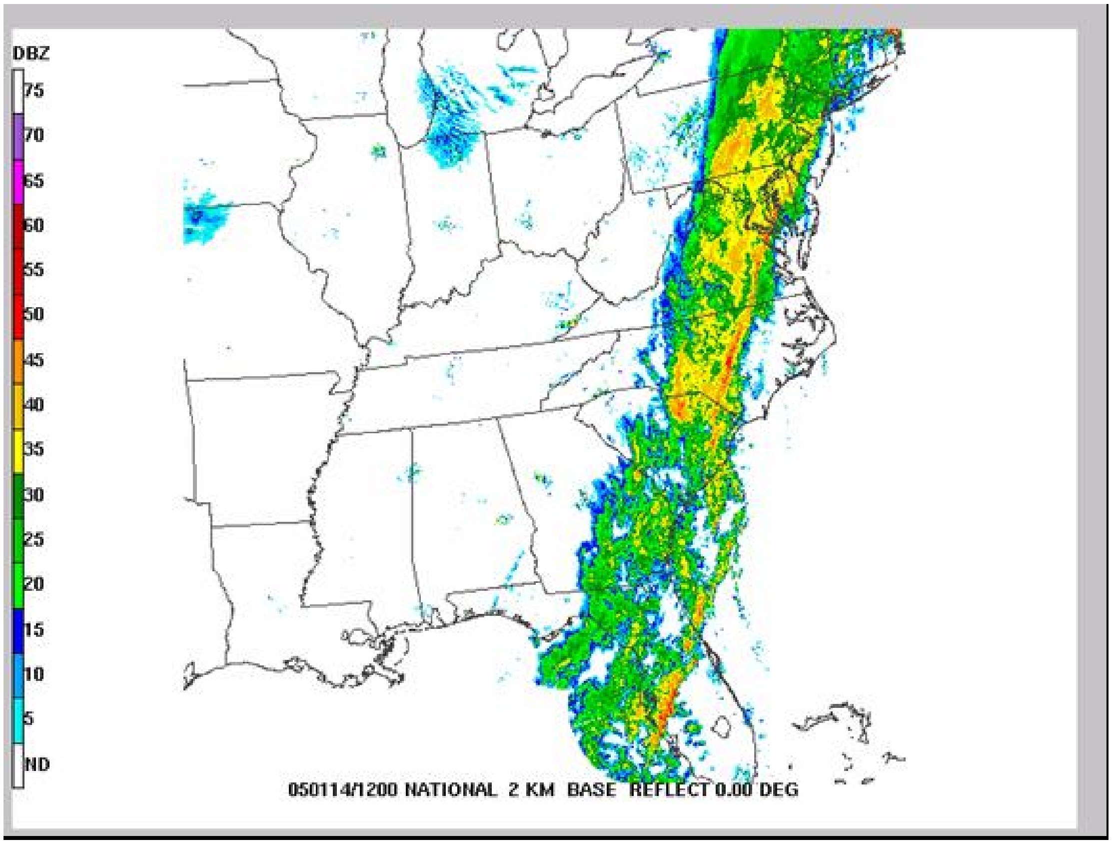

Figure E-4. Regional radar imagery for the East Coast (including North Carolina) on July 14. The time of the image is approximately 7 a.m.

Findings: The pilot whales and dwarf sperm whale were not emaciated, but the minke whale, which was believed to be a dependent calf, was emaciated. Many of the animals were on the beach for an extended period of time prior to necropsy and sampling, and many of the biochemical abnormalities noted in the animals were suspected of being related to the stranding and prolonged time on land. Lesions were observed in all of the organs, but there was no consistency across species. Musculoskeletal disease was observed in two pilot whales and cardiovascular disease was observed in one dwarf sperm whale and one pilot whale. Parasites were a common finding in the pilot whales and dwarf sperm whales but were considered consistent with the expected parasite load for wild odontocetes. None of the animals exhibited traumas similar to those observed in prior stranding events associated with mid-frequency sonar activity. Specifically, there was an absence of auditory system trauma and no evidence of distributed and widespread bubble lesions or fat emboli, as was previously observed (Fernández et al., 2005).

Sonar transmissions prior to the strandings were limited in nature and did not share the concentration identified in previous events associated with mid-frequency active sonar use (Evans and England, 2001). The operational/environmental conditions were also dissimilar (e.g., no constrictive channel and a limited number of ships and sonar transmissions). NMFS noted that environmental conditions were favorable for a shift from up-welling to down-welling conditions, which could have contributed to the event. However, other severe storm conditions existed in the days surrounding the strandings and the impact of these weather conditions on at-sea conditions is unknown. No harmful algal blooms were noted along the coastline.

<u>Conclusions</u>: All of the species involved in this stranding event are known to strand in this region. Although the cause of the stranding could not be determined, several whales had preexisting conditions that could have contributed to the stranding. Cause of death for many of the whales was likely due to the physiological stresses associated with being stranded. A consistent suite of injuries across species, which was consistent with prior strandings where sonar exposure is expected to be a causative mechanism, was not observed.

NMFS was unable to determine any causative role that sonar may have played in the stranding event. The acoustic modeling performed, as in the Hanalei Bay incident, was hampered by uncertainty regarding the location of the animals at the time of sonar transmissions. However, as in the Hanalei Bay incident, the response of the animals following the cessation of transmissions would imply a flight response that persisted for many hours after the sound source was no longer operational. In contrast, the presence of a severe weather event passing through North Carolina during January 13 and 14 is a possible contributing factor to the North Carolina UME of January 15.

E.8 STRANDING SECTION CONCLUSIONS

Marine mammal strandings have been a historic and ongoing occurrence attributed to a variety of causes. Over the last fifty years, increased awareness and reporting has lead to more information about species effected and raised concerns about anthropogenic sources of stranding. While there has been some marine mammal mortalities potentially associated with mid-frequency sonar effects to a small number of species (primarily limited numbers of certain species of beaked whales), the significance and actual causative reason for any impacts is still subject to continued investigation. ICES (2005a) noted that taken in context of marine mammal populations in general, sonar is not a major threat, nor a significant contributor to the overall ocean noise budget. However, continued research based on sound scientific principles is needed in order to avoid speculation as to stranding causes, and to further our understanding of potential effects or lack of effects from military mid-frequency sonar (Bradshaw et al., 2006; ICES 2005b; Barlow and Gisiner, 2006; Cox et al. 2006).

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APPENDIX F

COASTAL CONSISTENCY DETERMINATIONS AND NEGATIVE DETERMINATIONS

FEDERAL AGENCY COASTAL CONSISTENCY DETERMINATION (CCD) FOR CONNECTICUT

FEDERAL AGENCY COASTAL CONSISTENCY DETERMINATION (CCD) FOR FLORIDA

FEDERAL AGENCY COASTAL CONSISTENCY DETERMINATION (CCD) FOR GEORGIA

FEDERAL AGENCY COASTAL CONSISTENCY DETERMINATION (CCD) FOR TEXAS

FEDERAL AGENCY COASTAL CONSISTENCY DETERMINATION (CCD) FOR VIRGINIA

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR ALABAMA

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR DELAWARE

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR LOUISIANA

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR MAINE

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR MARYLAND

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR MASSACHUSETTS

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR MISSISSIPPI

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR NEW HAMPSHIRE

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR NEW JERSEY

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR NEW YORK

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR NORTH CAROLINA

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR RHODE ISLAND

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR SOUTH CAROLINA

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The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. 1451 "*et seq*".) was enacted to protect coastal resources from growing demands associated with commercial, residential, recreational and industrial uses. The CZMA allows coastal states to develop a Coastal Zone Management Plan (CZMP) whereby they designate permissible land and water use within the state's coastal zone. States then have the opportunity to review and comment on federal agency activities that could affect the state's coastal zone or its resources.

Federal agency activities potentially affecting a state's coastal zone must be consistent, to the maximum extent practicable, with the enforceable policies of the state's coastal management program. The enforceable policies of a state's coastal management program for purposes of federal consistency consist of management programs adopted by a coastal State in accordance with the provisions of sections 305 and 306, adopted by a coastal State in accordance with the provisions of sections 305 and 306, (16 U.S.C. 1454, 1455(d)) of the CZMA and approved by the Assistant Administrator for the Ocean Services and Coastal Zone Management, National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce. In addition, the enforceable policies of a State must be legally binding through constitutional provisions, laws, regulations, land use plans, ordinances or judicial or administrative decisions, by which a State exerts control over private and public land and water uses and natural resources in the coastal zone and which are incorporated in a management program as approved by the Office of Ocean and Coastal Resource Management, NOAA, either as part of the program approval described above or as a program change in accordance with the procedures detailed in 16 U.S.C. 1455(e). Typically, a state's CZMP will focus on the protection of physical, biological, and socioeconomic resources.

Review of federal agency activities is conducted through the submittal of either a Consistency Determination or a Negative Determination. A federal agency shall submit a Consistency Determination when it determines that its activity may have either a direct or an indirect effect on a state's coastal zone or resources. In accordance with 15 CFR 930.39, the consistency determination shall include a brief statement indicating whether the proposed activity will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the management program and should be based upon an evaluation of the relevant enforceable policies of the management program.

Pursuant to 15 CFR 930.41, the state has 60 days from the receipt of the Consistency Determination in which to concur with or object to the Consistency Determination, or to request an extension under 15 CFR 930.41(b). Federal agencies shall approve one request for an extension period of 15 days or less.

A federal agency may submit a Negative Determination to a coastal state when the federal agency has determined that its activities would not have an effect on the state's coastal zone or its resources or when conducting the same or similar activities for which Consistency Determinations have been prepared in the past. Pursuant to 15 CFR 930.35 the state has 60 days to review a federal agency's Negative Determination. States are not required to concur with a Negative Determination, and if the federal agency has not received a response from the state by the 60th day of submittal, it may proceed with its action. However, within the 60-day review period, a state agency may request, and the federal agency shall approve, one request for an extension period of 15 days or less.

In accordance with the CZMA, the U.S. Navy has reviewed the enforceable policies of each state's CZMP located within the Study Area. Based on the limitations discussed in Section 2.4, the enforceable policies of each state's CZMP, and pursuant to 15 CFR 930.39, the U.S. Navy prepared and submitted Consistency Determinations for the states of Connecticut, Florida, Georgia, Texas, and Virginia. Additionally, the U.S. Navy prepared and submitted Negative Determinations pursuant to 15 CFR § 930.35 for the states of Alabama, Delaware, Louisiana, Maine, Maryland, Massachusetts, Mississippi, New Hampshire, New Jersey, New York, North Carolina, Rhode Island, and South Carolina. The status of these submissions is shown in Table F-1 as of October 30, 2008.

Table F-1. Status of CZMA Determination Submissions

State	Submission Type	Status
Connecticut	Coastal Consistency Determination	Concurrence received October 21, 2008
Florida	Coastal Consistency Determination	Concurrence received September 23, 2008
Georgia	Coastal Consistency Determination	Objection received October 24, 2008. The State of Georgia is reevaluating objection as of October 26, 2008, based on additional information provided by Navy.
Texas	Coastal Consistency Determination	Concurrence received October 27, 2008
Virginia	Coastal Consistency Determination	Concurrence received October 16, 2008
Alabama	Negative Determination	Concurrence received September 23, 2008
Delaware	Negative Determination	No response received
Louisiana	Negative Determination	Concurrence received October 23, 2008
Maine	Negative Determination	Concurrence received November 5, 2008
Maryland	Negative Determination	No response received
Massachusetts	Negative Determination	No response received
Mississippi	Negative Determination	No response received
New Hampshire	Negative Determination	No response received
New Jersey	Negative Determination	No response received
New York	Negative Determination	Concurrence received September 23, 2008
North Carolina	Negative Determination	Concurrence received October 8, 2008
Rhode Island	Negative Determination	Concurrence received on August 27, 2008
South Carolina	Negative Determination	No response received

A copy of each CZMA determination letter is enclosed in this appendix, as well as any received state response.

FEDERAL AGENCY COASTAL CONSISTENCY DETERMINATION (CCD) FOR CONNECTICUT

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/975
August 22, 2008

Mr. Tom Ouellette
Office of Long Island Sound Programs
Department of Environmental Protection
79 Elm Street, 3rd Floor
Hartford, CT 06106-5127

Dear Mr. Ouellette:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar, improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within, and adjacent to, existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307(c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will be conducted in a manner consistent with the enforceable policies of Connecticut's approved coastal management program. The basis for this "Coastal Consistency Determination" is detailed in Enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom containing the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2], in compliance with the National Environmental Policy Act and Executive Order 12114. Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

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[1] See CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the state's federally approved coastal management plan. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies, or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] See Federal Register, Vol. 73, No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/975
August 22, 2008

In accordance with 15 Code of Federal Regulations (CFR) Section 930.32, the Department of the Navy has reviewed Connecticut's coastal management program and associated enforceable policies and has determined that active sonar activities occurring within Connecticut's coastal zone are consistent to the maximum extent practicable.

In accordance with 15 CFR Section 930.41(a), the State of Connecticut has 60 days from the receipt of this document in which to concur with, or object to, this Consistency Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Consistency Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

Connecticut's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. Connecticut's response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd., Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Consistency Determination.

Sincerely,

M.R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures: 1. Federal Agency CZMA Consistency Determination for Connecticut
2. AFAST DEIS/OEIS CD-Rom

2

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

October 21, 2008

Naval Facilities Engineering Command, Atlantic
Attn: Code EV22 (AFAST Project Manager)
6506 Hampton Blvd.
Norfolk, VA 23508-1278

Re: Proposed Atlantic Fleet Active Sonar Training (AFAST); Consistency Concurrence

To Whom It May Concern:

This is in response to the consistency determination, received on August 27, 2008 from M. R. Harrell, Assistant Deputy Chief of Staff for Operational Readiness and Training, for the proposed Atlantic Fleet Active Sonar Training (AFAST) program. Consistency determinations for direct federal actions are required by Section 307(c)(1) of the Coastal Zone Management Act of 1972, as amended, Subpart C of 15 Code of Federal Regulations (CFR) Part 930, and Section II, Part VII(c) of the State of Connecticut Coastal Management Program and Final Environmental Impact Statement.

This Department reviewed the consistency determination contained as Appendix F in the *Draft Environmental Impact Statement/Overseas Environmental Impact Statement* (DEIS/OEIS) for the AFAST program. That review included issuance of a public notice and request for public comment. Subsequently, by letter dated April 15, 2008 and addressed to J. M. Hinson, CAPT USN, this Department concurred with the determination that those proposed actions that would occur in Connecticut waters, i.e., submarine object detection and navigational training within existing submarine transit lanes and submarine maintenance conducted pier side at the Naval Submarine Base in Groton, are consistent to the maximum extent practicable with Connecticut's approved Coastal Management Program, pursuant to Section 22a-96(c) of the Connecticut General Statutes. Since your present consistency determination is also based on the DEIS/OEIS, and since no comments were received in response to our initial public notice, we hereby reiterate our concurrence that those actions that would occur in Connecticut waters are consistent to the maximum extent practicable with Connecticut's approved Coastal Management Program. A copy of our April 15, 2008 letter is attached for your reference.

We also raised in our April 15, 2008 letter a number of concerns related to the potential impacts of AFAST activities that would take place in offshore waters, including both within and outside of designated operating areas (OPAREAs), on marine species that may enter Long Island Sound. In preparing this present response, we took the opportunity to review the National Marine Fisheries Service's (NMFS) Proposed Rule on Taking and Importing Marine Mammals relative to the AFAST program, published in the Federal Register on October 14, 2008. That document describes additional mitigation measures that have been developed by the Navy subsequent to publication of the DEIS/OEIS and in cooperation with NMFS. Those measures address many of our expressed concerns, among other issues. Specifically, the proposed designation of Planning Awareness Areas would address to a degree our expressed preference for minimizing the Level B harassment of various species that would occur under the Preferred (No Action) Alternative as described in the DEIS/OEIS. The refinement of proposed helicopter dipping sonar activities and object detection exercises in North Atlantic Right whale critical habitat will benefit protection of that species, while the proposed Stranding Response Plan will help to protect all potentially affected marine mammals. Among the Navy's various research activities cited by NMFS, the stated objective of "understanding the effects of sound on marine mammals, sea turtles, fish

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AFAST Project Manager -2- October 21, 2008

and seabirds" would directly address a further concern expressed in our letter.

We commend the Navy for its development of the mitigation measures described above, as well as others previously identified in the DEIS/OEIS. Nevertheless, we encourage the continued pursuit of all appropriate resource protection efforts and scientific research as this program goes forward so as to avoid or minimize adverse impacts on all potentially affected species. In this regard, we again recommend, as in our previous letter, that the Navy consider the feasibility of retrieving sonobuoy parachutes and batteries as part of the AFAST training exercises in the interest of reducing potential entanglement of sea turtles and elimination or contamination of sea turtle feeding habitat.

Please contact Tom Ouellette of the DEP Office of Long Island Sound Programs at 860-424-3612 or at tom.ouellette@ct.gov if you have any questions in this regard. Thank you.

Yours truly,

Betsey C. Wingfield, Chief
Bureau of Water Protection and Land Reuse

BCW/TO/to
Encl.
cc: Allison Castellan, OCRM
Julie Victoria, DEP Wildlife Div.
Jenny Dickson, DEP Wildlife Div.
Mark Johnson, DEP Marine Fisheries Div.

FEDERAL AGENCY COASTAL CONSISTENCY DETERMINATION (CCD) FOR FLORIDA

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/976
August 22, 2008

Ms. Lauren Milligan
Florida Coastal Management Program
Department of Environmental Protection
3900 Commonwealth Boulevard
Douglas Building, Mail Station 47
Tallahassee, FL 32399-3000

Dear Ms. Milligan:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar, improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within, and adjacent to, existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307(c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will be conducted in a manner consistent with the enforceable policies of Florida's approved coastal management program. The basis for this "Coastal Consistency Determination" is detailed in Enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom containing the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2] in compliance with the National Environmental Policy Act and Executive Order 12114. Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

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[1] See CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the state's federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] See Federal Register, Vol. 73, No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/976
August 22, 2008

In accordance with 15 Code of Federal Regulations (CFR) Section 930.32, the Department of the Navy has reviewed Florida's coastal management program and associated enforceable policies and has determined that active sonar activities occurring within Florida's coastal zone are consistent to the maximum extent practicable.

In accordance with 15 CFR Section 930.41(a), the State of Florida has 60 days from the receipt of this document in which to concur with, or object to, this Consistency Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Consistency Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

Florida's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. Florida's response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Consistency Determination.

Sincerely,

M.R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures: 1. Federal Agency CZMA Consistency Determination for Florida
2. AFAST DEIS/OEIS CD-Rom

2

Florida Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Charlie Crist
Governor

September 23, 2008

Ms. Sarah Kotecki
Code EV22 (AFAST Project Manager)
Naval Facilities Engineering Command, Atlantic
6505 Hampton Boulevard
Norfolk, VA 23508-1278

RE: Department of the Navy – Draft Environmental Impact Statement/Overseas Environmental Impact Statement for Atlantic Fleet Active Sonar Training Along the East Coast and in the Gulf of Mexico.
SAI # FL200802194040C

Dear Ms. Kotecki:

The Florida State Clearinghouse, pursuant to Presidential Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335, 4341-4347, as amended, previously coordinated a review of the referenced Draft Environmental Impact Statement (DEIS).

Based on the information contained in the DEIS and comments provided by our reviewing agencies, the state has determined that, at this stage, the proposed federal activities are consistent with the Florida Coastal Management Program.

Thank you for the opportunity to review this document. Should you have any questions regarding this letter, please contact Ms. Lauren P. Milligan at (850) 245-2170.

Yours sincerely,

Sally B. Mann

Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/lm

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FEDERAL AGENCY COASTAL CONSISTENCY DETERMINATION (CCD) FOR GEORGIA

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/978
August 22, 2008

Ms. Kelie Moore
Coastal Zone Management Program
Department of Natural Resources
One Conservation Way, Suite 300
Brunswick, GA 31520-8687

Dear Ms. Moore:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar, improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within, and adjacent to, existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307 (c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will be conducted in a manner consistent with the enforceable policies of Georgia's approved coastal management program. The basis for this "Coastal Consistency Determination" is detailed in enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom containing the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2] in compliance with the National Environmental Policy Act and Executive Order 12114. Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

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[1] See CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the state's federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] See Federal Register, Vol. 73, No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/978
August 22, 2008

In accordance with 15 Code of Federal Regulations (CFR) Section 930.32, the Department of the Navy has reviewed Georgia's coastal management program and associated enforceable policies and has determined that active sonar activities occurring within Georgia's coastal zone are consistent to the maximum extent practicable.

In accordance with 15 CFR Section 930.41(a), the State of Georgia has 60 days from the receipt of this document in which to concur with or object to this Consistency Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Consistency Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

Georgia's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. Georgia's response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Consistency Determination.

Sincerely,

M.R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures: 1. Federal Agency CZMA Consistency Determination for Georgia
2. AFAST DEIS/OEIS CD-Rom

2

Oct-27-2008 08:35am From-CRD ECOLOGY +9122623131 T-031 P.002/004 F-111

Georgia Department of Natural Resources
2 Martin Luther King, Jr. Drive, SE, Suite 1252 East, Atlanta, Georgia 30334-9000
Noel Holcomb, Commissioner
Phone: (404) 656-3500
Fax: (404) 656-0770

October 24, 2008

Commander, Atlantic Naval Facilities
Attn: Code EV22 (AFAST PM)
6506 Hampton Blvd.
Norfolk, VA 23508-1278

VIA FACSIMILE: 757.322.4805

RE: Federal Consistency with Georgia's Coastal Management Program for DEIS/ODEIS for Atlantic Fleet Active Sonar Training (AFAST)

Dear Commander:

Staff of the Georgia Coastal Management Program (GCMP) as well as the Georgia Department of Natural Resources' Wildlife Resources Division (GDNR WRD) and the Coastal Resources Division (GDNR CRD) has reviewed your August 22, 2008 letter and attached Draft Atlantic Fleet Sonar Training Environmental Impact Statement and Overseas Environmental Impact Statement.

Attached to your letter is Table F-3: Georgia Coastal Management Program Consistency Review, which briefly outlines the GCMP's 33 enforceable policies and the consistency of the proposed actions with each. Several of the enforceable policies listed in that table have been incorrectly interpreted:

- **O.C.G.A. 12-5-280 Coastal Marshlands Protection Act:** The table states that the proposed activities would not take place on land and would not impact estuaries. However, the letter & DEIS states that submarine ship maintenance activities and submarine object detection/navigational training would take place pier side in Kings Bay and during transit to the training exercise location. Both the Kings Bay pier and transit areas to the training exercise location are within the estuarine area and, therefore, under jurisdiction of this Act.
- **O.C.G.A. 27-3-130 Endangered Wildlife Act:** The table states that the proposed activities would not impact any terrestrial species and that the Act extends only to species on public lands. Tidal waterbottoms extending from the mean high water line oceanward three miles are public lands owned by the State and any endangered wildlife found in, on or above such lands are under jurisdiction of this Act. Marine life transiting out of State Waters and into adjacent Federal Waters is not exempt from protection under this Act.
- **O.C.G.A. 27-1-3 Game and Fish Code:** The table states that the proposed activities would not impact terrestrial wildlife or freshwater wildlife resources. This Code is not limited to dry land and freshwater areas; marine game and fish are managed and protected under this Code by the Department of Natural Resources out to three nautical miles.
- **O.C.G.A. 50-16-61 Revocable License Program:** The table states that this license is applicable only to recreational docks. The License, however, is required for all uses of state-owned tidal waters and waterbottoms that will cause either temporary or permanent impacts.

Our greatest concern, as outlined in our March 31, 2008 comment letter (attached) is that the proposed actions are not consistent with the Endangered Wildlife Act because the marine mammal mitigation measures are insufficient. As outlined in Table 3-F, the proposed mitigation measures include:

- Effects to endangered marine wildlife will be addressed through an ESA consultation with NMFS
- The Navy will consult with NMFS on activities related to right whales "within the North Atlantic Right Whale Southeast critical habitat ..."
- Prior to conducting exercises in the critical habitat between 15 November and 15 April, the Navy will obtain the latest whale sighting from the aerial survey system and "to the extent operationally feasible, ships and submarines will avoid conducting training in the vicinity of recently sighted right whales."
- The mitigation measures outlined in Chapter 5 of the DEIS will be implemented (e.g. posting outlooks, reducing sonar power when marine mammals are sighted, transiting "slow safe speed", etc.)

None of the above mitigation measures differ substantively from those the Navy already presented in the January 2008 AFAST DEIS. Given that we have already found the mitigation measures in the AFAST DEIS to be insufficient in our March 31, 2008 letter, and given that no new mitigation measures were presented in the Navy's Federal Consistency review, GCMP **objects** with your consistency determination unless 1) a sufficient mitigation strategy is incorporated into the Final EIS, or 2) a sufficient mitigation strategy is made available following consultation with NMFS.

Coastal waters along the Southeast U.S. coast are the only known calving grounds for the imperiled North Atlantic right whale. While we acknowledge that the potential impacts of sonar on baleen whale are poorly understood, impacts on toothed whales have been documented. The Navy should fund independent research to determine whether sonar impacts baleen whales negatively. Until this question is answered, we contend that the Navy should avoid conducting AFAST exercises within all areas of known right whale occurrences to the maximum extent possible, given this species' imperiled status.

In the Southeast U.S., "areas of right whale occurrence" includes all waters within 30 nautical miles of shore from Cape Canaveral, FL to Chesapeake Bay, VA from November 15 through April 15 each year. [1] This distribution is much more expansive than the currently delineated Right Whale Southeast U.S. Critical Habitat. Mitigation measures should apply to the Southeast U.S. Right Whale Critical Habitat and all other areas of right whale occurrence. More information is needed regarding right whale distribution in deeper waters along the Southeast U.S. continental shelf (i.e. greater than 30 nautical miles offshore, which is also the approximate eastern limit of aerial survey transect lines). The Navy should fund and implement an alternate detection system (e.g. passive acoustic detection) to determine the extent to which right whales inhabit waters seaward of 30 nautical miles.

Vessel strikes are a leading cause of right whale mortality. Naval vessels should operate at speeds of 10 knots (or minimum safe speed) when transiting through areas inhabited by right whales during the right whale season. Exercises requiring faster vessel speeds should be conducted at the minimum required speed or in areas where right whales are not present. Right whales spend the majority of their time subsurface, which makes them difficult to detect visually. As such, reliance on shipboard lookouts as a primary means of reducing right whale collisions is not an effective alternative to vessel speed reductions.

We applaud the Navy for their longtime support of the Early Warning System (EWS) aerial survey system. The EWS surveys form the backbone of right whale research and management in the Southeast U.S (e.g. demographic data collection, detection of dead and entangled whales). We encourage the Navy to continue its support for the EWS surveys and other alternative detection technologies (e.g. passive acoustic detection systems). However, we also hope the Navy will recognize the limitations of the EWS surveys: aerial surveys can only confirm whales' presence at a given time and place—aerial surveys cannot confirm whale absence (i.e. detection is not 100%, it is likely much lower). As such, the EWS surveys should not be used to manage fine-scale vessel movements, sonar training events, etc. Until better detection technologies are developed, mitigation strategies should be broad-based and acknowledge that right whales are present throughout the nearshore waters of the Southeast U.S. from November 15 through April 15.

If you have any technical questions regarding our comments, please contact Brad Winn or Clay George at (912) 262-3336. If you have any questions regarding this federal consistency determination objection, please contact Kelie Moore at (912) 264-7218.

Sincerely,

Noel Holcomb

Noel Holcomb

cc: David Kaiser, NOAA OCRM
Susan Shipman, GDNR CRD
Dan Forster, GDNR WRD

1 GDNR's letter dated March 31, 2008 incorrectly described the right whale calving season as "November 15 through March 15 each year." This should have been "November 15 through April 15 each year."

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FEDERAL AGENCY COASTAL CONSISTENCY DETERMINATION (CCD) FOR TEXAS

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/979
August 22, 2008

Ms. Tammy Brooks
Coastal Division, General Land Office
Stephen F. Austin Building
1700 North Congress Street
Austin, TX 78701

Dear Ms. Brooks:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar, improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within, and adjacent to, existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307 (c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will be conducted in a manner consistent with the enforceable policies of Texas' approved coastal management program. The basis for this "Coastal Consistency Determination" is detailed in enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom containing the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2] in compliance with the National Environmental Policy Act and Executive Order 12114. Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

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[1] See CZMA section 304 (16 USC 1453 (6a)). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the state's federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] See Federal Register, Vol. 73, No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/979
August 22, 2008

In accordance with 15 Code of Federal Regulations (CFR) Section 930.32, the Department of the Navy has reviewed Texas' coastal management program and associated enforceable policies and has determined that active sonar activities occurring within Texas' coastal zone are consistent to the maximum extent practicable.

In accordance with 15 CFR Section 930.41(a), the State of Texas has 60 days from the receipt of this document in which to concur with, or object to, this Consistency Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Consistency Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

Texas' concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. Texas' response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Consistency Determination.

Sincerely,

M.R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures: 1. Federal Agency CZMA Consistency Determination for Texas
2. AFAST DEIS/OEIS CD-Rom

2

Coastal Coordination Council

P.O. Box 12873 ♦ Austin, Texas 78711-2873 ♦ (800) 998-4GLO ♦ FAX (512) 475-0680

October 27, 2008

M. R. Harrell
Assistant Deputy Chief of Staff for Operational Readiness and Training
Department of the Navy
US Fleet Forces Command
1562 Mitscher Avenue Suite 250
Norfolk Virginia 23551-5487

Re: **Atlantic Fleet Active Sonar Training Activities.**

Dear M. R. Harrell:

Based on information provided to the Texas Coastal Management Program (CMP) on the above project, it has been determined that it will likely not have adverse impacts on coastal natural resource areas in the coastal zone and is consistent with the goals and policies of the CMP.

If you have any questions or concerns, please contact me at (512) 463-9212 or at tammy.brooks@glo.state.tx.us.

Sincerely,

Tammy Sue Brooks

Tammy S. Brooks
Consistency Review Coordinator
Texas General Land Office

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FEDERAL AGENCY COASTAL CONSISTENCY DETERMINATION (CCD) FOR VIRGINIA

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/977
August 22, 2008

Ms. Ellie Irons
Department of Environmental Quality
629 East Main Street
Richmond, VA 23219

Dear Ms. Irons:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar, improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within, and adjacent to, existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307 (c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will be conducted in a manner consistent with the enforceable policies of Virginia's approved coastal management program. The basis for this "Coastal Consistency Determination" is detailed in Enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom containing the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2] in compliance with the National Environmental Policy Act and Executive Order 12114. Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

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[1] <u>See</u> CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the state's federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] <u>See</u> Federal Register, Vol. 73, No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/977
August 22, 2008

In accordance with 15 Code of Federal Regulations (CFR) Section 930.32, the Department of the Navy has reviewed Virginia's coastal management program and associated enforceable policies and has determined that active sonar activities occurring within Virginia's coastal zone are consistent to the maximum extent practicable.

In accordance with 15 CFR Section 930.41(a), the Commonwealth of Virginia has 60 days from the receipt of this document in which to concur with or object to this Consistency Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Consistency Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

Virginia's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. Virginia's response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Consistency Determination.

Sincerely,

M.R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures:
1. Federal Agency CZMA Consistency Determination for Virginia
2. AFAST DEIS/OEIS CD-Rom

2

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 1105, Richmond, Virginia 23218
TDD (804) 698-4021
www.deq.virginia.gov

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

October 16, 2008

Naval Facilities Engineering Command, Atlantic
Attn: Code EV22 (AFAST Project Manager)
6506 Hampton Boulevard
Norfolk, Virginia 23508-1278

RE: Federal Consistency Determination for the Atlantic Fleet Active Sonar Training, DEQ 08-187F.

Dear Sir/Madam:

The Commonwealth of Virginia has completed its review of the Federal Consistency Determination (FCD) for the above-referenced project. The Department of Environmental Quality (DEQ) is responsible for coordinating Virginia's review of Federal Consistency Determinations and responding to appropriate officials on behalf of the Commonwealth. This letter is in response to your August 22, 2008 submission (received August 27, 2008) requesting concurrence with the Federal Consistency Determination. The following agencies and planning district commission participated in this review:

Department of Environmental Quality
Department of Conservation and Recreation
Department of Game and Inland Fisheries
Marine Resource Commission
Department of Historic Resources
Hampton Roads Planning District Commission

The Virginia Institute of Marine Science and the City of Norfolk were also invited to respond.

Public notice of this proposed action was published on the DEQ web site from September 11, 2008 through September 30, 2008. No public comments were received in response to the notice. In addition, the Commonwealth of Virginia previously reviewed and responded to the Draft Environmental Impact Statement/Overseas Environmental Impact Statement for this project on March 27, 2008 under DEQ #08-044F. Comments which were submitted on the Draft EIS are still valid (see attached).

PROJECT DESCRIPTION

The Navy has issued a consistency determination on the potential environmental effects associated with sonar training for the Atlantic Fleet. This action was evaluated in the Draft Environmental Impact Statement (DEIS)/Overseas Environmental Impact Statement (OEIS) issued by the Navy earlier in 2008. Sonar training is used by the Navy to meet the requirements of the Fleet Readiness Training Plan and to stay proficient in Anti-Submarine Warfare (ASW) and Mine Warfare (MIW) skills. The proposed action is to designate areas where mid- and high-frequency active sonar and Improved Extended Echo Ranging (IEER) system training, maintenance and research, development, test and evaluation (RDT&E) activities will occur within and adjacent to existing operating areas (OPAREAs) and to conduct these activities.

In the DEIS, an alternatives analysis was preformed, which was based on public and regulatory concern regarding the potential effects of sonar on marine mammals. The Navy's preferred alternative is the "No Action Alternative" since it does not require the Navy to change the geographic limits of the areas in which it currently trains. The Navy would continue conducting active sonar activities within and adjacent to existing OPAREAs rather than designate active sonar areas, seasonal restrictions or areas of increased awareness. Under this action, the only sonar activities that have the potential to impact Virginia's coastal zone are the following:

- Ship and submarine object detection/navigational training which occur in established transit lanes entering and exiting the port at Norfolk
- Ship and submarine sonar maintenance activities which occur pier-side or while in transit.

FEDERAL CONSISTENCY ANALYSIS

Pursuant to the Coastal Zone Management Act of 1972, as amended and the federal consistency regulations administering the Coastal Zone Management Act (15 CFR 930.31(c)), Federal actions that can have reasonably foreseeable effects on Virginia's coastal uses or resources must be conducted in a manner consistent with the Virginia Coastal Resources Management Program (VCP)(also called the Virginia Coastal Zone Management Program). The VCP is comprised of a network of programs administered by several agencies. In order to be consistent with the VCP, the Federal agency must obtain all the applicable permits and approvals listed under the enforceable policies of the VCP prior to commencing the project.

According to information in the consistency determination, the proposed activity would have no effect on subaqueous lands management, wetlands management, dunes management, non point source pollution control, point source pollution control, shoreline sanitation or coastal lands management enforceable policies. The reviewing agencies that are responsible for the administration of specific enforceable policies generally agree with the Navy's determination. However, reviewers identified potential project impacts to the enforceable policies of the VCP which are discussed below. The Navy must ensure that the proposed action is consistent with the aforementioned policies. The analysis which follows responds to the Navy's discussion of the enforceable policies of the VCP that apply to this project and review comments submitted by agencies that administer the enforceable policies.

APPLICABLE ENFORCEABLE POLICIES

1. **Fisheries Management.** According to the FCD (Consistency Determination Section), the proposed sonar activities have the potential to impact federally-listed threatened or endangered species, including sea turtles and marine mammals. The Navy is currently in consultation with the National Marine Fisheries Service (NMFS) under the Endangered Species Act (ESA) for sea turtles and ESA-listed marine mammals. The Navy has submitted to the NMFS a Request Letter of Authorization under the Marine Mammals Protection Act (email, S. Kotecki/A. Pinion, September 11, 2008).

1(a) Jurisdiction. The Department of Game and Inland Fisheries (DGIF) and the Virginia Marine Resources Commission (VMRC) administer the fisheries management enforceable policy of the VCP.

1(b) Conclusion. Assuming the Navy completes consultation with the NMFS to address potential impacts upon listed sea turtles and marine mammals known from the affected waters and moves forward in a manner consistent with the recommendations made by NMFS for the protection of these species, DGIF finds this project consistent with the fisheries management enforceable policy.

Contact Amy Ewing, DGIF at (804) 367-2733, for additional information regarding these comments.

The VMRC did not indicate that aspects of fisheries management under its jurisdiction would be adversely affected.

2. **Air Pollution Control**. The FCD (Table F-6) states that the proposed action would not impact air quality. The use of active sonar has no potential for effects to air quality. However, potential air quality effects associated with airborne transportation is being analyzed in the Navy's VACAPES Range Complex EIS/OEIS.

3

2(a) Agency Jurisdiction. DEQ's Air Quality Division, on behalf of the State Air Pollution Control Board, is responsible to develop regulations that become Virginia's Air Pollution Control Law. DEQ is charged to carry out mandates of the state law and related regulations as well as Virginia's federal obligations under the Clean Air Act as amended in 1990. The objective is to protect and enhance public health and quality of life through control and mitigation of air pollution. The division ensures the safety and quality of air in Virginia by monitoring and analyzing air quality data, regulating sources of air pollution, and working with local, state and federal agencies to plan and implement strategies to protect Virginia's air quality. The appropriate regional office is directly responsible for the issue of necessary permits to construct and operate all stationary sources in the region as well as to monitor emissions from these sources for compliance. As a part of this mandate, the environmental documents of new projects to be undertaken in the State are also reviewed. In the case of certain projects, additional evaluation and demonstration must be made under the general conformity provisions of state and federal law.

2(b) Ozone Nonattainment Area. According to the DEQ Air Division, the port of Norfolk is located in an ozone (O_3) nonattainment area and an emission control area for the volatile organic compounds (VOCs) and oxides of nitrogen (NO_x), which are contributors to ozone pollution. Therefore, all reasonable precautions to limit emissions of VOCs and NO_x principally by controlling or limiting the burning of fossil fuels should be taken

2(c) Conclusion. For additional information regarding air regulations in Virginia or for help in the preparation of the VACAPES Range Complex Final EIS/OEIS, contact Jane Workman, Air Permits Manager, DEQ-Tidewater Regional Office at (757) 518-2112.

ADDITIONAL ENVIRONMENTAL CONSIDERATIONS

In addition to the enforceable policies of the VCP, the Department of Historic Resources and the Hampton Roads Planning District Commission had comments in response to our request for comments on the consistency determination.

1. Historic and Archaeological Resources.

1(a) Agency Jurisdiction. The Department of Historic Resources (DHR) conducts reviews of projects to determine their effect on historic structures or cultural resources under its jurisdiction. DHR, as the designated State's Historic Preservation Office, ensures that federal actions comply with *Section 106 of the National Historic Preservation Act of 1966* (NHPA), as amended, and its implementing regulation at 36 CFR Part 800. The NHPA requires federal agencies to consider the effects of federal projects on properties that are listed or eligible for listing on the National Register of

Historic Places. Section 106 also applies if there are any federal involvements, such as licenses, permits, approvals or funding. DHR also provides comments to DEQ through the state EIR review process.

1(b) Finding. The DHR states that the proposed project will have "no effect" to any known historic properties or archaeological sites listed in or eligible for listing in the National Register of Historic Places or the Virginia Landmarks Register.

2. Regional Planning Area.

2(a) Agency Jurisdiction. In accordance with the Code of Virginia, Section 15.2-4207, planning district commissions encourage and facilitate local government cooperation and state-local cooperation in addressing, on a regional basis, problems of greater than local significance. The cooperation resulting from this is intended to facilitate the recognition and analysis of regional opportunities and take account of regional influences in planning and implementing public policies and services. Planning district commissions promote the orderly and efficient development of the physical, social and economic elements of the districts by planning, and encouraging and assisting localities to plan, for the future.

2(b) Agency Comments. The staff of the Hampton Roads Planning District Commission (HRPDC) reviewed the consistency determination and encourages the Navy to select the option with the fewest impacts to the marine environment.

For more information contact Dwight Farmer, HRPDC at (757) 420-8300.

Thank you for the opportunity to comment on this FCD. If you have questions, please do not hesitate to call me at (804) 698-4325 or Anne Pinion at (804) 698-4488.

Sincerely,

Ellie Irons

Ellie Irons, Manager
Office of Environmental Impact Review

Enclosures

cc Michelle Hollis, DEQ-TRO
Amy Ewing, DGIF
Dwight Farmer, Hampton Roads PDC

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FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR ALABAMA

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DEPARTMENT OF THE NAVY
COMMANDING OFFICER, SHORE ACTIVITIES
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVE, SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/
August 22, 2008

Alabama Department of Environmental Management (ADEM)
Attn: Mr. Scott Brown, Program Chief
4171 Commanders Drive
Mobile, Alabama 36615-1421

Dear Mr. Brown:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar and improved extended echo ranging (IEER) system training; maintenance; and research, development, test, and evaluation activities will occur within and adjacent to existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307(c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972 as amended, we have determined that the Proposed Action will: (1) be conducted in a manner consistent with the enforceable policies of Alabama's approved coastal management program, and (2) not impact natural or cultural resources of the State's coastal zone. The basis for this "Negative Determination" is detailed in (Enclosure (1)) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom of the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2], in compliance with the National Environmental Policy Act (NEPA) and Executive Order 12114.

---

[1] See CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the state's federally approved coastal management plan. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] Federal Register, Vol. 73. No. 32, Friday, February 15, 2008, pages 8856 to 8858

5090
Ser N77/
August 22, 2008

Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website at http://afasteis.gcsaic.com.

In accordance with 15 Code of Federal Regulations (CFR) Section 930.35, the Department of the Navy has reviewed Alabama's coastal management program and associated enforceable policies and has determined that active sonar activities would have no reasonably foreseeable effects to the state's coastal zone or its resources.

In accordance with 15 CFR Section 930.35(c), the State of Alabama has 60 days from the receipt of this document in which to concur with or object to this Negative Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Negative Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

Alabama's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. Alabama's response or other inquires should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd., Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Negative Determination.

Sincerely,

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Encl: 1. Federal Agency CZMA Negative Determination for Alabama
2. AFAST DEIS/OEIS CD-Rom

2

ONIS "TREY" GLENN, III
DIRECTOR

ADEM
Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2059 ♦ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700
FAX (334) 271-7950

BOB RILEY
GOVERNOR

September 23, 2008

NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
CODE EV22 (AFAST PROJECT MANAGER)
6506 HAMPTON BLVD.
NORFOLK VA 23508-1278

RE: Proposal to Designate Areas Where Mid-and High-Frequency active Sonar and Improved Extended Echo Ranging System Training, Maintenance, Research, Development, Test, and Evaluation Activities Will Occur.
ADEM Tracking Number: USNAVY-08-001-CAP

Dear Sir:

Reference is made to the August 22, 2008, request for the State of Alabama's coastal consistency determination regarding the referenced proposal. A coastal consistency determination was requested pursuant to 15 CFR § 930, et seq. and Section 307 of the Coastal Zone Management Act of 1972, as amended.

Based upon review of the information submitted with the request for a coastal zone management consistency determination, it appears the proposal would not result in significant negative impacts to Alabama's coastal resources pursuant to ADEM Administrative Code Rule 335-8-2-.01 (2(b&c)). Furthermore, the proposal appears to be in the National interest and as such would be considered a use of regional benefit under the administrative code. Therefore, the ADEM agrees with the Department of the Navy statement of coastal consistency.

If you have any questions, please contact Allen Phelps of the ADEM Coastal/Facility Section office in Mobile at 251/432-6533.

Sincerely,

Steven O. Jenkins, Chief
Field Operations Division

SOJ/cap File: CZCERT/

e-copy: Steve Heath: ADCNR-MRD

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (Fax)

Decatur Branch
2715 Sandlin Road, S. W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (Fax)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (Fax)

Mobile - Coastal
4171 Commanders Drive
Mobile, AL 36615-1421
(251) 432-6533
(251) 432-6598 (Fax)

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FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR DELAWARE

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/294
August 22, 2008

Ms. Sarah Cooksey
Delaware Coastal Programs
Department of Natural Resources & Environmental Control
89 Kings Highway
Dover, DE 19901

Dear Ms. Cooksey:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within, and adjacent to, existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307(c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will: (1) be conducted in a manner consistent with the enforceable policies of Delaware's approved coastal management program, and (2) not impact natural or cultural resources of the State's coastal zone. The basis for this "Negative Determination" is detailed in Enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom of the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2], in compliance with the National Environmental Policy Act and Executive Order 12114.

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[1] See CZMA section 304 (16 USC 1453 (6a)). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the states federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] Federal Register, Vol. 73. No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/294
August 22, 2008

Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

In accordance with 15 Code of Federal Regulations (CFR), Section 930.35, the Department of the Navy has reviewed Delaware's coastal management program and associated enforceable policies and has determined that active sonar activities would have no reasonably foreseeable effects to the State's coastal zone or its resources.

In accordance with 15 CFR Section 930.35(c), the State of Delaware has 60 days from the receipt of this document in which to concur with or object to this Negative Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Negative Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

Delaware's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. Delaware's response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Negative Determination.

Sincerely,

M.R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures: 1. Federal Agency CZMA Negative Determination for Delaware
2. AFAST DEIS/OEIS CD-Rom

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FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR LOUISIANA

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/965
August 22, 2008

Mr. Gregory J. DuCote
Department of Natural Resources
P.O. Box 44487
617 North 3rd Street, Suite 1048
Baton Rouge, LA 70804

Dear Mr. DuCote:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within and adjacent to existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307(c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will: (1) be conducted in a manner consistent with the enforceable policies of Louisiana's approved coastal management program, and (2) not impact natural or cultural resources of the State's coastal zone. The basis for this "Negative Determination" is detailed in Enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom of the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2], in compliance with the National Environmental Policy Act and Executive Order 12114. Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

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[1] See CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the states federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] Federal Register, Vol. 73. No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/965
August 22, 2008

In accordance with 15 Code of Federal Regulations (CFR) Section 930.35, the Department of the Navy has reviewed Louisiana's coastal management program and associated enforceable policies and has determined that active sonar activities would have no reasonably foreseeable effects to the State's coastal zone or its resources.

In accordance with 15 CFR Section 930.35(c), the State of Louisiana has 60 days from the receipt of this document in which to concur with or object to this Negative Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Negative Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

Louisiana's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. Louisiana's response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Negative Determination.

Sincerely,

M.R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures:
1. Federal Agency CZMA Negative Determination for Louisiana
2. AFAST DEIS/OEIS CD-Rom

2

BOBBY JINDAL
GOVERNOR

SCOTT A. ANGELLE
SECRETARY

State of Louisiana

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF COASTAL RESTORATION AND MANAGEMENT

October 23, 2008

Naval Facilities Engineering Command, Atlantic
Attn: Code EV22 (AFAST PM)
6506 Hampton Blvd.
Norfoik, VA 23508-1278

RE: **C20080477**, Coastal Zone Consistency
United States Navy
Direct Federal Action
Atlantic Fleet Active Sonar Training
Offshore, Louisiana

Dear Sir:

The above referenced project has been reviewed for consistency with the approved Louisiana Coastal Resources Program (LCRP) as required by Section 307 of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in the application, is consistent with the LCRP. If you have any questions concerning this determination please contact Brian Vosburg of the Consistency Section at (225)342-9425 or 1-800-267-4019.

Sincerely yours,

Jim Rives
Administrator

JR/JDH/bmv

cc: Chris Davis, LDWF
Rick Hartman, NMFS

Coastal Management Division • Post Office Box 44487 • Baton Rouge, Louisiana 70804-4487
(225) 342-7591 • Fax (225) 342-9439 • http://www.dnr.state.la.us
An Equal Opportunity Employer

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FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR MAINE

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/968
August 22, 2008

Mr. Todd Burrowes
State Planning Office
State House Station #38
184 State Street
Augusta, ME 04333

Dear Mr. Burrowes:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within and adjacent to existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307(c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will: (1) be conducted in a manner consistent with the enforceable policies of Maine's approved coastal management program, and (2) not impact natural or cultural resources of the State's coastal zone. The basis for this "Negative Determination" is detailed in Enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom of the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2], in compliance with the National Environmental Policy Act and Executive Order 12114. Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

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[1] See CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the state's federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] Federal Register, Vol. 73. No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/968
August 22, 2008

In accordance with 15 Code of Federal Regulations (CFR) Section 930.35, the Department of the Navy has reviewed Maine's coastal management program and associated enforceable policies and has determined that active sonar activities would have no reasonably foreseeable effects to the State's coastal zone or its resources.

In accordance with 15 CFR Section 930.35(c), the State of Maine has 60 days from the receipt of this document in which to concur with or object to this Negative Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Negative Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

Maine's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. Maine's response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Negative Determination.

Sincerely,

M.R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures: 1. Federal Agency CZMA Negative Determination for Maine
2. AFAST DEIS/OEIS CD- Rom

2

SPO Maine State Planning Office

Executive Department

JOHN ELIAS BALDACCI
Governor

MARTHA E. FREEMAN
Director

October 24, 2008

M.R. Harrell
Assistant Deputy Chief of Staff
Naval Facilities Engineering Command, Atlantic
Attn: Code EV22 (AFAST Project Manager)
6506 Hampton Boulevard
Norfolk, Virginia 23508-1278

RE: AFAST; Negative determination

Dear Madam or sir:

I am writing, pursuant to 15 CFR sec. 930.35, to notify the Navy of the State's request for a 15-day extension, until November 10, 2008, for response to the Navy's letter dated August 22, 2008, providing its negative determination regarding the proposed action in the Atlantic Fleet Active Sonar Training ("AFAST") Draft Environmental Impact Statement (DEIS)/Overseas EIS.

Please contact Todd Burrowes (207-287-1496) on my staff if you have questions or need additional information. Thanks for your consideration.

Sincerely,

Kathleen Leyden
Director, Maine Coastal Program

cc:\
Brian Swan, DMR

OFFICE LOCATED AT: 184 STATE STREET, 38 STATE HOUSE STATION, AUGUSTA MAINE
PHONE: (207) 287-3261 internet: www.maine.gov/spo FAX: (207) 287-6489

SPO Maine State Planning Office

Executive Department

JOHN ELIAS BALDACCI
Governor

MARTHA E. FREEMAN
Director

November 5, 2008

M.R. Harrell
Assistant Deputy Chief of Staff
U.S. Fleet Forces Command
1562 Mitscher Avenue Suite 250
Norfolk, Virginia 23551-2487

RE: AFAST; CZMA/Negative Determination

Dear Sir or madam:

I am writing in response to the Navy's letter of August 22, 2008, providing its negative determination, pursuant to 15 C.F.R. §930.35, addressing the proposed action assessed in its draft Environmental Impact Statement / Overseas EIS for the Atlantic Fleet Active Sonar Training ("AFAST") activities for the United States' Atlantic East Coast and the Gulf of Mexico (referred to herein as the "DEIS"). As explained in that letter, and addressed in more detail in the DEIS, the purpose of the activities for which the Navy has provided its negative determination "is to provide training for the U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills."

The Navy states that it "does not propose to conduct active sonar activities, as described in [the DEIS], in the State's coastal zone"; and, with some stated exceptions outside the Gulf of Maine, "does not propose to conduct active sonar activities (training and similar RDT&E) within 22.2 km (12 NM) of the Atlantic East Coast." The location of AFAST activities appears to provide an underlying premise for the Navy's negative determination. The Navy has indicated that it provided a consistency determination to those states in whose coastal waters AFAST activities are planned.

For reasons outlined below, the State does not agree with the apparent premise that a consistency determination may only be required when a federal activity is proposed within a state's coastal zone and declines to concur with the Navy's determination that these activities have no reasonably foreseeable effects on Maine's coastal zone. Because the proposed action does not trigger a specific enforceable policy of Maine's coastal program, the State does not, however, object to the Navy's negative determination.

The location of a proposed federal activity outside of Maine's coastal zone is not necessarily dispositive of the question of whether it may affect Maine's coastal resources. The Navy's DEIS itself acknowledges that the active sonar training for the AFAST program has the potential to affect

OFFICE LOCATED AT: 184 STATE STREET, 38 STATE HOUSE STATION, AUGUSTA MAINE
PHONE: (207) 287-3261 internet: www.maine.gov/spo FAX: (207) 287-6489

M.R. Harrell
U.S. Fleet Forces Command
Page 2

marine mammals, including the Northern right whale[1], which are listed on Maine's marine threatened and endangered species list[2] and which are considered to be among the natural resources that make up the ecology of Maine's coastal zone. The precarious population status of the endangered Northern right whale necessitates close scrutiny of activities with potential for adverse effects on the species and has prompted management measures, such as gear restrictions, to protect the species that have attendant economic effects on Maine's commercial fishing industry. In this instance, to the extent that the proposed action has some potential for adverse effects on the Northern right whale, the Maine Department of Marine Resources ("DMR") has determined that correlative effects on Maine's coastal zone and uses are a reasonably foreseeable potential consequence of the Navy's AFAST program.

These potential effects of the AFAST program on Maine's coastal zone do not, however, trigger review under a specific enforceable policy of the State's coastal program and thus do not necessitate submission of a consistency determination. The Maine Endangered Species Act ("MESA") gives DMR state-level management authority regarding the Northern right whale and other species listed on the State's marine threatened and endangered species list. For these marine-listed species, MESA is focused on efforts to assist and facilitate compliance with requirements of the federal Endangered Species Act ("ESA"). MESA's "take"-related provisions are not applicable to marine-listed species, which, by definition, are covered by the federal ESA and in the case of marine mammals, the MMPA as well. To date, DMR has focused on working with Maine's fishing industry to facilitate its compliance with federal ESA and MMPA-based management measures regarding whale species, particular the Northern right whale.

At this point, the full scope of mitigation measures that the Navy will be required to employ pursuant to the MMPA and ESA to avoid and minimize potential adverse effects on the Northern right whale and other listed marine species is not finally determined. The NMFS's proposed rule for issuance of a letter of authorization ("LOA") under the MMPA for the Proposed Action is pending[3] and DMR is reviewing the proposed LOA. It is our understanding that the Navy's consultation with the USFWS under the ESA is also underway and may be completed by the end of 2008. As widely reported, in its current term the United States Supreme Court is addressing a case involving the efficacy of the Navy's mitigation measures in connection with mid-frequency active sonar training on the West Coast in which a lower federal court determined the Navy's proposed mitigation measures inadequate.

Under these circumstances, we urge that the Navy adapt its proposed action as needed to fully implement mitigation measures to protect marine mammals and other listed marine species recommended by NMFS and USFWS pursuant to the MMPA and ESA in order to ensure that all

[1] See, e.g., DEIS, p. 4-93-4
[2] As noted in the Navy's Negative Determination, the Maine Endangered Species Act, which provides for a state list of marine threatened or endangered species (12 MRSA section 6975), is included among the core laws that provide enforceable policies of Maine's coastal management program.
[3] 73 FR 60754 (October 14, 2008)

2

M.R. Harrell
U.S. Fleet Forces Command
Page 3

necessary and appropriate steps are taken to avoid and minimize adverse effects on marine-listed species, and thereby to avoid and minimize the potential for related adverse effects on Maine's coastal zone. As noted in our comments on the DEIS, we continue to suggest that seasonal restrictions be given careful consideration, with particular attention given to torpedo exercises (TORPEX) and anti-submarine warfare (ASW) training activities that may take place in the Critical Marine Habitat Closure area in the Great South Channel and others areas where is a high concentration of Northern right whale sightings.

Thank you for your consideration.

Sincerely,

George Lapointe
Commissioner
Maine Department of Marine Resources

Kathleen Leyden
Director
Maine Coastal Program

3

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR MARYLAND

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/966
August 22, 2008

Mr. Elder A. Ghigiarelli, Jr.
Department of the Environment
Montgomery Park Business Center
1800 Washington Blvd.
Baltimore, MD 21230

Dear Mr. Ghigiarelli:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within and adjacent to existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307(c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will: (1) be conducted in a manner consistent with the enforceable policies of Maryland's approved coastal management program, and (2) not impact natural or cultural resources of the State's coastal zone. The basis for this "Negative Determination" is detailed in Enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom of the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2], in compliance with the National Environmental Policy Act and Executive Order 12114. Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

[1] See CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the states federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] Federal Register, Vol. 73, No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/966
August 22, 2008

In accordance with 15 Code of Federal Regulations (CFR) Section 930.35, the Department of the Navy has reviewed Maryland's coastal management program and associated enforceable policies and has determined that active sonar activities would have no reasonably foreseeable effects to the State's coastal zone or its resources.

In accordance with 15 CFR Section 930.35(c), the State of Maryland has 60 days from the receipt of this document in which to concur with or object to this Negative Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Negative Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

Maryland's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. Maryland's response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Negative Determination.

Sincerely,

M.R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures: 1. Federal Agency CZMA Negative Determination for Maryland
2. AFAST DEIS/OEIS CD-Rom

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FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR MASSACHUSETTS

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/969
August 22, 2008

Mr. Robert L. Boeri
Acting Project Review Coordinator
Office of Coastal Zone Management
Executive Office of Environmental Affairs
251 Causeway Street, Suite 800
Boston, MA 02114

Dear Mr. Boeri:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within and adjacent to existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307(c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will: (1) be conducted in a manner consistent with the enforceable policies of Massachusetts' approved coastal management program, and (2) not impact natural or cultural resources of the State's coastal zone. The basis for this "Negative Determination" is detailed in Enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom of the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2], in compliance with the National Environmental Policy Act and Executive Order 12114.

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[1] See CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the state's federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] Federal Register, Vol. 73. No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/969
August 22, 2008

Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

In accordance with 15 Code of Federal Regulations (CFR) Section 930.35, the Department of the Navy has reviewed Massachusetts' coastal management program and associated enforceable policies and has determined that active sonar activities would have no reasonably foreseeable effects to the State's coastal zone or its resources.

In accordance with 15 CFR Section 930.35(c), the Commonwealth of Massachusetts has 60 days from the receipt of this document in which to concur with or object to this Negative Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Negative Determination, and as a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

Massachusetts' concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. Massachusetts' response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Negative Determination.

Sincerely,

M.R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures: 1. Federal Agency CZMA Negative Determination for Massachusetts
2. AFAST DEIS/OEIS CD-Rom

2

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR MISSISSIPPI

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/967
August 22, 2008

Mr. Mike Walker
Mississippi Coastal Program
Department of Marine Resources
1141 Bayview Avenue, Suite 101
Biloxi, MS 39530

Dear Mr. Walker:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within and adjacent to existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307(c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will: (1) be conducted in a manner consistent with the enforceable policies of Mississippi's approved coastal management program, and (2) not impact natural or cultural resources of the State's coastal zone. The basis for this "Negative Determination" is detailed in Enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom of the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2], in compliance with the National Environmental Policy Act and Executive Order 12114. Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

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[1] See CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the state's federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] Federal Register, Vol. 73. No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/967
August 22, 2008

In accordance with 15 Code of Federal Regulations (CFR), Section 930.35, the Department of the Navy has reviewed Mississippi's coastal management program and associated enforceable policies and has determined that active sonar activities would have no reasonably foreseeable effects to the State's coastal zone or its resources.

In accordance with 15 CFR Section 930.35(c), the State of Mississippi has 60 days from the receipt of this document in which to concur with or object to this Negative Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Negative Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

Mississippi's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. Mississippi's response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Negative Determination.

Sincerely,

M. R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures: 1. Federal Agency CZMA Negative Determination for Mississippi
2. AFAST DEIS/OEIS CD-Rom

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FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR NEW HAMPSHIRE

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/970
August 22, 2008

Mr. Chris Williams
New Hampshire Coastal Program
Department of Environmental Services
50 International Drive, Suite 200
Pease International Tradeport
Portsmouth, NH 03801

Dear Mr. Williams:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within, and adjacent to, existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307(c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will: (1) be conducted in a manner consistent with the enforceable policies of New Hampshire's approved coastal management program, and (2) not impact natural or cultural resources of the State's coastal zone. The basis for this "Negative Determination" is detailed in Enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom of the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2], in compliance with the National Environmental Policy Act and Executive Order 12114.

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[1] See CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the state's federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] Federal Register, Vol. 73. No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/970
August 22, 2008

Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

In accordance with 15 Code of Federal Regulations (CFR) Section 930.35, the Department of the Navy has reviewed New Hampshire's coastal management program and associated enforceable policies and has determined that active sonar activities would have no reasonably foreseeable effects to the State's coastal zone or its resources.

In accordance with 15 CFR Section 930.35(c), the State of New Hampshire has 60 days from the receipt of this document in which to concur with or object to this Negative Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Negative Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

New Hampshire's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. New Hampshire's response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Negative Determination.

Sincerely,

M.R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures: 1. Federal Agency CZMA Negative Determination for New Hampshire
2. AFAST DEIS/OEIS CD-Rom

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FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR NEW JERSEY

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/971
August 22, 2008

Ms. Kim Springer
Coastal Management Office
Department of Environmental Protection
401 East State Street, 7^{th} Floor
P.O. Box 418
Trenton, NJ 08625-0418

Dear Ms. Springer:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within, and adjacent to, existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine Warfare and mine warfare skills.

Pursuant to Section 307 (c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will: (1) be conducted in a manner consistent with the enforceable policies of New Jersey's approved coastal management program, and (2) not impact natural or cultural resources of the State's coastal zone. The basis for this "Negative Determination" is detailed in Enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom of the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2], in compliance with the National Environmental Policy Act and Executive Order 12114.

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[1] See CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the state's federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] Federal Register, Vol. 73, No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/971
August 22, 2008

Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

In accordance with 15 Code of Federal Regulations (CFR) Section 930.35, the Department of the Navy has reviewed New Jersey's coastal management program and associated enforceable policies and has determined that active sonar activities would have no reasonably foreseeable effects to the State's coastal zone or its resources.

In accordance with 15 CFR Section 930.35(c), the State of New Jersey has 60 days from the receipt of this document in which to concur with or object to this Negative Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Negative Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

New Jersey's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. New Jersey's response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Negative Determination.

Sincerely,

MRHarrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures: 1. Federal Agency CZMA Negative Determination for New Jersey
2. AFAST DEIS/OEIS CD-Rom

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FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR NEW YORK

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/972
August 22, 2008

Mr. Jeffrey Zappieri
Division of Coastal Resources
Department of State
99 Washington Avenue, Suite 1010
Albany, NY 12231-0001

Dear Mr. Zappieri:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within, and adjacent to, existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307 (c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will: (1) be conducted in a manner consistent with the enforceable policies of New York's approved coastal management program, and (2) not impact natural or cultural resources of the State's coastal zone. The basis for this "Negative Determination" is detailed in Enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom of the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2], in compliance with the National Environmental Policy Act and Executive Order 12114.

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[1] See CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the state's federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] Federal Register, Vol. 73. No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/972
August 22, 2008

Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website at http://afasteis.gcsaic.com.

In accordance with 15 Code of Federal Regulations (CFR) Section 930.35, the Department of the Navy has reviewed New York's coastal management program and associated enforceable policies and has determined that active sonar activities would have no reasonably foreseeable effects to the State's coastal zone or its resources.

In accordance with 15 CFR Section 930.35(c), the State of New York has 60 days from the receipt of this document in which to concur with or object to this Negative Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Negative Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

New York's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this determination. New York's response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Negative Determination.

Sincerely,

M.R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures: 1. Federal Agency CZMA Negative Determination for New York
2. AFAST DEIS/OEIS CD-Rom

2

STATE OF NEW YORK
DEPARTMENT OF STATE
ONE COMMERCE PLAZA
99 WASHINGTON AVENUE
ALBANY, NY 12231-0001

DAVID A. PATERSON
GOVERNOR

LORRAINE A. CORTÉS-VÁZQUEZ
SECRETARY OF STATE

September 23, 2008

Mr. M.R. Harrell
Navy Facilities Engineering Command, Atlantic
ATTN: Code EV22 (AFAST Project Manager)
6506 Hampton Blvd
Norfolk, VA 23508-1278

Re: F-2008-0652 (DA)
United States Navy
Atlantic Fleet Active Sonar Training (AFAST)
United States Atlantic East Coast and the Gulf of Mexico
Negative Determination

Dear Mr. M.R. Harrell:

On August 27, 2008, the Department of State received the United States Navy's negative determination and supporting information for the above referenced activity. Based on the information provided, the Department concurs with your determination that the Atlantic Fleet Active Sonar Training area designations will not result in any reasonably foreseeable effects to land and water uses or natural resources of the coastal area. Further review of this activity by the Department of State is not necessary.

Thank you for providing this information to the Department of State. If you have any questions regarding this matter, please contact us at (518) 474-6000 and refer to our file # F-2008-0652(DA).

Sincerely,

Jeff Zappieri
Supervisor of Consistency Review and Analysis
Division of Coastal Resources

JZ/mm

WWW.DOS.STATE.NY.US • E-MAIL: INFO@DOS.STATE.NY.US

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FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR NORTH CAROLINA

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/963
August 22, 2008

Mr. Steve Rynas
Division of Coastal Management
Department of Environment and Natural Resources
400 Commerce Avenue
Moorehead City, NC 28557-3421

Dear Mr. Rynas:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within, and adjacent to, existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307 (c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will: (1) be conducted in a manner consistent with the enforceable policies of North Carolina's approved coastal management program, and (2) not impact natural or cultural resources of the State's coastal zone. The basis for this "Negative Determination" is detailed in Enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom of the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2], in compliance with the National Environmental Policy Act and Executive Order 12114. Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

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[1] See CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the states federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] Federal Register, Vol. 73, No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/963
August 22, 2008

In accordance with 15 Code of Federal Regulations (CFR) Section 930.35, the Department of the Navy has reviewed North Carolina's coastal management program and associated enforceable policies and has determined that active sonar activities would have no reasonably foreseeable effects to the State's coastal zone or its resources.

The comments received from the North Carolina Division of Coastal Management on the AFAST DEIS/OEIS expressed concern with the analysis of impacts to fish. In response, this letter also includes a report in Enclosure (3) entitled "Effects of Mid- and High-Frequency Sonars on Fish" prepared by Arthur N. Popper, Ph.D. This report will be incorporated into the analysis of impacts to fish in the final AFAST EIS/OEIS.

In accordance with 15 CFR Section 930.35(c), the State of North Carolina has 60 days from the receipt of this document in which to concur with or object to this Negative Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Negative Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

North Carolina's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. North Carolina's response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Negative Determination.

Sincerely,

M.R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures:
1. Federal Agency CZMA Negative Determination for North Carolina
2. AFAST DEIS/OEIS CD-Rom
3. "Effects of Mid- and High-Frequency Sonars on Fish," CD-Rom

2

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Coastal Management
Michael F. Easley, Governor **James H. Gregson, Director** William G. Ross Jr., Secretary

October 8, 2008

M. R. Harrell (ATTN Code EV22 (AFAST Project Manager))
Assistant Deputy Chief of Staff for Operational Readiness and Training
US Fleet Forces Command
1462 Mitscher Avenue, Suite 250
Norfolk, VA 23551-2487

SUBJECT **CD08-053** – Consistency Concurrence for Continued Mid- and High-Frequency Sonar Training, Offshore, North Carolina (DCM#20080118)

Dear Mr Harrell:

The Division of Coastal Management (DCM) received (August 27, 2008) a Negative Determination from the US Navy, US Fleet Forces Command (Navy), finding that continued Mid- and High-Frequency Sonar Training by the Navy would be consistent with the North Carolina's coastal management program. According to the consistency submission, the Navy does not propose to conduct active sonar training activities within the State's coastal zone. Anti-submarine warfare training activities are proposed to occur at least 12 nautical miles beyond the State's shoreline. Mitigation measures related to the proposed activity are contained in Section 5 of the "*Draft Atlantic Fleet Active Sonar Training Environmental Impact Statement/ Overseas Environmental Impact Statement*" According to the Navy's consistency submission the proposed actions are not new and do not involve significant changes in systems, tempo, or intensity from prior activities. The Navy therefore concluded, based on the preceding statements, that the proposed activity would not have a reasonable foreseeable effect on the State's coastal zone or its resources.

North Carolina's coastal zone management program consists of, but is not limited to, the Coastal Area Management Act, the State's Dredge and Fill Law, Chapter 7 of Title 15A of North Carolina's Administrative Code, and the land use plan of the County and/or local municipality in which the proposed project is located. It is the objective of the Division of Coastal Management (DCM) to manage the State's coastal resources to ensure that proposed Federal activities would be compatible with safeguarding and perpetuating the biological, social, economic, and aesthetic values of the State's coastal waters.

To solicit public comments, DCM circulated a description of the proposed project to State agencies that would have a regulatory interest. No comments asserting that the proposed activity would be inconsistent with the State's coastal management program were received. Nonetheless, several State agencies expressed concerns related to the proposed activity. The North Carolina Division of Parks

400 Commerce Avenue, Morehead City, North Carolina 28557-3421
Phone: 252-808-2808 \ FAX: 252-247-3330 \ Internet: www.nccoastalmanagement.net

and Recreations noted that there are coastal parks that could be affected by the proposed activity. The North Carolina Division of Marine Fisheries expressed concerns that the use of sonar could adversely affect North Carolina's fishery resources. The North Carolina Division of Water Quality expressed concerns related to the cumulative effects of discharges into the Waters of the US. Likewise the Division of Coastal Management is concerned over the long-term cumulative effects of the sonar and the discharge of material into the marine environment. A copy of the responses received has been attached for reference.

DCM has reviewed the submitted information pursuant to the management objectives and enforceable policies of Subchapters 15A NCAC 07H and15A NCAC 07M of Chapter 7 of Title 15A of North Carolina's Administrative Code which are a part of the State's certified coastal management program and concurs that the proposed Federal activity is consistent, to the maximum extent practicable, with the enforceable policies of North Carolina's coastal management program. This concurrence applies only to the Navy's implementation of the "*No Action Alternative*" and adherence to the mitigation measures as described in the "*Draft Atlantic Fleet Active Sonar Training Environmental Impact Statement/ Overseas Environmental Impact Statement*" (February 2008). Furthermore, we encourage that the Navy take into consideration the State agency concerns expressed above when undertaking the proposed activity.

Should the proposed action be modified, a revised consistency determination could be necessary. This might take the form of either a supplemental consistency determination pursuant to 15 CFR 930.46, or a new consistency determination pursuant to 15 CFR 930.36. Likewise, if further project assessments reveal environmental effects not previously considered by the proposed action or which become significant due to the long-term cumulative effects of the proposed action, a supplemental consistency certification may be required. If you have any questions, please contact Stephen Rynas at 252-808-2808. Thank you for your consideration of the North Carolina Coastal Management Program.

Sincerely,

Doug Huggett

Doug Huggett
Manager, Major Permits and Consistency Unit

Cc Jim Gregson, Division of Coastal Management
Sarah Kotecki, Naval Facilities Engineering Command, Atlantic

Page: 2

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR RHODE ISLAND

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/973
August 22, 2008

Mr. Jeff Willis
Coastal Resources Management Council
Stedman Office Building
4808 Tower Hill Road, Suite 116
Wakefield, RI 02879-1900

Dear Mr. Willis:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training maintenance, and research, development, test, and evaluation activities will occur within, and adjacent to, existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307 (c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the Proposed Action will: (1) be conducted in a manner consistent with the enforceable policies of Rhode Island's approved coastal management program, and (2) not impact natural or cultural resources of the State's coastal zone. The basis for this "Negative Determination" is detailed in Enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom of the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2], in compliance with the National Environmental Policy Act and Executive Order 12114. Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

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[1] See CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the state's federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] Federal Register, Vol. 73. No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/973
August 22, 2008

In accordance with 15 Code of Federal Regulations (CFR) Section 930.35, the Department of the Navy has reviewed Rhode Island's coastal management program and associated enforceable policies and has determined that active sonar activities would have no reasonably foreseeable effects to the State's coastal zone or its resources.

In accordance with 15 CFR Section 930.35(c), the State of Rhode Island has 60 days from the receipt of this document in which to concur with or object to this Negative Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Negative Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

Rhode Island's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. Rhode Island's response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Negative Determination.

Sincerely,

M.R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures:
1. Federal Agency CZMA Negative Determination for Rhode Island
2. AFAST DEIS/OEIS CD-Rom

2

FEDERAL AGENCY NEGATIVE DETERMINATION (ND) FOR SOUTH CAROLINA

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DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N77/974
August 22, 2008

Ms. Barbara Neale, Director
Office of Ocean and Coastal Resource Management
Department of Health and Environmental Control
1362 McMillian Avenue, Suite 400
Charleston, SC 29405-2029

Dear Ms. Neale:

The U.S. Navy is proposing to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within, and adjacent to, existing operating areas, as well as to conduct these activities. The purpose is to provide training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews to support the requirements of the Fleet Readiness Training Plan and to develop and maintain proficiency in anti-submarine warfare and mine warfare skills.

Pursuant to Section 307 (c)(1), 16 United States Code (USC) 1456 of the Coastal Zone Management Act (CZMA) of 1972, as amended, we have determined that the proposed action will: (1) be conducted in a manner consistent with the enforceable policies of South Carolina's approved coastal management program, and (2) not impact natural or cultural resources of the State's coastal zone. The basis for this "Negative Determination" is detailed in Enclosure (1) based on the enforceable policies in the State's federally approved coastal management plan[1].

In addition, Enclosure (2) is a CD-Rom of the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS)/Overseas EIS (OEIS) and appendices which was published and released to the public for comment on February 15, 2008[2], in compliance with the National Environmental Policy Act and Executive Order 12114. Further information regarding the AFAST DEIS/OEIS may be obtained by visiting the project's website: http://afasteis.gcsaic.com.

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[1] See CZMA section 304, 16 USC 1453 (6a). An enforceable policy is a state policy that is legally binding under state law, and by which a state exerts control over private and public coastal uses and resources, and which are incorporated in the states federally approved coastal management plant. An enforceable policy is limited to a state's jurisdiction and must be given legal effect by state law and cannot apply to federal lands, federal waters, federal agencies or other areas or entities outside the state's jurisdiction, unless authorized by federal law.

[2] Federal Register, Vol. 73. No. 32, Friday, February 15, 2008, pages 8856 to 8858.

5090
Ser N77/974
August 22, 2008

In accordance with 15 Code of Federal Regulations (CFR) Section 930.35, the Department of the Navy has reviewed South Carolina's coastal management program and associated enforceable policies and has determined that active sonar activities would have no reasonably foreseeable effects to the State's coastal zone or its resources.

In accordance with 15 CFR Section 930.35(c), the State of South Carolina has 60 days from the receipt of this document in which to concur with or object to this Negative Determination, or to request an extension under 15 CFR Section 930.41(b). Given the critical nature of this training, we are seeking your concurrence with our Negative Determination. As a possible means to expedite this process, my staff is prepared to discuss this proposal in more detail and answer any questions you or your staff may have. Our point of contact is Ms. Sarah Kotecki, Naval Facilities Engineering Command, Atlantic, (757) 322-4769.

South Carolina's concurrence will be presumed if its response is not received by the U.S. Navy (Atlantic Fleet) within 60 days from receipt of this Determination. South Carolina's response or other inquiries should be sent to: Naval Facilities Engineering Command, Atlantic, Attn: Code EV22 (AFAST Project Manager), 6506 Hampton Blvd, Norfolk, Virginia 23508-1278; or Facsimile (757) 322-4805. If additional information should be required, requests for such information should be requested within ten days of receipt of this Negative Determination.

Sincerely,

M.R. Harrell

M. R. HARRELL
Assistant Deputy Chief of Staff
for Operational Readiness
and Training

Enclosures: 1. Federal Agency CZMA Negative Determination for South Carolina
2. AFAST DEIS/OEIS CD-Rom

2

APPENDIX G

UNDERWATER SOUND CONCEPTS

UNDERWATER SOUND CONCEPTS

G.1 WHAT IS SOUND?

Subjectively, the term *sound* refers to what is heard with the ears. Objectively, sound is a time-varying mechanical disturbance in an elastic medium. In modern usage, sound refers not only to the phenomenon in air that one hears, but also to whatever else is governed by the same physical principles (Pierce, 1989).

Sound is produced when an elastic medium is set into motion, often by a vibrating object within the medium. As the object vibrates, its motion is transmitted to adjacent “particles” of the medium. The motion of these particles is transmitted to adjacent particles, and so on. The result is a mechanical disturbance (the “sound wave”) that moves away from the source and propagates at a medium-dependent speed (the “sound speed”). As the sound wave travels through the medium, the individual particles of the medium oscillate about their static positions but do not propagate with the sound wave. As the particles of the medium move back and forth they create small changes, or perturbations, about the static values of the medium density, pressure, and temperature.

G.2 PHYSICAL AND SUBJECTIVE ATTRIBUTES OF SOUND

Sounds may be described in terms of physical and subjective attributes. Physical attributes may be directly measured. Subjective (or psychophysical) attributes may not be directly measured and require a listener to make a judgment about the sound. Physical attributes of a sound at a particular point in space are normally quantified by measuring perturbations in the pressure of the medium that accompany the passage of a sound wave. Two of the most important physical attributes are frequency and amplitude.

Frequency is the physical attribute most closely associated with the subjective attribute ***pitch***; the higher the frequency, the higher the pitch. Frequency is related to the speed at which the medium particles oscillate about their static positions. Frequency is the number of times that the medium pressure varies from its static pressure through a complete cycle in unit time (Galloway, 1988). The unit of frequency is hertz (Hz); 1 Hz is equal to 1 cycle per second. Pure tones have a constant, single frequency. Complex tones contain sound energy at multiple, discrete frequencies, rather than a single frequency (ANSI, 1994).

Amplitude is the physical attribute most closely associated with the subjective attribute ***loudness***. Amplitude is related to the amount that the medium particles vary about their static positions. As the amplitude increases, the loudness also increases.

G.3 IMPULSIVE AND CONTINUOUS – TYPE SOUNDS

Although no standard definitions exist, sounds may be broadly categorized as ***impulsive*** or ***continuous-type***. All non-impulsive sounds (e.g., continuous, varying, intermittent) are collectively referred to as "continuous-type" (NIOSH, 1998). Impulsive sounds (i.e., explosive source sonobuoys) feature steep rises and high peaks in the medium pressure, followed by rapid return to the static pressure. Impulsive sounds have short durations and broad frequency content. Impulsive sounds are often produced by processes involving a rapid release of energy (e.g., chemical explosions) or mechanical effect (e.g., mechanical punch press or pile driving) (Hamernik and Hsueh, 1991).

Although they may have brief durations, most sonar "pings" may be considered to be continuous-type sounds because their durations are relatively long compared to their harmonic period — the time for the medium pressure to move through one complete cycle.

G.4 SOUND METRICS

G.4.1 Sound Pressure

Sound pressure is the incremental variation in a medium's static pressure as a sound wave travels through it. The unit of sound pressure is the pascal (Pa) (1 Pa = 10 µbar = 1.45×10^{-4} psi).

Instantaneous sound pressure $p(t)$ is the total instantaneous pressure at a point minus the static pressure at that point (ANSI, 1994). Figure G-1 shows instantaneous sound pressures for a hypothetical (a) pure tone and (b) impulsive sound. Instantaneous sound pressure is a time-varying quantity. Standard descriptors used for time-varying quantities, such as the peak value or root-mean-squared value, are also used to describe the instantaneous sound pressure.

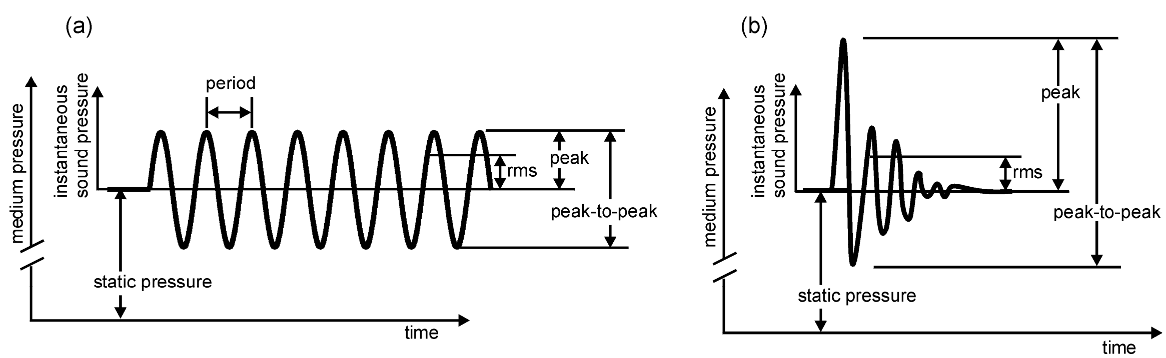

Figure G-1

Peak sound pressure is the maximum absolute value of the instantaneous sound pressure during a specified time interval (ANSI, 1994). The ***peak-to-peak (p-p) sound pressure*** is the difference between the maximum and minimum values of the instantaneous sound pressure.

The ***mean-squared sound pressure*** $\overline{P^2}$ is:

$$\overline{P^2} = \frac{1}{T}\int_0^T p^2(t)\,dt\,, \qquad \text{(G-1)}$$

where T is the time over which $p^2(t)$ is integrated. For impulsive sounds the "effective duration" may be defined using different criteria (see Hamernik and Hsueh, 1991). For periodic sounds it is common to integrate over an integral number of periods. For other continuous-type sounds it is common to integrate over long time periods. The unit of $\overline{P^2}$ is pascal-squared (Pa^2).

Since $\overline{P^2}$ does not have the same physical units as $p(t)$, the ***root-mean-squared* (*rms*) *sound pressure*** is often used instead. The rms sound pressure $\overline{P}$ is the square-root of the mean-squared sound pressure is:

$$\overline{P} = \sqrt{\frac{1}{T}\int_0^T p^2(t)\,dt}\,. \qquad \text{(G-2)}$$

For pure tones (with T equal to an integral number of periods), Eq. (B-2) simplifies to $\overline{P} = P_p/\sqrt{2}$, where P_p is the peak sound pressure. This relation may not hold for more complex sounds. In general, $\overline{P}$ must be calculated from Eq. (B-2) using $p(t)$ for the specific sound of interest.

G.4.1.1 Sound Levels and Decibels

Because mammalian ears possess a large dynamic range and humans judge the relative loudness of sounds by the ratio of the sound pressures (a logarithmic behavior), it is common to describe physical attributes of sounds with logarithmic units called ***sound levels*** (Kinsler *et al*., 1982). The term "level" indicates the logarithm of the ratio of a given quantity divided by some reference quantity with the same units (ANSI, 1994; Young, 1988). The use of a logarithmic scale compresses the range of numerical values that must be used.

When using logarithmic units, the base of the logarithm and the reference value must be specified. Typically, the logarithm is taken to the base 10, so the logarithm is written as $\log_{10}$. The logarithm of a number y to a base b is the exponent x required so that b raised to the $x = y$: if $x = \log_b y$, then $y = b^x$. As an example, $\log_{10}(100) = 2$, since $10^2 = 100$. Some important mathematical relations involving logarithms are:

- $\log_b(xy) = \log_b x + \log_b y$
- $\log_b(x/y) = \log_b x - \log_b y$
- $\log_b x^a = a\log_b x$

Sound levels are normally expressed in ***decibels***. A decibel is 1/10 of a bel, a unit of level when the logarithm is to the base ten and the quantities concerned are proportional to power (ANSI, 1994).

To express a quantity X in decibels using a reference X_{ref}, the equation is:

$$10\log_{10}\left(\frac{X}{X_{ref}}\right), \tag{G-3}$$

if X and X_{ref} have units of power or energy, or:

$$20\log_{10}\left(\frac{X}{X_{ref}}\right) = 10\log_{10}\left(\frac{X^2}{X_{ref}^2}\right), \tag{G-4}$$

if X and X_{ref} have units of pressure, force, velocity, voltage, or a similar quantity. The use of X^2 and X_{ref}^2 arises because power is related to the product of pressure and velocity, force and velocity, voltage and current, etc.

When a numeric value is presented in decibels, it is important to also specify the numeric value and units of the reference quantity. Normally the numeric value is given, followed by the text "re", meaning "with reference to", and the numeric value and unit of the reference quantity (Harris, 1998). For example, a pressure of 1 Pa, expressed in decibels with a reference of 1 µPa, is written 120 dB re 1 µPa.

G.4.1.2 Sound Pressure Level

The most common sound level is ***sound pressure level*** (SPL). SPL is defined as:

$$SPL = 10\log_{10}\left(\frac{\overline{P^2}}{P_{ref}^2}\right) = 20\log_{10}\left(\frac{\overline{P}}{P_{ref}}\right). \tag{G-5}$$

The standard reference pressure P_{ref} is 1 µPa for water (and media other than gases) and 20 µPa for air (and other gases) (ANSI, 1994). The different reference pressures for air and water means that the same sound pressure will result in different numeric values of SPL in-air and underwater.

G.4.2 Impulse

Impulse is the time integral of a force over the time that the force is applied (ANSI, 1994).

Acoustic impulse I_a, or "impulse per unit area of $p(t)$" (Hamernik and Hsueh, 1991), is defined as:

$$I_a = \int_0^T p(t)\,dt\,, \tag{G-6}$$

where T is the effective duration of the waveform. Often the "A-duration", defined as the time required for the instantaneous sound pressure in the initial wave to reach the peak pressure and then return to zero, is used (Hamernik and Hsueh, 1991). Impulse is often used in structural mechanics where the effects of impulsive loads must be taken into account (Hamernik and Hsueh, 1991), in certain source modeling situations (Marshall, 1996), and characterizing some effects of impulsive sounds on marine animals (Marshall, 1996; Yelverton *et al*., 1975). The unit of impulse is the pascal-second (Pa-s).

G.4.3 Sound Intensity

Sound energy transfer and power flow are often described in terms of the sound intensity. ***Sound intensity*** is the average rate of sound energy transported in a specified direction through a unit area perpendicular to the propagation direction. Power is energy per time, so sound intensity is equivalent to ***sound power flux density*** **—** a measure of the sound power transported through a unit area perpendicular to the propagation direction (Fahy, 1995). The units of sound intensity are watts per square-meter (W/m^2).

Instantaneous sound intensity is the product of the instantaneous sound pressure and instantaneous particle velocity. The instantaneous intensity consists of two parts: the *active intensity* associated with the particle velocity component in-phase with the sound pressure and the *reactive intensity*, which is associated with the particle velocity component in-quadrature (90º out-of-phase) with the sound pressure (Fahy, 1995). The term ***sound intensity*** normally refers to the time-averaged (mean) active intensity (Kinsler *et al*., 1982; Fahy, 1995); this quantity corresponds to local net transport of sound energy. In contrast, the reactive intensity represents local oscillatory transport of energy and has a mean of zero.

For a free plane or spherical wave, the sound intensity in the direction of propagation, I, is:

$$I = \frac{\overline{P}^2}{\rho c}, \tag{G-7}$$

where ρ is the medium density and c is the sound speed (ANSI, 1994). Equation (G-7) is only valid for plane and spherical waves and does not apply to the general case, for which both sound pressure and particle velocity must be known to calculate sound intensity.

Sound intensity level (IL) is:

$$IL = 10 \log_{10}\left(\frac{I}{10^{-12}\ \mathrm{W/m^2}}\right), \tag{G-8}$$

where I is the sound intensity in a given direction (ANSI, 1994).

G.4.4 Sound Energy Flux Density

G.4.4.1 Energy Flux Density

Sound energy can also be described by the ***sound energy flux density*** (EFD). In contrast to sound intensity, which is sound *power* flow per unit area, EFD is the sound *energy* flow per unit area. EFD is defined as:

$$E = \int_0^T I(t)\,dt\,, \tag{G-9}$$

where E is the energy flux density, $I(t)$ is the instantaneous acoustic intensity in a given direction and T is the duration of the sound (Urick, 1983). In practice, Eq. (G-9) is rarely used and plane waves are assumed. This makes $I(t) = p^2(t)/\rho c$ and:

$$E = \int_0^T \frac{p^2(t)}{\rho c}\,dt\,. \tag{G-10}$$

The units of EFD are joules per square-meter (J/m^2).

Note that Eq. (G-10) is only valid for plane waves. The plane wave assumption may not be valid under some conditions, especially underwater at low frequencies close to a sound source or in an enclosed space. Equation (G-10) is also problematic because sound speed may vary substantially underwater.

G.4.4.2 Energy Flux Density Level

Energy flux density level (EL) is calculated from:

$$EL = 10\log_{10}\left(\frac{E}{E_{ref}}\right) = 10\log_{10}\left(\frac{\int_0^T p^2(t)/\rho c\,dt}{P_{ref}^2 T_{ref}/\rho c}\right), \tag{G-11}$$

where E_{ref} is the EFD of a plane wave with rms pressure P_{ref} and duration T_{ref}, in the same environment, so the factor ρc in E and E_{ref} cancel. For underwater applications, the reference quantities P_{ref} and T_{ref} are normally taken to be 1 µPa and 1 s, respectively (Marshall, 1996), so Eq. (G-11) becomes:

$$EL = 10\log_{10}\left(\frac{\int_0^T p^2(t)\,dt}{(1\,\mu\text{Pa})^2(1\,\text{s})}\right), \tag{G-12}$$

and *EL* is in dB re 1 µPa^2-s. For airborne applications, P_{ref} = 20 µPa and *EL* is expressed in dB re (20 µPa)^2-s.

G.4.4.3 Relationship between EL, SPL, and Exposure Duration

Since $\overline{P^2} = 1/T \int_0^T p^2(t)\,dt$, Eq. (G-12) may be written as:

$$\begin{aligned} EL &= 10\log_{10}\left(\frac{\overline{P^2}T}{P_{ref}^2 T_{ref}}\right) \\ &= 10\log_{10}\left(\frac{\overline{P^2}}{P_{ref}^2}\right) + 10\log_{10}\left(\frac{T}{T_{ref}}\right) \\ &= SPL + 10\log_{10}\left(T / T_{ref}\right) \end{aligned} \tag{G-13}$$

If T_{ref} = 1 s, and *T* is the sound duration in seconds,

$$EL = SPL + 10\log_{10}(T). \tag{G-14}$$

Equation (G-14) reveals some important relationships between EL, SPL, and the sound duration:

- $\log_{10}(1) = 0$, so if the sound duration is 1 second, SPL and EL have the same numeric value (but not the same reference quantities). For example, a 1-second sound with an SPL of 100 dB re 1 µPa has an EL of 100 dB re 1 µPa^2-s.
- If the sound duration is constant but the SPL changes, EL will change by the same number of decibels as the SPL.
- If the SPL is held constant and the duration changes, EL will change as a function of $10\log_{10}(T)$:
    - $10\log_{10}(10) = 10$, so **increasing duration by a factor of 10 raises EL by 10 dB**.
    - $10\log_{10}(0.1) = -10$, so **decreasing duration by a factor of 10 lowers EL by 10 dB**.
    - Since $10\log_{10}(2) \approx 3$, **doubling the duration increases EL by 3 dB**.
    - $10\log_{10}(1/2) \approx -3$, so **halving the duration lowers EL by 3 dB**.

G.4.4.4 Total EFD for Multiple Exposures

The ***total energy flux density*** for multiple exposures is found by summing the energy flux densities of the individual exposures:

$$E = \sum_{n=1}^{N} E_n = \sum_{n=1}^{N}\left[\int_0^{T_n} \frac{p_n^2(t)}{\rho c}\,dt\right], \tag{G-15}$$

where N is the number of exposures and E_n, $p_n(t)$, and T_n are the energy flux density, instantaneous sound pressure, and duration of the n^{th} exposure, respectively.

Total energy flux density level is similarly defined:

$$EL = 10\log_{10}\left(\frac{\sum_{n=1}^{N} E_n}{P_{ref}^2 T_{ref}}\right). \qquad \text{(G-16)}$$

Figure G-2 illustrates the summation of energy for a succession of sonar "pings". In this hypothetical case, each ping has the same duration and SPL. The EL at a particular location from each individual ping is 100 dB re 1 μPa^2-s (red circles). The upper, blue curve shows the running total or cumulative EL.

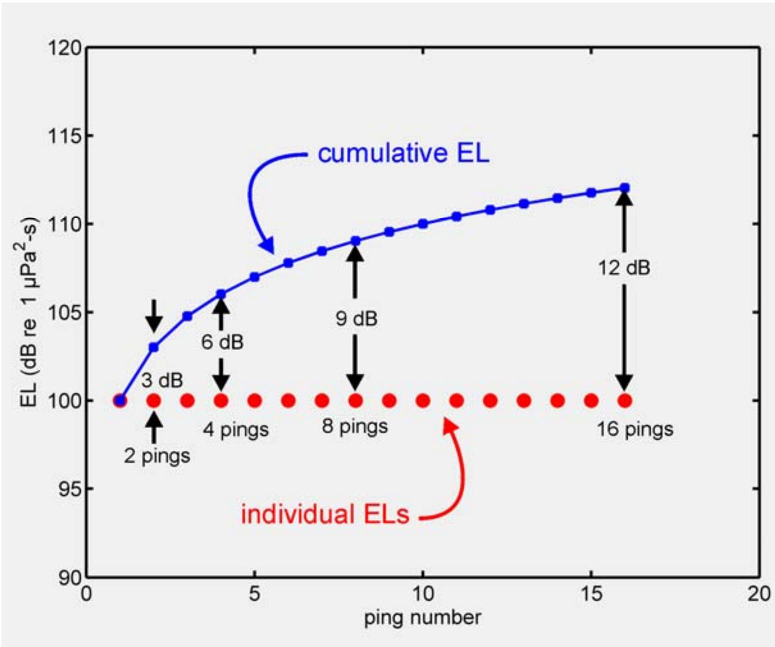

Figure G-2

After the first ping, the cumulative EL is 100 dB re 1 μPa^2-s. Since each ping has the same duration and SPL, receiving two pings is the same as receiving a single ping with twice the duration. The cumulative EL from two pings is therefore 103 dB re 1 μPa^2-s. The cumulative EL from four pings is 3 dB higher than the cumulative EL from two pings, or 106 dB re 1 μPa^2-s. Each doubling of the number of pings increases the cumulative EL by 3 dB.

Figure G-3 shows a more realistic example where the individual pings do not have the same SPL or EL. These data were recorded from a stationary hydrophone as a sound source approached, passed, and moved away from the hydrophone. As the source approached the hydrophone, the received SPL from each ping increased, causing the EL of each ping to increase. After the source passed the hydrophone, the received SPL and EL from each ping decreased as the source moved further away.

Although the cumulative EL increases with each additional ping received, the main contributions are from those pings with the highest individual ELs. Individual pings with ELs 10 dB or more below the ping with the highest level contribute little (less than 0.5 dB) to the total cumulative EL. This is shown in Fig. G-3 where only a small error is introduced by summing the energy from the 8 individual pings with EL greater than 185 dB re 1 μPa^2-s (black line), as opposed to including all pings (blue line).

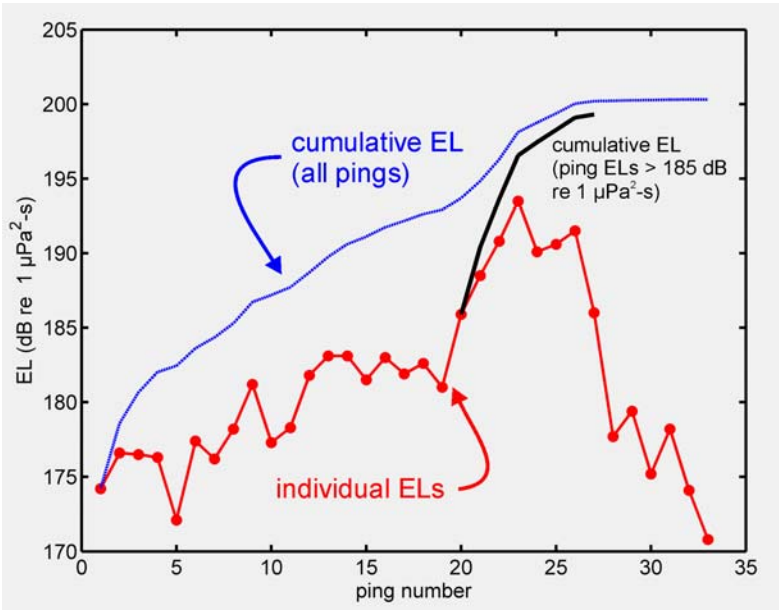

Figure G-3

G.4.5 Sound Exposure

Sound exposure (SE) is defined as

$$SE = \int_0^T p^2(t)\,dt\,, \tag{G-17}$$

and has units of pascal-squared seconds (Pa^2-s). Sound exposure and sound energy flux density are closely related and differ only by the factor of ρc.

The level quantity for sound exposure is called the ***sound exposure level*** (SEL):

$$SEL = 10\log_{10}\left(\frac{\int_0^T p^2(t)\,dt}{P_{ref}^2 T_{ref}}\right). \tag{G-18}$$

If P_{ref} = 1 μPa and T_{ref} = 1 s, Eq. (G-18) is identical to Eq. (G-12).

An expression analogous to Eq. (G-14) may also be developed for SEL, yielding

$$SEL = SPL + 10\log_{10}(T), \tag{G-19}$$

where T is in seconds.

Sound exposure and sound exposure level are often used in airborne applications. In these situations, $p(t)$ is normally replaced with the instantaneous A-weighted sound pressure and the reference pressure P_{ref} = 20 μPa (ANSI, 1994).

G.5 SOUND PROPAGATION

G.5.1 Reflection and Refraction

When a sound wave propagating in a medium encounters a second medium with a different density or sound speed, part of the incident sound will be ***reflected*** back into the first medium and part will be ***transmitted*** into the second medium. If the second medium has a different sound speed than the first, the propagation direction will change as the sound wave enters the second medium; this phenomenon is called ***refraction***. Refraction may also occur within a single medium if spatial gradients exist in the sound speed.

Refraction of sound resulting from spatial variations in the sound speed is one of the most important phenomena that affects sound propagation in water. The sound speed in the ocean primarily depends on hydrostatic pressure (i.e., depth) and temperature. Sound speed increases with both hydrostatic pressure and temperature. In seawater, temperature has the most important effect on sound speed for depths less than about 300 m. Below 1500 m, the hydrostatic pressure is the dominant factor because the water temperature is relatively constant. The variation of sound speed with depth in the ocean is called a sound speed profile. Although the actual variations in sound speed are small, the existence of sound speed gradients in the ocean has an enormous effect on the propagation of sound in the deep ocean.

G.5.2 Diffraction, Scattering, and Reverberation

Sound waves experience diffraction in much the same manner as light waves. ***Diffraction*** may be thought of as the bending of a sound wave around an obstacle. Common examples include sound heard from a source around the corner of a building and sound propagating through a small gap in an otherwise closed door or window.

An obstacle or inhomogeneity (for example, smoke, suspended particles, or gas bubbles) in the path of a sound wave causes ***scattering*** if, secondary sound spreads out from it in a variety of directions (Pierce, 1989). Scattering is similar to diffraction. Normally *diffraction* is used to describe sound bending or scattering from a single object and *scattering* is used when there are multiple objects.

Reverberation refers to the prolongation of a sound that occurs when sound waves in an enclosed space are repeatedly reflected from the boundaries defining the space, even after the source has stopped emitting.

G.5.3 Sound Attenuation and Transmission Loss

As a sound wave passes through a medium, the intensity decreases with distance from the sound source. This phenomenon is known as attenuation or propagation loss. The effects of sound attenuation may be described using the ***transmission loss*** (*TL*), defined as:

$$TL = 20\log_{10}\frac{P(1)}{P(r)}, \qquad \text{(G-20)}$$

where $P(1)$ is the sound pressure at a distance of 1 m from the source and $P(r)$ is the sound pressure at a distance r (Kinsler *et al*., 1982). The units of transmission loss are dB. The transmission loss is used to relate the ***source level*** (*SL*), defined as the *SPL* produced by a sound source at a distance of 1 m, and the ***received level*** (*RL*) at a particular location:

$$RL = SL - TL. \qquad \text{(G-21)}$$

The main contributors to sound attenuation are:

- ***geometrical spreading*** or divergence of the sound wave as it propagates away from the source,
- ***sound absorption*** (conversion of sound energy into heat),
- ***scattering, diffraction, multipath interference, boundary effects,*** and
- ***other non-geometrical effects*** (Kinsler *et al*., 1982; Urick, 1983).

G.5.3.1 Spreading Loss

Spreading loss or divergence loss is a geometrical effect representing a regular weakening of a sound wave as it spreads out from a source (Urick, 1983). Spreading describes the reduction in sound pressure caused by the increase in surface area as the distance from a sound source increases. Spherical and cylindrical spreading are common types of spreading loss.

A point sound source in a homogeneous, lossless medium without boundaries will radiate spherical waves — the acoustic energy spreads out from the source in the form of a spherical shell. As the distance from the source increase, the shell surface area increases. If the sound power is fixed, the sound intensity must decrease with distance from the source (intensity is power per unit area). The surface area of a sphere is $4\pi r^2$, where r is the sphere radius, so the change in intensity is proportional to the radius squared. For spherical waves, $I = \overline{P}^2 / \rho c$, so the pressure decreases as the inverse of radial distance. This prediction is known as the ***spherical spreading law***. The transmission loss for spherical spreading is:

$$TL = 20\log_{10} r, \qquad \text{(G-22)}$$

where r is the distance from the source. This is equivalent to a 6 dB reduction in *SPL* for each doubling of distance from the sound source.

In ***cylindrical spreading***, spherical waves expanding from the source are constrained by upper and lower boundaries and take on a cylindrical shape. In this case the sound wave expands in the shape of a cylinder rather than a sphere and the transmission loss is:

$$TL = 10\log_{10} r \quad \text{(G-23)}$$

Cylindrical spreading is an approximation to wave propagation in a water-filled channel with horizontal dimensions much larger than the depth. Cylindrical spreading predicts a 3 dB reduction in *SPL* for each doubling of distance from the source.

G.5.3.2 Multipath Loss

Multipath refers to sound waves from a single source traveling multiple sound paths before reaching a single receiver. Multipath propagation is common when a source is located relatively close to a boundary and, in underwater applications, when the depth is small relative to the horizontal propagation distance. In multipath propagation, sound may not only travel a direct path from source to receiver, but also be reflected from the surface and/or bottom multiple times before reaching the receiver. The existence of multipaths results in a condition that permits constructive and destructive interference between sound waves propagating in the different paths and the received sound amplitude may be reduced as a result.

G.5.3.3 Surface and Bottom Effects

Because it reflects and scatters sound, the sea surface has a major effect on the propagation of underwater sound in applications where either the source or receiver is at shallow depth. If the sea surface is smooth, the reflected sound pressure is nearly equal to the incident sound pressure; however, if the sea surface is rough, the amplitude of the reflected sound wave will be reduced.

For a particular sound source, the relationship between the “direct” sound wave, which propagates directly from the source to the receiver, and the reflected wave depends on the depth of the source and the distance to the receiver. At some distances the reflected wave will be in-phase with the direct wave (their waveforms add together) and at other distances the two waves will be out-of-phase (their waveforms cancel). This results in constructive and destructive interference between the surface reflected sound wave and produces an interference pattern in the underwater sound field. This phenomenon is called the ***Lloyd mirror effect*** and is an example of multipath propagation loss. In this case the resulting sound field contains an alternating series of sound pressure maxima and minima.

The sea bottom is a reflecting and scattering surface, similar to the sea surface. Sound interaction with the sea bottom is more complex, however, primarily because the acoustic properties of the sea bottom are more variable and the bottom is often layered into regions of differing density and sound speed. The Lloyd mirror effect may also be observed from sound sources located near the sea bottom. For a “hard” bottom such as rock, the reflected wave will be approximately in-phase with the incident wave. Thus, near the ocean bottom, the incident and reflected sound pressures may add together, resulting in an increased sound pressure near the sea bottom.

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APPENDIX H

SUMMARY OF ACOUSTIC MODELING RESULTS

SUMMARY OF ACOUSTIC MODELING RESULTS

H.1 ACOUSTIC EFFECTS ANALYSIS

Active sonar operation has the potential to injure or otherwise harass marine animals in the nearby vicinity of the sonar dome. The number of animals exposed to potential harm or harassment in any such action is dictated by the acoustic propagation field and the manner in which the sonar is operated (i.e., source level, depth, frequency, pulse length, directivity, platform speed, and repetition rate). The measurements of potential injury or harassment to the marine wildlife due to sonar operations are the total accumulated energy received ,summed over all source emissions (temporary or permanent auditory threshold shift) and the maximum sound pressure level received by the animal over the duration of the activity (behavioral harassment).

This appendix describes how the acoustic analysis of sonar effects was conducted. The Marine Mammal Acoustic Effects Analysis (MMAEA) model calculates an area for which each source exceeds the defined Level A and Level B harassment thresholds. This is computed for each combination of training scenario, source, and season. This area is multiplied by the population density for each species and the number of scenario occurrences per year to determine the estimated number of Level A, Level B, and behavioral exposures that may occur annually. Training event information was gathered from the operational community concerning platforms and sensors used, locations of various training activities, the duration of each type of event, and the number of each that would occur over the course of a typical year. Data are summarized by harassment thresholds for the respective sonar system, scenario, and species. A summary of the input data for the methodology is provided in Figure H-1.

The final results are described as the “estimated number of exposures.” These results depend on the input data values for each of the categories described above. Each category has a varying degree of confidence and stability over time. The results also depend on definitions made for the methodology that bound the volume of analysis. Without these constraints, the number of variations that could be modeled would be near infinite. The use of defined ship tracks, specific acoustic propagation analysis points, representative training scenarios, and typical source characteristics are all examples of this point. The goal was to develop unbiased predictions of the number of exposures that are expected over the duration of one year’s training given these diverse and variable factors. These predictions do not represent an absolute guarantee of the interaction of sound and mammals on a day-to-day or annual basis since variations can occur relative to the modeled parameters. Instead, the results represent the average that would be expected.

The acoustic effects analysis entails the following steps.

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

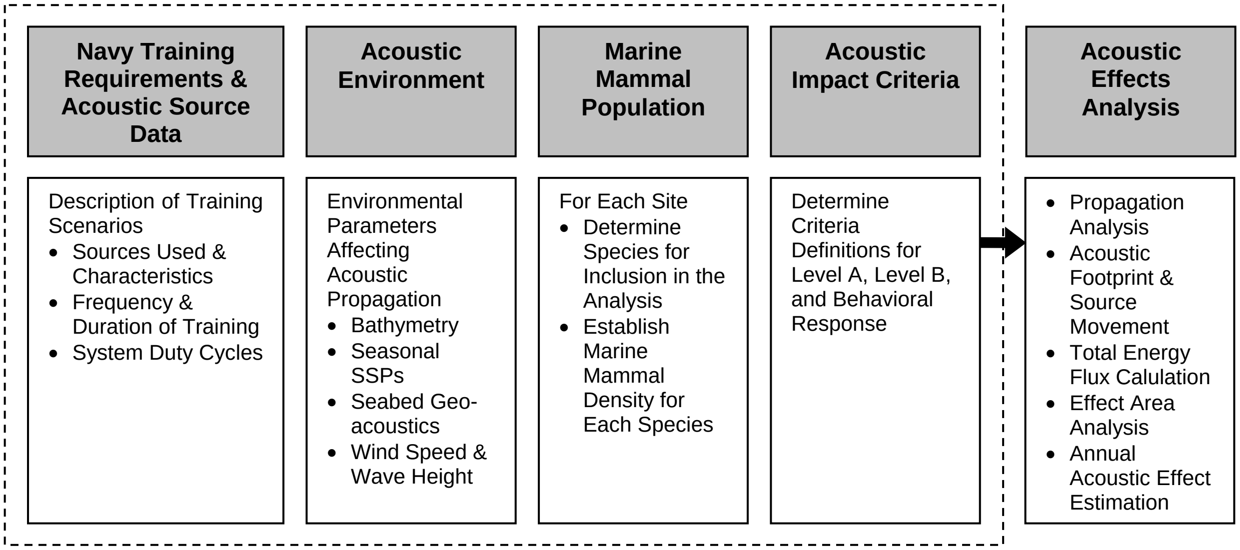

Figure H-1 Summary of the elements included in the acoustics effects analysis.

(2) For the relevant environmental acoustic parameters, transmission loss (TL) estimates are computed, sampling the water column over the appropriate depth and range intervals. TL data are sampled at the typical depth(s) of the source and at the nominal frequency of the source. The receive level for each range interval is calculated by taking the maximum receive level for all depths at that range.

(3) The accumulated energy and maximum received sound pressure level within the waters in which the sonar is operating is sampled over a two-dimensional grid. At each grid point, the received sound from each source emission is modeled as the effective energy source and sound pressure level reduced by the appropriate propagation loss from the location of the source at the time of the emission to that grid point.

(4) For energy criteria, the zone of influence (ZOI) for a given threshold (that is, the volume for which the accumulated energy level exceeds the threshold) is estimated by summing the areas represented by each grid point for which the accumulated sound exposure levels (SEL) exceeds that threshold. For the sound pressure level, the maximum received sound pressure level is compared to the appropriate dose response function for the marine mammal group and source frequency of interest. The percentage of animals likely to respond corresponding to the maximum received level is found, and the area of the grid point is multiplied by that percentage to find the adjusted area. Those adjusted area are summed across all grid points to find the overall ZOI.

The number of animals exposed to any given acoustic threshold is estimated by multiplying the animal densities by the effect area (derived from the effect volume). This calculation assumes that the animals are evenly distributed throughout the grid. Acoustic propagation and mammal population data are analyzed by season. The analysis estimated the sound exposure for marine mammals produced by each active source type independently. Results from each acoustic source were added on a per-training exercise basis and then activities were summed to annual totals. The relevant measure of potential physiological effects to marine mammals due to sonar training is the modeled accumulated (summed over all source emissions) SEL received by the animal over the duration of the activity. To calculate the estimated exposures using EL, the seasonal exposure zones generated during the acoustic modeling are multiplied by the average density of each species per season by OPAREA. Behavioral effects below the 195 dB SEL threshold were modeled using the dose response function.

Finally, the number of exposures is estimated as the “product” (scalar or vector, depending upon whether an animal density depth profile is available) of the ZOI and the animal densities.

H.2 ACOUSTIC SOURCE DESCRIPTIONS AND TRAINING SCENARIOS

Table H-1 identifies all of the acoustic systems used during Atlantic Fleet active sonar activities. The acoustic systems presented in Table H-1 have been separated into systems that were analyzed and systems that were not analyzed in the effects analysis. The systems that were not included in the effects analysis were systems that are typically operated at frequencies greater than 200 kilohertz (kHz). As a group, marine mammals have functional hearing ranging from 10 hertz (Hz) to 200 kHz; however, their best hearing sensitivities are well below that level. Since active sonar sources operating at 200 kHz or higher attenuate rapidly and are at or outside the upper frequency limit of even the ultrasonic species of marine mammals, further consideration and modeling of these higher frequency acoustic sources are not warranted. As such, high-frequency active sonar systems in excess of 200 kHz are not included in this analysis.

In addition, systems that were found to have similar acoustic output parameters (i.e., frequency, power, deflection angles) were compared. The system with the largest acoustic footprint was modeled as representative of those similar systems that have a smaller footprint. An example of this representative modeling is the AN/AQS-22 and AN/AQS-13. Based on individual sonar parameters and the acoustic modeling, the AN/SQS-53 hull-mounted sonar was noted as being the most powerful of all the sonar systems analyzed. The AN/SQS-53 has a nominal source level of 235 decibels with a reference pressure of 1 micro-Pascal at 1 meter (dB re 1 µPa-m) and transmits at center frequency range of 2.6 kHz and 3.3 kHz. As a result, this sonar system has the largest acoustic footprint.

The ANSQS-53 sonars can be equipped with Small Object Avoidance (SMA) or "Kingfisher" mode capability. Kingfisher transmissions use a narrower horizontal beam width and more rapid pulse repetition rate than the regular search mode. They are also lower in source level than the AN/SQS-53 track mode. The resulting acoustic footprint is therefore considerably smaller than what is generated when modeling the employment of the AN/SQS-53 in a typical ASW mission.

H.3 ENVIRONMENTAL PARAMETERS AFFECTING SOUND PROPAGATION

Sound propagation (the spreading or attenuation of sound) in the oceans of the world is affected by several environmental factors: water depth, variations in sound speed within the water column, surface roughness, and the geoacoustic properties of the ocean bottom. These parameters can vary widely with location. To support the modeling of sound propagation in all waters, the United States Naval Oceanographic Office verifies models that have been created by other Navy labs prior to entering them into the Navy standard library. In this collection, the bathymetry (water depth) database is the most highly sampled, reflecting both the variability of this parameter and the relative ease of measuring it. The sound speed and bottom properties databases are provinced, meaning that relatively large, often irregularly shaped areas are characterized by a single typical parameter set (i.e., a sound speed profile or a set of geoacoustic parameters). For this effort, a set of 36 representative environments was selected from these standard databases to cover the full gamut of conditions that can be observed in these areas.

Four types of data are used to define the acoustic environment for each province:

Table H-1. Acoustic Sources Modeled or Considered

System	*Frequency*	*Source Level (re 1μPa)*	*Associated Platform*	*System Description*
AN/SQS-53	3.5 kHz	235 dB	DDG and CG hull-mounted sonar	ASW search, detection, and localization; utilized 70% in search mode and 30% track mode
AN/AQS-13	10.0 kHz	215 dB	Helicopter dipping sonar	ASW sonar lowered from hovering helicopter (approximately 10 pings/dip, 30 seconds between pings)
AN/AQS-22	4.1 kHz	217 dB	Helicopter dipping sonar	ASW sonar lowered from hovering helicopter (approximately 10 pings/dip, 30 seconds between pings)
Explosive source sonobuoy (AN/SSQ-110A)	Impulsive broadband	Classified	MPA deployed	ASW system consists of explosive acoustic source buoy (contains two 4.1 lb charges) and expendable passive receiver sonobuoy
AN/SSQ-125	MF	Classified	MPA deployed	ASW system consists of active sonobuoy and expendable passive receiver sonobuoy
AN/SQQ-32	HF	Classified	MCM over the side system	Detect, classify, and localize bottom and moored mines
AN/BQS-15	HF	Classified	Submarine navigational sonar	Only used when entering and leaving port
AN/SQS-56	7.5 kHz	225 dB	FFG hull-mounted sonar	ASW search, detection, localization; utilized 70% in search mode and 30% track mode
MK-48 Torpedo	HF	Classified	Submarine fired exercise torpedo	Recoverable and non-explosive exercise torpedo; sonar is active approximately 15 min per torpedo run
MK-46/MK-54 Torpedo	HF	Classified	Surface ship and aircraft fired exercise torpedo	Recoverable and non-explosive exercise torpedo; sonar is active approximately 15 min per torpedo run
AN/SLQ-25 (NIXIE)	MF	Classified	DDG, CG, and FFG towed array	Towed countermeasure to avert localization and torpedo attacks (approximately 20 mins per use)
AN/SQS-53 and AN/SQS-56 (Kingfisher)	MF	Classified	DDG, CG, and FFG hull-mounted sonar (object detection)	Only used when entering and leaving port

Table H-1. Acoustic Sources Modeled or Considered, Cont'd

System	*Frequency*	*Source Level (re 1μPa)*	*Associated Platform*	*System Description*
AN/BQQ-10 and AN/BQQ-5	MF	Classified	Submarine hull-mounted sonar	ASW search and attack (approximately 1 ping every 2 hours when in use)
Tonal sonobuoy (DICASS) (AN/SSQ-62)	8 kHz	201 dB	Helicopter and MPA deployed	Remotely commanded expendable sonar-equipped buoy (approximately 12 pings, 30 secs between pings)
ADC MK-1, MK-2, MK-3 and MK-4	MF	Classified	Submarine deployed countermeasure	Expendable acoustic countermeasure (approximately 20 mins per use)
Submarine deployed countermeasure (NAE)	MF	Classified	Submarine deployed countermeasure	Expendable acoustic countermeasure (approximately 20 mins per use)

ADC – Acoustic Device Countermeasure; CG – Guided Missile Cruiser; DDG – Guided Missile Destroyer; DICASS – Directional Command-Activated Sonobuoy System; FFG – Fast Frigate; HF – High-Frequency; MF – Mid-Frequency; MPA – Maritime Patrol Aircraft EMATT – Expendable Mobile Acoustic Training Target

- **Seasonal Sound Speed Profiles (SVPs) –** Seasonal SVPs for the range sites were obtained from the Generalized Digital Environmental Model, Variable resolution of the Oceanographic and Atmospheric Master Library. These data are available through the Naval Oceanographic Office's Data Warehouse. Any single observation taken within the acoustic provinces will necessarily vary from the seasonal mean. The training areas within the study area are subject to the meanders of the Gulf Stream and other oceanographic intrusions such as warm-core rings and estuarine run-off.
- **Seabed Geoacoustics –** The type of sea floor influences how much sound is absorbed and how much sound is reflected back into the water column. Bottom characteristics for the study area were generated from a combination of sources including side-scan and sub-bottom profiler data, which included data that provided information on the roughness of the sea floor; echo-sounder data that provided information on bottom hardness; and bottom sampling to validate the side-scan and echo-sounder geological characterization data. Data on bottom type were also obtained from other sources such as a Woods Hole Oceanographic Institution (WHOI) report and the Navy's compiled data contained within the Marine Resource Assessments.
- **Wind Speeds –** Several environmental inputs, such as wind speed and surface roughness, are necessary to model acoustic propagation on the prospective ranges. Wind speeds were averaged for each season to correspond to the seasonal velocity profiles.
- **Bathymetry data** - Bathymetry data for the training areas were obtained from the National Oceanic and Atmospheric Administration National Data Center Coastal Relief East Coast databases; the National Geophysical Datacenter, Coastal Relief Model (Volume II); and the NAVOCEANO's Digitized Bathymetric Data Base - Variable Resolution. The resulting bathymetry map covers a larger area than the range area to account for acoustic energy propagating off the training area.

H.3.1 Acoustic Province Selection Process

The OPAREAS to be modeled represented such an array of different geophysical environments that to make the task manageable those with similar characteristics were grouped together. The selection process begins by creating provinces within the bathymetry database. This is accomplished by grouping areas within depth regimes that are approximately an octave in width as displayed in Table H-2.

The province databases were then used to define a set of *environmental provinces* (regions in which the bathymetry, sound speed, and bottom loss provinces are constant). For the region of interest, this resulted in nearly 1,000 distinct environmental provinces, far too many for the analysis required for this study. In order to compress this large set of environmental provinces, the most important environmental parameters associated with the analysis of water volumes potentially affected were identified. Since the total energy source levels for these sonars seldom exceed the minimum thresholds by more than 50 to 60 decibels (dB), the key environmental parameters were determined to be those that matter to propagation out to ranges equal to 50 to 60 dB of transmission loss (TL).

Of the three types of environmental data (bathymetry, sound speed profile, and bottom properties) that affect propagation, bathymetry is the most influential environmental parameter upon TL at the ranges of interest. For this reason, it was deemed desirable for the selection of representative environmental provinces to include each of the bathymetry provinces.

Table H-2. Definition of Bathymetry Provinces

Minimum Depth (meters [m]) in Province	Maximum Depth (m) in Province	Representative Depth (m) of Province
7.5	15	10
15	35	20
35	75	50
75	150	100
150	350	200
350	750	500
750	1,500	1,000
1,500	3,000	2,000
3,000	5,000+	4,000

The other two environmental parameters that affect sound propagation tend to be significant only in certain water depth regimes. In shallow water (depths less than 500 meters [m] [1,640 feet (ft)]), bottom interaction is likely to occur before TL reaches the 50 to 60 dB level. In these cases, the acoustic properties of the bottom can dictate the extent of water volume affected. This is particularly true at low frequencies where bottom losses can be relatively small.

At the other end of the water depth spectrum (depths greater than 500 m [1,640 ft]), certain features of the sound speed profile (e.g., surface duct, secondary sound channel) may provide better propagation and thus result in larger volumes of water being affected.

To capture the range of variability of the sound speed profile and bottom properties, the decision was made to select three representative sound speed profiles (and bottom loss provinces). Two of the representatives reflect the extremes (cold water/warm water for the sound speed profiles and low loss/high loss for the bottom loss provinces), while the third represents an average.

Selecting Average Winter Sound Speed Profiles

Figure H-2 presents the winter sound speed profiles for the 27 sound speed provinces found in the operating areas of interest. The pictured profiles included surface ducts ranging in depth from 50 to 200 m (164 to 656 ft). Some of the colder-water profiles have pronounced surface duct gradients, while the surface ducts in the southern-latitude profiles tend to have more gradual pressure gradients. Several of the profiles from the vicinity of the Sargasso Sea include a weak secondary sound channel within the depth range of 200 to 500 m (656 to 1,640 ft).

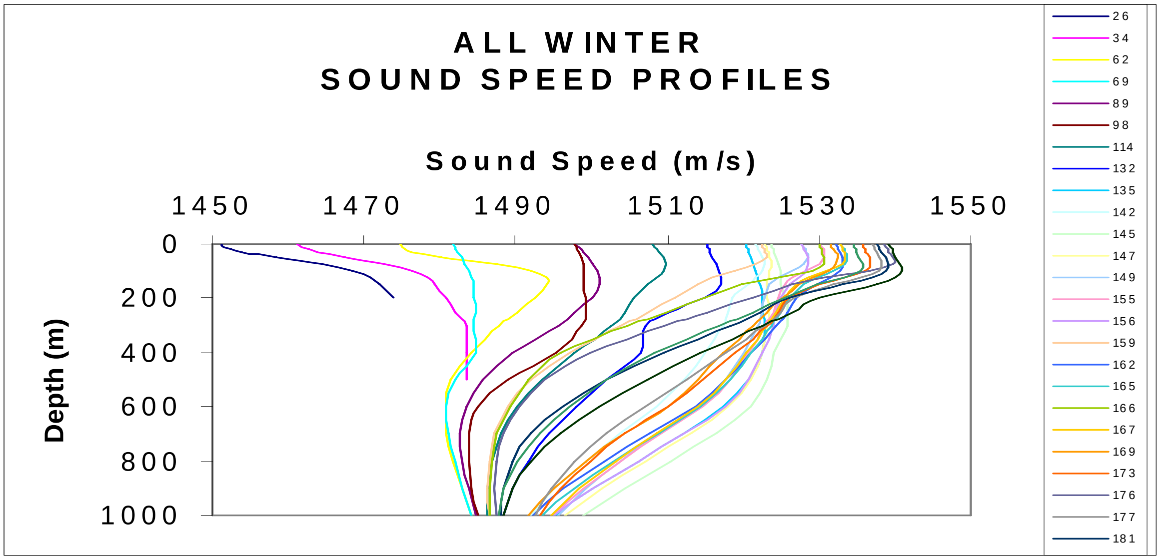

Figure H -2. Winter Sound Speed Profiles in Operating Areas

This set of 27 profiles was sorted into three categories: (1) cold-water, northern-latitude profiles, (2) mid-latitude (Sargasso Sea) profiles, and (3) warm-water, southern-latitude (primarily from the Gulf of Mexico) profiles. A single representative sound speed profile was chosen for each category. The representative sound speed profiles for each category are presented in Figure H-3. The blue line represents the northern-latitude representative profile, the green line represents the mid-latitude representative profile, and the red line represents the southern latitude representative profile.

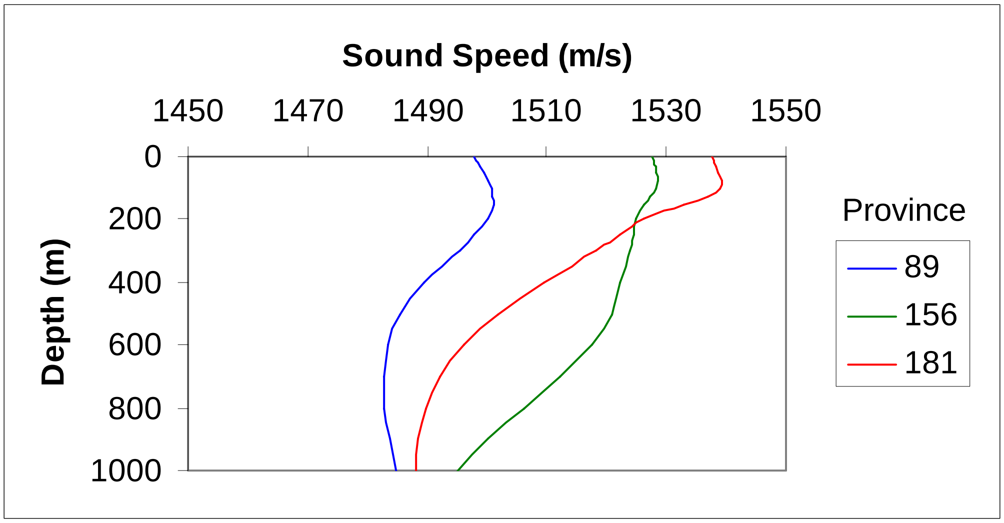

Figure H -3. Representative Winter Sound Speed Profiles

Selecting Average Summer Sound Speed Profiles

Summer sound speed profiles were also broken out into the same three categories described above. Similarly, the same process was utilized to select the representative sound speed profile for each of the three categories. Figure H-4 depicts all 27 summer sound speed profiles.

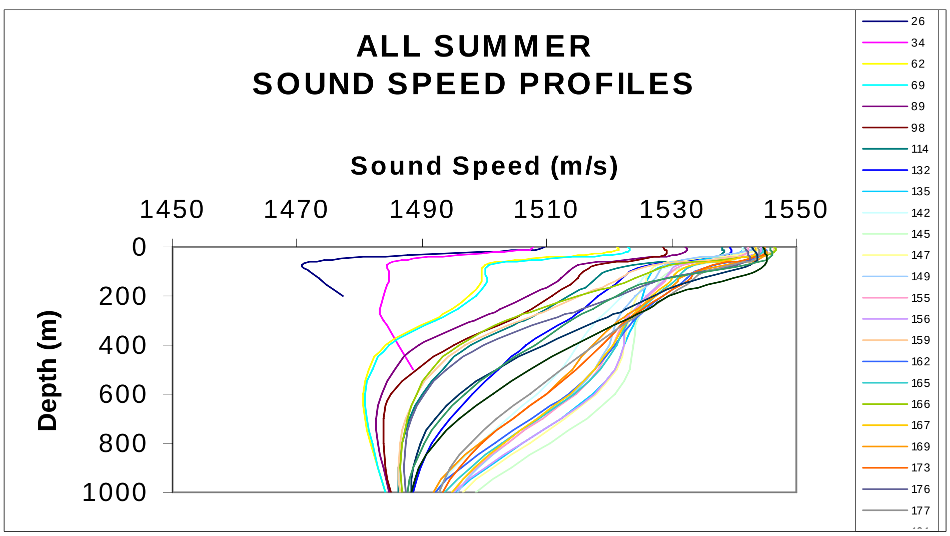

Figure H-4. Summer Sound Speed Profiles in Operating Areas

This set of 27 summer sound speed profiles was sorted into three categories: (1) cold-water, northern-latitude profiles, (2) mid-latitude (Sargasso Sea) profiles, and (3) warm-water, southern-latitude (primarily from the Gulf of Mexico) profiles. One sound speed profile was then selected for each category. The representative profiles for each category are presented in Figure H-5. The blue line represents the northern-latitude average profile; the green line represents the mid-latitude average profile, and the red line represents the southern latitude average profile.

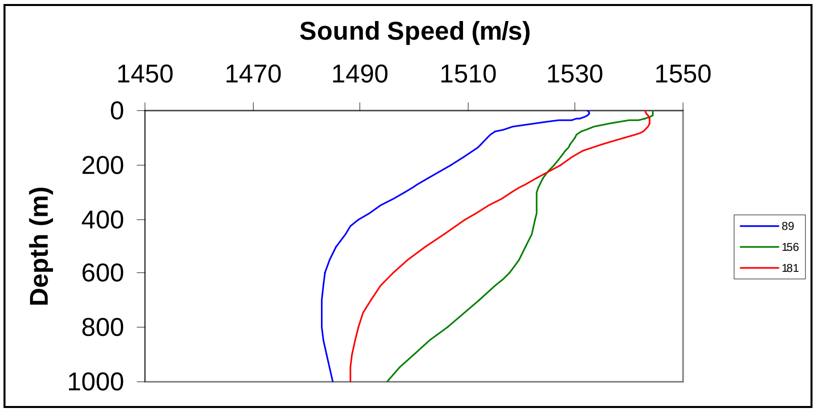

Figure H-5. Three Representative Summer Sound Speed Profiles

Selecting Representative Bottom Loss Provinces

Selecting three representative bottom loss provinces is more complicated due to the frequency dependence of the loss. It is common for a bottom loss province to be a low-loss bottom at certain frequencies but a high-loss bottom at other frequencies. Furthermore, this behavior is not predicated simply upon frequency; it is possible for bottom losses to increase or decrease as frequency increases. The matter is further complicated by the fact that the Navy standard database for bottom acoustic properties is itself a dichotomy: one database for below 5 kilohertz [kHz] and an independent database for high frequencies.

For this effort, the consolidation of bottom loss classes is driven by losses at 5 kHz and below. This is driven by the observation that the sources that are likely to impact marine wildlife are sonars that operate in this frequency range.

There is a total of 53 bottom loss provinces situated in the U.S. East Coast and Gulf of Mexico operational areas.

Even without considering the complexity of the frequency dependence, it is clear that partitioning these bottom loss curves into three homogenous sets is difficult. Fortunately for the sources being considered, bottom loss is a secondary consideration that is important only in shallow water and only for shallow grazing angles. Focusing on these considerations, three representative provinces were selected; the associated frequency bottom loss curves for these three representative provinces are presented in Figures H-6 through H-8.

The variation in bottom loss from one of the representative bottom-loss provinces to the next is generally on the order of 2 to 5 dB/bounce but decidedly not uniform across all grazing angles. The differences are most pronounced at grazing angles above 45° and tend to decrease with increasing frequency.

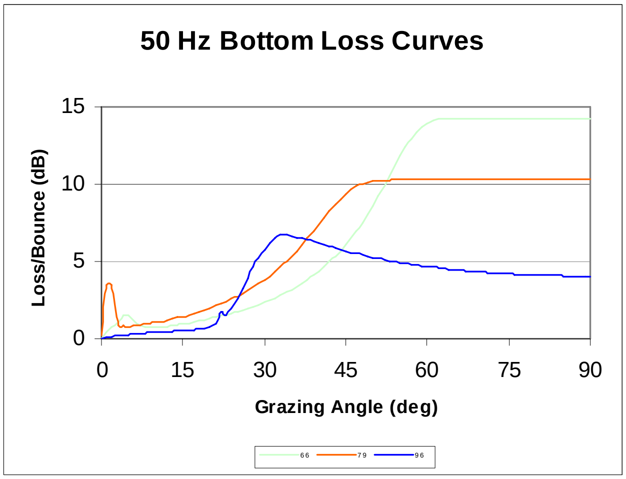

Figure H-6. 50 Hz Bottom Loss for Representative Bottom Provinces

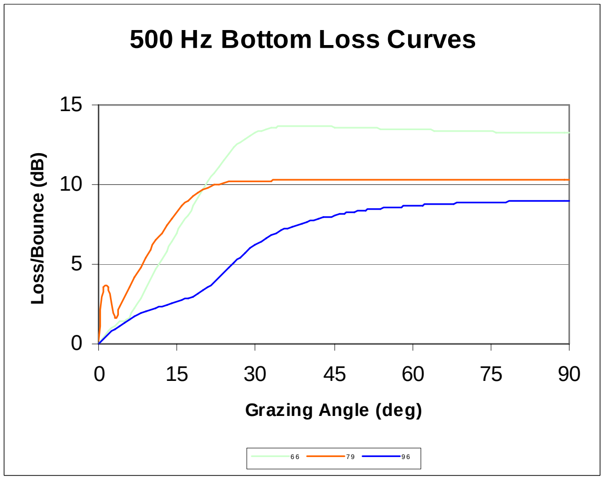

Figure H-7. 500 Hz Bottom Loss for Representative Bottom Provinces

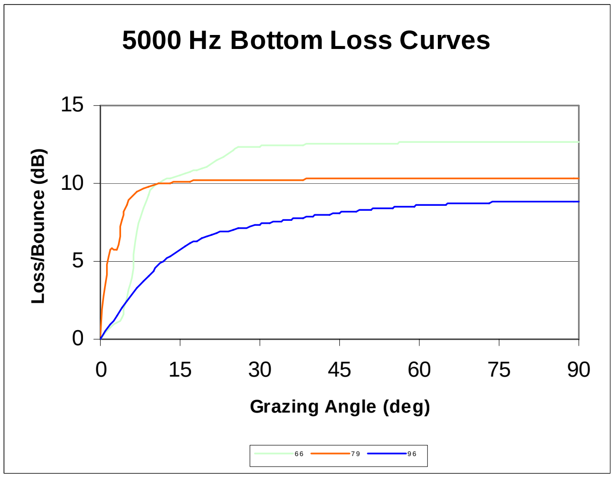

Figure H-8. 5,000 Hz Bottom Loss for Representative Bottom Provinces

Next, the remaining bottom-loss provinces are assigned to one of the three representative provinces. Again, this is a subjective process that is complicated by varying frequency and grazing angle dependencies. Often the variation among the various provinces assigned to a particular representative province is as great as the variability among the three representative provinces themselves. Fortunately, bottom loss is very much a second-order factor in determining TL over short ranges so that the precision of the bottom-loss province assignments is not critical.

Bottom-loss provinces were assigned to the three representative provinces (low-loss, medium-loss, and high-loss) to simplify the number of provinces.

Summary of Environmental Province Selection

With the number of water-depth "provinces" reduced to nine and the number of sound-speed and bottom-loss provinces reduced to three each, this reduces the maximum number of distinct environmental provinces in the region of interest to no more than 72 (= 8 x 3 x 3). However, since not all combinations of environmental parameters are attained in the area of interest, only 36 distinct environmental provinces are actually encountered. These provinces in Figure H-9 are numbered from 1 through 36 and are defined by their environmental properties in Table H -3.

Provincing the environment implies that the impact of variations in the environment local to the source operations cannot be addressed. At the time of the design of this model, source levels were low enough relative to the thresholds (or equivalently, thresholds were high enough) such that impact ranges seldom extend beyond 10 to 20 kilometers (km) (5 to 11 NM). Since this is just slightly greater than the resolution of most Navy-standard environmental databases, range dependence of the environment was viewed as a second-order consideration. Recent action potentially lowering the harassment threshold level increases the impact ranges by a factor of five or more. For the high-power sources (most notably the AN/SQS-53C), this increases impact ranges to 100 km or more and raises the issue of whether the environment can be treated as range independent. Although addressing this issue is beyond the scope of this effort, intuition suggests that the effect of a range-dependent environment will tend to be muted by the averaging required to cover the uncertainty in the positioning of the source track. If this is the case, then the difference between modeling the environment as range-independent versus range-varying will typically be negligible. However, at this time the relative efficacy of range-independent modeling has not been demonstrated.

Tables H-4 through H-6 partition the environmental provinces according to the following three loosely defined depth regimes:

- Continental Shelf – Water depths 150 m (492 ft) or less
- Continental Slope – Water depths from 150 to 1,500 m (492 to 4,921 ft)
- Deep Ocean – Water depths 1,500 m (4,921 ft) or greater

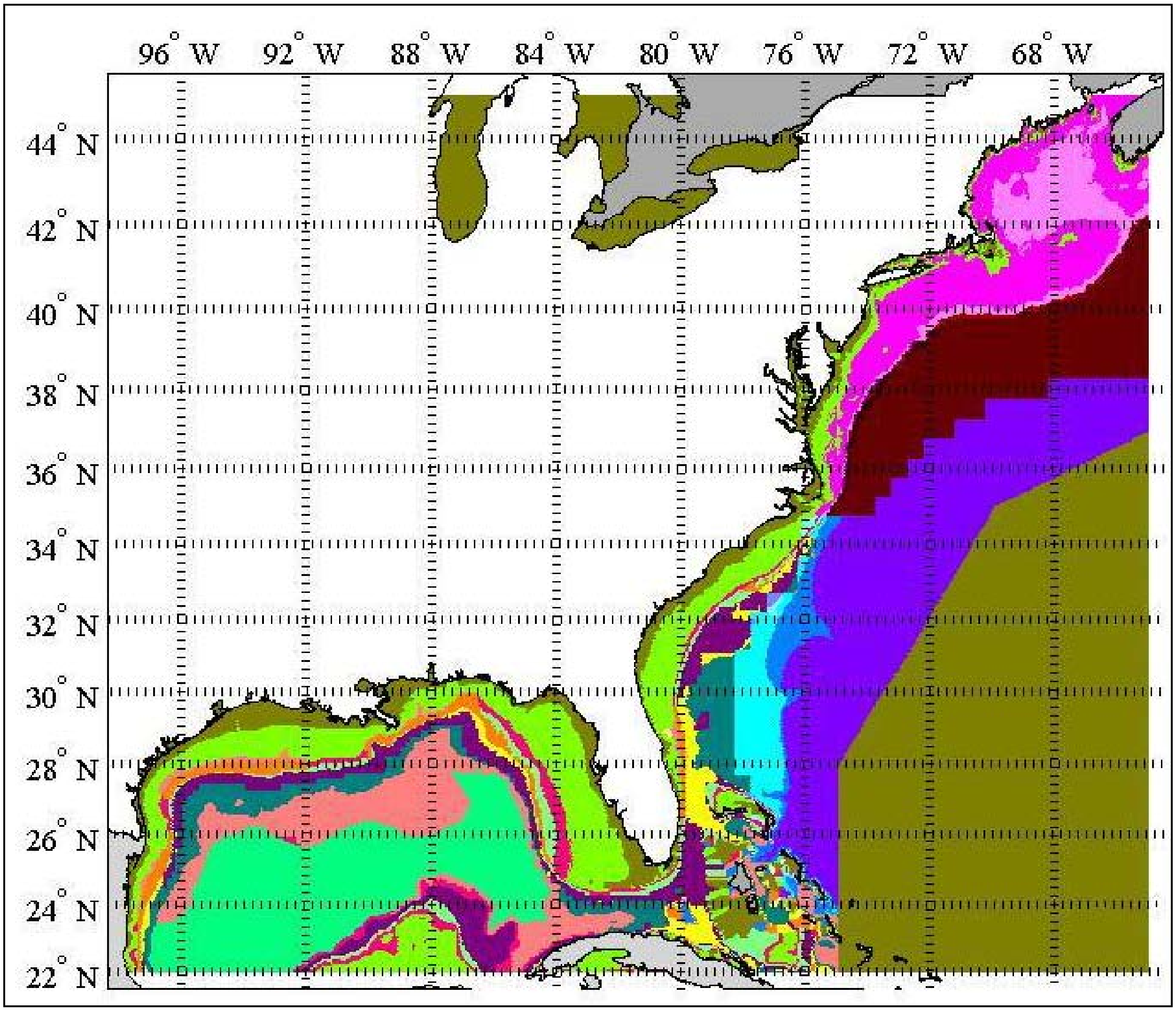

Figure H-9. Delineation of the 36 Provinces, represented by differentiation in color

Table H-3. Description of Acoustic Provinces

Environmental Province	Representative Water Depth (m)	Bottom Loss Province	Sound Speed Province
1	10	Low Loss	Southern Latitude, Warm Water
2	20	Low Loss	Southern Latitude, Warm Water
3	50	Low Loss	Southern Latitude, Warm Water
4	100	Medium Loss	Southern Latitude, Warm Water
5	200	Medium Loss	Southern Latitude, Warm Water
6	500	Medium Loss	Southern Latitude, Warm Water
7	1,000	Medium Loss	Southern Latitude, Warm Water
8	1,000	High Loss	Southern Latitude, Warm Water
9	2,000	High Loss	Southern Latitude, Warm Water
10	4,000	Medium Loss	Southern Latitude, Warm Water
11	1,000	Low Loss	Southern Latitude, Warm Water
12	500	Low Loss	Southern Latitude, Warm Water
13	200	Low Loss	Southern Latitude, Warm Water
14	100	Low Loss	Southern Latitude, Warm Water
15	2,000	Low Loss	Southern Latitude, Warm Water
16	2,000	Medium Loss	Southern Latitude, Warm Water
17	50	Medium Loss	Southern Latitude, Warm Water
18	10	Medium Loss	Southern Latitude, Warm Water
19	20	Medium Loss	Southern Latitude, Warm Water
20	2,000	Medium Loss	Mid-Latitude, (Sargasso Sea)
21	1,000	Medium Loss	Mid-Latitude, (Sargasso Sea)
22	500	Medium Loss	Mid-Latitude (Sargasso Sea)
23	200	Medium Loss	Northern Latitude, Cold Water
24	4,000	Medium Loss	Mid-Latitude (Sargasso Sea)
25	1,000	Low Loss	Mid-Latitude (Sargasso Sea)
26	500	Low Loss	Mid-Latitude (Sargasso Sea)
27	50	Low Loss	Mid-Latitude (Sargasso Sea)
28	50	Low Loss	Northern Latitude, Cold Water
29	100	Low Loss	Northern Latitude, Cold Water
30	200	Low Loss	Northern Latitude, Cold Water
31	500	Low Loss	Northern Latitude, Cold Water
32	500	Medium Loss	Northern Latitude, Cold Water
33	1,000	Medium Loss	Northern Latitude, Cold Water
34	2,000	Medium Loss	Northern Latitude, Cold Water
35	4,000	Medium Loss	Northern Latitude, Cold Water
36	1,000	Low Loss	Northern Latitude, Cold Water

Although each depth regime is well represented, the Continental Slope, which varies the most in water depth, has the greatest number of provinces. Each of the sound speed provinces is represented by at least one province in each of the three depth regimes. The same is true for the bottom loss provinces with the exception of the Continental Shelf regime that does not have a high-loss bottom-loss province.

Table H-4. Continental Shelf Environmental Provinces

Environmental Province	Representative Water Depth (m)	Bottom Loss Province	Sound Speed Province
1	10	Low Loss	Southern Latitude Warm Water
18	10	Medium Loss	Southern Latitude Warm Water
2	20	Low Loss	Southern Latitude Warm Water
19	20	Medium Loss	Southern Latitude Warm Water
3	50	Low Loss	Southern Latitude Warm Water
17	50	Medium Loss	Southern Latitude Warm Water
27	50	Low Loss	Mid-Latitude (Sargasso Sea)
28	50	Low Loss	Northern Latitude Cold Water
4	100	Medium Loss	Southern Latitude Warm Water
14	100	Low Loss	Southern Latitude Warm Water
29	100	Low Loss	Northern Latitude Cold Water

Table H-5. Continental Slope Environmental Provinces

Environmental Province	Representative Water Depth (m)	Bottom Loss Province	Sound Speed Province
5	200	Medium Loss	Southern Latitude Warm Water
13	200	Low Loss	Southern Latitude Warm Water
23	200	Medium Loss	Northern Latitude Cold Water
30	200	Low Loss	Northern Latitude Cold Water
6	500	Medium Loss	Southern Latitude Warm Water
12	500	Low Loss	Southern Latitude Warm Water
22	500	Medium Loss	Mid-Latitude (Sargasso Sea)
26	500	Low Loss	Mid-Latitude (Sargasso Sea)
31	500	Low Loss	Northern Latitude Cold Water
32	500	Medium Loss	Northern Latitude Cold Water
7	1,000	Medium Loss	Southern Latitude Warm Water
8	1,000	High Loss	Southern Latitude Warm Water
11	1,000	Low Loss	Southern Latitude Warm Water
21	1,000	Medium Loss	Mid-Latitude (Sargasso Sea)
25	1,000	Low Loss	Mid-Latitude (Sargasso Sea)
33	1,000	Medium Loss	Northern Latitude Cold Water
36	1,000	Low Loss	Northern Latitude Cold Water

Table H-6. Deep Water Environmental Provinces

Environmental Province	Representative Water Depth (m)	Bottom Loss Province	Sound Speed Province
9	2,000	High Loss	Southern Latitude Warm Water
15	2,000	Low Loss	Southern Latitude Warm Water
16	2,000	Medium Loss	Southern Latitude Warm Water
20	2,000	Medium Loss	Mid-Latitude (Sargasso Sea)
34	2,000	Medium Loss	Northern Latitude Cold Water
10	4,000	Medium Loss	Southern Latitude Warm Water
24	4,000	Medium Loss	Mid-Latitude (Sargasso Sea)
35	4,000	Medium Loss	Northern Latitude Cold Water

It is widely recognized within the Anti-Submarine Warfare (ASW) community that variations in environmental characteristics that range along the path of propagation can significantly impact propagation loss. It is this "range dependence" of the environment that has led to use of more sophisticated models of propagation loss that account for such variability. However, it is important to note that significant environmental range dependence generally does not occur over very short ranges but rather over ranges on the order of 10 km (5 NM) or more. Rapid changes in water depth are the most likely to be encountered and can be significant over much shorter ranges. Along the continental slope, the bottom slope averages 2 to 3 degrees; changes in water depth up or down slope on the order of 100 m (328 ft) typically occur over ranges of a couple kilometers. Steeper slopes of 15 degrees or more are encountered along seamounts; such slopes result in changes in water depth of 100 m (328 ft) over ranges of nearly a half of a kilometer.

Still, it is not unusual to hear concern voiced about a bottom feature playing a dramatic role in enhancing propagation. Features such as a shoaling bottom or a bottom canyon are postulated as potential wave guides serving to amplify sound energy in a manner not dissimilar to the effect of a megaphone. However, for this amplification to occur, interactions with the bottom must be loss-less (or nearly so). While this may occur at low frequencies (less than 200 Hz), the bottom loss curves presented in Figures H-6 to H-8 demonstrate that this is not the case at the mid-frequencies range.

Changes in the sound speed profile are typically related to variations in sea surface temperature and tend to occur quite gradually (over hundreds of kilometers). Ocean fronts (and related rings and eddies) are the exception to this rule. However, even in the presence of a pronounced oceanographic front such as the North Wall of the Gulf Stream, significant sound speed variability does not occur over ranges of less than several kilometers.

Changes in bottom composition significant enough to noticeably alter bottom loss can occur quite rapidly over range. Rock outcroppings are a notable example. However, unlike changes in the other environmental parameters, range dependence on bottom loss never enhances propagation. Simply stated, average propagation along a track with varying bottom losses is never better than propagation along that same track with the most favorable of the bottom losses over the entire track.

H.4 SONAR MODELING

H.4.1 Propagation Modeling

The ability to provide credible results for a set of sonars operating in a variety of (unspecified) modes within ocean environments all along the U.S. East Coast and within the Gulf of Mexico is a design-driving requirement for the model. The requirement to cover a wide range of potential scenarios (environments and source operating modes) motivates a parameterization of the inputs in order to make the number of pre-computations manageable. For the source (e.g., sonar), this means that results are generated for a few selected values that span the domain of each "sonar setting" (e.g., beam widths and steer directions, "effective" energy source levels, ping cycle times, etc.). See Table H-1 for a description of sources modeled. For the environment, this implies a partitioning of the areas into regions (environmental provinces) with relatively homogeneous propagation characteristics. In the case of sonar settings, linear interpolation among the input parameters is used to determine the results for a specific operating mode. The environmental provinces effectively implement a nearest neighbor rule for the environmental acoustics inputs.

Propagation analysis for acoustic harassment estimates is performed using the Comprehensive Acoustic Simulation System (CASS) using the Gaussian Ray Bundle (GRAB) model. The CASS/GRAB model is an acoustic model developed by Naval Undersea Warfare Center for modeling active acoustic systems in a range-dependent environment. This model has been approved by the Oceanographic and Atmospheric Master Library (OAML) for acoustic systems that operate in the 150 Hz to 100 kHz frequency range. The OAML was originally created in 1984 to provide consistency and standardization for all oceanographic and meteorological programs used by the Navy. Today, the OAML's role is expanded to provide the Navy a standard library for meteorological and oceanographic databases, models, and algorithms.

CASS/GRAB provides detailed multi-path propagation information as a function of range and bearing. GRAB allows range-dependent environmental information input so that, for example, as bottom depths and sediment types change across the range, their acoustic effects can be modeled.

A means of representing propagating sound is by acoustic rays. As acoustic rays travel through the ocean, their paths are affected by absorption, back-scattering, reflection, boundary interaction, etc. The CASS/GRAB model determines the acoustic ray paths between the source and a particular location in the water which, in this analysis, is referred to as a receive cell. The rays that pass through a particular point are called eigenrays. Each eigenray, based on its intensity and phase, contributes to the complex pressure field, hence the total energy received at a point. By summing the modeled eigenrays, the total received energy for a receive cell is calculated. This is illustrated in Figure H-10 and an example of propagation loss on a single bearing can be found in Figure H-11. The propagation losses are normally less than those predicted by spherical spreading versus range due to the multiple eigenrays present.

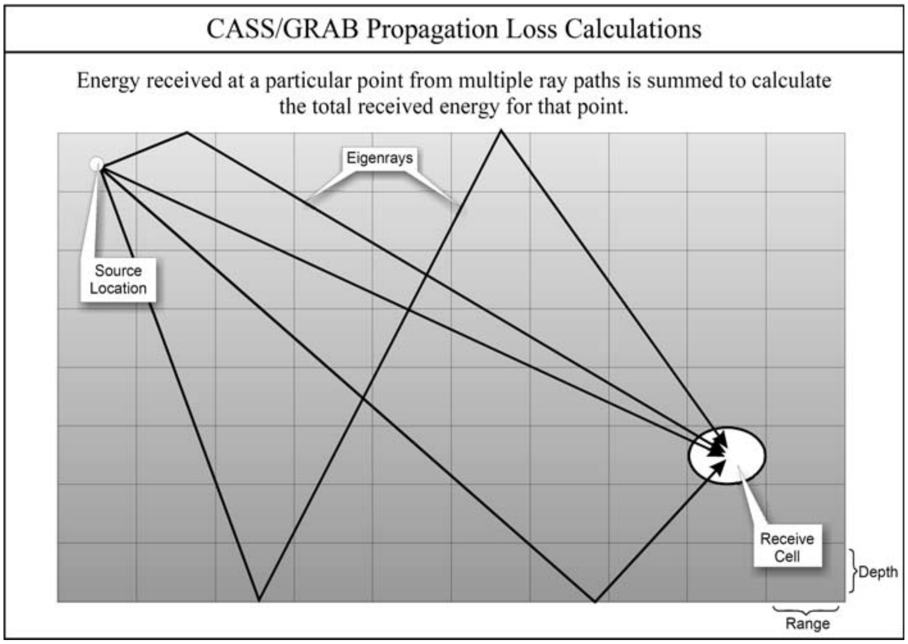

Figure H-10 Depiction of acoustic rays in the CASS/GRAB propagation loss calculation.

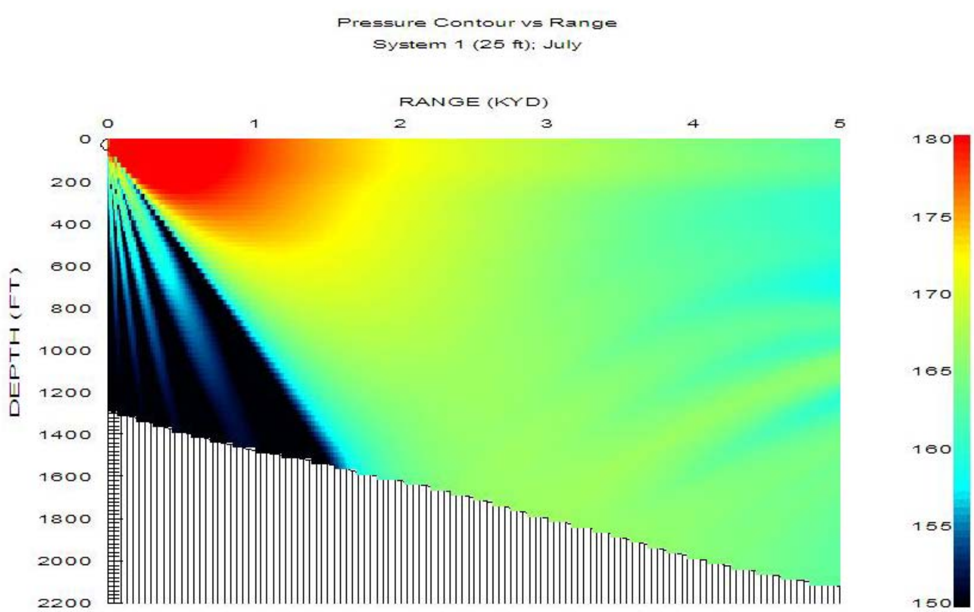

Figure H-11 (Relative Received Level vs. Range) displays a sample propagation loss function for a single bearing angle from the sonar dome.

Propagation loss functions for each unique combination (i.e., acoustic source, season, source depth, etc.) are produced at 45-degree bearing angles versus range and depth from three chosen analysis points. For each bearing angle, the maximum receive level is used to populate all angles around the source, plus or minus 22.5 degrees. This results in a continuous 360-degree characterization of the receive level from the source (Figure H-12). The three representative points are used to characterize acoustic propagation in different depth regimes to reflect the topography of the site. The analysis is performed to a distance of 1 km (3,300 ft) at intervals in distance and depths of 5 m (16 ft) and 2 m (7 ft). The propagation loss calculations are then converted into a two-dimensional acoustic footprint. First, the exposure level is calculated by applying the source's output level and duration to the propagation loss function. Second, the result for each bearing line is spread to cover a 45-degree wedge. For horizontally directional sources, the beam width is applied to produce the final acoustic footprint. Figure H-13 depicts an example two-dimensional acoustic footprint calculation.

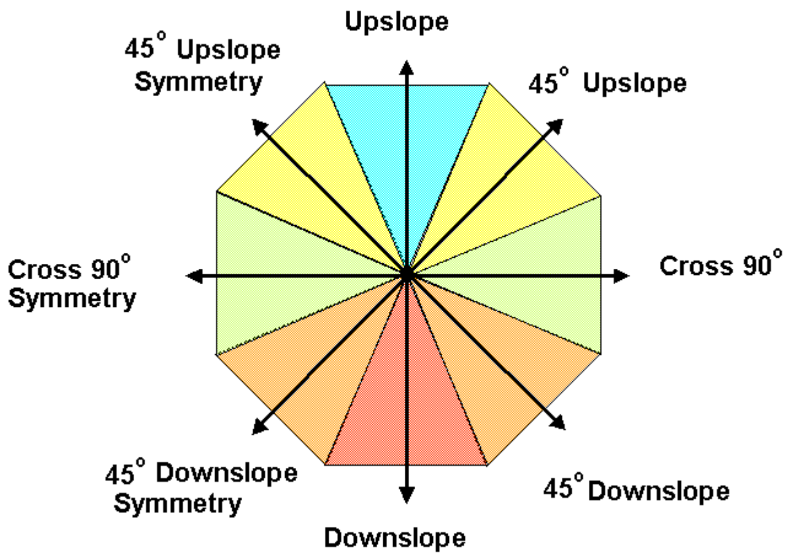

Figure H-12. Bearing angle definition for propagation loss calculation

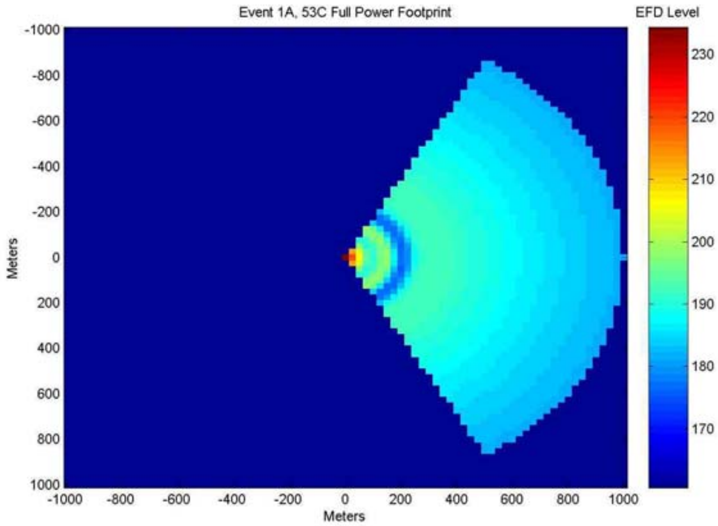

Figure H-13. Two-dimensional acoustic footprint example.

H.4.2 Criteria and Thresholds for Active Sonar

Tables H-6 through H-8 summarizes the criteria and threshold used in this analysis for active sonar.

Table H-6. Physiological Effects, Criteria, and Thresholds for Active Sonar

Animals	Criteria	Threshold (dB 1 μPa^2-s)	MMPA Effect
Odontocetes and Mysticetes	PTS	215	Level A harassment
Odontocetes and Mysticetes	TTS	195	Level B harassment
Pinnipeds	PTS	203	Level A harassment
Pinnipeds	TTS	183	Level B harassment

dB 1 μPa^2-s = decibel referenced to 1 micropascal squared second; PTS = Permanent Threshold Shift; TTS = Temporary Threshold Shift

Table H-7. SPL Risk-Function Parameters for Behavioral Response to Active Sonar

Animals	Risk-Function Mean (SPL)	Risk Transition Parameter	Basement Receive Level
Odontocetes (except harbor porpoises) and Pinnipeds	165 dB	10	120 dB
Mysticetes	165 dB	8	120 dB

dB = decibel

Table H-8. Behavioral Response to Active Sonar (Harbor Porpoise)

Animals	Effect	Receive Level
Harbor Porpoise	Behavioral	Greater than 120 dB SPL re 1 μPa

dB = decibel; SPL re 1 μPa = sound pressure level referenced to 1 micropascal

H.5 EXPLOSIVE SOURCE SONOBUOY MODELING

H.5.1 Propagation Modeling

The approach begins with a high-fidelity acoustic model that has all of the required properties for the "linear" problem. Since the OPAREAs of interest include shallow-water regions, the selected model must treat range-dependent environments and be able to exploit Navy standard bottom-sediment interaction approaches (e.g., the Navy Standard: OAML, 2002). It must cover a wide frequency band (up to about 10 kHz), and correctly account for caustics, surface cutoff, ducting, low-frequency cutoff, and important diffraction effects. Because of the wide bandwidth for small shots, wave-theory models (such as modal theory or parabolic equation method or finite-element approaches) are usually not practical, so that modified ray theory models are favored. Examples include Navy standard models (REFMS or ASTRAL) and the model used for long-range, flat-bottom estimates in Churchill and Seawolf — the REFMS model (Britt et al., 1991; Jordan, 2008). Only single-explosion estimates were evaluated due to the wide-spacing in the deployment pattern of explosive sonobuoys and the differences in the timing of the detonation.

H.5.2 Similitude Formulas for Source Properties

Standard similitude formulas are used to model the free-field source properties close to the source, starting at a nominal source-level range of 1 m (3.3 ft). Weak shock theory is used to estimate the waveform and levels to ranges beyond a few meters. Rather than revert to linear propagation theory when the amplitudes are small, the weak shock is used to all ranges. This is consistent with the Seawolf and Churchill FEISs (although not explicitly stated in the documents). References for similitude and explosive sound propagation include Cole (1948), Arons et al. (1949), Weston (1960), Urick (1983), Goertner (1982), Gaspin (1983), Chapman (1988), Gaspin and Shuler (1971), and Bluy and Payne (1974). The standard similitude formulas used are provided below.

H.5.3 Environmental Provinces and Sound Propagation

For an ideal, deep-water environment (flat pressure-release surface, constant sound speed, no absorption, no bottom interaction, source and receiver away from the surface) and a single explosion, impact ranges associated with the acoustic thresholds can be estimated using standard formulas for shock waves. Injury ranges are approximately 45 m (148 ft) for small animals and 26 m (85 ft) for larger animals.

However, the assumption of an ideal, deep-water environment would not always be appropriate. To estimate impact areas for the variety of deployment sites, Navy standard acoustic models and databases were applied to environmental "provinces" within which the ocean acoustic environments are expected to be similar.

Based on the Navy standard Underwater Shock Wave Reflection and Refraction in Deep and Shallow Water model (Britt et al., 1991), modified to account for impulse response, shock-wave waveform, and nonlinear shock-wave effects, and on the Navy (Britt et al., 1991) standard environmental databases (sound speed, wind speed, bottom interaction, and bathymetry), impact ranges were estimated for each applicable season and province. Note that the model is validated for use of the highly specialized bottom sediment databases and for range-varying environments. In addition, test calculations were made to account for bubble pulses.

H.5.4 Estimated Impact Ranges and Areas for a Single Explosion

For a single explosive charge (3.7-lb TNT equivalent NEW), impact ranges are relatively short, and there is little dependence on season, water depth, or bottom properties for the OPAREAs covered.

The impact ranges for TTS based on energy levels are the same for both frequency limits (10 and 100 Hz) in all cases for small explosives because of the broadness of the frequency spectrum. The same is true for behavioral disturbance (without TTS).

There is little variability due to environmental conditions for any of the impact ranges. In fact, the only case for which there is some variability (the TTS range for energy threshold), shows that most of this variability occurs in shallow water (less than 100 m [328 ft]). This result is as expected. However, greater variability is found in the estimation of TTS impact areas for multiple explosives – primarily because of energy accumulation and hence, greater ranges for multiple shots.

H.5.5 Impact Volumes for Various Metrics

The impact of explosive sources on marine wildlife is measured by four different metrics, each with its own threshold(s). Two of these metrics, total and peak one-third octave energy, are treated in similar fashion as the energy metric used for active sonar including the summation of energy if there are multiple pings. The other two, peak pressure and positive impulse, are by their nature single ping metrics.

- *Sound Exposure Level (SEL).* For plane waves, as assumed here, SEL is the time integral of the squared pressure divided by the impedance. It has International System of Units (SI) units of joules per square meter (J/m^2) (but in-lb/in^2 is also used in Churchill). SEL levels have units of dB re 1 μPa^2-s (using the usual convention that the reference impedance is the same as the impedance at the field point).
- *1/3-Octave SEL.* This is the SEL in a 1/3-octave frequency band. A 1/3-octave band has upper and lower frequency limits with a ratio of $2^{1/3}$. Hence, the bandwidth is about 25 percent of center frequency. The computation of impact volumes for the energy metric follows closely the approach taken to model the energy metric for active sonar. The only significant difference is that SEL is sampled at several frequencies in one-third-octave bands and only the peak one third octave level is accumulated.
- *Positive impulse.* This is the time integral of the pressure over the initial positive phase of an arrival. SI units are Pascal seconds (Pa-s), but psi-ms are also used. There is no decibel analog for impulse. The modeling of positive impulse follows the work of Goertner.

- The modified positive impulse threshold is unique among the various injury and harassment metrics in that it is a function of depth and the animal weight. To be conservative, the Navy will assume the animal weight is that of a calf dolphin, with an average mass of 12.2 kg (27 lbs). Although the thresholds are a function of depth and animal weight, sometimes they are summarized as their value at the sea surface for a typical calf dolphin (with an average mass of 12.2 kg [27 lb]). For the onset of slight lung injury, the threshold at the surface is approximately 13 psi ms; for the onset of extensive lung hemorrhaging (1 percent mortality), the threshold at the surface is approximately 31 psi-ms.
- *Peak pressure.* This is the maximum positive pressure for an arrival. Units used here are psi and decibel levels with the usual underwater reference of 1 μPa. The peak pressure metric is a simple, straightforward calculation. At each range/animal depth combination, transmission ratio modified by the source level in a one-octave band and beam pattern is averaged across frequency on an eigenray-by-eigenray basis. This averaged transmission ratio (normalized by the broadband source level) is then compared across all eigenrays with the maximum designated as the peak arrival. Peak pressure at that range/animal depth combination is then simply the product of: the square root of the averaged transmission ratio of the peak arrival, the peak pressure at a range of 1 m, and the similitude correction. If the peak pressure for a given grid point is greater than the specified threshold, then the incremental volume for the grid point is added to the impact volume for that depth layer.

The criteria and thresholds used in the AFAST EIS/OEIS are summarized in Table H-9.

Table H-9. Effects, Criteria, and Thresholds for Small Explosives

Effect	Criteria	Metric	Threshold	MMPA Effect
Physiological	Onset extensive lung injury	Goertner modified positive impulse	30.5 psi-ms	Mortality
Physiological	50 percent TM rupture	Energy flux density	1.17 in-lb/in^2 (about 205 dB re 1 µPa^2-s)	Level A Harassment
Physiological	Onset slight lung injury	Goertner modified positive impulse	indexed to 13 psi-ms	Level A Harassment
Physiological	TTS for baleen whales	Greatest energy flux density level in any 1/3-octave band above 10 Hz - for total energy over all exposures	182 dB re 1 µPa^2-s	Level B Harassment
Physiological	TTS for toothed whales and sea turtles	Greatest energy flux density level in any 1/3-octave band above 100 Hz - for total energy over all exposures	182 dB re 1 µPa^2-s	Level B Harassment
Physiological	TTS	Peak pressure over all exposures	23 psi	Level B Harassment

dB 1 µPa^2-s = decibel referenced to 1 micropascal squared second; Hz = hertz; psi-ms = pounds per square inch-millisecond; TM = tympanic membrane; TTS = temporary threshold shift

H.5.6 Depths of Animals and Explosions

Animal depths are selected to ensure the greatest direct path for the harassment ranges, and to give the greatest impact range for the injury thresholds; they are thus conservative. The latter is consistent with the approach of Churchill.

H.6 DERIVATIONS OF ACOUSTIC EXPOSURES IN AFAST

The modeling procedures discussed in the above sections were applied to each of the active sonar and sonobuoy systems using the environmental and geospatial data for each of the acoustic provinces within the study area. The modeling output resulted in a comprehensive database of ensonified areas or ZOIs per hour of sonar activity (or per unit as in the case of a sonobuoy or an acoustic device countermeasure) for each of the regulatory acoustic thresholds of interest.

The next step required developing animal density spreadsheets that were seasonal and analysis area specific. The marine species density data provide seasonal (spring, summer, fall, and winter) density estimates for most species of interest (Endangered Species Act [ESA] and Marine Mammal Protection Act [MMPA]) by geographic area. Animals are assumed to be uniformly distributed for the purposes of this analysis, whereby the term "uniformly distributed" means that an equal number of individuals in the population occur within the analysis area. In reality, many species of cetaceans occur in large groups and would likely be sighted prior to mission activities. Therefore, resulting exposure estimates for these species are higher than what would be expected to actually occur.

By taking into consideration the estimated calendar of the training exercises and their location within the OPAREAs, species presence and density data may be associated (by location and season). The estimates of potential acoustic exposure for each species, by each of the regulatory thresholds, for each of the OPAREAs were calculated by multiplying the appropriate elements together using a Microsoft Excel spreadsheet.

A summary of the acoustic effects analysis modeling flow path can be found in Figure H-14.

H.6.1 Propagation Analysis – Step 1

The initial modeling step consists of calculating the propagation loss functions for Level A and Level B threshold analyses. The thresholds for Level A and Level B harassment analyses were developed in Section 4.4 and a summary can be found in Tables H.6 through H-9.

<u>Level A Propagation Modeling</u>

In comparing the threshold level for Level A harassment to the source characteristics for the systems analyzed, it was apparent that detailed propagation analysis would overcomplicate the analysis without significant benefit. This is due to the short distances necessary to reach the Level A thresholds with spherical spreading losses alone. An example is shown in Table H-11 for a source assumed to ping with a pulse duration of 1 second. As a result of these short distances, few or no surface and bottom interactions occur and absorption is negligible in comparison to the spreading losses. Also, there is little accumulation of energy from multiple pings above or near the thresholds for the moving sources.

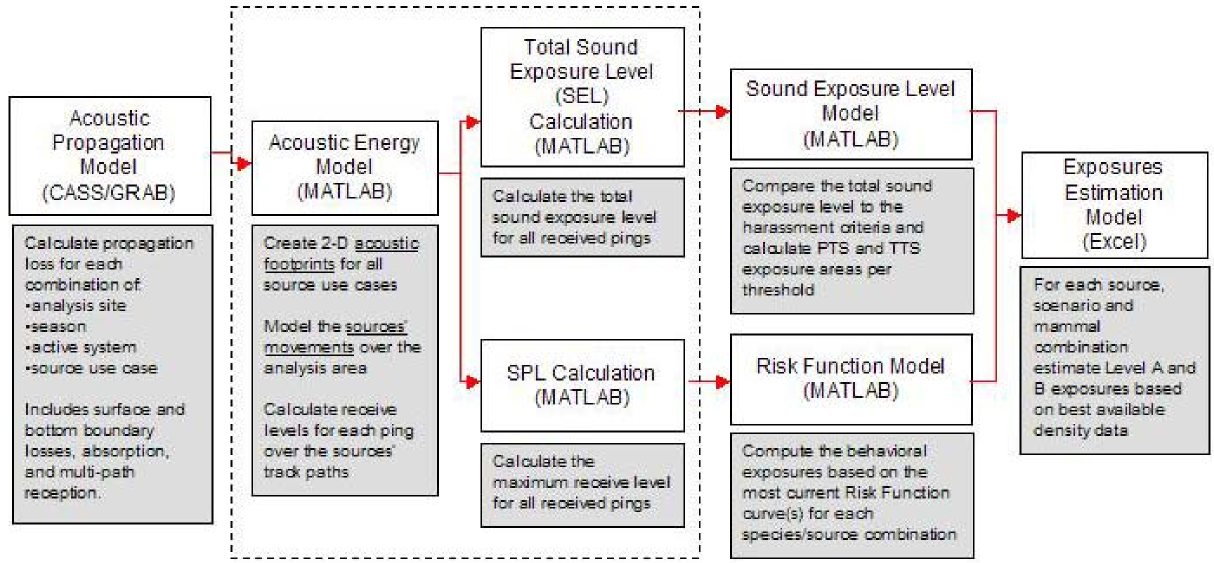

Figure H-14. Marine Mammal Acoustic Effects Analysis (MMAEA) modeling flow path

Table H-11. Level A Harassment Range Example

Source Level (dB re µPa @ 1 m)	Ping Length(s)	Total SEL (dB re 1 µPa^2 s)	Level A Threshold (dB re 1 µPa^2 s)	Allowable Spreading Loss (dB)	Distance to Reach Level A Threshold (20 Log R) m
215	1	215.00	215	0.00	1.00
220	1	220.00	215	5.00	1.8
225	1	225.00	215	10.00	3.1
230	1	230.00	215	15.00	5.6

The Level A harassment range corresponds to that for each ping independently. Thus, to determine the Level A harassment range for each source, propagation losses were modeled equal to spherical spreading. For sources where multiple pings from a single point would occur, such as the dipping sonar, the harassment range was defined by the total SEL from all pings at each transmission point.

Some caveats exist for the Level A harassment analysis, all of which produce an expectation of very rare or no Level A harassment. Despite this low likelihood, assessment of Level A harassment was included using the following methodology for completeness.

- For the physically larger sources (i.e., the surface ship and submarine sonars), the Level A harassment ranges would be within the near field of the acoustic transducers. In this circumstance, the actual levels received by any mammal would be limited by the shielding effect of the sonar's structure. In some circumstances, the Level A harassment range of a ping would correspond to a distance smaller than the size of the sonar dome itself.

- The analysis assumes that the acoustic energy is constant throughout the vertical water column at a given horizontal range from the source. This is done to account for the lack of knowledge of the vertical location of mammals within the water column. For short distances, the slant range between the source and mammal may significantly exceed the horizontal distance, resulting in a lower energy level actually being received versus the level modeled, and a corresponding overestimate of the potential for acoustic exposures within the Level A harassment zone.
- For lower-power sources, the harassment range may be less than the size of the mammal itself.
- Level A harassment ranges for all sonars correspond to distances where striking the mammals is possible. Mitigation to avoid ship strikes of mammals simultaneously eliminates the potential for Level A harassment.

Level B Propagation Modeling

Propagation analysis for Level B acoustic harassment estimates is performed using the Comprehensive Acoustic Simulation System (CASS) using the GRAB model. The CASS/GRAB model is an acoustic model developed by NUWC for modeling active acoustic systems in a range-dependent environment. This model has been approved by the OAML for acoustic systems that operate in the 150 to 100 kHz frequency range. The OAML was originally created in 1984 to provide consistency and standardization for all oceanographic and meteorological programs used by the Navy. Today the OAML’s role is expanded to provide the Navy a standard library for meteorological and oceanographic databases, models, and algorithms.

CASS/GRAB provides detailed multi-path propagation information as a function of range and bearing. GRAB allows range-dependent environmental information input so that, for example, as bottom depths and sediment types change across the range, their acoustic effects can be modeled.

Propagation loss functions for each unique combination (i.e., acoustic source, season, source depth, etc.) are produced at 45-degree bearing angles versus range and depth from three chosen analysis points. For each bearing angle, the maximum receive level curve is used to populate all angles around the source, plus or minus 22.5 degrees. This results in a continuous 360-degree characterization of the receive level from the source. The three representative points are used to characterize acoustic propagation in different depth regimes to reflect the topography of the site. The analysis is performed to a distance of 1,200 km (648 NM) at intervals in distance and depths of 5 m (16 ft) and 2 m (7 ft).

A means of representing propagating sound is by acoustic rays. As acoustic rays travel through the ocean, their paths are affected by absorption, back-scattering, reflection, boundary interaction, etc. The CASS/GRAB model determines the acoustic ray paths between the source and a particular location in the water which, in this analysis, is referred to as a receive cell. The rays that pass through a particular point are called eigenrays. Each eigenray, based on its intensity and phase, contributes to the complex pressure field, hence the total energy received at a point. By summing the modeled eigenrays, the total received energy for a receive cell is calculated. This is illustrated in Figure H-10 (CASS/GRAB Propagation Loss Calculations). The propagation losses are normally less than those predicted by spherical spreading versus range due to the multiple eigenrays present.

Propagation Model Considerations

The total SEL for all pings will exceed the level of the most-intense ping when multiple pings are received. To calculate the accumulation of energy from multiple pings, the acoustic propagation analysis must be done up to a distance ensuring that the potential for cumulative energy exceeding the threshold is assessed. The extent to which receive levels need to be accumulated depends on the source operational characteristics, including source level, source movement, ping duration, and ping repetition rate.

H.6.2 Acoustic Footprint Generation and Source Movement Modeling – Step 2

The acoustic footprint represents the ping coverage from each transmission point as the movement of the source is modeled. Representative ship tracks are used for moving sources: surface ship sonars, torpedo sonar, and dipping sonar. As the movement is modeled, the ping's receive level at all points covered by the acoustic footprint is recorded at each point. Both the acoustic footprint and receive cells are defined to represent areas of 25 by 25 m (82 by 82 ft), or 0.000625 km^2 (0.0001822 NM^2).

H.6.3 SEL Calculation – Step 3

For each of the receive area cells, the total SEL is calculated for all received pings recorded for that area cell. SEL is calculated by using the sound exposure equation presented in Appendix B, as follows:

$$SEL = SPL + 10\log_{10} T\ ,$$

where SEL has units of dB re 1 µPa^2-s, SPL has units of dB re 1 µPa, and T is in seconds.

H.6.4 Marine Mammal Effect Area Analysis – Step 4

The total calculated SEL for each receive cell is compared to the TTS threshold of 195 dB re µPa^2-s, and the number of cells above the threshold is counted. The total harassment area is then calculated by multiplying the number of cells by the area per cell, 0.000625 km^2 (0.0001822 NM^2). Since the mammal distribution data were provided in the same depth regimes as described in Section H.3.1, the receive cells above the threshold were also calculated by depth regimes (i.e., depth greater or less than 91.4 m [300 ft]), and the cell totals were counted separately for each of these depth regions.

H.6.5 Annual Marine Mammal Acoustic Effect Estimation – Step 5

To determine the mammal harassment estimates, the total harassment area for each source is converted to a harassment rate (harassment area/first hour and the rate of change of area for each hour after that) (i.e., harassment areas multiplied by the corresponding mammal population densities). This is done for each mammal distribution region and for both Level A and Level B criteria thresholds. Level A harassment areas are subtracted from Level B harassment areas to prevent double-counting incidents. For the surface and dipping sonars, the harassment area is expressed in area per kilometer of movement. The torpedo area is calculated per run and the submarine area is expressed in area per ping.

The harassment rates for each source are used to estimate species harassment rates by multiplying the harassment rate by the corresponding mammal population density (based on the NODE report). This is done for every species and all four both summer and winter seasons. The results are summed to produce a species harassment rate used in the final calculations.

The species harassment rates are multiplied by the operational duty cycle for each source, the length of each scenario, and the number of yearly scenario occurrences. This produces the estimated number of animals incidentally harassed annually for each combination of source, season, and animal.

H.6.6 Spreadsheet Analysis Methods

The use of the system and mode specific ZOI is considered the first step towards estimating the amount of energy or maximum received level a given training event would produce in the specific analysis area, and the potential effects that event would have on protected marine species. The ZOI values represent the area exposed by sonar energy within a one-hour timeframe, by single ping, or by units of a specific device (i.e. sonobuoys).

The occurrence of marine mammals within the study area were found for each analysis area by season with a percent correction factor applied to each density value that accounts for surveyed animals that were not identified to species. The correction factor is specific to each region and differs for each species group (e.g. large whales versus small whales).

The next step of the analysis requires that ZOIs, which are presented according to various operating modes are combined in the correct ratio to reflect the sonar usage that would occur during the training events. For example, for some percentage of time a given sonar may be operated in tracking mode instead of searching mode. The power levels for the modes are different and averaging the sonar ZOIs is required to obtain a more accurate representation of how sonar would be used during the training events.

The Navy specified the amount of sonar operation in hours, pings, or number of buoys (for the Directional Command Activated Sonobuoy System (DICASS) and the explosive source sonobuoy (AN/SSQ-110A) by season. Hours of operation by acoustic province were determined by multiplying hours per season by a percent amount of provinces that comprise each analysis area. The resulting values depicted the amount of hours of sonar operation by season and by province.

The final step is to take the summed event ZOIs and multiply them by the marine mammal and sea turtle densities, yielding the number of animals potentially exposed. Exposures are presented as a number of each species potentially exposed to sonar sound of a given received sound level, corresponding to an impact threshold, by season and by analysis area.

H.7 MARINE MAMMAL EXPOSURES

The following tables provide the estimated marine mammal exposures for each training scenario under each alternative, displaying the seasonal exposures by exposure type (PTS, TTS, or behavioral). The analysis did not predict any potential for marine mammal mortalities.

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Table H-12. Estimated Marine Mammal PTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under the No Action Alternative

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	2	2	2	2	0	0	0	0	2	2	2	2	0	0	0	0	1	1	1	1
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	1	1	1	1	1	1	1	1	4	4	4	4	0	0	0	0	0	0	0	0
Clymene dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common dolphin	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Pilot whales	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso's dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-13. Estimated Marine Mammal PTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under Alternative 1

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	1	1	1	1	1	1	1	1	2	2	2	2	0	0	0	0	0	0	0	0
Clymene dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common dolphin	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Pilot whales	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso’s dolphin	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act
F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-14. Estimated Marine Mammal PTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under Alternative 2

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	1	1	1	1	1	1	1	1	2	3	2	2	0	0	0	0	0	0	0	0
Clymene dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common dolphin	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Pilot whales	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso’s dolphin	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-15. Estimated Marine Mammal PTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under Alternative 3

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	1	1	1	1	0	0	0	0	2	2	2	2	0	0	0	0	1	1	1	1
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	0	0	0	0	1	1	1	1	4	4	4	4	0	0	0	0	0	0	0	0
Clymene dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Pilot whales	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso’s dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-16. Estimated Marine Mammal PTS Exposures from Coordinated ULT Active Sonar Activities Under the No Action Alternative

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	0	0	0	0	0	0	0	0	2	2	2	2	0	0	0	0	0	0	0	0
Clymene dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pilot whales	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso’s dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act
F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-17. Estimated Marine Mammal PTS Exposures from Coordinated ULT Active Sonar Activities Under Alternative 1

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Clymene dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pilot whales	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso’s dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act
F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-18. Estimated Marine Mammal PTS Exposures from Coordinated ULT Active Sonar Activities Under Alternative 2

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	0	0	0	0	0	0	0	0	1	2	1	1	0	0	0	0	0	0	0	0
Clymene dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pilot whales	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-19. Estimated Marine Mammal PTS Exposures from Coordinated ULT Active Sonar Activities Under Alternative 3

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	0	0	0	0	0	0	0	0	2	2	2	2	0	0	0	0	0	0	0	0
Clymene dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pilot whales	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso’s dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act
F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-20. Estimated Marine Mammal PTS Exposures from Strike Group Active Sonar Activities Under the No Action Alternative

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	0	0	0	0	1	1	1	1	2	2	2	2	0	0	0	0	1	0	0	1
Clymene dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	2
Pilot whales	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso’s dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Striped dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-21. Estimated Marine Mammal PTS Exposures from Strike Group Active Sonar Activities Under Alternative 1

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Clymene dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	2
Pilot whales	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Striped dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-22. Estimated Marine Mammal PTS Exposures from Strike Group Active Sonar Activities Under Alternative 2

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	0	0	0	0	0	0	0	0	1	2	1	1	0	0	0	0	0	0	0	0
Clymene dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pilot whales	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso’s dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act
F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-23. Estimated Marine Mammal PTS Exposures from Strike Group Active Sonar Activities Under Alternative 3

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	0	0	0	0	1	1	1	1	2	2	2	2	0	0	0	0	1	0	0	1
Clymene dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Pilot whales	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso’s dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Striped dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-24. Estimated Marine Mammal TTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under the No Action Alternative

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	105	105	314	314	72	72	73	73	348	348	230	230	1	1	1	1	3	3	3	3
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	33	34	93	93	73	66	92	92	613	602	496	496	1	1	0	0	6	0	5	5
Clymene dolphin	4	4	13	13	8	8	10	10	32	32	29	29	0	0	0	0	2	2	2	2
Common dolphin	55	55	243	243	0	0	0	0	0	0	0	0	3	3	2	2	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	1	1	1	1	1	1	3	3	3	3	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	9	9	28	28	18	18	21	21	66	66	60	60	0	0	0	0	2	3	3	3
Pilot whales	13	17	35	35	12	10	16	16	81	72	84	84	6	2	2	1	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso's dolphin	8	8	22	22	10	10	12	12	68	68	61	61	1	1	1	1	0	0	0	0
Rough-toothed dolphin	0	0	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	3	4	8	8	0	0	0	0	1	1	2	2	0	0	1	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	80	80	191	191	0	0	0	0	0	0	0	0	2	2	3	3	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	1	1	2	2	0	1	0	0	2	2	2	2	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	1	1	1	0	1	1	3	0	3	2	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	10	10	6	6	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	12	2	8	8	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-25 Estimated Marine Mammal TTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under Alternative 1

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	72	72	186	186	37	37	29	29	197	197	136	136	1	1	1	1	3	3	3	3
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	53	54	138	138	58	61	64	64	245	183	212	212	1	1	1	1	6	0	5	5
Clymene dolphin	5	5	10	10	8	8	9	9	27	27	27	27	0	0	0	0	2	2	2	2
Common dolphin	121	121	300	300	0	0	0	0	0	0	0	0	3	3	3	3	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	1	1	1	1	1	1	3	3	3	3	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	10	10	20	20	16	16	18	18	57	57	56	56	0	0	0	0	2	4	3	3
Pilot whales	16	19	40	40	8	8	9	9	60	60	61	61	6	2	2	1	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso's dolphin	3	3	8	8	1	1	1	1	52	52	50	50	1	1	1	1	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	2	3	6	6	0	0	0	0	1	1	1	1	0	0	1	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	12	12	29	29	0	0	0	0	0	0	0	0	3	3	4	4	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	1	0	1	1	1	0	1	0	3	0	3	1	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	7	7	3	3	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	6	2	3	3	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-26. Estimated Marine Mammal TTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under Alternative 2

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	72	72	186	179	37	37	29	29	197	207	145	136	1	1	1	1	3	3	3	3
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	53	54	138	91	58	61	81	64	245	313	237	212	1	1	1	1	6	0	5	5
Clymene dolphin	5	5	10	10	8	8	9	9	27	27	27	27	0	0	0	0	2	2	2	2
Common dolphin	121	121	300	242	0	0	0	0	0	0	0	0	3	3	3	3	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	1	1	1	1	1	1	3	3	3	3	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	10	10	20	20	16	16	18	18	57	57	56	56	0	0	0	0	2	4	3	3
Pilot whales	16	19	40	28	8	8	10	9	60	73	74	61	6	2	2	1	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso's dolphin	3	3	8	9	1	1	10	1	52	65	68	50	1	1	1	1	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	2	3	6	5	0	0	0	0	1	1	1	1	0	0	1	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	12	12	29	32	0	0	0	0	0	0	0	0	3	3	4	4	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	1	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	1	0	1	1	1	0	1	0	3	0	3	1	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	7	7	3	3	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	6	2	3	3	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-27. Estimated Marine Mammal TTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under Alternative 3

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	69	69	172	172	64	64	57	57	391	391	254	254	1	1	1	1	3	3	3	3
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	16	18	39	39	61	60	70	70	529	486	439	439	0	1	0	0	6	0	5	5
Clymene dolphin	5	5	12	12	9	9	10	10	32	32	29	29	0	0	0	0	2	2	2	2
Common dolphin	29	29	92	92	0	0	0	0	0	0	0	0	3	3	3	3	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	1	1	1	1	1	1	3	3	3	3	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	10	10	26	26	19	19	21	21	67	67	61	61	0	0	0	0	2	3	3	3
Pilot whales	10	12	22	22	11	6	13	13	81	73	84	84	7	2	2	1	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso's dolphin	5	5	12	12	13	13	14	14	71	71	62	62	1	1	1	1	0	0	0	0
Rough-toothed dolphin	0	0	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	2	2	4	4	0	0	0	0	1	1	2	2	0	0	1	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	41	41	84	84	0	0	0	0	0	0	0	0	2	2	2	2	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	1	1	1	1	0	1	0	0	2	2	2	2	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	1	0	1	1	1	0	1	1	4	0	3	2	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	11	11	6	6	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	13	2	8	8	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-28. Estimated Marine Mammal TTS Exposures from Coordinated ULT Active Sonar Activities Under the No Action Alternative

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	19	19	57	57	13	13	13	13	242	242	158	158	0	0	0	0	0	0	0	0
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	6	6	17	17	13	12	17	17	424	416	342	342	0	0	0	0	1	0	1	1
Clymene dolphin	1	1	2	2	2	2	2	2	22	22	20	20	0	0	0	0	0	0	0	0
Common dolphin	10	10	44	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	2	2	2	2	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	2	2	5	5	3	3	4	4	46	46	42	42	0	0	0	0	0	1	0	0
Pilot whales	2	3	6	6	2	2	3	3	56	50	59	59	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso’s dolphin	1	1	4	4	2	2	2	2	47	47	42	42	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	14	14	34	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	2	0	2	1	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-29. Estimated Marine Mammal TTS Exposures from Coordinated ULT Active Sonar Activities Under Alternative 1

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	13	13	34	34	7	7	5	5	137	137	94	94	0	0	0	0	0	0	0	0
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	10	10	25	25	10	11	11	11	168	124	145	145	0	0	0	0	1	0	1	1
Clymene dolphin	1	1	2	2	1	1	2	2	19	19	19	19	0	0	0	0	0	0	0	0
Common dolphin	22	22	54	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	2	2	2	2	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	2	2	4	4	3	3	3	3	40	40	39	39	0	0	0	0	0	1	1	1
Pilot whales	3	3	7	7	1	1	2	2	42	42	43	43	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso’s dolphin	1	1	2	2	0	0	0	0	36	36	35	35	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	2	2	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	2	0	2	1	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-30. Estimated Marine Mammal TTS Exposures from Coordinated ULT Active Sonar Activities Under Alternative 2

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	13	13	34	32	7	7	5	5	137	143	100	94	0	0	0	0	0	0	0	0
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	10	10	25	17	10	11	15	11	168	215	162	145	0	0	0	0	1	0	1	1
Clymene dolphin	1	1	2	2	1	1	2	2	19	19	19	19	0	0	0	0	0	0	0	0
Common dolphin	22	22	54	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	2	2	2	2	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	2	2	4	4	3	3	3	3	40	40	39	39	0	0	0	0	0	1	1	1
Pilot whales	3	3	7	5	1	1	2	2	42	51	51	43	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso’s dolphin	1	1	2	2	0	0	2	0	36	45	47	35	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	2	2	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	2	0	2	1	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-31. Estimated Marine Mammal TTS Exposures from Coordinated ULT Active Sonar Activities Under Alternative 3

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	12	12	31	31	12	12	10	10	272	272	176	176	0	0	0	0	0	0	0	0
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	3	3	7	7	11	11	13	13	366	335	303	303	0	0	0	0	1	0	1	1
Clymene dolphin	1	1	2	2	2	2	2	2	22	22	20	20	0	0	0	0	0	0	0	0
Common dolphin	5	5	17	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	2	2	2	2	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	2	2	5	5	3	3	4	4	47	47	42	42	0	0	0	0	0	1	0	0
Pilot whales	2	2	4	4	2	1	2	2	56	51	59	59	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso’s dolphin	1	1	2	2	2	2	2	2	49	49	43	43	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	7	7	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	2	0	2	1	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-32. Estimated Marine Mammal TTS Exposures from Strike Group Active Sonar Activities Under the No Action Alternative

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	39	39	110	110	51	51	53	53	66	66	44	44	0	0	0	0	67	0	0	45
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	14	14	39	39	81	70	103	103	260	256	238	238	0	0	0	0	119	0	0	89
Clymene dolphin	1	1	4	4	9	9	12	12	17	17	19	19	0	0	0	0	59	0	0	47
Common dolphin	15	15	57	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	3
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	1	1	1	1	2	2	2	2	0	0	0	0	3	0	0	2
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	9
Pantropical spotted dolphin	3	3	8	8	20	20	25	25	37	37	40	40	0	0	0	0	382	0	0	301
Pilot whales	5	6	15	15	15	13	20	20	61	53	69	69	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1
Risso’s dolphin	3	3	8	8	10	10	13	13	39	39	36	36	0	0	0	0	11	0	0	9
Rough-toothed dolphin	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	6	0	0	4
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	6
Sperm whale*	1	2	3	3	0	1	1	1	1	1	2	2	0	0	0	0	3	0	0	2
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	161	0	0	128
Striped dolphin	28	28	71	71	0	0	0	0	0	0	0	0	0	0	0	0	32	0	0	26
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	1	1	0	1	1	1	1	2	2	2	0	0	0	0	2	0	0	1
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	1	0	1	1	2	0	2	1	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-33. Estimated Marine Mammal TTS Exposures from Strike Group Active Sonar Activities Under Alternative 1

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	29	29	76	76	45	45	35	35	73	73	51	51	0	0	0	0	32	0	0	26
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	21	21	55	55	60	65	65	65	117	85	107	107	0	0	0	0	61	0	0	48
Clymene dolphin	1	1	3	3	10	10	11	11	18	18	19	19	0	0	0	0	58	0	0	46
Common dolphin	18	18	47	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	1	1	1	1	2	2	2	2	0	0	0	0	3	0	0	2
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	9
Pantropical spotted dolphin	3	3	6	6	20	20	24	24	37	37	39	39	0	0	0	0	430	0	0	304
Pilot whales	6	7	15	15	8	8	9	9	39	36	41	41	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1
Risso’s dolphin	1	1	2	2	2	2	2	2	28	28	27	27	0	0	0	0	9	0	0	7
Rough-toothed dolphin	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	7	0	0	5
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	6
Sperm whale*	1	1	2	2	1	1	1	1	1	1	1	1	0	0	0	0	2	0	0	2
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81	0	0	64
Striped dolphin	2	2	7	7	0	0	0	0	0	0	0	0	0	0	0	0	26	0	0	21
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	2	0	0	1
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	1	0	1	1	2	0	2	1	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-34. Estimated Marine Mammal TTS Exposures from Strike Group Active Sonar Activities Under Alternative 2

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	13	13	34	32	7	7	5	5	137	143	100	94	0	0	0	0	0	0	0	0
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	10	10	25	17	10	11	15	11	168	215	162	145	0	0	0	0	1	0	1	1
Clymene dolphin	1	1	2	2	1	1	2	2	19	19	19	19	0	0	0	0	0	0	0	0
Common dolphin	22	22	54	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	0	0	0	0	2	2	2	2	0	0	0	0	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pantropical spotted dolphin	2	2	4	4	3	3	3	3	40	40	39	39	0	0	0	0	0	1	1	1
Pilot whales	3	3	7	5	1	1	2	2	42	51	51	43	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Risso’s dolphin	1	1	2	2	0	0	2	0	36	45	47	35	0	0	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperm whale*	0	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped dolphin	2	2	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	0	0	0	0	2	0	2	1	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-35. Estimated Marine Mammal TTS Exposures from Strike Group Active Sonar Activities Under Alternative 3

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	26	26	65	65	44	44	39	39	74	74	49	49	0	0	0	0	56	0	0	39
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	6	7	16	16	67	63	78	78	245	235	228	228	0	0	0	0	140	0	0	107
Clymene dolphin	1	1	3	3	10	10	12	12	18	18	19	19	0	0	0	0	59	0	0	47
Common dolphin	5	5	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	3
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	0	0	0	0	1	1	1	1	2	2	2	2	0	0	0	0	3	0	0	2
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	9
Pantropical spotted dolphin	3	3	7	7	20	20	24	24	37	37	40	40	0	0	0	0	352	0	0	269
Pilot whales	4	4	9	9	14	8	17	17	61	53	69	69	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1
Risso's dolphin	2	2	4	4	13	13	14	14	39	39	36	36	0	0	0	0	15	0	0	12
Rough-toothed dolphin	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	1	0	0	1
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	6
Sperm whale*	1	1	2	2	0	1	1	1	1	1	2	2	0	0	0	0	2	0	0	2
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	161	0	0	128
Striped dolphin	11	11	23	23	0	0	0	0	0	0	0	0	0	0	0	0	45	0	0	35
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	0	0	0	0	1	1	1	1	1	2	2	2	0	0	0	0	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	0	0	0	0	1	0	1	1	2	0	2	1	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-36. Estimated Marine Mammal Behavioral Exposures for ULT, RDT&E, and Maintenance Active Sonar Activities Under the No Action Alternative

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	8734	8734	30901	30901	5874	5874	9738	9738	34718	34722	41963	41963	1272	1266	6239	6239	1584	1584	1993	1993
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	1150	1150	9077	9077	0	0	0	0
Bottlenose dolphin	2934	3088	10017	10017	7401	6531	14291	14291	65060	64957	89217	89217	1539	1509	6549	6372	2001	1442	2317	2317
Clymene dolphin	481	481	1349	1349	801	801	1550	1550	3224	3224	4981	4981	0	0	0	0	182	182	193	193
Common dolphin	3409	3409	16477	16477	16	16	26	26	0	0	0	0	4044	4044	19737	19737	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	11	12	12
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	8	8
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Kogia spp.	46	46	128	128	76	76	147	147	306	306	473	473	41	41	169	169	2	2	3	3
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	36	38	38
Pantropical spotted dolphin	1008	1008	2824	2824	1677	1677	3243	3243	6747	6748	10425	10425	896	896	3687	3687	526	537	633	633
Pilot whales	1190	1530	3939	3939	1292	1084	2591	2591	8605	7705	14560	14560	4251	2119	9003	7069	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	6	6
Risso’s dolphin	680	680	2288	2288	975	975	1842	1842	7203	7203	10548	10548	1518	1518	7762	7762	21	21	24	24
Rough-toothed dolphin	22	22	61	61	36	36	70	70	146	146	225	225	0	0	0	0	40	40	43	43
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	25	27	27
Sperm whale*	289	338	925	925	26	35	59	59	132	124	292	292	135	211	2479	1543	5	5	6	6
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	185	185	252	252
Striped dolphin	7626	7626	23125	23125	5	5	11	11	0	0	0	0	8979	8979	37706	37706	29	29	39	39
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	284	284	1425	1425	0	0	0	0
Beaked whale	82	85	235	235	38	64	78	78	167	208	310	310	159	184	712	717	2	1	1	1
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	5127	5199	70366	70366	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Fin whale*	6	6	23	23	0	0	0	0	0	0	0	0	106	106	292	292	0	0	0	0
Humpback whale*	84	0	172	86	132	0	198	99	524	0	634	317	76	12	372	236	0	0	0	0
Minke whale	3	3	6	6	5	5	7	7	18	18	22	22	18	18	95	95	0	0	0	0
North Atlantic right whale*	9	0	7	26	6	0	4	14	85	0	0	189	51	13	21	138	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	298	175	105	449	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	674	674	3213	3213	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	761	3	5881	5881	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-37. Estimated Marine Mammal Behavioral Exposures for ULT, RDT&E, and Maintenance Active Sonar Activities Under Alternative 1

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	6488	6488	20914	20914	3470	3470	5044	5044	22019	22019	26933	26933	2314	2314	5938	5938	515	515	511	511
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	4	4	19	19	0	0	0	0
Bottlenose dolphin	4866	5078	15434	15434	5699	5987	10683	10683	28758	23325	40833	40833	2354	1818	9812	9823	1141	752	1128	1128
Clymene dolphin	539	539	1252	1252	765	765	1476	1476	2838	2838	4706	4706	0	0	0	0	178	178	189	189
Common dolphin	9051	9051	25929	25929	0	0	0	0	0	0	0	0	8091	8091	36911	36911	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	11	11	11
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7	8	8
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Kogia spp.	51	51	119	119	73	73	140	140	270	270	447	447	55	55	219	219	2	2	3	3
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	35	38	38
Pantropical spotted dolphin	1128	1128	2620	2620	1602	1602	3089	3089	5941	5941	9850	9850	1207	1207	4822	4822	415	523	609	609
Pilot whales	1493	1746	4562	4562	759	797	1548	1548	6167	6163	10522	10522	3245	1989	5467	5164	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5
Risso's dolphin	290	290	846	846	105	105	191	191	5367	5367	8590	8590	1478	1478	6223	6223	17	17	20	20
Rough-toothed dolphin	24	24	57	57	35	35	67	67	128	128	212	212	0	0	0	0	32	32	32	32
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	25	26	26
Sperm whale*	233	246	700	700	34	46	76	76	69	82	139	139	182	247	956	819	4	5	5	5
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	110	110	149	149
Striped dolphin	921	921	2716	2716	2	2	4	4	0	0	0	0	17277	17277	67280	67280	27	27	36	36
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	308	308	1345	1345	0	0	0	0
Beaked whale	42	33	111	111	11	21	23	23	92	135	163	163	52	59	205	206	1	1	1	1
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	7	0	11	11	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Fin whale*	12	12	25	25	0	0	0	0	0	0	0	0	78	78	113	113	0	0	0	0
Humpback whale*	93	0	160	80	127	0	189	94	467	0	599	299	88	3	357	179	0	0	0	0
Minke whale	3	3	6	6	4	4	7	7	16	16	21	21	8	8	13	13	0	0	0	0
North Atlantic right whale*	9	0	5	17	0	0	0	0	34	0	0	76	38	6	0	13	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	154	195	113	282	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	360	360	356	356	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	251	3	247	247	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W – Winter

Table H-38. Estimated Marine Mammal Behavioral Exposures for ULT, RDT&E, and Maintenance Active Sonar Activities Under Alternative 2

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	6488	6488	20914	20135	3470	3470	5007	5044	22019	23044	28400	26933	2314	2314	5938	5938	515	515	511	511
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	4	4	19	19	0	0	0	0
Bottlenose dolphin	4866	5078	15434	10188	5699	5987	13603	10683	28758	37131	45095	40833	2354	1818	9812	9823	1141	752	1128	1128
Clymene dolphin	539	539	1252	1252	765	765	1476	1476	2838	2838	4706	4706	0	0	0	0	178	178	189	189
Common dolphin	9051	9051	25929	19421	0	0	0	0	0	0	0	0	8091	8091	36911	36911	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	11	11	11
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7	8	8
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Kogia spp.	51	51	119	119	73	73	140	140	270	270	447	447	55	55	219	219	2	2	3	3
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	35	38	38
Pantropical spotted dolphin	1128	1128	2620	2620	1602	1602	3089	3089	5941	5941	9850	9850	1207	1207	4822	4822	415	523	609	609
Pilot whales	1493	1746	4562	3145	759	797	1641	1548	6167	7531	12732	10522	3245	1989	5467	5164	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5
Risso's dolphin	290	290	846	951	105	105	1627	191	5367	6742	11765	8590	1478	1478	6223	6223	17	17	20	20
Rough-toothed dolphin	24	24	57	57	35	35	67	67	128	128	212	212	0	0	0	0	32	32	33	33
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	25	26	26
Sperm whale*	233	246	700	582	34	46	72	76	69	89	158	139	182	247	956	819	4	5	5	5
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	110	110	149	149
Striped dolphin	921	921	2716	3027	2	2	4	4	0	0	0	0	17277	17277	67280	67280	27	27	36	36
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	308	308	1345	1345	0	0	0	0
Beaked whale	42	33	111	30	11	21	20	23	92	98	140	163	52	59	205	206	1	1	1	1
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	7	0	11	11	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Fin whale*	12	12	25	25	0	0	0	0	0	0	0	0	78	78	113	113	0	0	0	0
Humpback whale*	93	0	160	80	127	0	189	94	467	0	599	299	88	3	357	179	0	0	0	0
Minke whale	3	3	6	6	4	4	7	7	16	16	21	21	8	8	13	13	0	0	0	0
North Atlantic right whale*	9	0	5	16	**0**	0	**0**	**0**	34	0	0	76	38	6	0	13	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	154	195	113	282	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	360	360	356	356	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	251	3	247	247	0	0	0	0

* Model results indicate that the likelihood of exposure is so low that it is discountable

** Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-39. Estimated Marine Mammal Behavioral Exposures for ULT, RDT&E, and Maintenance Active Sonar Activities Under Alternative 3

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	6456	6456	18957	18957	5082	5082	7551	7551	37685	37685	45358	45358	687	683	3987	3987	1389	1389	1752	1752
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	1102	1102	9036	9036	0	0	0	0
Bottlenose dolphin	1606	1918	4557	4557	6238	5990	11500	11500	57104	54216	79242	79242	1148	1027	5494	5205	1900	1494	2209	2209
Clymene dolphin	545	545	1332	1332	839	839	1540	1540	3249	3249	5006	5006	0	0	0	0	178	178	192	192
Common dolphin	1807	1807	5963	5963	15	15	21	21	0	0	0	0	4447	4447	23114	23114	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	11	11	11
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7	8	8
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Kogia spp.	52	52	127	127	80	80	146	146	309	309	476	476	39	39	160	160	3	2	3	3
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	35	38	38
Pantropical spotted dolphin	1141	1141	2788	2788	1756	1756	3222	3222	6801	6801	10478	10478	841	841	3497	3497	388	472	573	573
Pilot whales	939	1197	2695	2695	1160	687	2257	2257	8624	7750	14582	14582	4232	1986	8880	7785	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5
Risso’s dolphin	456	456	1313	1313	1215	1215	2141	2141	7421	7421	10812	10812	1317	1317	7124	7124	22	22	27	27
Rough-toothed dolphin	25	25	60	60	38	38	70	70	147	147	226	226	0	0	0	0	32	32	33	33
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	25	26	26
Sperm whale*	198	206	555	555	26	35	56	56	132	124	292	292	115	197	2507	1516	4	5	5	5
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	190	190	263	263
Striped dolphin	4212	4212	11127	11127	5	5	11	11	0	0	0	0	6729	6729	31582	31582	39	39	53	53
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	261	261	1428	1428	0	0	0	0
Beaked whale	72	74	191	191	42	69	82	82	167	208	310	310	39	69	224	229	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	5067	5138	70593	70593	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Fin whale*	7	7	18	18	0	0	0	0	0	0	0	0	94	94	229	229	0	0	0	0
Humpback whale*	94	0	170	85	138	0	197	98	528	0	637	319	70	10	336	207	0	0	0	0
Minke whale	3	3	6	6	5	5	7	7	18	18	22	22	22	22	121	121	0	0	0	0
North Atlantic right whale*	11	0	8	27	6	0	3	13	86	0	0	191	45	11	17	91	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	232	152	58	274	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	687	687	3486	3486	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	746	3	5907	5907	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act
F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-40. Estimated Marine Mammal Behavioral Exposures from Coordinated ULT Active Sonar Activities Under the No Action Alternative

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	683	683	2417	2417	448	448	634	634	9573	9573	10185	10185	9	9	54	54	485	485	469	469
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	10	10	82	82	0	0	0	0
Bottlenose dolphin	219	222	786	786	613	538	1139	1139	20778	20541	25946	25946	14	13	59	57	902	775	874	874
Clymene dolphin	28	28	96	96	62	62	119	119	1076	1076	1556	1556	0	0	0	0	30	30	30	30
Common dolphin	328	328	1186	1186	1	1	2	2	0	0	0	0	36	36	178	178	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	3	3	9	9	6	6	11	11	102	102	148	148	0	0	2	2	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6
Pantropical spotted dolphin	58	58	200	200	129	129	249	249	2252	2252	3258	3258	8	8	33	33	23	44	43	43
Pilot whales	89	113	315	315	106	89	212	212	3136	2816	4910	4910	17	12	75	59	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Risso’s dolphin	52	52	181	181	79	79	142	142	2647	2647	3439	3439	13	13	70	70	3	3	3	3
Rough-toothed dolphin	1	1	4	4	3	3	5	5	49	49	70	70	0	0	0	0	31	31	30	30
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4
Sperm whale*	21	25	75	75	2	3	5	5	43	41	100	100	1	1	20	13	0	1	1	1
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	14	13	13
Striped dolphin	550	550	1877	1877	0	0	1	1	0	0	0	0	81	81	340	340	2	2	2	2
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	2	2	13	13	0	0	0	0
Beaked whale	6	6	19	19	3	5	6	6	59	71	105	105	1	2	6	6	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	41	42	615	615	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	1	1	2	2	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0
Humpback whale*	6	0	12	6	12	0	15	7	196	0	194	97	1	0	3	2	0	0	0	0
Minke whale	0	0	0	0	0	0	1	1	7	7	7	7	0	0	1	1	0	0	0	0
North Atlantic right whale*	0	0	0	1	1	0	0	1	27	0	0	45	0	0	0	1	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	4	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	2	2	25	25	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	4	0	50	50	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-41. Estimated Marine Mammal Behavioral Exposures from Coordinated ULT Active Sonar Activities Under Alternative 1

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	483	483	1675	1675	260	260	347	347	5869	5869	6385	6385	19	19	52	52	485	485	469	469
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	357	362	1226	1226	444	464	841	841	8419	6208	11304	11304	21	16	88	88	902	775	873	873
Clymene dolphin	30	30	91	91	57	57	117	117	991	991	1524	1524	0	0	0	0	30	30	30	30
Common dolphin	726	726	1886	1886	0	0	0	0	0	0	0	0	72	72	333	333	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	3	3	9	9	5	5	11	11	94	94	145	145	0	0	2	2	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6
Pantropical spotted dolphin	63	63	191	191	120	120	245	245	2074	2074	3189	3189	11	11	44	44	22	49	48	48
Pilot whales	110	127	367	367	60	63	126	126	2273	2244	3535	3535	12	13	44	43	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Risso's dolphin	22	22	65	65	8	8	15	15	1973	1973	2844	2844	13	13	56	56	3	3	3	3
Rough-toothed dolphin	1	1	4	4	3	3	5	5	45	45	69	69	0	0	0	0	31	31	30	30
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4
Sperm whale*	17	18	57	57	2	3	6	6	25	30	48	48	2	2	7	6	1	1	1	1
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	14	13	13
Striped dolphin	72	72	204	204	0	0	0	0	0	0	0	0	156	156	607	607	2	2	2	2
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	3	3	12	12	0	0	0	0
Beaked whale	3	2	9	9	1	2	2	2	34	50	55	55	0	1	2	2	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	1	1	2	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
Humpback whale*	7	0	11	6	12	0	15	7	181	0	189	95	1	0	3	2	0	0	0	0
Minke whale	0	0	0	0	0	0	1	1	6	6	7	7	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	1	0	0	0	0	10	0	0	16	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W – Winter

Table H-42. Estimated Marine Mammal Behavioral Exposures from Coordinated ULT Active Sonar Activities Under Alternative 2

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	483	483	1675	1613	260	260	344	347	5869	6254	6880	6385	19	19	52	52	485	485	469	469
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	357	362	1226	806	444	464	1079	841	8419	11401	12744	11304	21	16	88	88	902	775	873	873
Clymene dolphin	30	30	91	91	57	57	117	117	991	991	1524	1524	0	0	0	0	30	30	30	30
Common dolphin	726	726	1886	1365	0	0	0	0	0	0	0	0	72	72	333	333	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	3	3	9	9	5	5	11	11	94	94	145	145	0	0	2	2	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6
Pantropical spotted dolphin	63	63	191	191	120	120	245	245	2074	2074	3189	3189	11	11	44	44	22	49	48	48
Pilot whales	110	127	367	250	60	63	134	126	2273	2758	4282	3535	12	13	44	43	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Risso's dolphin	22	22	65	74	8	8	132	15	1973	2490	3917	2844	13	13	56	56	3	3	3	3
Rough-toothed dolphin	1	1	4	4	3	3	5	5	45	45	69	69	0	0	0	0	31	31	30	30
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4
Sperm whale*	17	18	57	47	2	3	6	6	25	32	54	48	2	2	7	6	1	1	1	1
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	14	13	13
Striped dolphin	72	72	204	229	0	0	0	0	0	0	0	0	156	156	607	607	2	2	2	2
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	3	3	12	12	0	0	0	0
Beaked whale	3	2	9	2	1	2	2	2	34	36	47	55	0	1	2	2	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	1	1	2	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
Humpback whale*	7	0	11	6	12	0	15	7	181	0	189	95	1	0	3	2	0	0	0	0
Minke whale	0	0	0	0	0	0	1	1	6	6	7	7	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	1	0	0	0	0	10	0	0	16	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act
F – Fall; Spr – Spring; Smr – Summer; W – Winter

Table H-43. Estimated Marine Mammal Behavioral Exposures from Coordinated ULT Active Sonar Activities Under Alternative 3

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	467	467	1509	1509	375	375	479	479	10292	10292	10968	10968	4	4	33	33	485	485	469	469
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	10	10	82	82	0	0	0	0
Bottlenose dolphin	109	122	359	359	511	487	924	924	18217	17143	23261	23261	10	8	49	47	900	775	872	872
Clymene dolphin	31	31	94	94	64	64	119	119	1078	1078	1559	1559	0	0	0	0	30	30	29	29
Common dolphin	162	162	403	403	1	1	1	1	0	0	0	0	40	40	208	208	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	3	3	9	9	6	6	11	11	102	102	148	148	0	0	1	1	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6
Pantropical spotted dolphin	66	66	198	198	134	134	248	248	2256	2256	3263	3263	8	8	32	32	20	42	42	42
Pilot whales	66	84	219	219	94	56	186	186	3141	2829	4915	4915	16	11	73	66	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Risso's dolphin	33	33	104	104	96	96	164	164	2707	2707	3503	3503	11	11	64	64	3	3	3	3
Rough-toothed dolphin	1	1	4	4	3	3	5	5	49	49	70	70	0	0	0	0	31	31	30	30
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4
Sperm whale*	14	14	45	45	2	3	5	5	43	41	100	100	1	1	21	13	0	1	1	1
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	14	13	13
Striped dolphin	290	290	922	922	0	0	1	1	0	0	0	0	61	61	285	285	2	2	2	2
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	2	2	13	13	0	0	0	0
Beaked whale	5	5	16	16	3	6	7	7	59	71	105	105	0	1	2	2	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	41	41	617	617	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	1	1	1	1	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0
Humpback whale*	7	0	12	6	13	0	15	7	197	0	194	97	1	0	3	2	0	0	0	0
Minke whale	0	0	0	0	0	0	1	1	7	7	7	7	0	0	1	1	0	0	0	0
North Atlantic right whale*	0	0	0	1	1	0	0	1	27	0	0	45	0	0	0	1	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	2	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	2	2	27	27	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	4	0	51	51	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-44. Estimated Marine Mammal Behavioral Exposures from Strike Group Active Sonar Activities Under the No Action Alternative

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	1314	1314	4901	4901	1714	1714	2535	2535	2392	2392	2521	2521	0	0	0	0	2741	0	0	2779
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	481	484	1812	1812	3590	3070	6869	6869	12775	12712	17218	17218	0	0	0	0	6267	0	0	6247
Clymene dolphin	42	42	153	153	365	365	803	803	796	796	1400	1400	0	0	0	0	3666	0	0	3610
Common dolphin	493	493	1857	1857	4	4	6	6	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	219	0	0	216
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	153	0	0	151
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0	0	28
Kogia spp.	4	4	15	15	35	35	76	76	76	76	133	133	0	0	0	0	159	0	0	160
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	729	0	0	718
Pantropical spotted dolphin	88	88	320	320	765	765	1681	1681	1666	1666	2929	2929	0	0	0	0	23831	0	0	23131
Pilot whales	185	222	691	691	676	564	1416	1416	2958	2581	5170	5170	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	105	0	0	103
Risso's dolphin	93	93	344	344	438	438	845	845	2061	2061	2687	2687	0	0	0	0	686	0	0	677
Rough-toothed dolphin	2	2	7	7	16	16	36	36	36	36	63	63	0	0	0	0	348	0	0	342
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	504	0	0	497
Sperm whale*	43	52	159	159	16	21	43	43	54	51	145	145	0	0	0	0	165	0	0	180
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9901	0	0	9794
Striped dolphin	977	977	3550	3550	3	3	10	10	0	0	0	0	0	0	0	0	2008	0	0	1982
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	9	10	32	32	20	34	45	45	61	80	127	127	0	0	0	0	105	0	0	51
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	9
Fin whale*	1	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	9	0	19	9	73	0	100	50	149	0	173	87	0	0	0	0	0	0	0	0
Minke whale	0	0	1	1	3	3	3	3	5	5	6	6	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	1	2	0	1	3	6	0	0	10	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-45. Estimated Marine Mammal Behavioral Exposures from Strike Group Active Sonar Activities Under Alternative 1

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	987	987	3567	3567	1642	1642	2096	2096	2828	2828	3042	3042	0	0	0	0	1998	0	0	1971
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	713	717	2575	2575	2396	2566	4475	4475	5455	3961	7610	7610	0	0	0	0	3778	0	0	3733
Clymene dolphin	43	43	146	146	367	367	801	801	828	828	1397	1397	0	0	0	0	3627	0	0	3572
Common dolphin	618	618	2231	2231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	217	0	0	214
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	152	0	0	149
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0	0	27
Kogia spp.	4	4	14	14	35	35	76	76	79	79	133	133	0	0	0	0	172	0	0	182
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	721	0	0	710
Pantropical spotted dolphin	89	89	306	306	768	768	1677	1677	1734	1734	2924	2924	0	0	0	0	26759	0	0	23412
Pilot whales	203	235	724	724	311	323	677	677	1879	1738	3103	3103	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	104	0	0	102
Risso's dolphin	29	29	105	105	55	55	117	117	1384	1384	2005	2005	0	0	0	0	579	0	0	571
Rough-toothed dolphin	2	2	7	7	17	17	36	36	37	37	63	63	0	0	0	0	407	0	0	400
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	499	0	0	491
Sperm whale*	32	34	113	113	19	24	54	54	32	36	66	66	0	0	0	0	129	0	0	159
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4974	0	0	4926
Striped dolphin	85	85	308	308	1	1	4	4	0	0	0	0	0	0	0	0	1600	0	0	1579
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	5	5	16	16	5	9	10	10	30	44	52	52	0	0	0	0	101	0	0	57
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	9
Fin whale*	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	10	0	18	9	73	0	99	50	152	0	173	86	0	0	0	0	0	0	0	0
Minke whale	0	0	1	1	3	3	3	3	5	5	6	6	0	0	0	0	0	0	0	0
North Atlantic right whale*	0	0	0	0	0	0	0	0	5	0	0	7	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W – Winter

Table H-46. Estimated Marine Mammal Behavioral Exposures from Strike Group Active Sonar Activities Under Alternative 2

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	485	485	1676	1614	261	261	345	348	5870	6256	6882	6386	19	19	52	52	486	485	469	470
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	358	363	1227	806	446	466	1081	842	8422	11405	12747	11307	21	16	88	88	903	775	873	875
Clymene dolphin	30	30	91	91	58	58	117	117	991	991	1524	1524	0	0	0	0	31	30	30	31
Common dolphin	727	727	1887	1365	0	0	0	0	0	0	0	0	72	72	333	333	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogia spp.	3	3	9	9	5	5	11	11	94	94	145	145	0	0	2	2	0	0	0	0
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6
Pantropical spotted dolphin	63	63	191	191	120	120	245	245	2074	2074	3190	3190	11	11	44	44	31	49	48	57
Pilot whales	111	127	367	251	60	63	134	126	2274	2759	4283	3536	12	13	44	43	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Risso's dolphin	22	22	65	74	8	8	132	15	1974	2491	3918	2844	13	13	56	56	3	3	3	3
Rough-toothed dolphin	1	1	4	4	3	3	5	5	45	45	69	69	0	0	0	0	31	31	30	30
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4
Sperm whale*	17	18	57	47	2	3	6	6	25	32	54	48	2	2	7	6	1	1	1	1
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	14	13	16
Striped dolphin	72	72	204	229	0	0	0	0	0	0	0	0	156	156	607	607	2	2	2	2
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	3	3	12	12	0	0	0	0
Beaked whale	3	2	9	2	1	2	2	2	34	36	47	55	0	1	2	2	0	0	0	0
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fin whale*	1	1	2	2	0	0	0	0	0	0	0	0	**0**	**0**	1	1	0	0	0	0
Humpback whale*	7	0	11	6	12	0	15	7	181	0	189	95	1	0	3	2	0	0	0	0
Minke whale	0	0	0	0	0	0	1	1	6	6	7	7	0	0	0	0	0	0	0	0
North Atlantic right whale*	**0**	0	**0**	1	**0**	0	**0**	**0**	10	0	0	16	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W - Winter

Table H-47. Estimated Marine Mammal Behavioral Exposures from Strike Group Active Sonar Activities Under Alternative 3

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Atlantic spotted dolphin	917	917	3176	3176	1365	1365	1794	1794	2548	2548	2686	2686	0	0	0	0	2604	0	0	2631
Atlantic white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottlenose dolphin	229	253	801	801	2981	2755	5566	5566	12189	11936	16623	16623	0	0	0	0	7906	0	0	7871
Clymene dolphin	46	46	151	151	374	374	800	800	796	796	1400	1400	0	0	0	0	3600	0	0	3564
Common dolphin	158	158	432	432	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	215	0	0	213
Fraser's dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	151	0	0	149
Killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0	0	27
Kogia spp.	4	4	14	14	36	36	76	76	76	76	133	133	0	0	0	0	177	0	0	175
Melon-headed whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	716	0	0	709
Pantropical spotted dolphin	96	96	316	316	783	783	1676	1676	1666	1666	2930	2930	0	0	0	0	21604	0	0	20630
Pilot whales	132	150	459	459	606	361	1260	1260	2959	2584	5171	5171	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	103	0	0	102
Risso's dolphin	54	54	181	181	517	517	951	951	2074	2074	2700	2700	0	0	0	0	913	0	0	904
Rough-toothed dolphin	2	2	7	7	17	17	36	36	36	36	63	63	0	0	0	0	87	0	0	86
Short-finned pilot whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	495	0	0	490
Sperm whale*	25	27	88	88	15	21	42	42	54	51	145	145	0	0	0	0	107	0	0	143
Spinner dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9856	0	0	9764
Striped dolphin	394	394	1321	1321	3	3	10	10	0	0	0	0	0	0	0	0	2735	0	0	2708
White beaked dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaked whale	7	9	24	24	22	36	47	47	61	80	127	127	0	0	0	0	21	0	0	4
Harbor porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryde's whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	9
Fin whale*	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Humpback whale*	10	0	18	9	74	0	99	50	149	0	173	87	0	0	0	0	0	0	0	0
Minke whale	0	0	1	1	3	3	3	3	5	5	6	6	0	0	0	0	0	0	0	0
North Atlantic right whale*	**0**	0	**0**	1	2	0	1	3	6	0	0	10	0	0	0	0	0	0	0	0
Sei whale*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Denotes species listed in accordance with the Endangered Species Act

F – Fall; Spr – Spring; Smr – Summer; W – Winter

H.7.1 Sea Turtle Exposures

Based on the best available scientific data, the sensitive hearing ranges for sea turtles range from 200 Hz up to 700 Hz, with their sensitivity falling off considerably below 200 Hz. The operational frequencies of the mid-frequency and high-frequency sonar systems used during training events would fall outside the optimal hearing range for sea turtles. Therefore, only impulsive sound from the explosive source sonobuoy (AN/SSQ-110A) was considered in the sea turtle exposure analysis. The following tables list the estimated sea turtle exposures for each training scenario and under each Alternative, displaying the seasonal exposures by exposure type (PTS or TTS). The analysis did not predict any potential for sea turtle mortalities.

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Table H-48. Estimated Sea Turtle PTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under the No Action Alternative

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter

1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-49. Estimated Sea Turtle PTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under Alternative 1

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter

1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-50. Estimated Sea Turtle PTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under Alternative 2

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter
1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-51. Estimated Sea Turtle PTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under Alternative 3

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter
1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-52. Estimated Sea Turtle PTS Exposures from Coordinated ULT Active Sonar Activities Under the No Action Alternative

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter

1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-53. Estimated Sea Turtle PTS Exposures from Coordinated ULT Active Sonar Activities Under Alternative 1

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter

1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-54. Estimated Sea Turtle PTS Exposures from Coordinated ULT Active Sonar Activities Under Alternative 2

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter
1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-55. Estimated Sea Turtle PTS Exposures from Coordinated ULT Active Sonar Activities Under Alternative 3

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter
1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-56. Estimated Sea Turtle PTS Exposures from Strike Group Active Sonar Activities Under the No Action Alternative

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter

1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.

2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-57. Estimated Sea Turtle PTS Exposures from Strike Group Active Sonar Activities Under Alternative 1

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter

1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.

2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-58. Estimated Sea Turtle PTS Exposures from Strike Group Active Sonar Activities Under Alternative 2

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter
1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-59. Estimated Sea Turtle PTS Exposures from Strike Group Active Sonar Activities Under Alternative 3

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter
1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class. .

Table H-60. Estimated Sea Turtle TTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under the No Action Alternative

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter

1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-61. Estimated Sea Turtle TTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under Alternative 1

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter

1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-62. Estimated Sea Turtle TTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under Alternative 2

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter

1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-63. Estimated Sea Turtle TTS Exposures from ULT, RDT&E, and Maintenance Active Sonar Activities Under Alternative 3

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter

1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast
2. This .category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-64. Estimated Sea Turtle TTS Exposures from Coordinated ULT Active Sonar Activities Under the No Action Alternative

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter

1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-65. Estimated Sea Turtle TTS Exposures from Coordinated ULT Active Sonar Activities Under Alternative 1

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter

1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-66. Estimated Sea Turtle TTS Exposures from Coordinated ULT Active Sonar Activities Under Alternative 2

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter
1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp’s ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp’s ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-67. Estimated Sea Turtle TTS Exposures from Coordinated ULT Active Sonar Activities Under Alternative 3

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter
1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp’s ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp’s ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-68. Estimated Sea Turtle TTS Exposures from Strike Group Active Sonar Activities Under the No Action Alternative

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter
1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-69. Estimated Sea Turtle TTS Exposures from Strike Group Active Sonar Activities Under Alternative 1

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter
1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-70. Estimated Sea Turtle TTS Exposures from Strike Group Active Sonar Activities Under Alternative 2

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter

1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

Table H-71. Estimated Sea Turtle TTS Exposures from Strike Group Active Sonar Activities Under Alternative 3

Species	Southeast												Northeast				Gulf of Mexico			
	VACAPES OPAREA				CHPT OPAREA				JAX/CHASN OPAREA				Northeast OPAREA				GOMEX			
	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W	Spr	Smr	F	W
Hardshell turtle[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kemp's Ridley turtle[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leatherback turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F – Fall; Spr – Spring; Smr – Summer; W – Winter

1. This category includes green, hawksbill, and unidentified hardshell species for all regions. It also includes Kemp's ridley sea turtles in the Gulf of Mexico, and may include extralimital occurrences of olive ridley turtles along the Atlantic coast.
2. This category does not include Kemp's ridley sea turtles in the Gulf of Mexico. They are included in the hardshell sea turtle class.

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APPENDIX I

SUMMARY FOR BIOLOGICAL EVALUATION

BIOLOGICAL EVALUATION FOR FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES SECTION 7 CONSULTATION FOR ATLANTIC FLEET ACTIVE SONAR TRAINING ACTIVITIES

This Biological Evaluation (BE) appendix serves to initiate formal consultation pursuant to Section 7 of the Endangered Species Act (ESA) with the National Marine Fisheries Service (NMFS). The U.S. Navy prepared this appendix to consolidate and provide information on the potential environmental effects to Federally-listed species associated with the implementing the proposed action analyzed in this Atlantic Fleet Active Sonar Training (AFAST) Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS).

I.1 PURPOSE AND NEED OF THE PROPOSED ACTION

The Navy seeks to designate areas where mid- and high-frequency active sonar and the improved extended echo ranging (IEER) system training, maintenance, and research, development, test, and evaluation (RDT&E) activities will occur within and adjacent to existing operating areas (OPAREAs), and to conduct these activities. These areas are located in the ocean along the East Coast and within the Gulf of Mexico. Navy OPAREAs include designated ocean areas near fleet concentration areas (i.e., homeports). OPAREAs are where the majority of routine Navy training and RDT&E takes place. However, the Navy's training exercises are not confined to the OPAREAs. Some training exercises or portions of exercises are conducted seaward of the OPAREAs, and a limited amount of active sonar use is conducted in water areas shoreward of the OPAREAs.

The purpose of the Proposed Action is to provide mid- and high-frequency active sonar and IEER system training for U.S. Navy Atlantic Fleet ship, submarine, and aircraft crews, as well as to conduct RDT&E activities to support the requirements of the Fleet Response Training Plan (FRTP) and stay proficient in ASW and MIW skills. The FRTP is the Navy's training cycle that requires naval forces to build up in preparation for operational deployment and to maintain a high level of proficiency and readiness while deployed. All phases of the FRTP training cycle are needed to meet Title 10 requirements.

The Navy's need for training and RDT&E is found in Title 10 of the United States Code (U.S.C.), Section 5062 (10 U.S.C. 5062). Title 10 U.S.C. 5062 requires the Navy to be "organized, trained, and equipped primarily for prompt and sustained combat incident to operations at sea." The current and emerging training and RDT&E activities addressed in the AFAST Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) are conducted in fulfillment of this legal requirement.

- Section 1.1, *Purpose,* of this AFAST EIS/OEIS provides further information on the purpose of the proposed action.

- Section 1.2, *Need*, provides further information on the need for the proposed action.

I.2 DESCRIPTION OF AFAST TRAINING ACTIVITIES

AFAST activities involve active sonar technology and the IEER system. The activities encompass maintenance and research, as well as RDT&E for active sonar activities similar to Atlantic Fleet training. These RDT&E activities have not been previously evaluated in other environmental planning documents. Training and RDT&E activities involving active sonar and the IEER system are collectively described as active sonar activities. The activities involving active sonar are not new and do not involve significant changes in systems, tempo, or intensity from past activities.

The systems used during training include active and passive systems mounted to surface ships and submarines or deployed by military patrol aircraft and helicopters. Other systems include torpedoes and acoustic device countermeasures.

- Section 2.1 of this AFAST EIS/OEIS, *ASW Training, MIW Training, and RDT&E Activities*, for an overview of the types of Navy training.
- Section 2.2, *Sonar Systems*, provides specific information on the systems employed during AFAST proposed activities.
- Section 2.3, *Representative Active Sonar Use and Acoustic Sources*, provides specific information about the active sonar training events and the usage of each system.

I.3 AFAST ACTIVITY LOCATIONS

Active sonar use was distributed throughout the AFAST Study Area based on actual reported usage. The U.S. Navy compiled the information and grouped similar events to form representative scenarios. The scopes of these activities, which are presented in the EIS/OEIS, also form the basis of the Section 7 ESA consultation. They Navy's preferred alternative is to continue conducting active sonar activities within and adjacent to existing OPAREAs rather than designate active sonar areas or areas of increased awareness.

- Refer to Section 2.7, *Preferred Alternative* of this EIS/OEIS for specific information on the proposed location of U.S. Navy active sonar training along the East Coast and Gulf of Mexico

I.4 STATUS OF LISTED SPECIES AND CRITICAL HABITAT

Sixteen species listed under the ESA potentially occur in the AFAST Study Area. Seven of these species are marine mammals, five are sea turtles, and four are fish. Table I-1 gives the names, status, and locations for these threatened and endangered species. Critical habitat has been designated for the North Atlantic right whale and the Gulf sturgeon.

Table I-1. ESA-listed Species Along the East Coast and in the Gulf of Mexico

Common Name	Scientific Name	ESA Status	Possible Location
North Atlantic right whale	*Eubalaena glacialis*	Endangered	East Coast
Humpback whale	*Megaptera novaeangliae*	Endangered	East Coast
Sei whale	*Balaenoptera borealis*	Endangered	East Coast
Fin whale	*Balaenoptera physalus*	Endangered	East Coast and Gulf of Mexico
Blue whale	*Balaenoptera musculus*	Endangered	East Coast
Sperm whale	*Physeter macrocephalus*	Endangered	East Coast and Gulf of Mexico
West Indian manatee	*Trichechus manatus*	Endangered	East Coast and Gulf of Mexico
Green sea turtle	*Chelonia mydas*	Threatened[1]	East Coast and Gulf of Mexico
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	East Coast and Gulf of Mexico
Loggerhead sea turtle	*Caretta caretta*	Threatened	East Coast and Gulf of Mexico
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered	East Coast and Gulf of Mexico
Leatherback sea turtle	*Dermochelys coriacea*	Endangered	East Coast and Gulf of Mexico
Shortnose sturgeon	*Acipenser brevirostrum*	Endangered	East Coast
Gulf sturgeon	*Acipenser oxyrinchus desotoi*	Endangered	Gulf of Mexico
Smalltooth sawfish	*Pristis pectinata*	Endangered	Gulf of Mexico
Atlantic salmon	*Salmo salar*	Endangered	East Coast

1. As a species, the green sea turtle is listed as threatened. However, the Florida and Mexican Pacific coast nesting populations are listed as endangered. It should be noted that green sea turtles found in the East Coast OPAREAs and eastern Gulf of Mexico might not all be from the Florida population.
Sources: DON, 2001, 2002a, 2002b, 2005, 2007a, 2007b, 2007c, and 2007d

Description, status, diving behavior, acoustic and hearing, and distribution information about Federally-listed species is contained in this AFAST EIS/OEIS in the following sections:

- North Atlantic right whale, Section 3.6.1.1.1
- Humpback whale, Section 3.6.1.1.2
- Sei whale, Section 3.6.1.1.5
- Fin whale, Section 3.6.1.1.6
- Blue whale, Section 3.6.1.1.7
- Sperm whale, Section 3.6.1.2.1
- West Indian manatee, Section 3.6.1.4.1
- Green sea turtle, Section 3.7.1.1
- Hawksbill sea turtle, Section 3.7.1.2
- Loggerhead sea turtle, Section 3.7.1.3
- Kemp's ridley sea turtle, Section 3.7.1.4
- Leatherback sea turtle, Section 3.7.1.6
- Shortnose sturgeon, Section 3.9.4.1

- Gulf sturgeon, Sections 3.9.4.2 and 3.9.4.3
- Smalltooth sawfish, Section 3.9.4.3
- Atlantic salmon, Section 3.9.4.4

Additional information pertaining to these species ESA status is contained in Section 3.6.2, *Threatened and Endangered Marine Mammals*; Section 3.7.2, *Threatened and Endangered Sea Turtles*; and Section 3.9.4, *ESA Listed Fish Species*.

I.5 DETERMINATION OF IMPACTS TO LISTED SPECIES AND CRITICAL HABITAT

The potential exists for direct and indirect effects to occur to threatened and endangered species, including marine mammals, sea turtles, and fish, as a result of exposure to in-water sound; entanglement with expended materials; direct strike with torpedoes, training targets, or sonobuoys; or vessel strike. The EIS/OEIS includes a quantitative analysis to determine the potential impacts to marine mammals and sea turtles associated with the use of active sonar and explosive source sonobuoys.

- Refer to Section 4.4.2, *Assessing Marine Mammal Response to Sonar*, through Section 4.4.8, *Acoustic Effects Analysis*, of this AFAST EIS/OEIS for detailed information on the acoustic methodology and analysis for marine mammals.
- Refer to Section 4.4.9, *Acoustic Effects Results for Marine Mammals*, contains acoustic exposure estimates for all species of marine mammals in the study areas including Federally-listed species.
- Refer to Section 4.4.10.3, *Potential Effects to ESA-Listed Species*, for specific information about the potential acoustic effects from AFAST activities to Federally-listed marine mammals.
- Refer to Section 4.4.11, *Other Potential Acoustic Effects to Marine Mammals*, for information on the potential for likelihood of prolonged exposure, potential for long-term effect, and sound in the water from ships and in-air sound.
- Refer to Section 4.5.2, *Explosive Source Sonobuoy*, for information on the acoustic methodology, analysis, and potential acoustic exposures to sea turtles.

Information about the potential effects to marine mammals and sea turtles from expended materials, direct strike, and vessel strike is contained within the body of the AFAST EIS/OEIS.

- Refer to Section 4.4.12, *Potential Nonacoustic Effects to Marine Mammals*, for detailed information on the potential marine mammal entanglement with expended materials; direct strike by a torpedo, exercise target, or sonobuoy; and the potential for ship strike.
- Refer to Section 4.5.3, *Potential Nonacoustic Effects to Sea Turtles*, for detailed information on the potential sea turtle entanglement with expended materials; direct strike by a torpedo, exercise target or sonobuoy; and the potential for ship strike.

Information on the potential acoustic impacts to fish from proposed active sonar and explosive source sonobuoys is contained within the AFAST EIS/OEIS.

- Refer to Section 4.7, *Marine Fish*, for detailed information on the potential acoustic impacts to fish.
- Refer to Section 4.7.3, *ESA-Listed Fish Species*, for details on the effects to ESA-Listed species.

Northeast North Atlantic right whale critical habitat is listed as such due to being some of the known primary feeding grounds. North Atlantic right whales primarily feed on zooplankton. Effects to zooplankton from the proposed active sonar and explosive source sonobuoys are contained within the AFAST EIS/OEIS in Section 4.9, *Marine Invertebrates*.

I.6 CUMULATIVE EFFECTS

Regulations for ESA Section 7 require that the U.S. Navy analyze cumulative effects during formal consultations. The Biological Opinion (BO) issued by NMFS in response to the federal action agency must consider these cumulative effects. Cumulative effects include the effects of future state, tribal, local and private actions, not involving federal actions that are reasonably certain to occur in the action area under consideration. Future federal actions that are unrelated to the Proposed Action are not considered because they require separate consultation pursuant to Section 7 of the ESA.

- Section 6.2, *Past and Present Actions*, provides a comprehensive, detailed description of the activities in the AFAST Study Area.
- Section 6.4, *Discussion of Cumulative Impacts Relative to the Proposed Action*, and Section 6.5, *Assessing Individual Past, Present, and Future Impacts,* discuss the cumulative effects of other actions added to the proposed AFAST activities.

I.7 MITIGATION MEASURES

The U.S. Navy has developed mitigation measures that would be implemented as part of the Proposed Action to protect ESA-listed species during AFAST training. The mitigations presented in Chapter 5, Mitigation Measures, of the EIS/OEIS address actions specific to active sonar training activities, use of explosive source sonobuoys, and vessel transits. Many of these mitigation measures are the same as the protective measures that have been in place for Navy at-sea training since 2004.

- Refer to Section 5.1, *Mitigation Measures Related to Acoustic Effects,* for mitigation measures used during active sonar training.
- Refer to Section 5.2, *Mitigation Measures Related to Explosive Source Sonobuoys,* for mitigation measures used during the deployment of explosive source sonobuoys.

- Refer to Section 5.3, *Mitigation Measures Related to Vessel Transit and North Atlantic Right Whales,* for mitigation measures used to reduce the likelihood of striking a north Atlantic right whale with a Navy vessel.
- Refer to Section 5.6, *Alternative Mitigation Measures Considered but Eliminated,* for a discussion of mitigation measures that were considered infeasible.

I.8 LIST OF PREPARERS

Refer to Chapter 7 of the AFAST EIS/OEIS for a list of document preparers**.**

I.9 REFERENCES

Refer to Chapter 8 of the AFAST EIS/OEIS for a list of references cited.

APPENDIX J

SUMMARY OF PUBLIC COMMENTS

SUMMARY OF PUBLIC COMMENTS

This appendix contains the comments received on this Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) during the 45-day public comment period, which began upon the release of the AFAST Draft EIS/OEIS on February 15, 2008 and ended on March 31, 2008. Comments on the AFAST Draft EIS/OEIS were received in the following forms: letters, written statements received at the public hearings, oral statements made during the public hearings, written statements submitted through a project fax line, and written statements submitted electronically through the project website.

J.1 RECEIPT OF COMMENTS

A total of 214 commenters (Table J-1) submitted 1,607 comments on the AFAST Draft EIS/OEIS.

Table J-1. Summary of Comments

Commenter Classification	Number of Commenters
Elected Officials	1
State Agencies	19
Federal Agencies	4
Associations/Organizations	28
Individuals	162
Total	**214**

J.2 IDENTIFICATION OF COMMENTS

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

E Elected officials
G State and Federal agencies
A Associations/organizations
I Individuals

These codes were assigned for the convenience of readers and to assist in the organization of the comments. Priority and/or special treatments were not given to any commenter. Within each of the categories, each submission was then assigned a number, which reflects the alphabetical listing of the individuals' last name.

All comments were reviewed and categorized based on the chapter to which the comment pertained. The comments were then further categorized into more specific sections, or resource areas.

J.3 RESPONSES TO COMMENTS

Tables J-2 through J-5 provide an alphabetic listing of all comments received on the AFAST Draft EIS/OEIS by elected officials; state and federal agencies; associations/organizations; and individuals, respectively. Responses to these comments were drafted and reviewed for scientific and technical accuracy and completeness. The Navy has included responses to all substantive comments received on the AFAST Draft EIS/OEIS in Table J-6, which is arranged according to AFAST Final EIS/OEIS Section number.

Where the AFAST EIS/OEIS was corrected factually, or the analyses were modified or supplemented with additional information, the comment response will so state and references the applicable section in the AFAST Final EIS/OEIS where the change was made. Each of the individually blocked letters that were received is enclosed electronically as part of the AFAST Final EIS/OEIS.

Please note that for all comments where no response was required other than "noted", a check mark (√) was used. In addition, for all comments that were received on other non-AFAST related environmental planning documents, where the comment could not be extended to the AFAST EIS/OEIS, the comment was marked not applicable, or "N/A". These comments, although logged, are not presented in Table J-6. Refer to the individual letters for these comments. Further, several comments were received on other environmental planning documents in which the comment could be extended to the AFAST EIS/OEIS. In these instances, italicized text is used to introduce the date and title of the respective letter.

Table J-2. Elected Officials

Commenter	Affiliation	Commenter Number
Katie Hall	Senator Marc Basnight, North Carolina Senate	E-001

Table J-3. State and Federal Agency

Commenter	Affiliation	Commenter Number
Chrys Baggett	North Carolina Clearinghouse	G-001
Daniel Basta	Office of Marine Sanctuaries	G-002
Susan Bromm	U.S. Environmental Protection Agency	G-003
Sarah Cooksey	State of Delaware Department of Natural Resources and Environment	G-004
Maria Dunn	North Carolina Wildlife Resources Commission	G-005
Michelle Duval	North Carolina Department of Environment and Natural Resources	G-006
Florida State Clearinghouse	State of Florida	G-007
David Fox	State of Connecticut	G-008
Gregory Hogue	Department of the Interior	G-009
Noel Holcomb	Georgia Department of Natural Resources	G-010
Ellie Irons	Commonwealth of Virginia	G-011
Barbara Jackson	Georgia State Clearinghouse	G-012
Linda Janey	Maryland State Clearinghouse	G-013
Ken Koschek	New Jersey Department of Environmental Protection	G-014

Table J-3. State and Federal Agency Cont'd

Commenter	Affiliation	Commenter Number
Kathleen Leyden	Maine State Planning Office	G-015
Mary Ann Poole	Florida Fish and Wildlife Conservation Commission	G-016
Timothy Ragen	Marine Mammal Commission	G-017
Jean Ricard	State of South Carolina, Office of State Budget	G-018
Janet Riddel	Mississippi Office Budget and Fund Management	G-019
Jim Rives	State of Louisiana	G-020
Stephen Rynas	North Carolina Department of Environmental and Natural Resources	G-021
State of Mississippi	State Clearinghouse for Federal Programs	G-022
Bettey Wingfield	Connecticut Bureau of Water Protection and Land Reuse	G-023

Table J-4. Associations/Organizations

Commenter	Affiliation	Commenter Number
Geraldine and Brandon Amoroso	National Parks Conservation Association	A-001
Susan Barco	Virginia Aquarium	A-002
Bernard Paul Buckley	Lowcountry Progressives	A-003
William Culler	Navy League	A-004
William Dudley	Navy League of the United States	A-005
Ruth Gabey	Maine Peace and Justice	A-006
Marsha Green	Ocean Mammal Institute	A-007
Kristina Jackson	Sierra Club	A-008
Ellis W. James	Sierra Club	A-009
Michael Jasny	Natural Resources Defense Council	A-010
Arthur Langrish	Cypress Sierra Group	A-011
Drew Martin	Sierra Club, Loxahatchee Group, South Florida	A-012
Nazen Merjian	Voices for Animals	A-013
Kristen Metzger	CSA International, Inc.	A-014
Christine Miller	North Carolina Coastal Federation	A-015
Susan Millward	Animal Welfare Institute	A-016
James Milne	PenderWatch & Conservancy	A-017
Debora Mosher	Norfolk Environmental Commission	A-018
Michelle Nowlin	Southern Environmental Law Center	A-019
William Rossiter	Cetacean Society International	A-020
Society for Animal Protective Legislation	Animal Welfare Institute	A-021
John R. Spruill	PenderWatch and Conservancy	A-022
Jeannine Stallings	Wyoming Advocates For Animals	A-023
Corwin Strong	Navy League	A-024
Pat Talley	Corpus Christi Public Libraries	A-025
Mason Weinrich	The Whale Center of New Englad	A-026
Taffy Lee Williams	New York Whale and Dolphin Action League	A-027
Russell Wray	Citizens Opposing Active Sonar Threats	A-028

Table J-5. Individuals

Full Name	Number	Full Name	Number
Paul Abney	I-001	Roberta Evres	I-046
Lorraine M. Allen	I-002	Marilyn Flynn	I-047
Dorothee Alsentzer	I-003	B. J. Fordham	I-048
Mary and Ulrich Alsentzer	I-004	Fay Forman	I-049
Anonymous (Brighton, MA)	I-005	Ellen Forwalk	I-050
Aaron Armstrong	I-006	Dorothy Foster	I-051
Frances Armstrong	I-007	Marion Foster	I-052
Ron Asher	I-008	Mary Edna Fraser	I-053
Maia Aytac	I-009	F. J. Gallagher	I-054
Dr. David Bain	I-162	Robert Marion Gantt	I-055
Weldon P. Barker	I-010	Alice Gardner	I-056
Stephanie Beard	I-011	Peter George	I-057
Margaret Becker	I-012	Joan Gerdsen	I-058
Douglas Beckmann	I-013	Yuriko Gessell	I-059
Rita E. Bell	I-014	Mark Giese	I-060
Darlene Black	I-015	Jonathan Gilman	I-061
Antonio Blasi	I-016	Joe Ginsburg	I-062
Sam Booher	I-017	Leslie A. Goller	I-063
Jean Bradley	I-018	Brian Charles Grabbatin	I-064
Barbara Brodie	I-019	Ronda and Robert Greaves	I-065
Mary and Maurice Brookhart	I-020	Gail J. Guzzo	I-066
Mary Hughes Brookhart	I-021	John Hall	I-067
Betty Brown	I-022	Henry Hammond	I-068
Alison Bruce	I-023	Carolyn W. Harding	I-069
Greg Burkov	I-024	Jana Harker	I-070
K. Bush	I-025	Laurie Lindemulder Harris	I-071
Patricia Cachopo	I-026	Patrick Hayes	I-072
Mr. and Mrs. James Carter	I-027	Bruxanne Hein	I-073
Elaine Charkowski	I-028	Susie Heywarrd	I-074
Eileen Christofi	I-029	Richard H. Hiers	I-075
Karen M. Clarke	I-030	Virginia Hinchman	I-076
Kathy Cornelius	I-031	David Hodge	I-077
Wendy L. Crisp	I-032	Amanda Hodges	I-078
Gayle Culucko	I-033	Ralph Hodges	I-079
Cori Currier	I-034	Jennifer Holmes	I-080
Judith Darrell-Kemp	I-035	Kathleen Houlihan	I-081
Susan Davis	I-036	Linda Hunt	I-082
Drucilla DeVan	I-037	Bebe Hutson	I-083
Dr. David D. Dow	I-038	Bridget Irons	I-084
David Brian Dunkleberger	I-039	Larry Issacs	I-085
Gloria Eddie	I-040	Dr. Wayne Johnson	I-086
Diane Edgecomb	I-041	Cindy Kearney	I-087
Jane Edsall	I-042	Barbara Keenan	I-088
Maureen A. Edwards	I-043	Gary Kirkland	I-089
Ben Ehrman	I-044	Denise Koelsch	I-090
Janice Emich	I-045	Sandra Krebs	I-091

Table J-5. Individuals Cont'd

Full Name	Number
Pamela Kristan	I-092
Donna and Larry Lascottle	I-093
Rosemary D. Lee	I-094
Herman Lenz	I-095
Mark C. Lieberman	I-096
M. Lind	I-097
Joseph J. Luczkovich	I-098
Dev Luthra	I-099
Aiden Lynch	I-100
Karin Malo	I-101
Sally Mann	I-102
Jim Mansfeld	I-103
Fleming Markel	I-104
Stacy Marony	I-105
Josh Martini	I-106
Emily Mason	I-107
Marcella Matthaei	I-108
Barb Matthes	I-109
Jeffrey Matthews	I-110
Lisa Mayo	I-111
N. McDonald	I-112
Judith McKellips	I-113
Thomas Megan	I-114
Haley Merrill	I-115
Karen Mills	I-116
Scott Mills	I-117
Burton Moore	I-118
Holly Moore	I-119
Kathleen Moore	I-120
Nancy Mroczek	I-121
Jon Noggle	I-123
Nancy Oden	I-124
Terry Patterson	I-125
Elisa Pearmain	I-126
Pat Pellmore	I-127
Joan Pittman	I-128
Caren Plaskon	I-129
Welling Pope	I-130
Jim Prutting	I-131
Edward Pupa	I-132
Octavia Randolph	I-133
Lani Roe	I-134
Elaine Ryan	I-135
Diane Sanderson	I-136
Marietta Scaltrito	I-137
Gerald Schulze	I-138
Ethan Shimony, PhD	I-139
Joe Shute	I-140
Peter Sirois	I-141
Sarah Skigen	I-142
Evelyn Staton	I-143
Tenga	I-144
Lexi Thomas	I-145
Mary and George Treavers	I-146
Fraces Tutt	I-147
Udubkivya Udubkivya	I-148
Felix Vescio	I-149
Elise Wallace	I-150
Jeff Warach	I-151
Helen Warren	I-152
Louise Whitney	I-153
Donna Worthington	I-154
Susan Wredman	I-155
Mary Yost	I-156
Bob Young	I-157
Marie Louis Zwicker	I-158
Name Witheld_Maine	I-159
Name Witheld_No State_031308	I-160
Name Witheld_No State_031408	I-161

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Table J-6. Summary of Comments and Responses

Comment Number	Commenter Number	Section Number	Comment	Comment Response
518	A-006	1	Please take note of the environmental destruction already on record from the use of underwater sonar devices. This planet cannot take any more thoughtless abuse. Please cancel your plans.	Please refer to section 1.2 on Why The Navy Needs to Train. Please refer to Chapter 3 for broad ranging discussions of the Affected Environment and see Chapter 6, Cumulative Effects.
272	A-009	1	If we're going to have increased training, and by that I mean the increased intensity of sonar, then we've got to step up our ability to be able to protect the marine mammals.	As stated on Page 1-1, "The activities involving active sonar described in this EIS/OEIS are not new and do not involve significant changes in systems, tempo, or intensity from past activities." Please refer to Chapter 5 for a description of mitigation and conservation measures.
1194	A-019	1	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* We encourage the Navy to tone down the rhetoric and answer some of the questions that have been raised about the purpose and need, such as why current training ranges, operated by the U.S. and its allies in other parts of the ocean, cannot continue to serve the Navy's training needs.	The Proposed Action does not involve the construction or designation of any new ranges. The Proposed Action will occur within and adjacent to existing operating areas.
153	I-018	1	First we had to worry about the marine mammals in the Pacific because of your sonar and now it's the Atlantic. Would you please look at the following suggestions.	√

Comment Number	Commenter Number	Section Number	Comment	Comment Response
154	I-025	1	I am writing in strong opposition to the Navy's plans to increase training exercises in the Atlantic Fleet Active Sonar Training Study Area (AFAST). The oceans are the home of ocean wildlife, and their safety must be taken into serious account. Fatalities to ocean wildlife from similar sonar exercises have been well documented. If the animals (including mammals, fish, and other wildlife) are not killed directly they often die later from deafness caused by sonar. How would we humans like it if someone generated excruciatingly loud sounds in our homes??	The proposed action does not involve significant changes in systems, tempo, or intensity from past actions. Please refer to Chapter 4 for the results of the environmental analysis. Also, please refer to the stranding report in Appendix E.
497	I-075	1	As a long-time Florida resident, I am concerned that the United States Navy is planning to experiment with mid-frequency active sonar during exercises in the Atlantic Ocean off the East Coast, and in the Gulf of Mexico.	As stated on Page 1-1, "The activities involving active sonar described in this EIS/OEIS are not new and do not involve significant changes in systems, tempo, or intensity from past activities."
1	I-086	1	No amount of strategic justification should permit the Navy to test sonar anywhere near Marine Mammals	Please refer to Chapter 1, Purpose and Need for the Proposed Action.
175	I-103	1	I am also opposed to your plans to formalize and increase training exercises into the massive Atlantic Fleet Active Sonar Training (AFAST) Study Area.	As stated in Chapter 1, the activities involving active sonar are not new and do not involve significant changes in systems, tempo, or intensity from past activities.
184	I-109	1	I am very much against the Navy's plan to increase training exercises into the Atlantic Fleet Active Sonar Training (AFAST) Study Area.	As stated in Chapter 1, the activities involving active sonar are not new and do not involve significant changes in systems, tempo, or intensity from past activities.
173	I-121	1	I am very demoralized to hear that the US Navy will be pursuing formalizing and increasing training exercises with MFA sonar on the Eastern seaboard. Please stop using MFA sonar in the ocean! It is so mean and irresponsible for life that lives, tries to live, as we all do on earth.	As stated in Chapter 1, the activities involving active sonar are not new and do not involve significant changes in systems, tempo, or intensity from past activities.
550	I-126	1	It is not needed and it is your duty to protect the creatures of the sea as well as people on the land.	Please refer to Chapter 1, Purpose and Need for the Proposed Action.
214	I-064	1.2	I urge you to reconsider extensive sonar testing.	Please refer to Section 1.2, Need, for additional information on the need to conduct active sonar activities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
750	I-091	1.2	Considering the fact that no navy in the world can compare with ours, it seems reasonable that we could scale back our training until a real threat materializes. It is possible that before that time, our present methods become obsolete.	Please refer to section 1.2 on Why The Navy Needs to Train.
1394	I-145	1.2	Why are we testing the sonar when we know that it like killing our sea animals?	Please refer to Section 1.2, Need for additional information on the need to conduct active sonar activities.
34	I-151	1.2	Before, I was speaking with Jene, he was telling me about the Title 10 5062 - I'm sorry, I forget the exact number, but that it was reviewed annually and how the Armed Forces need to be prepared and ready. And before, you talked about the adequacies or inadequacies of the current plan when you were speaking before. I think one very important thing is to - more important is threat assessment right now in terms of China. Being attacked by China is, I think, a very low possibility right now, versus Iran. So focusing more in areas like that and threat assessment, instead of training absolute war, when there is not exactly clear indications or clear threats on either side.	Please refer to Section 1.2, Need for additional information on the need to conduct active sonar activities.
1392	I-160	1.2	While everyone likes to think they are in support of national defense, how up to date and realistic are these sonar programs in relation to today's terrorism and warfare? Today, submarine warfare sounds like something from WW II. We suspect that attacks today will come from continents away via missiles or from inside the country from terrorists who don't mind dying to achieve their purpose. Perhaps there needs to be an objective study of just how valid the need is for this Active Sonar Training.	As described in Section 1.2.1, many nations continue to heavily invest in submarine technology, including designs for nuclear attack submarines, strategic ballistic missile submarines, and modern diesel electric submarines.
1393	I-134	1.2.1	Well, I would like to know why you are not using any other like infrared radiation that could also be used instead of sonar because sonar is killing some of the whales, and I am not sure why you are not using the infrared instead of the sonar.	As described in Section 1.2.1, modern, quiet submarines can be better detected using active sonar devices, which can detect threat submarines at distances outside the firing range of many modern-day torpedoes. Refer to Chapter 4 for the results of the environmental effects analysis.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1195	A-019	1.2.2	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* The Navy notes that the range could be used for "mine warfare" in the future but declines to discuss what that would entail. If mine warfare training is indeed needed, what is the expected time frame? Why is such training necessary now? Is such training conducted in other areas?	Refer to Section 1.2.2 for an explanation of the need for mine warfare training.
1199	A-019	1.2.2	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Given the international interest and concern that mines pose, it is reasonable, from a public standpoint, to assume such training would be warranted in the near future.	Refer to Section 1.2.2 for an explanation of the need for mine warfare training.
589	I-019	1.3	I am perplexed as to why the Navy continues to choose areas potentially harmful to marine life after courts have ruled against the Navy using MFA sonar in other areas, and when the Navy must have many alternatives.	Please refer to Sections 1.3 for a discussion of where training occurs and 1.6 for operational requirements, which require the use of certain geographic locations.
14	I-008	1.3	Why not develop other methods of detection and demonstrate our compassion for another species as they have demonstrated their compassion for us?	Please refer to Section 1.3, Why the Navy Trains, for additional information.
177	I-127	1.3	I do not understand the pig-headed stance on the new sonar. It is a potential weapon against you if in the wrong hands. We think in the public Naval training includes making a gentleman. You are wrong to use that weapon on the innocent within our food chain.	Please refer to Section 1.3 for a summary of the Navy's need to train.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1129	I-036	1.3.5	*All comments from this commenter are specific to USWTR. The comments were reviewed and the most relevant ones pulled out.* While the HSUS accepts the dictum that the Navy needs "to train as it fights", we do not find enough objective, substantiated evidence in this chapter to convince us that all of the proposed exercises per year are vital, that a shut down procedure (versus merely lowering power output) would be damaging to mission readiness, or that seasonal restrictions cannot be incorporated into the exercise schedule.	Refer to Section 1.3 for additional information.
457	A-026	1.4	There is legal precedent for the Navy to take such precautions. In recent court decisions in both Hawaii and in California, limitation were placed on where and when naval training exercises could take place because of marine mammals. Clearly the courts felt it is in the public's and the environment's interest to do everything possible to avoid damaging these important national resources. It is our hope that the AFAST training exercises will be conducted with this philosophy from this point forward, without the time or expense of legal tests of where they should or should not be allowed.	In the process of this EIS, the Navy has worked with NMFS to develop appropriate mitigation measures applicable to the AFAST study area.
1382	G-020	1.4	Pursuant to NOAA Regulations at 33 CFR §930.35(b), this proposed activity therefore is subject to review for consistency with the approved Louisiana Coastal Resources Program (LCRP). Review of the above referenced project will proceed upon receipt of the requested consistency determination.	See Appendix F for discussion of Negative Determination for the State of Louisiana.
381	I-154	1.4	Made even more horrific and outrageous by the fact that they are facilitated by the U.S. government's ruthless disregard, and circumvention of all animal protection laws, including the Marine Mammal Protection Act, and the endangered Species Act.	The National Marine Fisheries Service is a cooperating agency in the preparation of the EIS/OEIS. The Navy has initiated consultation with the National Marine Fisheries Service in accordance with the Endangered Species Act and Marine Mammal Protection Act.
1426	A-028	1.4.1	COAST believes that the DEIS was written in an attempt to build the case that the Navy AFAST activities will have no significant impact upon the environment. In other words, the Navy had already come to its "conclusion", and made its decision, and the DEIS was then written so as to build a case that would support that conclusion and decision. But this is quite the opposite approach of that required by NEPA.	No significant impact or harm is anticipated based on best available science. The document was prepared in accordance with NEPA.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1361	A-010	1.4.2	The Navy indicates that its analysis of "extraterritorial" activities, those activities that would take place outside U.S. territorial waters, was prepared under the authority of Executive Order 12114 rather than under NEPA…Not only is this position on the scope of review inconsistent with the statues...but, insofar as it represents a broader policy, it provides further indication that current operations off the east coast and Gulf of Mexico are likewise out of compliance...If, as we expect, activities currently taking place there have not received their due analysis in a prior environmental impact statement, then the Navy is operating in ongoing violation of NEPA.	The EIS/OEIS has received extensive legal review to ensure that current operations are in compliance all required Federal, state, and local regulations/laws.
155	I-027	1.4.3	We respectfully submit that the Navy should avoid extended(?) ocean noise when selecting training site. The Marine Mammal Protection Act specifically states that marine mammals shall not be "taken" without DOC permission.	The Navy is applying for an authorization pursuant to Section 101(a)(5)(A) of the Marine Mammal Protection Act.
731	I-146	1.4.3	According to the Marine Mammal Protection Act there should be no destruction or adverse modification of marine habitat.	The Navy will be consulting with NMFS on the analysis Marine Mammals and ESA.
1132	I-036	1.44	*All comments from this commenter are specific to USWTR. The comments were reviewed and relevant comments are included.* Not all the species that may qualify for listing under the ESA are in fact listed. The ESA does not (and frankly cannot, given the current state of scientific knowledge about marine species) list all the species and stocks that may qualify for the protections granted under the statute. The failure to account for uncertainty in both science and policy pervades the DEIS.	The Navy must comply with federal laws, such as the ESA, as they are written and does not have the authority to question the accuracy of them.
734	I-146	1.4.6	The Coastal Zone Management Act should protect the nation's coastal zone resources with the enforceable policies of NOAA.	The AFAST EIS/OEIS has developed consistency determination for all applicable states and have submitted them for agency review.
1369	A-010	1.4.9	Executive Order 13158, which sets forth protections for marine protected areas ("MPAs") nationwide. 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, including the national marine sanctuaries and the numerous other areas potentially affected by activities taking place along the East Coast and Gulf of Mexico.	Please see revised text in Section 1.4.9 and Chapters 3 and 4.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
772	G-011	1.4.9	Coordinate with the National Marine Fisheries Service, the Virginia Institute of Marine Science, the Virginia Marine Resources Commissions, the United States Fish and Wildlife Service (FWS), Virginia's Department of Conservation and Recreation's Division of Natural Heritage and DGIF to ensure the best course of action.	The Navy is currently consulting with NMFS in accordance with the ESA and MMPA. In addition, the Navy has welcomed comments from all coastal states' agencies..
847	G-015	1.4.9	In keeping with its objective of avoiding and minimizing potential adverse impacts, we also encourage the Navy to consult to the extent practicable with the Maine Department of Marine Resources (DMR), as Maine's lead agency regarding protected marine species, regarding the nature, timing and location of any active sonar or torpedo exercises proposed in or that may affect marine life in Gulf of Maine areas proximate to Maine, particularly feeding and other areas frequented by the northern right whale. This coordination could potentially involve the Navy's use of information available from DMR's large whale sighting website as well as the Navy's sharing of information to further develop and enhance the effectiveness of this tool. Still in its early stages, this GIS/web-based application is intended to enable commercial fishermen and other interested persons to access real-time sightings of large whales in the Gulf of Maine. See http://maine.gov/dmr/rm/whale/whale.html. Please contact Brian Swan (207-624-6573; brian.swan@maine.gov) regarding further consultation with DMR.	The Navy is consulting with the NMFS under ESA and MMPA to minimize impact to marine mammals. The Navy utilizes all available marine mammal sighting data and real-time global positioning information on various marine mammal species when planning for operational activities. Navy personnel also participate in North Atlantic Right Whale Consortium.
864	I-158	1.4.9	A growing number of governmental and scientific bodies have expressed concern over the environmental impacts of naval active sonars and other sources of intense underwater noise. Some of these are the Scientific Committee of the International Whaling Commission, the United Nations Law of the Sea deliberations, the European Union Parliament, and the IUCN-World Conservation Union.	Research and comments are welcome.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1180	A-019	1.5	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* As detailed in other documents, we are troubled by the apparent lack of coordination with other agencies, both federal and state, in the process of where to locate the USWTR. We encourage the Navy to correct this defect in the EIS process for AFAST.	The Undersea Warfare Training Range (USWTR) is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. As discussed in Section 1.5, the National Marine Fisheries Service has agreed to cooperating agency status. Other applicable state and federal agencies were notified of the intent to prepare the AFAST EIS/OEIS, as well as the availability of the AFAST EIS/OEIS. All comments from federal and state agencies are included.
1181	A-019	1.5	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* Evidence of meaningful coordination and cooperation with the National Marine Fisheries Service, and details of compliance with take-reduction plans and population recover plans for endangered and threatened species, is imperative.	As discussed in Section 1.5, the National Marine Fisheries Service has agreed to cooperating agency status.
807	A-015	1.6	The North Carolina Coastal Federation (NCCF) submits these comments on the Navy's Draft Environmental Impact Statement (DEIS) for its Atlantic Fleet Active Sonar Training program (AFAST). NCCF attended the scoping meeting for this program in 2007 and attended the public hearing held in Morehead City on March 11, 2008. We also gave public comment for the Navy's Undersea Warfare Training Range (USWTR) Draft Environmental Impact Statement, which identified coastal North Carolina as the preferred site. Further, we organized a public forum on the state of scientific knowledge about the impacts of sonar activities, tapping into the wealth of scientist expertise in N.C. The event was well-attended, though the Navy chose not to participate, and provided strong evidence that the public is concerned about the adverse impacts that naval sonar use can have on marine life and the coastal economic engines of fishing and boating.	Public participation into the development of the AFAST Draft EIS/OEIS has been encouraged throughout the process. Refer to Section 1.6 for additional information.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1054	A-027	1.6	Comments are written as a matter of fulfilling the NEPA process but who will assure the commentators that these will be read and responsibly acted upon by NMFS/NOAA and the Navy?	Refer to Appendix J for a matrix of response to comments.
1428	A-028	1.6	…if the public's ideas, comments, and concerns fall on deaf ears, if the federal agency will not seriously consider what the public has to offer, then the public's involvement ceases to have any real meaning, and the NEPA process becomes hollow, and is nothing but a sham. Unfortunately, this has been the case with regards to past Navy sonar EISs, and the Navy clearly has not changed course with regards to this DEIS.	Please refer to Section 1.6 for a summary of the actions taken to elicit public involvement.
1429	A-028	1.6	After attending the AFAST scoping meeting in New London, Connecticut on November 2, 2006, COAST submitted detailed written comments on issues we believed needed to be addressed in the AFAST DEIS. Upon reviewing this DEIS, we found that some of the specific points that COAST had raised had not been addressed.	All issues raised during the scoping process that are within the scope of the AFAST EIS/OEIS were considered. All comments received during the AFAST scoping period were uploaded onto the AFAST public website on Wednesday, April 2, 2008.
1430	A-028	1.6	COAST strongly urges that the Navy change its course when it comes to the writing of the Final EIS, by properly addressing the comments and concerns of the public.	In accordance with NEPA, all comments received during the public comment period (February 15 through March 31, 2008) on the AFAST EIS/OEIS were addressed. Please refer to Appendix J for additional information.
285	I-006	1.6	I see that's what you're doing now is trying to get public input and I would like to see more of that,	Please reference Section 1.6 for a summary of public involvement tasks associated with the AFAST project.
464	I-013	1.6	Whether or not the legal requirements for public review are met given the rationale for selecting the no action alternative involves unknown and undefined future training needs.	Please refer to information on defined known future training needs in Chapter 2. If future training were to significantly deviate from what has been described in the AFAST EIS/OEIS, the Navy would conduct a new environmental analysis.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
473	I-013	1.6	Comment 2 (This is a question really.) - Are the legal requirements for public review met? As future unknown and undefined, training needs are used as a rationale for selecting the no action alternative (paragraph 2.9 on page 2-83), can the legal requirements for a public review be met? Future training needs are not defined. How can a public review be made of requirements that are not defined? In effect future, undefined actions (e.g. elevated training in environmentally sensitive areas to meet an undefined future ASW training needs) can take place under the no action alternative, and there is no way to evaluate these actions because by their very nature their effects are contingent on unknown and undefined future events. Recommendation 4. Perform a legal review to determine if using future, undefined threats as a rationale for selecting an alternative meets legal requirements.	Future training assumptions are predicted and identified by the constraints that are already developed in the No Action Alternatives. If new activities or new requirements for current activities are identified, then new environmental analysis under NEPA would be conducted and therefore, public review would be included as part of the analysis process.
62	I-035	1.6	So as you continue, I think you should begin to address the public, let the public know that the EPA requires this, as citizens our Congress people have mandated this, and welcome the opportunity to together work for common goals.	Please refer to Section 1.6 for information on Public Involvement in the EIS process.
63	I-035	1.6	So that would be my concern tonight. I don't think we're on different pages about this, but I do think there is a different way of doing this so that the public - I think tonight this auditorium should have been filled with people, and I get a sense that you're concerned that it would be too filled with people. And so I would urge you to reconsider that, that many people simply want to be educated and together could work and come to some sort of understanding about what the Navy needs to do to have it done properly. Thank you.	Please refer to Section 1.4 for additional information on public involvement during the NEPA process.
64	I-035	1.6	Just briefly. Thank you. I think I would just like to add to my sense that the Navy reconsider how it approaches these hearings, these public hearing. The gentleman mentioned that it's been in the Federal Register. Most of us don't read the Federal Register. So, I think the question is who is your audience, who should it be? And certainly the general public is very interested in this area. Environmental organizations are as well. So I think you should consider more why you're doing this. You are mandated to do it, but I think beyond that, there is such an educational component to this, so that then people will support your activities and not have it be so adversarial. And by doing it in just this sort of public notice that's barely seen or the Federal register, you're not really reaching people who might in fact support your activities or give you additional worthwhile comments, as we've all done tonight.	Please refer to Section 1.4 for additional information on public involvement during the NEPA process.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
66	I-035	1.6	So, as you continue doing this, not simply because you're obligated to do it, but because in fact it serves a very useful function, I would urge you to sit down and reconsider how you are informing the public about these sorts of hearings. Thank you.	Please refer to Section 1.6 for additional information on public involvement during the NEPA process.
1135	I-036	1.6	I am concerned about the confusing number of public hearings. It's very hard to keep track of.	An announcement was published in the Federal Register on February 15, and display ads announcing the AFAST Public Hearings were published in 17 major newspapers at various times before the public hearings. In addition, a website was established to provide online access to the latest project information.
678	I-038	1.6	These dollar and FTE costs could have been avoided if the military had adopted a more conciliatory approach early on, working with the public and regulators.	NEPA provides a forum for public comment to generate involvement in federal decision making.
833	I-077	1.6	My feeling is that the Navy is attempting to institute a sonar test program with little notice and exposure.	As stated in Chapter 1, the activities involving active sonar are not new and do not involve significant changes in systems, tempo, or intensity from past activities. Please refer to Section 1.4 for a summary of the actions taken to elicit public involvement.
35	I-151	1.6	And my last point was that I think that hearings like this, if there is another public hearing, should be advertised or publicized more around colleges, because a lot of students - there are a lot of organizations around here that are very interested. And I just came here by happenstance; I'm very lucky.	An announcement was published in the Federal Register on February 15, and display ads announcing the AFAST Public Hearings were published in 17 major newspapers at various times before the public hearings. In addition, a website was established to provide online access to the latest project information.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
533	A-022	1.6.1	In Section 1.4.1 of the Environmental Impact Statement, it's revealed that the Navy has received 131 comment letters in response to the scoping sessions. We respectfully request that the Navy release - post to the - post to the Web all 131 letters immediately so everyone concerned about this matter can have the benefit of all letters that have been issued.	Scoping comments were uploaded to the project website on April 4, 2008.
179	A-017	1.6.2	Section 1.4.2, Page 1-13 of the DEIS states that as of December 16, 2006 you had received 131 letters in response to the 2006 public scoping meetings. We respectfully request that you immediately post an image of those comment letters on the web with appropriate indexing by the name of the organization submitting the comment, or the name of the individual if the comment was by an individual. We request that you not wait for a Freedom of Information Act request to provide this information. In response to a Freedom of information Act request the Navy posted on the web 866 comment letters it received in November and December 2005 and in January 2006 concerning the USWTR in Onslow Bight. We know that additional comment letters were sent within the comment period, but the Navy chose to post only 866 of them. Our reading of each of those comment letters revealed that 95% of the writers expressed opposition to the range or at least some level of concern with the lack of completeness of the DEIS. We have not received any response from the Navy on those letters. We respectfully request that all comment letters issued concerning the USWTR be formally considered as a comment on this DEIS as well, as was agreed by the Navy's representatives at the November 14, 2006 scoping meeting.	All comments received during the AFAST scoping period were uploaded onto the AFAST public website on Wednesday, April 2, 2008. An Undersea Warfare Training Range (USWTR) will not be construction under the AFAST proposed action. USWTR is a separate proposal being analyzed in a separate environmental planning document.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
535	A-022	1.6.2	At the scoping meeting for this project held here in Morehead in November 2006, the Navy told us that all of the comment letters submitted concerning the training range here at Onslow Bight would be considered as comment letters on this matter. Of course, we don't have access to the 131 letters, but since 866 doesn't go into 131, we have to conclude that those letters were not considered. We request that the Navy immediately incorporate all letters received concerning the sonar training range as official comment letters concerning this matter.	The proposed action described in the Atlantic Fleet Active Sonar Training EIS/OEIS will not involve the construction of a training range. All comments received during the public comment period for the 2005 USWTR DEIS/OEIS will be incorporated into the revised USWTR DEIS/OEIS. Where applicable, comments that pertain to AFAST will be incorporated. The Navy has continuously incorporated knowledge gained thorough past environmental analysis in developing environmental planning documents. The AFAST scoping letters have been made publicly available through the AFAST DEIS web site.
49	A-028	1.6.2	After I attended the AFAST scoping meeting in New London, COAST submitted detailed written comments about issues and concerns we believe needed to be considered in the EIS. Upon reviewing sections of the Draft EIS, it became apparent that some of the specific points COAST raised had not been addressed. This came as no surprise, as other sonar EISes have done the same. In fact, we notice a distinct pattern in which the Navy ignores, dismisses or avoids directly addressing some comments from members of the public, including many knowledgeable about the issues involved. Other comments are sometimes met with strained arguments, attempting to justify EIS assumptions and conclusions that are scientifically unsupportable. And we notice the failure of the EISes to look at crucial information which contradicts the case the Navy is so strenuously attempting to build, that being that their activities will have no significant impact upon the environment.	Please refer to Section 1.6.2 for an overview of the comments received during the scoping process.
51	A-028	1.6.2	Another principle at the very heart of NEPA is that of public participation. This promotes the fundamental principles of our democracy by allowing citizens a voice in the process. Scoping meetings, public hearings and comments are an important part of this process, but only a part. If the public's comments and concerns fall on deaf ears, then the public's involvement ceases to have any real meaning, and the NEPA process becomes hollow and is nothing but a sham. When this is the case, the only recourse left open to the public wishing to protect our shared environment is through the courts.	Please refer to Section 1.6.2 for an overview of the comments received during the scoping process and which were incorporated into the document.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
58	I-035	1.6.2	New England has many organizations involved in all sorts of environmental issues. I was struck by a couple of things. I thought the process of informing the public about this hearing would have been better. Speaking to your people outside, all of whom I thought were wonderful, professional, knowledgeable, I think there could have been a better way, perhaps in the future, of using the Internet, connecting with different organizations and not to being afraid of connecting with the public.	The AFAST project website is available at www.afasteis.gcsaic.com.
1144	A-019	1.6.2	Overall, the DEIS lacks objectivity and appears to be “subterfuge designed to rationalize a decision already made.” Metcalf v. Daley, 214 F. 3d 1135, 1142 (9th Cir. 2000). The DEIS acknowledges that the Navy has undertaken the activities it now seeks to evaluate for decades, and purports to analyze four alternatives for the continuation of its AFAST program.	Please refer to section 1.6.2 on public scoping process and the review of purpose and need in that public forum.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1150	A-019	1.7	The DEIS improperly segments analysis of the Navy's training programs in the Atlantic. The Navy currently is conducting three distinct environmental reviews for its training programs in the Atlantic. In addition to the environmental review of AFAST, the Navy is evaluating the construction and operation of the USWTR, for which its current preferred alternative is off the coast of North Carolina in the Cherry Point OPAREA. The Navy published a DEIS for this project in the fall of 2005. Since that time, the Navy has added another alternative for this project in the Charleston OPAREA off the coast of South Carolina, and plans to issue a DSEIS for this project within the next several months. The third environmental review the Navy is conducting is of the full array of training activities-including AFAST and explosives that are the subject of the above-referenced DEIS – in several of the Atlantic OPAREAS, including the Cherry Point and Charleston OPAREAS. The Navy's segmentation of environmental review for these connected activities violates the National Environmental Policy Act. CEQ regulations require the Navy to analyze proposed actions in the same EIS when it is the "best way to assess adequately the combined impacts of similar actions." 40 C.F.R. 1508.25	Courts have rejected similar NEPA segmentation challenges, upholding federal agencies' decisions to organize and plan their actions in a reasonable or rational manner. Segmentation allows an agency to avoid the NEPA requirement that an EIS be prepared for all major federal actions with significant environmental impacts by dividing an overall plan into component parts, each involving action with less significant environmental effects. Here, the AFAST EIS/OEIS document is not seeking to avoid the greater scrutiny and procedural requirements of an EIS, where an EIS/OEIS is being prepared and provides an in-depth analysis of the environmental consequences which may result from the Navy's use of active sonar along the east coast and in the Gulf of Mexico. The Tactical Training Theater Assessment and Planning (TAP) documents concerning the Virginia Capes, Charleston/ Jacksonville, and Navy Cherry Point Range Complexes and the Undersea Warfare Training Range (USWTR) document are all also EISs/OEISs. While the AFAST EIS/OEIS addresses the Navy's use of active sonar as described in the AFAST proposed action, other activities not similar to the Navy's use of sonar as described by the proposed action are addressed in separate documents (e.g., NAVSEA new ship construction sea-trials Overseas Environmental Assessment [OEA]). Agencies are permitted to address projects separately if they may logically be viewed in isolation; the question is whether the projects have independent

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				utility or logical termini. Under the regulatory guidelines, a project that bears some relationship to a larger undertaking can nevertheless be segregated as long as the project: (1) is of sufficient length to address environmental matters of a broad scope; (2) has independent utility or independent significance; and (3) will not restrict consideration of alternatives for other reasonably foreseeable actions. Courts have found that even a modest showing of independent utility is sufficient to rebut a claim of segmentation. The USWTR is addressed in a separate document because it has independent utility; USWTR concerns the construction and installation of an underwater range for MFAS ASW training, unlike the ASW training discussed in AFAST and the other types of naval training that takes place in the TAP documents. Furthermore, the chapters on cumulative effects in the USWTR EIS/OEIS and AFAST EIS/OEIS will capture the cumulative impacts of all past, present, and reasonably foreseeable direct and indirect effects from mid-frequency active sonar to the marine environment. With regard to the TAP documents concerning the Virginia Capes, Charleston/ Jacksonville, and Navy Cherry Point Range Complexes, the naval training events described in each document are geographically driven where not all training events can occur in each range due to unique training requirements (e.g., use of live ordnance by Navy tactical jets operating off a carrier vice inert at a nearby land range

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				can only be accomplished in the JAX OPAREA). In contrast, a primary factor for AFAST as a stand alone document is the fact that ASW for major exercises takes place over several OPAREAs. Also, ASW training is not dependent on the other types of naval training events. Moreover, the Navy is considering the cumulative impacts of all past, present, and reasonably foreseeable direct and indirect effects of the AFAST and TAP actions in the cumulative effects chapters in each of the documents.
443	A-022	1.7.2	The comments on the USWTR DEIS are equally applicable to the AFAST DEIS.	Applicable concerns were considered in the development of the AFAST EIS.
444	A-022	1.7.2	The subject DEIS does not mention our CHPP/ Further, the Navy has not issued any response to my comment letter of January 18, 2006.	The January 2006 letter was in response to the Undersea Warfare Training Range, which is being analyzed in a separate environmental planning document. Those comments will be addressed in the next iteration of the USWTR Draft EIS/OEIS. The Navy does not propose to conduct sonar activities (systems < 200 kHz) in state waters under the AFAST proposed action.

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567	I-007	1.7.2	3. Why isn't the AFAST and the USWTR in the same environmental study?	AFAST analyzes all training sonar operations on the East Coast and in the Gulf of Mexico. USWTR analyzes the installation of a fixed range and a concentration of some shallow water, mostly unit level, sonar operations in that area.
676	I-007	1.7.2	I was surprised at the lack of information on the USWTR in the AFAST Draft EIS/OEIS.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action.
116	I-055	1.5.2	I strongly protest the plan to build a permanent sonar testing station off the SC coast.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action.
117	I-064	1.7.2	I am concerned about proposals for a permanent sonar testing range off the coast of Charleston, SC.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action.
120	I-066	1.7.2	I live in the area of the Cape Romain National Wildlife Refuge on the South Carolina coast. We have a tremendous love for our native dolphins, manatees, whales, sea birds and turtles that live here with us, with some species survival already pressured by the coastal development. We also have a village shrimping industry that provides a livelihood to many members of this community. It is with some concern that I now read about a permanent sonar testing facility that will increase the sea noise up to 140 decibels.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action.
692	I-069	1.7.2	3.) Why is the Navy proposing a fixed sonar range (the USWTR) before answering critical questions about the Atlantic Fleet Active Sonar Training? And its reactions on ocean life?	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action.

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121	I-072	1.7.2	This project was scuttled in NC because of public outcry. The assumption seems to be that SC does not care about cruel and environmentally damaging activities. This is unfounded and insulting. Thirty years ago, when the connection between sonar and marine mammal deaths was unclear, we were dealing with an innocent mistake, an unforeseen set of consequences. At this point, the evidence is overwhelming. Sonar use kills whales and dolphins. If training is needed, the vast majority of it could no doubt be conducted with simulators. The US Navy has tried for years to deny the obvious impacts of sonar use and made no visible effort to mitigate them. Given that the greatest threats to our country are not even sovereign nations with access to submarine technology, I see no urgency that would outweigh the detriment here. At any rate, this activity could be conducted further from the coastline with fewer impacts. The plan as put forward is unacceptable.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action.
126	I-085	1.7.2	Until there is definitive proof that sonar poses no danger to marine life, especially whales, I strongly protest the placement of a sonar testing range off the coast of Charleston. Thank you for your consideration of this point of view.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action.
71	I-122	1.7.2	I strongly recommend against a sonar test range in this area.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action.
570	I-140	1.7.2	And this is the second or third meeting I've been to concern the sonar range off the beach. And I am against the sonar range proposal the way it is. I brought some stuff that I - is it all right to show to- to whoever? I got here late. Well, there's some pictures of stuff that I just about ran over and tore my boat up on. So-	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action.

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809	A-015	1.7.2	Next, the division of the three EIS processes needlessly confuses the public, which has indicated a strong concern about the Navy's sonar activities and their effects. The public hearing on the USWTR had an attendance of nearly 200 people who took time from their families and work to attend the meeting and the public comment process generated hundreds of comments, demonstrating the attention paid to this important issue. Many people believe that their comments for the USWTR count for the AFAST process as well, since the same concerns apply and thus did not attend the public meeting. The Navy should incorporate the all of the public comments from the USWTR process into the AFAST DEIS and those performing the revised analysis for the AFAST EIS should incorporate all of those suggestions into their assessment.	The Undersea Warfare Training Range (USWTR) is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be constructed under the AFAST proposed action. The AFAST Draft EIS/OEIS includes study areas that may be affected by the USWTR, but the AFAST activities are separate and not relying on the USWTR. For this reason, the comments, although common in theory, must remain separate between the two projects.
1050	A-027	1.7.9	The DEIS/OEIS fails to acknowledge harm to cetaceans beyond 1 k from the source, a ridiculously small area considering that the Navy's own documents, based on computer modeling, show that 300 miles from the source, given the right conditions, LFA Sonar (100-500 Hz) will have attenuated to only 140 dB.	The AFAST EIS/OEIS only addressed mid-frequency and high frequency sonar sources. Refer to Figures 5-1 and 5-2 for the ranges to effect.
319	A-018	2	My concern was when I looked at a newspaper article showing that there were three proposed sonar training ranges off our coast, living here, I'm very concerned about that.	The Proposed Action does not involve the construction of any ranges. The Proposed Action is for the Navy to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur and to conduct these activities. These activities will occur within and adjacent to existing Operating Areas. Please refer to Chapter 2 figures for additional information.

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329	A-018	2	The designated areas that you have that you want to do this training in, of course, are the ones in which the animals live. This is an additional stress to an already environmentally stressed out area.	As described in Chapter 2, the Proposed Action is for the Navy to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur and to conduct these activities. These activities are not new and do not involve significant changes in systems, tempo, or intensity from past activities. In addition, please refer to Chapter 4 for the results of the environmental analyses.
1179	A-019	2	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* Secondary/indirect impacts: We recognize there is a natural inclination to group activities in one location, to maximize resources and increase efficiency. Because of the multiple uses of each OPAREA, we encourage a review of all ongoing activities within each OPAREA, specifically including mine warfare training and combat-readiness exercises, marine/shore landings and air-craft landing practice.	As discussed in Chapter 2, the proposed action is for the Navy to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur within and adjacent to existing operating areas and to conduct these activities. Under the proposed action, the Navy will not conduct marine/shore landings or air-craft landing practices. The Navy is also preparing EISs for its range complexes which will address other training activities; the Navy considers the cumulative effects of all of its training in the range complex and AFAST EISs.
565	I-007	2	1. Why is the Navy doing piecemeal environmental studies on Sonar on the East Coast instead of a comprehensive environmental study on all Navy Sonar Training on the East Coast?	AFAST is a comprehensive analysis of Navy sonar training on the East Coast.

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388	I-046	2	I am a resident where marine life is abundant and studied by Mote Aquarium. I feel it is a huge tragedy to conduct any sonar test which will inevitably harm sea life. Our waters are already showing signs of extinction to some species and we can no longer afford the loss of any and all sea mammals. It would bring great satisfaction to us if all sonar test were deleted from any future plans by our US Navy. Thank you kindly in advance with this urgent matter.	As described in Chapter 2, the Proposed Action is for the Navy to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur and to conduct these activities. These activities are not new and do not involve significant changes in systems, tempo, or intensity from past activities. The Navy is legally required to be capable of deploying at a level of readiness necessary to respond to real world situation. As such, the skills associated with active sonar technology must be maintained.
315	I-123	2	First, it was the harmful US Navy (MFA) sonar studies which caused the loss of many species of whale. Now, we understand the US Navy has plans to conduct "AFAST" study areas.	As described in Chapter 2, the Proposed Action is for the Navy to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur and to conduct these activities. These activities are not new and do not involve significant changes in systems, tempo, or intensity from past activities. Per the analysis of effects to marine mammals (section 4.4), no significant impacts to any marine mammal species is anticipated.

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370	I-154	2	Marine life on the Eastern Seaboard may be at risk. On the heels of several successful lawsuits challenging the US Navy's use of mid-frequency active (MFA sonar because of its harmful effects on marine animals, plans are still underway to formalize and increase training exercises into the massive Atlantic Fleet Active Sonar Training (AFAST) Study Area.	As described in Chapter 2, the Proposed Action is for the Navy to designate areas where mid- and high-frequency active sonar and improved extended echo ranging system training, maintenance, and research, development, test, and evaluation activities will occur and to conduct these activities. These activities are not new and do not involve significant changes in systems, tempo, or intensity from past activities. In addition, please refer to Chapter 4 for the results of the environmental analyses.
1003	A-008	2.1	How many decades has the current level of sonar training been in effect? Is this level of training anticipated to continue indefinitely into the future? There does not appear to be any discussion of this in the draft EIS.	This type of training has been conducted for 40 years and is not expected to increase from current levels.
969	G-017	2.2	The 200+ kHz MIW sources do not themselves "dissipate:; rather, the energy or sound they produce is "dissipated," or, more correctly, the energy is "absorbed" or attenuated more rapidly than for lower frequency sounds due to the conversion of acoustic energy to mechanical energy that oscillates the molecular bonds between certain mineral salts dissolved in seawater (p. 2-7, lines 38-39).	Text has been corrected.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
385	I-005	2.2	No ultra low and/or ultra high frequency sonar to be used at sea by the United States Navy nor any other military service for any reason. This equipment includes the use of underwater explosives which kills and or maims sea life.	Only mid- and high-frequency active sonar will be used during active sonar activities. This includes sonar with a frequency that is equal to or greater than 1 kilohertz. Sonar is not an explosive source. Explosive source sonobuoys will be used, but the explosives are small, weighing 4.2 lbs each. Active sonar and explosive source sonobuoys were analyzed for the potential to affect marine life. Please refer to Section 2.2 and Appendix C for additional information on exercises using active sonar and explosive source sonobuoys. In addition, please refer to Chapter 4 for the results of the acoustic analysis.
970	G-017	2.2.1	Similarly, the frequencies of best hearing sensitivity are not "well below that level" (p. 2-8, lines 6-8) but rather are "within" the broader frequency "range" listed (10 Hz to 200 kHz).	Text has been corrected.
972	G-017	2.2.1	On page 2-9, lines 3-11, and elsewhere in the DEIS and appendices, the nominal source level used for the AN/SQQ-53C and similar mid-frequency sources is 235 dB re 1 micropascal at 1 meter SPL, but in the 2001 Bahamas Interim Report and elsewhere, the Navy has acknowledged a higher, though classified source level for the sonar when in the beam formed (not omnidirectional) mode. The DEIS should clarify whether using the two different source levels will make any difference in the results, and, if so, why the Navy chose to use the simplifying assumption of a constant 235 dB SPL for these sources. The consequences of using a nominal center frequency (3.5 kHz) rather than the full bandwidth of the system or a given signal should also be described. At these frequencies, a difference of 1 or 2 kHz can have dramatic consequences for the propagation of the signal.	Please refer to revised Table 2-1 and Table 4-5. Modeling accounts for various classified operating modes of the sonar systems. The effect of ocean environmental factors to propagation paths will significantly outweigh attenuation caused by a relatively minor change in source frequency,

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1359	A-010	2.2.1	…the Navy must describe source levels, frequency ranges, duty cycles, and other technical parameters relevant to determining potential impacts on marine life. The AFAST DEIS and its predecessors provide some of this information, indicating, for example, the nominal source level of the SQS-53 system, which is deployed on surface ships. But it fails to disclose sufficient information about helicopter dipping sonar, active sonobuoys, acoustic device countermeasures, training targets, or range sources that would be used during the exercise; and, even with respect to the SQS-53 system, refrains from giving any indication of platform speed, pulse length, repetition rate, beam widths, or operating depths...	This information is classified to protect national security.
1351	A-010	2.4	For somewhat less critical areas, the Navy has not attempted to identify "increased awareness" areas for Alternative 3 (or use areas for Alternatives 1 and 2) by category of exercise. Such an analysis is necessary, since certain exercises presumable would have greater flexibility in their operational requirements than others.	Please refer to Section 2.4, Operational Requirements and 2.6.2 Process for developing Alternatives. Typical training space requirements for each exercise type are described in Section 2.4. In developing alternatives, various required training spaces often overlapped. See Appendix D.
588	A-011	2.4	I urge you to look for an alternate site, which will have a less devastating impact. Surely you can find an area more distant from the Gulf Stream. Perhaps even the Great Lakes, where migrating whales, turtles and dolphins are not present.	Please refer to Sections 2.3 for a discussion of where training occurs and 2.4 for operational requirements, which require the use of certain geographic locations.
230	A-013	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
904	A-016	2.4	The US Navy (the Navy) should demonstrate a serious commitment to the protection of marine life by: a) ceasing actions involving the introduction of high intensity anthropogenic noise into the oceans in areas where there are known populations of marine animals, including designated protected areas, migration routes, and breeding, mating and feeding areas;	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
1090	A-016	2.4	areas where marine animals are known to congregate, such as known feeding and breeding areas, should be completely avoided	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
650	A-021	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
1006	A-023	2.4	I am further informed feeding and breeding areas, WHERE MARINE MAMMALS ARE KNOWN TO CONGREGATE, are not wholly off limits.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
76	I-010	2.4	Please do not hold your sonar exercises off the South Carolina coast!	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
352	I-012	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
744	I-014	24	Completely avoid areas where marine animals are known to congregate, feed or breed.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
185	I-018	2.4	Areas where the animals congregate should be avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.5 for a discussion of operational requirements associated with the proposed action.
386	I-022	2.4	I am writing to urge you to conduct naval operations that do not disturb the feeding and breeding areas of marine animals.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements

Comment Number	Commenter Number	Section Number	Comment	Comment Response
				associated with the proposed action.
204	I-025	2.4	Please end sonar tests in the habitat of ocean wildlife, and figure out another way to test sonar that doesn't take the lives and destroy the hearing of marine creatures.	Please refer to Section 2.4 for operational requirements, which require the use of certain geographic locations.
437	I-026	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
193	I-028	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
602	I-031	2.4	The Navy has not specified that it will avoid migration paths, breeding areas.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
1107	I-033	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas should be completely avoided by AFAST.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
814	I-037	2.4	To eliminate all harm to marine life from active sonar, use the ocean dead zones around our country for training. There is no legitimate excuse not to use the dead zones.	Oceanic dead zones are too small and infrequent to support the Navy's operational requirements for training. Refer to Section 2.4 for additional information.
263	I-040	2.4	areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided;	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
390	I-045	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
1543	I-060	2.4	Completely avoid areas where marine life congregates.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
577	I-062	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
620	I-070	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
124	I-074	2.4	Please do not use sonar in your exercises off the South Carolina coast. Thank You	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
506	I-075	2.4	To avoid operations in areas known to have marine animal populations, such as breeding and feeding areas or migration routes during migration seasons.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
338	I-076	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
611	I-079	2.4	They didn't seem to make much of a case in the information provided as to why this training has to be done in these specific environmentally critical areas such as the one off the coast here of South Georgia and North Florida where the less than 350 remaining right whales mate during the year. They didn't explain in the information that they provided why, even if they need to train in this specific area during the year, they cannot take a break during the three-to-four-month period when these whales are mating off the shore.	Other than transit and helicopter dipping sonar, the Navy does not propose to use sonar in designated right whale critical habitat in the Southeast. Helicopter transit distance requirements are discussed in Section 2.4. The need for year-round training is discussed in Section 2.4.1.2.
418	I-080	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
666	I-082	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
397	I-088	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
289	I-093	2.4	Feeding and breeding areas completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
722	I-094	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
111	I-095	2.4	Please stop doing Sonar operations in areas where marine animals/life are known to congregate, and stop doing such exercises at night or when visibility is poor.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action. Please refer to Chapter 5 for mitigation and conservation measures, specifically for night exercises and poor visibility.
139	I-097	2.4	Your AFAST threatens marine animals. STOP! The damage you are doing is in no way justified. Please.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action. In addition, please refer to Chapter 4 for the results of the environmental analysis.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1142	I-101	2.4	Exercises should not be conducted in areas where marine animals/life are known to congregate.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
294	I-112	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
307	I-113	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
149	I-118	2.4	As a local citizen, I would like the Department of the Navy to know that I am against them using the Charleston area to test sonar in our offshore waters. This form of sonar testing from all of the reading I have done on the subject poses a great threat to all cetaceans within several miles of the testing sight by subjecting them to unacceptable decibel levels.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action. In addition, please refer to Chapter 4 for the results of the environmental analysis.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
180	I-121	2.4	At the very least (poor outcome) do no exercises... avoid areas marine mammals congregate…	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
316	I-123	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
132	I-125	2.4	Please do not do this - not in Charleston - not anywhere that it will have an adverse affect on the marine life.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action. In addition, please refer to Chapter 4 for the results of the environmental analysis.
1578	I-130	2.4	Active sonar should not be used...in areas where marine mammals amass or travel such as breeding or feeding areas.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
793	I-135	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
225	I-137	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be avoided…	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
593	I-143	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
321	I-144	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
740	I-146	2.4	Marine mammal habitats such as Stellwagen Bank should be off limits entirely as well as any areas of feeding, breeding and migration. There must be other areas of the ocean where training can take place.	Activities will not be conducted in any National Marine Sanctuary. Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
1591	I-147	2.4	Nor in areas where marine animals are known to congregate.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
345	I-149	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
375	I-154	2.4	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided;	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
369	I-155	2.4	And feeding and breeding areas should be off limits to your project. Please consider my points. Thank you.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.4 for a discussion of operational requirements associated with the proposed action.
1347	A-010	2.5	First, the Navy declines to consider a reduction in the level of current training in the AFAST study area. Yet the Navy's assumption that exercises on the range must continue at their current tempo may well be an artifact of the navy's Tactical Training Theater assessment and Planning Program (TAP) process, which, in requiring separate environmental analysis of existing ranges and operating areas, seems to assume a priori that exercises cannot be reapportioned or alternative sites found. Moreover, the DEIS fails to analyze meaningfully whether a different mix of simulators and at-sea exercises would accomplish its aim. Instead, it rules out the increased use of simulators by stating, in a cursory few sentences, that they do not obviate the need for realistic training...Alternatives that combine greater use of simulators with fewer open-water exercises-or that develop a plan to maximize use of synthetic training-should have been analyzed, not dismissed out of hand.	Please see Sections 2.5 and 2.6 for alternatives analysis. Also, please see Sections 1.1 and 1.2 for discussion of Purpose and Need as well as Section 2.3 for a description of active sonar activities for research, development, testing and evaluation.
1352	A-010	2.5	…from the omission of reasonable alternative locations, the Navy fails to consider alternatives of any other kind. While the question of proper siting is crucial, it is not the only factor that must by considered in identifying other, less harmful ways to fulfill the Navy's purpose...many reasonable alternatives are missing from the Navy's analysis...the DEIS fails to include a range of mitigation measures among its alternatives...omission from the alternatives analysis renders that analysis inadequate.	The Navy considered a reasonable range of alternatives as discussed in Sections 2.5, 2.6 and 2.7. All alternatives would employ the mitigation described in Chapter 5.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1353	A-010	2.5	Fourth, the Navy's statement of purpose and need contains no language that would justify the limited set of alternatives that the Navy considers (or the alternative it ultimately prefers). Yet it is a fundamental requirement of NEPA that agencies preparing an EIS specify their project's "purpose and need" in terms that do exclude full consideration of reasonable alternatives..."The existence of a viable but unexamined alternative renders an environmental impact statement inadequate."	The Navy considered a reasonable range of alternatives as discussed in Section 2.5, 2.6 and 2.7. All alternatives would employ the mitigation described in Chapter 5.
1354	A-010	2.5	In sum, the DEIS omits from its analysis reasonable alternatives-with regard to both the siting of the range and other operational choices-that might achieve the navy's core aim while minimizing environmental harm. These omissions are all the more unreasonable given the long period during which the Navy has worked on this document and its predecessors. For these reasons, we urge the Navy to issue and EIS that adequately informs the public of all reasonable alternatives that would reduce adverse impacts to whales, fish, sea turtles, and other marine resources.	The Navy considered a reasonable range of alternatives as discussed in Sections 2.5, 2.6 and 2.7.
1372	A-010	2.5	Because the Navy’s 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).	The Navy considered a reasonable range of alternatives as discussed in Sections 2.5 and 2.6.
199	I-025	2.5	You need to test your sonar elsewhere, in a sonar tunnel or tank of some sort, similar in concept to wind tunnels that are used for aeronautical experiments - NOT in the habitat of our oceans whose wildlife is already under siege from pollution and over fishing.	Please refer to Section 2.4 for operational requirements and Section 2.5 for information related to alternatives considered but eliminated from further analysis.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
674	I-038	2.5	I recently saw a draft of comments prepared by Mary Frazer for the North Carolina Chapter - Sierra Club on the Navy's proposal to pursue the "No Action" alternative for its sonar training in the Gulf of Mexico and Atlantic coast of the U.S. Following the recent legal action off the California coast between environmentalists and the U.S. Navy on the sonar training restrictions put forward by the California Coastal Commission, I feel the Navy should consider an alternative strategy to training like they fight, which is the subject of my comments. Given the public concerns about the potential impacts of active sonar training on wild places (coastal ocean) and wild things (living marine, protected and natural trust resources), I feel the Navy would be well served by adopting a more cooperative approach with their opponents.	Please refer to Section 2.4 for operational requirements and Section 2.5 for information related to alternatives considered but eliminated from further analysis.
328	I-153	2.5	Please, do all in your power to minimize or even eliminate sonar testing. Our marine life is too precious to be scuttled into oblivion. Thank you for any attention you may give to this random experimentation. In the name of those who cannot speak for themselves.	As stated in Section 2.6, the Navy is legally required to be capable of deploying at a level of readiness necessary to respond to real world contingency situations. Refer to Section 2.6 for additional information.
1390	I-160	2.5	There is surely enough data available about sonar/radar and the physics thereof from practical experience as well as from laboratory experiments to extrapolate for standards of active sonar that these ocean wide practice/training events can be replaced. The use of satellite monitoring where Google Earth can actually zero in on someone in their driveway on their global maps would seem to make many Department of Defense routine procedures outdated.	Please refer to Section 2.5 for a discussion of alternatives considered but eliminated.
27	A-018	2.5.1	#4. I am urging the Navy to continue with its research but not go ahead with AFAST	Please refer to Section 2.5.1, Conduct No Active Sonar Activities.
313	I-008	2.5.4	Surely, the Navy with all its resources can confine testing to small areas at limited times and save this harmful technology for a Yes emergency were it necessary	As stated in Section 2.5.4, the training schedule is driven by the deployment schedule. In addition, the active sonar activities must be conducted in a realistic environment that meet requirements such as proximity to homeports and support facilities, water depths, and acoustic

Comment Number	Commenter Number	Section Number	Comment	Comment Response
				environments.
868	G-021	2.5.5	Section 2.7.5 (Altering the Tempo and Intensity of Atlantic Fleet Active Sonar Training) of the DEIS indicates that the “tempo and intensity” of operations are to remain the same. However, there may be operational changes that have not been disclosed that could have environmental effects. For example, will the Navy be using “new” sonar technologies that will be more powerful and/or operate at different frequencies than what is currently being used?	Any future developments will be subject to further NEPA analysis. As stated in Chapter 1, the activities involving active sonar are not new and do not involve significant changes in systems, tempo, or intensity from past activities.
872	G-021	2.5.5	If the Navy is proposing to use “new” sonar technology the environmental effects of the “new” technology on the environment, especially marine animals, could be substantially different from the currently used sonar technology. Section 1502.14 of the CEQA regulations requires that alternatives “should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public.” (Emphasis added.) Pursuant to Section 1502.14, if the Navy is proposing the use of “new" sonar technologies, DCM would request that a new alternative be developed to compare the currently used sonar technology with the “new” sonar technology to provide the public with a clear basis for the selection of the preferred alternative.	Any future developments will be subject to further NEPA analysis. As stated in Chapter 1, the activities involving active sonar are not new and do not involve significant changes in systems, tempo, or intensity from past activities.
1348	A-010	2.6	The Navy's refusal to adopt any meaningful geographic mitigation for the AFAST study area is unjustifiable and, indeed, outrageous.	Please see Sections 2.6 and Chapter 5.

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1292	A-028	2.6	While this DEIS does present four alternative, including the NO Action Alternative, Alternative 1, Alternative 2, and Alternative 3, none of these alternatives actually effectively avoids or minimizes adverse impacts, for all the reasons stated above in these comments. This can clearly be seen in the DEIS estimated numbers of exposures that will result in Level B and Level A harassment of marine mammals.	Please refer to Section 2.6, for information about action alternatives designed with a focus on avoiding certain species of concern.
919	G-017	2.6	The maps that were intended to indicate the substantive differences between the four alternatives (e.g., Figures ES-2 through 7) were not effective for that purpose and could be reduced in number and made more informative. Maps of the Navy's preferred alternative and Alternative 3 do not contain the same sonar training and exercise areas shown in maps of Alternatives 1 and 2, so it is not possible to determine where exercises might have been moved or how much available training space was lost or gained relative to the preferred alternative or to Alternative 3.	Multiple maps are necessary to show the full extent of the alternatives. A side-by-side comparison of alternative maps for the various geographic regions does show the differences in training space.
924	G-017	2.6	The extensive and largely redundant textual descriptions of each class of activity and where these occur (pages 2-44 through 2-78) do not help us understand what is gained, lost, or changed between alternatives and should be replaced by less text conveying more information of use in evaluating the alternatives.	To ensure that the Navy accurately depicts the activities which occur, we are required to use this format in fully describing each alternative. Please see Chapter 4 for analysis of alternatives.
478	I-013	2.6	Overall Recommendation. 7. The comparison of the no action alternative and alternative 3 should be repeated taking into consideration the following points. - The no action alternative should be modified to define levels and areas of future training. Particular attention should be paid to defining the level of allowed future training in environmentally sensitive areas.	This estimate is based on the best knowledge about Navy training. Navy training exercises occur over a large area, much greater than areas of increased awareness. Estimates were based on an average over the entire AFAST study area. If future training was substantially increased or actual effects are substantially different than described, the Navy would review its environmental analysis and employ adaptive management.

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479	I-013	2.6	To help define the levels and areas of allowed future training under the no action alternative, the acoustic effects model should be used to evaluate a range of options for training in environmentally sensitive areas. This modeling effort would give an idea of marine mammal takes under different postulated levels of training in environmentally sensitive areas that are possible in the future under the no action alternative.	This estimate is based on the best knowledge about Navy training. Navy training exercises occur over a large area, much greater than areas of increased awareness. Estimates were based on an average over the entire AFAST study area. If future training was substantially increased or actual effects are substantially different than described, the Navy would review its environmental analysis and employ adaptive management.
480	I-013	2.6	Once levels and areas of allowed future training are defined under this newly developed no action alternative, an estimate of the marine mammal takes associated with this new action alternative should be developed.	This estimate is based on the best knowledge about Navy training. Navy training exercises occur over a large area, much greater than areas of increased awareness. Estimates were based on an average over the entire AFAST study area. If future training was substantially increased or actual effects are substantially different than described, the Navy would review its environmental analysis and employ adaptive management.
481	I-013	2.6	Then another evaluation and selection between this newly developed no action alternative and alternative 3 should be performed. The new evaluation and selection would use the estimated marine mammal takes resulting from the now defined future levels and areas of training that would be allowed under the no action alternative. For this new evaluation, due consideration should be given to uncertainties in the data and models, and that all the alternatives considered meet the screening criteria for operational feasibility.	This estimate is based on the best knowledge about Navy training. Navy training exercises occur over a large area, much greater than areas of increased awareness. Estimates were based on an average over the entire AFAST study area. If future training was substantially increased or actual effects are substantially different than described, the Navy would review its environmental analysis and employ adaptive management.
727	I-091	2.6	Reading the Navy's printed material has not clarified our understanding. For example, we don't know what the 3 alternatives mean	Please refer to Section 2.6 for a discussion of each of the alternatives.

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908	G-017	2.6	To determine marine mammal exposure levels, the DEIS uses some sort of weighting function with five sets of marine mammal density data (i.e., beaked whales, right whales, sperm whales, all odontocetes, and all mysticetes). The actual process for using this data is not clear. On page 2-43, lines 41-42, the weighting process is described in a general way: "…beaked whale seasonal density graphics and exposure grids served as the primary data used to limit the placement of training area locations." The DEIS does not describe whether and to what extent other species were considered. On page 2-54, lines 1-15, the DEIS states that sperm whales and northern right whales were "specifically considered" although, beaked whales were the primary consideration. Here, too, the nature of that consideration and the relative weight assigned to conflicting or additive information about risk to right whales versus risk to sperm whales or beaked whales were not described.	All marine mammal density data was considered when identifying sonar training boxes. However, special consideration was given to species that are sensitive due to their endangered status or their sensitivity to sound in the water. Navy analysis was based on best-available science.
920	G-017	2.6	The differences between Alternative 1 and the four seasonal Alternative 2 options can be easily displayed on one map instead of five. We would still have difficulty determining how much training space is actually gained or lost or how that gain or loss translates into actual events lost, moved, or rescheduled, along with the associated costs of such changes. It is these latter considerations that are important for selecting an alternative, not the relative amount or placement of eligible training areas on the maps.	The Navy is not obligated to consider costs. No training events would be lost or rescheduled under any alternative.

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1130	I-036	2.6	*All comments from this commenter are specific to USWTR. The comments were reviewed and the most relevant ones pulled out.* The DEIS needs to build an ironclad case to justify the lack of any seasonal restrictions, which are a commonly used, or at least considered mitigation method for other noise-producing activities to avoid seasonal concentrations or migrations of marine life. One compelling reason for considering seasonal restrictions is the presence of the highly endangered North Atlantic right whale.	The Navy has performed a detailed analysis to develop its current alternatives. Of which Alternative 2 takes into account seasonality of marine mammal migrations. Refer to Section 2.6 for additional information.
1349	A-010	2.6	The Navy rules out Alternative 3 because the annual take numbers it implies are roughly comparable to those associated with the no-action alternative; but a closer examination of the numbers strongly suggests that the Navy's would-be "areas of increased awareness" were poorly chosen...the DEIS has not identified "increased awareness" areas in such a way as to lower harbor porpoise take. A similar point may be made about North Atlantic right whales, even though many areas of high concentrations are known and critical habitat has been defined...there is no justification for why some areas along the shelf break and shoreward of the Gulf Stream are included while others are not...the Navy must revisit Alternative 3 to heuristically identify areas whose exclusion would, indeed, effectively lower risks to vulnerable species and/or reduce the amount of overall take.	As discussed in the EIS/OEIS, in the southeast North Atlantic right whale critical habitat, activities could include object detection/navigational sonar training and maintenance activities for surface ships and submarines while entering/exiting ports located in Kings Bay, Georgia, and Mayport, Florida. In addition, helicopter dipping sonar would occur off of Mayport, Florida in the established training areas within the right whale critical habitat. In the northeast North Atlantic right whale critical habitat, a limited number of TORPEXes would be conducted in August through September when many North Atlantic right whales have migrated to the south. Under all alternatives, no sonar activities occur within 12 NM of shore with few exceptions. Harbor porpoises have an exceptionally low threshold for behavioral response (see criteria section); therefore, geographic differences in the alternatives do not substantially affect overall harbor porpoise exposures.

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1350	A-010	2.6	In addition, Alternative 3 makes exceptions for certain biologically critical areas that it has identified for exclusion. For example, after acknowledging the importance of "reducing[ing] potential exposures of endangered right whales during their critical calving and feeding activities," the Navy goes on to allow certain exercises in established critical habitat, including TORPEX exercises in the foraging grounds in the northeast and tracking activities in the breeding grounds in the southeast...Similarly, the Navy would allow major carrier strike grouped exercises in DeSoto Canyon in the Gulf of Mexico. Despite the Navy's claims, we believe the Navy has no viable operational justification for use of many of these critical areas.	No more than one strike group level event would occur in GOMEX annually. Also, refer to mitigation measures for North Atlantic Right Whales, including TORPEX mitigations. Only a limited number of TORPEXes would occur in a given year.
455	A-026	2.6	Hence, we should like to stress that creating and avoiding areas of heightened environmental concern should only be considered as additive to existing precautions to detect and avoid harm to marine mammals, and not in lieu of these important measures.	The mitigation measures will be used regardless of the alternative chosen.
932	G-002	2.6	Under DEIS/OEIS Alternative 3, the Navy would not conduct AFAST activities within sanctuaries and would also establish a 5 kilometer (km) buffer zone around each sanctuary in which activities would also not take place. However, in order to be effective, any buffer zone needs to be sufficiently wide to ensure that AFAST activities are unlikely to adversely affect sanctuary resources. The DEIS does not provide adequate information for the ONMS to evaluate, based on the nature of activities taking place adjacent to these buffer zones, whether the proposed 5 km buffer zone would ensure that AFAST activities are unlikely to affect, significantly or otherwise, sanctuary resources. Further, the DEIS does not describe, on a site-by-site basis, what training activities (if any) would occur in the proposed buffer zones. Therefore, we ask that additional information be provided us on both the activities and their acoustic effects and propagation so we can determine if the buffer zones included under Alternative 3 would be appropriate.	The 5 km buffer, the only sound that would enter the sanctuary would be at a level that would only cause low-level behavioral effects based on the dose response curve. Refer to Figures 5-1 and 5-2 in Chapter 5 for range to effects. No sonar training would occur within the sanctuaries or within the buffered areas.

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913	G-017	2.6	Alternative 3 relied on, among other considerations, areas of "high" marine mammal density, but the relative density scale as presented in Figure D-1 in Appendix D, page 7, contains seven degrees of relative density from High to Low/Unknown. The DEIS does not describe how the scale was used. For example, did the analysis consider only the highest of the seven densities or multiple densities, and, if more than one density was used, how were the data integrated to identify the most environmentally sensitive areas for the alternatives? Were all species considered and the density information summed or were some species weighted more heavily as in Alternative 1 and 2?	After the Navy identified environmentally sensitive areas, such as critical habitat areas, oceanographic features that would have high productivity, the exposure maps were used to identify any potential additional avoidance areas based on higher exposure potential to acoustically sensitive or endangered animals. Where operationally feasible, areas of the highest potential exposures were avoided. Best scientific judgment was used. Priority was given to right whales, beaked whales and sperm whales.
79	I-010	2.6	Please coordinate your planning for such training with leading environmental groups so as to identify areas where the impact on marine life will not be so damaging!	Please refer to Section 1.4 for a discussion of public involvement in the EIS process.
950	G-002	2.6	In these three sections, there is considerable confusion over what activities will and will not be allowed to take place within sanctuaries under Alternative 3. Statements regarding the intent of the buffer zones under Alternative 3 also appear in Appendix D and further confuse the issue. For example, page D-199 states "A 5 km buffer was designated around marine sanctuaries within the Study Area to ensure that all training activities occurred outside the designated marine sanctuaries." Is this asserting that under Alternative 3, all training activities will occur outside sanctuaries or outside both sanctuaries and buffer zones around sanctuaries? This requires clarification.	The Navy will not be operating sonar within the buffers established around all National Marine Sanctuaries under Alternative 3.
115	I-053	2.6	Specific precautions must be taken to protect the federally endangered North Atlantic right whale, humpback whale and manatee.	Please refer to Chapter 4 for information about the North Atlantic right whale, humpback whale, and manatee. Also, exercises would be limited in areas considered critical North Atlantic right whale habitat. As discussed in the EIS/OEIS, in the southeast North Atlantic right whale critical habitat, activities could include object detection/navigational sonar training and

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				maintenance activities for surface ships and submarines while entering/exiting ports located in Kings Bay, Georgia, and Mayport, Florida. In addition, helicopter dipping sonar would occur off of Mayport, Florida in the established training areas within the right whale critical habitat. In the northeast North Atlantic right whale critical habitat, a limited number of TORPEXes would be conducted in August through September when many North Atlantic right whales have migrated to the south.
1293	A-028	2.6	The DEIS did not examine other alternatives that might actually be effective in helping to avoid or minimize adverse impacts to the environment. For instance, by simply refraining from conducting AFAST activities (other than the transit of vessels at a very slow speed and with extreme vigilance) in areas and at times where right whales are likely to be. While right whales may, and do, also show up in places and at times unexpectedly, by refraining from undertaking AFAST activities in areas and at times when right whales are expected to be, the Navy would help to avoid and minimize adverse impacts.	The EIS identified North Atlantic Right Whale critical habitat along the U.S. East Coast in Section 2.6.5 as well as possible overlap with operation areas, and delineated mitigation measures to be taken including a buffer zone near marine sanctuaries and seasonal limitations.
13	I-008	2.6	Surely, the Navy with all its resources can confine testing to small areas at limited times and save this harmful technology for a Yes emergency were it necessary?	Please refer to Section 2.6 for a discussion of alternatives considered for analysis.

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940	G-002	2.6	As the DEIS/OEIS does not contain sufficient information on what activities would./would not potentially occur with sanctuaries, the ONMS cannot determine with any certainty if any activities that might take place in these sanctuaries would be prohibited by sanctuary regulations or what the extent of the impact might be. For this reason, we request that, if sanctuaries are not to be excluded from AFAST activities (as presently proposed under No Action Alternative), additional information be provided on what activities specifically are anticipated to take place within sanctuaries (to include type, frequency, and acoustic effects) so that we can determine whether they are prohibited by sanctuary regulations as well as their impacts on sanctuary resources.	Please refer to Section 2.6 for clarification.
944	G-002	2.6	The DEIS/OEIS seems to suggest that, under the No Action Alternative, the Navy would consult with NOAA as it deems appropriate on a case-by-case basis. While this is one option, similar to our previous comment, if the Navy proceeds under the No Action Alternative and therefore cannot rule out that certain proposed activities might rise to a level requiring consultation, we ask that Navy initiate consultation under section 304(d) at this time so that we can consider and prepare any recommendation we deem necessary to protect sanctuary resources (as provided for under section 304(d)) while the action is still at the DEIS stage.	Please refer to revised text in Section 2.6, where it is clearly stated that the Navy does not plan to conduct any sonar activities in the National Marine Sanctuaries.

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875	G-017	2.6.1	The Navy has argued that "No Action" is the appropriate term because "no action" is taken to change the existing level of effort. We believe the term "No Action" should be used for an alternative in which the activity under analysis is not undertaken at all (hence "no action"). The Commission anticipates that the Navy's use of this term will lead to confusion rather than sharpen the understanding of the issues. For example, in this DEIS the no-action alternative is the one posing the greatest environmental risk. In our view, this approach is inconsistent with the intent of the National Environmental Policy Act. For these reasons, the Marine Mammal Commission recommends that the Navy rename the "No Action" alternative in this DEIS to a term that is more reflective of the actual level of activity and associated unmitigated risk from that activity.	The No Action Alternative is defined in Section 2.6.1. Please refer to Section 2.6.1 on Actions Considered but Eliminated for a discussion of the alternative Conduct No Active Sonar Activities.
866	G-021	2.6.1	The DEIS briefly summarizes the “No Action” alternative as “continuing with the present course of action. DCM requests further clarification as to the meaning of “continuing with the present course of action."	The No Action Alternative is defined in Section 2.6.1, and is summarized as continuing to conduct active sonar activities within and adjacent to existing OPAREAs rather than designating active sonar areas or areas of increased awareness.
67	I-063	2.6.1	The Atlantic Fleet sonar training must NOT occur in right whale breeding, calving and migration zones - of which the coast off Jacksonville, FL is.	As stated in Section 2.6.1, active sonar training will not occur in the North Atlantic right whale critical habitat with the exception of object detection and navigation off the shore of Mayport, Florida and Kings Bay, Georgia; helicopter Anti-Submarine Warfare activities off the shore of Mayport, Florida; and torpedo exercises in the Northeast. Refer to Section 5.3.2 for information regarding mitigation measures for the southeast Atlantic.

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882	G-006	2.6.2	Given the considerable resources expended in development of the DEIS/OEIS, the DMF does not believe that a full range of reasonable alternatives was adequately examined. The Navy should develop an alternative that represents a combination of Alternatives 1, 2, and 3, i.e., a combination of areas that are available for year-round and seasonal use, as well as inclusion of areas of increased awareness.	Section 2.6.2 describes the process used for developing alternatives. Based on the Navy's operational requirements, four alternatives were developed.
771	G-011	2.6.2	Conduct further research into particularly sensitive areas and seasonal shifts in species aggregations to determine which of the three alternatives is the most protective of marine life.	The Navy has performed a detailed analysis to develop its current alternatives. Seasonal animal densities were considered in all of the action alternatives.
360	A-001	2.6.2	Areas where marine animals are known to congregate, such as feeding and breeding areas, should be completely avoided.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.5 for a discussion of operational requirements associated with the proposed action.
1294	A-028	2.6.3	It is clear that the only real factors considered in the DEIS "analysis" of alternatives, were the factors of cost and convenience for the Navy. While these factors can legitimately be included in the alternative analysis, they must be considered with other factors. If an alternative analysis factors in cost and convenience, but does not give adequate consideration to alternatives that will help to minimize and avoid adverse impacts such as increased protection through more meaningful mitigation measures, more protective noise thresholds, and larger, more realistic safety zones, then it fails to meet the standards set forth under NEPA.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action The modeling results presented in the AFAST EIS assume no mitigation measures; therefore, effects could potentially be lessened by implementation of the mitigation measures. Based on the modeling results, no right whales will be exposed to sound levels likely to result in Level A harassment (potential injury). In addition, mortalities are not. Please refer to Section 4.4.6 for a discussion of the criteria and thresholds used to estimate

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				potential effects. These thresholds have been approved by the National Marine Fisheries Service. Safety zones will be applied beginning at 2,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
1145	A-019	2.7	In the end, however, the Navy chooses to embrace the status quo, continuing business as usual and, tellingly, the most environmentally damaging alternative set forth for review. In discarding these less damaging alternatives, the Navy offers the unsubstantiated justification that to constrain or limit its activities in any way would somehow compromise its training objectives and thus national security.	Please refer to section 2.7 for a discussion on the Preferred Alternative.
1397	A-008	2.7	Instead of embracing less damaging actions, the Navy asserts that putting constraints on training would compromise its training objectives, a rationalization that is not substantiated.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.
278	A-009	2.7	The migration routes and the patterns of activity of many of the marine mammals that we're discussing tonight are in those critical areas and the reason that I focused on alternative three was not because I was necessarily happy with all of it, but I would call to your attention in the last sentence. Active sonar would not be conducted within areas of increased awareness, and to me that is the most important aspect of what we're talking about.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 27 for a description of how the preferred alternative was selected.

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1019	A-010	2.7	For sonar training, there is no step more crucial to reducing impacts than the careful siting of exercises, avoiding concentrations of vulnerable and endangered species and high abundances of marine life to the greatest extent possible. Yet, after spending what must have been millions of dollars on habitat analysis, the Navy did not establish a single environmental exclusion zone, neither along the eastern seaboard nor in the Gulf of Mexico, nor in any part of the vast AFAST study area, which appears to run more than half the size of the continental United States. No exclusions are made for North Atlantic right whales, the critically endangered species that has been the focus of enormous conservation effort; for harbor porpoises, a strategic stock that even the Navy admits is extremely vulnerable to sonar; for other highly vulnerable species, such as beaked whale that have been associated with severe sonar-related injury, and species listed under the Endangered Species Act; for areas with large concentrations of marine mammals; or even for national marine sanctuaries or other protected areas along the U.S. coast. And this is the case despite the Navy's admission of flexibility in the siting of exercises and a past record of using geographic mitigation to reduce harm.	Refer to Section 2.7. The Navy does attempt to limit its activities within critical right whale habitat. The alternatives carried forward in the analysis were selected based on their ability to meet the following criteria: (a) use existing Navy ranges and facilities; (b) be consistent with the stated requirements for active sonar training; (c) achieve training tempo requirements based on Fleet deployment schedules; and (d) support realistic training that replicates expected operating environments for naval forces. In addition, Chapter 5 presents the Navy's mitigation measures, outlines steps that would be implemented to protect marine mammals and federally listed species during AFAST activities. This chapters also presents a discussion of other measures that have been considered and rejected because they are either: (a) not feasible; (b) present a safety concern; (c) provide no known or ambiguous protective benefit; or (d) have an unacceptable impact on training fidelity.
811	A-015	2.7	There is strong and growing evidence linking sonar use to marine mammal strandings and death. Faced with this increasing body of knowledge and the harm sonar as its currently used in causing marine mammals, including the critically injured right whale, the Navy's preferred no action alternative of 'business as usual' approach is the wrong one. They Navy acknowledges that continuing its current course of action is the most environmentally damaging one; this should not be allowed to continue.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected, as well as Appendix E for a review of marine mammal strandings.

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915	A-016	2.7	Despite the overwhelming evidence that active mid-frequency sonar use has caused deaths in marine mammals, the Navy has chosen the DEIS/OEIS alternative with the potential to do the most harm. Instead of committing to avoiding areas and times when marine mammals and other biologically sensitive factors are present, the Navy chooses the alternative that allows it to operate whenever and wherever it pleases. This is not the approach to take in an area such as the eastern seaboard which is rich in marine life and home to the last few remaining North Atlantic right whales.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected. Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
1197	A-019	2.7	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Is it possible that such areas could be used for the training the Navy desires in a way that resolves the state's legitimate concerns about continuing threats to safety and marine habitats?	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.
656	A-021	2.7	The Navy has chosen the alternative that could impart the most harm: The Navy considered four alternatives when selecting training sites within the Study area: a) sites that would enable the Navy to fulfill its operational requirements while avoiding areas of biological significance, such as whale feeding areas, year-round; b) sites that would avoid such areas on a seasonal basis; c) sites based solely on areas of biological significance and avoiding those areas completely by training elsewhere; and d) sites based on the Navy's operational requirements only, and disregarding any biologically sensitive areas. The Navy chose the fourth, citing operational impedance as the reason for not choosing a more protective and precautionary alternative.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.

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446	A-026	2.7	We are writing to comment on the Atlantic Fleet Active Sonar Training (AFAST) Draft Environmental Impact Statement (DEIS). Specifically, we want to encourage the Navy to take Alternative # 3 - to analyze data to determine where and when Areas of Increased Awareness should be designated, and to not use those for AFAST exercises.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.
825	G-005	2.7	The preferred alternative is stated to be the "No Action" alternative. This alternative was chosen based on the flexibility of training, lesser cost, and geographical variation for naval training, not avoidance of impacts to marine resources. We are concerned with the potential to impact important marine resource areas including impacts to National Marine Sanctuaries, migration routes and important seasonal activities of marine resources.	Selection of the preferred alternative was based on the combination of the operational requirements compared with the data developed. Refer to Section 2.7.
845	G-006	2.7	Section 2.9 describes the Navy's operationally preferred alternative, which is the No Action Alternative, or status quo. The rationale presented is that alternatives 1, 2, and 3 would eliminate needed flexibility in conducting training operations. The statement is also made that there is "independent of the geographic limitations that would be imposed by Alternative 3 [i.e., designation of areas of increased awareness where no active sonar would occur] there is not a significant difference in the analytical results between Alternative 3 and the No Action Alternative." Based on this conclusion by the Navy and the relatively small areas where active sonar would not be used in Alternative 3 (other naval training activities could still occur), DMF does not believe that this alternative has been adequately considered.	Alternative 3, as well as all alternatives, was given extensive analysis and consideration. Selection of the preferred alternative was based on the combination of the operational requirements compared with the data developed. Refer to Section 2.7 for additional information.

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831	G-008	2.7	The rationale for selection of the No-Action Alternative is summarized on page 2-83. While Alternative 3 is dismissed due to the relative insignificant differences in impacts between it and the preferred alternative, Alternatives 1 and 2 are reported to severely limit the ability to train in areas similar to potential threats and require the relocation of 30% of current training. Differences in impact between Alternatives 1, 2 and the No-Action Alternative are implied but not discussed.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected. Also please refer to the revised comparison of alternatives discussion in Ch 4.
838	G-008	2.7	there do appear to be some significant differences in modeled acoustic impacts, as noted above. The DEIS should more thoroughly discuss these differential impacts, particularly those of Alternative 1, and weigh them against the benefits of the No-Action Alternative. As described in section 2.8, Alternative 1 was apparently developed to meet the Navy's operational requirements.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected. Also please refer to the revised comparison of alternatives discussion in Ch 4.
891	G-010	2.7	It would be more prudent to implement designated sonar training ranges within areas of low whale density (Alternatives 1 and 2) or to identify important whale habitats within the project area and avoid using sonar in such areas (Alternatives 3).	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.
760	G-011	2.7	Since several reviewers indicated that the Navy's preferred alternative, the No Action Alternative, is the least productive of the four alternatives analyzed in the DEIS, the Commonwealth recommends that the Navy take adequate steps to protect marine species. In order to achieve this, the Navy should: Restrict active sonar training exercises by designating areas of seasonal operation (Alternative 2) or areas of increased awareness (Alternative 3), or a combination of these, to reduce the potential adverse impact to whales.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected. In addition, please refer to Chapter 5 for information related to mitigation measures.

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761	G-011	2.7	Investigate the potential of other areas within the study area (as depicted in Figure ES-1) which may be suitable for sonar training using Alternatives 1 and 2 since it is not clear in the DEIS why these alternatives are not viable options.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.
895	G-017	2.7	The DEIS does not describe why or how 30 percent of the Navy's training events would be relocated under Alternatives 1 and 2, or the impact that relocation would have on cost and effectiveness of training. Doing so seems vital for informed decision-making because those impacts would be offset by reductions in estimated annual marine mammal exposures of some 28 to 40 percent (from Table ES-3, page ES-23).	Historical sonar usage was examined, with approximately 30 percent of present-day training occurring outside those areas. Section 2.7 has been updated with more information on the impact of relocation.
898	G-017	2.7	Section 2 of the DEIS explains how alternative operating areas were determined. That explanation does not support the contention that the Navy would have to relocate 30 percent of its training activities under Alternatives 1 and 2. Training fidelity was the primary consideration in determining sites of operation, and the sites chosen under Alternatives 1 and 2 meet the four criteria of (1) replication of the threat environments, (2) proximity for multiple assets, (3) safety of personnel, and (4) adequacy of space to carry out the requisite training maneuvers (p. 2-44, lines 8-14, and page 2-53, lines 22-26). Under Alternatives 1, 2, and 3, areas of high risk to marine mammals would be avoided only "to the extent allowable" while still meeting operational requirements (p. 2-71, lines 7-29). The disadvantages of moving 30 percent of training activities appear to be negligible if, as stated in section 2, activities were only relocated if training realism, logistic cost, and personnel safety were not adversely affected. The environmental benefits of these rejected alternatives are considerable, however, as they reduce the number of exposures by 700,000 to more than 1,000,000. If our interpretation is correct, these results argue strongly against the selection of the Navy's preferred alternative.	Please refer to Section 2.7.

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874	G-021	2.7	Considering the very large operating region depicted in Figure ES-1, there would appear to be opportunities to identify other locations (within the context of Alternatives 1 and 2) in the study area that could be suitable for sonar training. DCM suggests that the Navy further investigate the potential that other locations in the study area (as depicted in Figure ES-1) may be suitable for sonar training within the context of Alternatives 1 and 2.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.
879	G-021	2.7	DCM recommends that the Navy reconsider the "No Action" Alternative as its preferred alternative and to consider Alternative 2 as the preferred alternative. Alternative 2 is environmentally superior since training operations would be adjusted seasonally to minimize effects to marine resources while still meeting operational training requirements.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.
1340	G-023	2.7	We are particularly concerned about the elevated number of potential acoustic exposures to which the most sensitive marine mammals evaluated in the DEIS/OEIS would be subjected resulting in Level B harassment, under the preferred alternative compared to other alternatives that were rejected. Specifically, harbor porpoise, a stated listed species of special concern, would sustain 286,132 exposures under the Preferred (No Action) Alternative, but only 28 exposures under either Alternative 1 or Alternative 2, both of which would designate specific active sonar training areas. Similarly, the federally endangered North Atlantic right whale would sustain 555 acoustic exposures under the Preferred Alternative, 210 under Alternative 1, and 197 under Alternative 2. We believe that it is difficult to quantify and predict whether, as concluded in the DEIS/OEIS, these effects would indeed be temporary or that they would don't affect animal rates of recruitment or survival. Although these exposures patterns are reversed for other described mammal species, we would prefer, based on the potential impacts to harbor porpoise and right whale, that the Navy consider implementation of either Alternative 1 or Alternative 2 instead of the No Action Alternative.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected. Also, please see the revised exposure numbers.
462	I-013	2.7	Three comments on the Draft Atlantic Fleet Active Sonar Training EIS/OEIS are submitted herein. The comments pertain to: A logical conflict in the rational given for selecting the no action alternative	Please reference Section 2.7 for a discussion of the Preferred Alternative.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
467	I-013	2. 7	Comment 1 - The No Action Alternative was selected in part because of a desire to retain flexibility as to where future training exercises can be held, but the analysis of acoustic effects on marine mammals does not account for potential future changes as to where the training exercises are held.	The entire AFAST Study Area was examined and variability in the operations were considered.
468	I-013	2.7	The rationale for selecting the no action alternative is to allow flexibility to train in all areas thus giving the ability to train for any future threats and that there is no significant difference in the acoustic effects analysis (i.e. estimated marine mammal takes) for the no action alternative and alternative 3. (paragraph 2.9 on page 2-83).	The effects analysis is an average of what training could potentially occur within the AFAST study areas and is based is based on the best estimate of training tempo and location. The physiological effects (i.e., PTS and TTS) are reduced in Alternative 3 versus the No Action. Due to adding buffer areas to marine mammal density determinations, and the range of effects within dose function, the behavioral take estimates between the No Action and Alternative 3 were very similar. Please refer to Sect. 4.4.10 for additional clarification.
471	I-013	2.7	The no action alternative would allow training effort to be performed, and concentrated, anywhere based on any future threats.' However, the assertion that there is no difference in acoustic effects compared to alternative 3 is based on model results for the no action alternative that assume training effort is performed in defined areas (Presumably the model's assumed training exercise locations for the no action alternative are based on where current training takes place.). 'To illustrate the above idea, consider the following. Hypothetically under the no action alternative, in the future more training can take place in the environmentally sensitive areas identified in alternative 3. If future levels of training in environmentally sensitive areas are higher than the training levels assumed for the acoustic effects analysis of the no action alternative, then the acoustic effects analysis results are no longer valid. For example, under the no action alternative let's just arbitrarily say that in the future three times as much training takes place in environmentally sensitive areas as was modeled for the no action alternative's acoustic effects analysis. We don't know what the acoustic effects are for this future scenario because the increased level of training in the environmentally sensitive areas was not analyzed, and therefore we can't do a valid comparison between the no action alternative and alternative 3. Again, the issue is the acoustic effects analysis for the no action alternative does not account for possible future elevated levels of training in environmentally sensitive areas, and therefore the analysis is not valid.' Recommendations: 1.	The effects analysis is an average of what training could potentially occur within the AFAST study areas and is based is based on the best estimate of training tempo and location. If actual sonar activities are substantially different than analyzed in the DEIS, the Navy would conduct the appropriate analysis required under Nepenthe physiological effects (i.e., PTS and TTS) are reduced in Alternative 3 versus the No Action. Due to adding buffer areas to marine mammal density determinations, and the range of effects within dose function, the behavioral take estimates between the No Action and Alternative 3 were very similar. Please refer to Sect. 4.4.10 for additional clarification.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
			For the no action alternative, the level of testing in environmentally sensitive areas that was assumed for the acoustic effects analysis should be given.. For the no action alternative, acoustic effects should be modeled for a range of postulated training efforts in environmentally sensitive areas. For example, an estimate could be made of marine mammal takes if 5%, 10%, 15%, … of sonar training occurred in environmentally sensitive areas. This would give some measure of the possible takes under the no action alternative that would occur if higher levels of training were to occur in environmentally sensitive areas in the future. As the no action alternative theoretically allows any level of training in environmentally sensitive areas, the marine mammal takes that occur with elevated levels of training in these areas should be used when deciding between the 4 alternatives under consideration.	
476	I-013	2.7	Summary and Overall Recommendation. The preferred no action alternative leaves open the possibility of any level of training in the future, in any area, including environmentally sensitive areas. The comparison of the no action alternative with the other alternatives is not valid because the acoustic effects analysis for the no action alternative does not account for possible increased levels of training in environmentally sensitive areas in the future.	Future training assumptions are predicted and identified by the constraints that are already developed in the No Action Alternatives. If new activities or new requirements for current activities are identified, then new environmental analysis under NEPA would be conducted. If future training is substantially different or actual effects are substantially different than described, the Navy would review its environmental analysis and employ adaptive management.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
152	I-015	2.7	It is my understanding the Navy considered four alternatives when selecting training within the Study Area and is opting on sites based on the Navy's operational requirements only, disregarding any biologically sensitive areas. I am not going to quote evidence on the Navy's 235 sonar decibels nor ocean noise impact to marine animals nor sonar-related stranding knowing how aware you are. I simply request that you rethink the alternatives that would impact the least harm, not the most harm which you have chosen.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.
806	I-017	2.7	I do not understand the Navy's preferred alternative which is to keep training the way it has been done. For the life of me, I can not understand why the US Navy is looking for the most environmentally damaging of all the alternatives they could develop. It is almost like you want to support the loss in ocean fish, and pollution of our ocean.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.
240	I-040	2.7	The Navy considered four alternatives when selecting training sites within the Study area: a) sites that would enable the Navy to fulfill its operational requirements while avoiding areas of biological significance, such as whale feeding areas, year-round; b) sites that would avoid such areas on a seasonal basis; c) sites based solely on areas of biological significance and avoiding those areas completely by training elsewhere; and d) sites based on the Navy's operational requirements only, and disregarding any biologically sensitive areas. The Navy chose the fourth, citing operational impedance as the reason for not choosing a more protective and precautionary alternative.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.
713	I-069	2.7	17.) Isn't the Navy simply requesting total unrestricted use of sonar for training disregarding all knowns and unknowns? Please respond to all questions.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
627	I-070	2.7	The Navy considered four alternatives when selecting training sites within the Study area: a) sites that would enable the Navy to fulfill its operational requirements while avoiding areas of biological significance, such as whale feeding areas, year-round; b) sites that would avoid such areas on a seasonal basis; c) sites based solely on areas of biological significance and avoiding those areas completely by training elsewhere; and d) sites based on the Navy's operational requirements only, and disregarding any biologically sensitive areas. The Navy chose the fourth, citing operational impedance as the reason for not choosing a more protective and precautionary alternative.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.
616	I-079	2.7	Having said these things, I would like to recommend that the Navy take some sort of alternative. And it seemed a little confusing as to which was better, But take action that will at the very least not involve using this sonar for training purposes in the South Georgia and North Florida area during the period that right whales are present.	Other than transit and helicopter dipping sonar, the Navy does not propose to use sonar in designated right whale critical habitat in the Southeast. Helicopter transit distance requirements are discussed in Section 2.4.1.3. The need for year-round training is discussed in Section 2.4.1.2.
715	I-096	2.7	For response to the Draft Environmental Impact Statement for the AFAST Study I request you to please review my comments listed below: The Navy has acknowledged that is sonar use has previously resulted in the deaths of whales, but has chosen an area for training which is least protective to whales.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected. In addition, as stated in Appendix E, there are five stranding events that have been putatively linked to potential sonar operations. Please refer to Appendix E for additional information.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
178	I-129	2.7	It is my understanding the Navy considered four alternatives when selecting training areas within the Study Area and is opting on sites based on the Navy's operational requirements only, disregarding any biologically sensitive areas. I am not going to quote evidence on the Navy's 235 sonar decibels nor ocean noise impact to marine animals nor sonar-related stranding knowing how aware you are. I simply request that you rethink the alternatives that would impact the least harm, no the most harm which you have chosen.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.
32	I-151	2.7	I feel very strongly that the Navy should consider the proposal numbered - the second alternative, have fixed areas, but seasonally trained and also, if not, at least one of the other alternatives other than just no action…	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.
406	I-154	2.7	The Navy considered four alternatives when selecting training sites within the Study area: a) sites that would enable the Navy to fulfill its operational requirements while avoiding areas of biological significance, such as whale feeding areas, year-round; b) sites that would avoid such areas on a seasonal basis; c) sites based solely on areas of biological significance and avoiding those areas completely by training elsewhere; and d) sites based on the Navy's operational requirements only, and disregarding any biologically sensitive areas. The Navy chose the fourth, citing operational impedance as the reason for not choosing a more protective and precautionary alternative.	The No Action Alternative has been selected as the operationally preferred alternative; however, all alternatives were analyzed with respect to potential environmental effects. Please refer to Section 2.7 for a description of how the preferred alternative was selected.
271	A-009	3	And I would draw the staff's attention to the fact that we have sea turtles, we have porpoises and dolphins, and we have whales. And I will focus my attention on right whales because that is an endangered species.	Correct. Please refer to Chapter 3 for a description of the affected environment.
22	A-018	3	These are my major concerns for the Navy's program of AFAST. #1 The proposed sonar training sites are one of the world's high density of marine life.	Please refer to Chapter 3 for a discussion of the marine life likely to occur in the AFAST Study Area.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
23	A-018	3	Many of the species are either protected or on the endangered species list.	Please refer to Chapter 3 for a discussion of the marine life likely to occur in the AFAST Study Area.
1147	A-019	3	However, in recent years there has been much progress in understanding the ways in which whales, dolphins, fishes and, to a lesser extent, sea turtles and invertebrates, use sound to communicate with one another, feed and avoid predators. This increased understanding, combined with evidence obtained from necropsies, fishermen, and a few direct observations of marine mammals' responses to sonar, indicates a potentially profound adverse impact from the increased use of sonar in ocean waters.	The Navy uses the best scientific data available from peer-reviewed sources on which to base its analysis. Please refer to Chapter 3 for broad ranging discussions of the Affected Environment. Also, the Navy does not intend to increase sonar usage.
1169	A-019	3	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* Hard Bottom: Current and accurate mapping of hard bottom, with additional surveys of area designated for the USWTR, is necessary. More details about the location of cables that will be (or might need to be) installed to facilitate effective training, and the short- and long-term impacts to the hard bottom and fish resources from cable construction and maintenance, are also important to evince compliance with NEPA. Corals: Current and accurate mapping of corals, include deep sea Lophelia coral beds, is necessary. This analysis should include an assessment of the potential impacts to the corals, and the invertebrates and fish species that depend on them, from sonar training (including impacts of vibrations from noise, potential toxicity from leaching of metals from batteries, potential breakage or smothers from discarded parachutes).	The Undersea Warfare Training Range (USWTR) is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. Refer to Sections 4.6, 4.7, 4.9, and 4.10 for the results of the analysis to essential fish habitat, marine fish, marine invertebrates, and marine plants and algae, respectively.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1186	A-019	3	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* The opinions asserted are unsupported by scientific study; indeed, it appears that the Navy did little to survey the very environment in which it proposes to conduct sensitive – and potentially harmful – military operations, relying instead on outdated maps and the absence of scientific study conducted in the Atlantic between southern Virginia and northern Florida.	Please refer to Chapter 3 for a description of the environmental baseline.
312	I-008	3	Science indicates dolphins and whales know where each other are located by using their sonar. Science has now shown us they each say their own name with the unique sound signature, plus the individual's name they are calling out to. We know they are a high order of sea life and that they have a sophisticated social system. Possibly, their communication system is helpful when whaling ships are approaching, likely their biggest threat to survival today. Also, their food supply is dwindling due in no small part to the chemicals leaching into the oceans through the polluted and dirty water that continuously drains from landfills and other contaminated areas throughout the world. They have no other place to live. Whales and dolphin are facing these major challenges to their survival and now the Navy has escalated its war on this species by blasting them with incomprehensible sonic sound levels that surely confuses and disorients them, makes their world uninhabitable. Likely, they commit suicide by beaching themselves in ever increasing numbers because they have been unable to tolerate this war being waged upon them. The earth needs these gentle beings for the important role they play in its ecology. They demonstrate very rare interspecies compassion, by the many instances of dolphins and whales protecting human lives from sharks. What are we doing?	As stated on Page 1-1, "The activities involving active sonar described in this EIS/OEIS are not new and do not involve significant changes in systems, tempo, or intensity from past activities." Please refer to Chapter 3 for a discussion of the environmental baseline, and Chapter 4 for the results of the acoustic and nonacoustic effects analyses.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
303	A-002	3.2	We ask the Navy to continually update and reanalyze the best available data that they can get.	As stated in Section 3.2, the Navy is committed to reviewing and incorporating the best available information available to compile the environmental baseline and conduct the environmental analyses.
1013	A-010	3.2	It assumes that no marine mammals would be seriously injured or killed, despite a growing, peer-reviewed, scientific record of injuries and mortalities.	The Navy is using the best available peer reviewed and gray literature
1106	A-010	3.2	(5) The Navy's analysis of marine mammal distribution, abundance, population structure, and ecology contains false assumptions that tend to underestimate impacts on species; and	The best available science was utilized in the determination of distribution, densities and abundance. Refer to Section 3.2.2 for additional information.
818	A-015	3.2	To begin to address these failings, the Navy must conduct further studies of these effects, give the scientific community information it needs to investigate environmental effects of sonar and explosives use, and take advantage of the wealth of scientific expertise available in North Carolina through the academic community and waterman by soliciting their views and then taking the steps they recommend.	Research into this EIS/OEIS has been extensive and has included consultations with many organizations within the academic community as discussed in Section 3.2. As summarized in Section 1.6, participation by the public has been welcome throughout this study.
551	A-019	3.2	Unfortunately, I see in this DEIS the same problem that plagued the Navy's DEIS for the Undersea Warfare Training Range, and that is the equation that an absence of information indicates an absence of impact. That is not the case.	As stated in Sections 3.2.3 through 3.2.5, primary literature, governmental publications, and other data sources such as search engines were used to obtain information for the Draft EIS/OEIS. When internet searches were warranted, the authors evaluated each result for credibility, and overall quality and relevance of the content.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
552	A-019	3.2	There are numerous studies that have been published, peer-reviewed, and are readily available that document how a variety of ocean species, marine mammals, fish, turtles, birds communicate with one another.' There is a number of species - a number of studies that indicate the impact that noise and other effects have on these - on the species' ability to communicate with one another, to engage in reproductive activities, to be able to ply the ocean waters for their own food and activity and to remain safe from other prey.' There are also numerous studies that indicate the impact that sonar could have in masking the basic communication that these animals use between one another.' And so therefore, based on that information, we question the conclusion in this DEIS that there is an absence of impact, which flies in the face of the published research and studies and the conclusions that may be drawn from them.	The Navy used the best available scientific data including all relative published peer-reviewed material. Refer to Chapter 4 for discussion on environmental consequences of sonar training. Please refer to Section 4.4 for discussion of marine mammals and masking. Also, please refer to the new framework write-up for variety of behavioral responses. Also, the EIS conclusion is no significant impact, not no impact
1149	A-019	3.2	Documentation of dying coral beds, declining populations of sea turtles, sea birds and marine mammals, and the perilous condition of North Atlantic Right Whale, it is reckless for the Navy to continue to assert that there are no significant adverse impacts from its use of sonar and explosives in the Atlantic Ocean. Although not as robust as might be ideal, the scientific literature does not support the Navy's conclusion.	The Navy acknowledges in the AFAST EIS/OEIS that many of these resources are stressed due to the culmination of human activities. Please refer to Chapter 3 for broad ranging discussions of the Affected Environment and see Chapter 6, Cumulative Effects. However, the Navy's analysis of the proposed action uses the best scientific data available from peer-reviewed resources on which to base its conclusion. Refer to Chapter 4 for an analysis of potential impacts from the proposed action.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1170	A-019	3.2	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* Mammals: Additional surveys of species distribution and abundance are needed for the entire region. We encourage close coordination with scientists who study the migratory pattern, diving behaviors, communication patterns (for navigation, prey identification, juvenile/calf care, socializing and mating) and feeding and calving locations for all marine mammals (dolphins and whales) found off the shore of North Carolina and other states within the south Atlantic.	Species densities are based on the best study data available. Please refer to Section 3.2 for a discussion of the data analyzed. The density information is based on NMFS survey data.
1173	A-019	3.2	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* Turtles: Additional surveys of species distribution and abundance are needed for the entire Atlantic region. We encourage close coordination with scientists who study the migratory patterns, diving behaviors, communication patterns (for navigation, pretty identification, juvenile, socializing and mating), and feeding and calving locations for all turtle species found off the shore of the states in the south-Atlantic region.	Species densities are based on the best study data available. Please refer to Section 3.2 for a discussion of the data analyzed. The Marine Resource Assessments and Navy OPAREA Density Estimate reports are available from viewing on the AFAST website.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1208	A-019	3.2	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* There is precious little understood about right whales, even among scientists who have studied the whales' migratory patterns, feeding and reproductive behaviors, and stranding events and who have tracked whales entangled in fishing gear. Consequently there is little, if any, scientific justification for the concepts of predictable seasonal presence or absence or migrational directionality of right whales off the North Carolina Coast. Although one might expect trends in seasonal density, and indeed it is this expectation that provides the basis for the seasonal marine protected areas off the Maine and North Florida coasts, juvenile whales in particular appear to sometimes travel long distances along the North Carolina coast without an understood purpose or destination.	The Navy is committed to continually researching and incorporating new information as to the occurrence and densities of marine mammals.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1215	A-019	3.2	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Bottlenose dolphins are among the most heavily studied species on the Atlantic Seaboard. However, their migratory patterns and populations south of Virginia have not received equal attention, with few survey efforts conducted in this region. Recent study indicates that the waters off the North Carolina coast provide important habitat for bottlenose dolphins, with areas south of Cape Hatteras of particular importance during the winter months. Other surveys have documented high densities of dolphins along the coast and along the continental shelf edge. These observations support the decision of the South Atlantic Marine Fisheries Council to establish areas seaward of the Onslow Bight and Cape Hatteras as Essential Fish Habitat/Habitat Areas of Particular Concern.	The marine mammal density estimates used in the analysis reflect a compilation of the most recent data and information on the occurrence, distribution, and densities of marine mammals. Please reference Section 3.2.2, Marine Species Density Determinations for additional information. Refer to Section 3.6 for additional information on bottlenose dolphin occurrence within the AFAST Study Area.
449	A-026	3.2	In the past, our lack of knowledge and technology would likely have limited our ability to properly assess and designate areas where such conflicts could be likely. However, in the past several decades, intensive research has resulted in a much better ability to assess the predictable presence of important species in time and space. There is no reason for the Navy not to use this information to assure the safety of marine life.	As noted in Section 3.2, the best available information was used to compile the environmental baseline and conduct the environmental effects analyses.
888	G-010	3.2	The abundance and distribution of many whales' species within the project area is poorly understood.	Species densities are based on the best study data available. Please refer to Section 3.2 for a discussion on marine species density determinations.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
894	G-010	3.2	We question the reliability of the Alternatives Analysis given how little is known about the distribution and abundance of many marine mammal species inhabiting the project area. The marine mammals density data at the heart of the Alternatives Analysis are spatially and temporarily coarse in scale, and therefore inappropriate for fine scale analysis that was conducted in the DEIS (i.e. identifying designated sonar training ranges.	Species densities are based on the best study data available. Please refer to Section 3.2 for a discussion on marine species density determinations.
897	G-010	3.2	GDNR recommends that comprehensive marine mammal surveys be conducted within each OPAREA and across all four seasons in order to calculate accurate season-specific estimates of marine mammal density. Results should be incorporated into the Alternatives Analysis prior to publication of the final EIS and used to determine if it is appropriate for NMFS to issue a Letter of Authorization to the Navy to take marine mammals under the Marine Mammal Protection Act.	Season-specific estimates of marine mammal density were based on NMFS surveys. These densities were used in the alternatives analyses. The Navy is consulting with NMFS under the MMPA to obtain an LOA. Please refer to Section 3.2 for additional information.
903	G-010	3.2	Accurate marine mammal density estimates should be calculated and analyzed prior to publication of the final EIS and prior to implementation of proposed AFAST activities. Reliable marine mammal population estimates within the project area should not be considered as mitigation. Rather, accurate density estimates are baseline information that should be considered in Alternatives Analysis prior to onset of the proposed action	Species densities are based on the best study data available. Please refer to Section 3.2 for a discussion on marine species density determinations.
568	I-007	3.2	4. Why does the AFAST Draft EIS/OEIS make conclusions that are not supported by facts? 5. Why isn't there the proper scientific research in the AFAST Draft EIS/OEIS?	As stated in Sections 3.2.3 through 3.2.5, primary literature, governmental publications, and other data sources such as search engines were used to obtain information for the Draft EIS/OEIS. When internet searches were warranted, the authors evaluated each result for credibility, and overall quality and relevance of the content.
802	I-009	3.2	I OPPOSE the Navy s upcoming use of sonar because I am skeptical about the extent of their research.	For information about the Navy's research and the sources of data used in the EIS/OEIS, please refer to Section 3.2.

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803	I-009	3.2	I feel that not enough comprehensive research has been done.	For information about the Navy's research and the sources of data used in the EIS/OEIS, please refer to Section 3.2.
1131	I-036	3.2	*All comments from this commenter are specific to USWTR. The comments were reviewed and the most relevant ones pulled out.* Science does not actually know much about the distribution of many marine species (especially certain pelagic marine mammals, such as beaked whales). Rather than emphasize this uncertainty, the DEIS speciously emphasizes the reliability of the limited information that suits the Navy's purpose, but is not necessarily an accurate reflection of reality.	The best available science was utilized in the determination of distribution, densities and abundance.
1133	I-036	3.2	*All comments from this commenter are specific to USWTR. The comments were reviewed and the most relevant ones pulled out.* The DEIS relies heavily on reports produced by Department of the Navy analysts in its discussions of the various physical, biological, and ecological characteristics of the sites. While some reliance on these reports might be expected, the actual reliance is excessive particularly given the availability of much more reliable data.	The Navy used the best available scientific data, including all relative published peer-reviewed material.
712	I-069	3.2	16.) Is it the Navy's opinion that an absence of information proves no harm would be done to marine life by using sonar for training?	The data in the AFAST EIS/OEIS is based on the best information available from all sources. Section 3.2 summarizes this process.
490	I-128	3.2	Before any decisions are taken, please arrange for the collection of sufficient and reliable scientific data so as to be able to carefully evaluate the impact on marine mammals, pelagic and colonial birds, sea turtles and fish that such an installation might represent.	As stated in Section 3.2, the Navy is committed to reviewing and incorporating the best available information available to compile the environmental baseline and conduct the environmental analyses.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
420	I-154	3.2	As the science on the impacts of ocean noise grows, so do the findings relating to its impacts on marine life. Without comprehensive knowledge of its impacts on all marine life, precaution must prevail.	As stated in Section 3.2, the Navy is committed to reviewing and incorporating the best available information available to compile the environmental baseline (Chapter 3) and conduct the environmental analyses (Chapter 4).
1111	A-010	3.2.1	The Navy's main source for information about marine mammal populations in the AFAST study area is its Marine Resource Assessments; but as these are secondary sources, it is generally difficult to assess which primary reference was used to support the Navy's analysis and whether it in fact constitutes the best available scientific evidence.	The MRAs are posted on the AFAST public web site and are available for download.
1112	A-010	3.2.1	Where references are offered in the DEIS, many appear to be more than 10 years old, predating increased sighting effort and data routinely available to take reduction teams. This sometimes results in inadequate or inaccurate depiction of habitat use and consequently, inappropriate characterization of risk.	The Navy used the best available scientific data, including all relative published peer-reviewed material. Species densities are based on the best study data available. Please refer to Section 3.2 for a discussion on marine species density determinations.
304	A-002	3.2.2	We believe that the lack of directed marine mammal surveys and the unique environment of the Chesapeake Bay, Norfolk Canyon and Cape Hatteras area is an endangered area, especially important and sensitive marine environment. We strongly encourage the Navy to support continued data acquisition and to corroborate with stranding networks in future analysis. A good example of why this is important is that two of our most common marine animals are harbor porpoises and harbor seals, two species that were specifically mentioned as not being sufficient in the data records to create an analysis for. The reason they are not in the data records is because there have been no directed surveys in the winter months in our area which is when those animals occur, not because those animals are not in our area.	The Navy used the best available scientific data, including all relative published peer-reviewed material. As stated in Section 5.1.4, the Navy does and will continue to coordinate with the National Marine Fisheries Service Stranding Coordinators for any unusual marine mammal behavior. This includes any stranding, beached live/dead, or floating marine mammals that may occur coincident with Navy training activities. Discussion Two species rare and sometimes present in VACAPES OPAREA, quantitative analysis is not possible due to lack of survey data.

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305	A-002	5	and to constantly and continually seek new data, new collaborations to update the marine mammal density analyses. Thank you very much.	The Navy is committed to continually researching and incorporating new information as to the occurrence and densities of marine mammals. Refer to Chapter 5.
918	A-016	3.2.2	The Navy's analysis of acoustic impacts to marine mammals is through modeling based on abundance estimate which were largely determined from aerial surveys, a difficult way to count marine mammals, especially relatively small animals and those that dive for prolonged periods such as beaked whales - the very animals though to be most susceptible to anthropogenic ocean noise. Modeling based on estimates is an inexact science that cannot accurately predict every eventuality in the real world.	Species densities are based on the best study data available. Please refer to Section 3.2.2 for a discussion of the data analyzed.
1227	A-019	3.2.2	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* In addition to underestimating the abundance and distribution of species offshore North Carolina, the (USWTR) DEIS inaccurately states that certain species are not found in North Carolina waters and offshore. Specifically, the Navy states that manatees and seals are not present in the region and, based on this assertion, the Navy declines to consider the impacts of its proposed action on these species.	The marine mammal density estimates used in the effects analysis reflect a compilation of the most recent data and information on the occurrence, distribution, and densities of marine mammals. Please reference Section 3.2.2, Marine Species Density Determinations for additional information. Manatees and seals would be extralimital off North Carolina.
1265	A-028	4	The OEIS (5.1) states that "Due to spreading loss, sound attenuates logarithmically from the source, so the area in which an animal could be exposed to potential injury (PTS) is small." For reasons stated above in these comments, the noise thresholds set by this OEIS for PTS and TTS have been set unreasonably high. Additionally, if injuries and deaths do result from acoustically mediated bubble growth independent of marine mammal's behavioral reactions to sonar noise, even at received levels of sound as low or lower than 150 dB (RMS), then the OEIS threshold of 215 dB for Level A	Please refer to Section 4.4 for a discussion of bubble growth and decompression sickness.

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			harassment and injury is, to put it plainly, ridiculous. The same is true if it is the animal's behavioral responses to sonar sound which cause decompression sickness. Either way, whales are being injured and killed on exposure to levels of sound far below the OEIS threshold for injury. Therefore the area in which an animal could be exposed to potential injury is vastly greater then the DEIS would have the reader believe.	
1200	A-019	3.2.2	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* From the outset, it should be noted that relatively fewer surveys of marine species – including whales – and marine habitat have been conducted along the southern portion of the mid-Atlantic coast as compared with other regions of the U.S. Atlantic coast.	The marine mammal density estimates used in the analysis reflect a compilation of the most recent data and information on the occurrence, distribution, and densities of marine mammals. Please reference Section 3.2.2, Marine Species Density Determinations for additional information.
1205	A-019	3.2.2	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* The DEIS grossly mischaracterizes the presence and abundance of whales offshore North Carolina, underestimating both the variety of species present, the abundance of their respective populations and the geographic range they occupy.	The marine mammal density estimates used in the analysis reflect a compilation of the most recent data and information on the occurrence, distribution, and densities of marine mammals. Please reference Section 3.2.2, Marine Species Density Determinations for additional information.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
183	A-017	3.2.5	Section 3.2.5, page 3-7 of the current DEIS states "The Navy conducted internet searches using search engines Google, Yahoo, and Dogpile…" We submit that the Navy should formally consider the comments in these 866-plus letters before engaging in general literature search.	As stated in Sections 3.2.3 through 3.2.5, primary literature, governmental publications, and other data sources such as search engines were used to obtain information for the EIS/OEIS. When internet searches were warranted, the authors evaluated each result for credibility, and overall quality and relevance of the content. The range described in the Draft Undersea Warfare Training Range (USWTR) EIS/OEIS is not proposed under the AFAST proposed action. USWTR is a separate proposal being analyzed in a separate environmental planning document; however, the Navy considered applicable issues raised in the USWTR comments when developing the AFAST EIS.
537	A-022	3.2.5	Section 3.2.5 of the Impact Statement says that part of the process included going to Google looking for information. We suggest it would be more appropriate to walk down the hall land read all the comment letters that were submitted concerning the Training Range before the Navy spends time Googling. Thank you very much.	As stated in Sections 3.2.3 through 3.2.5, primary literature, governmental publications, and other data sources such as search engines were used to obtain information for the Draft EIS/OEIS. When internet searches were warranted, the authors evaluated each result for credibility, and overall quality and relevance of the content. The range described in the Draft Undersea Warfare Training Range (USWTR) EIS/OEIS is not proposed under the AFAST proposed action. USWTR is a separate proposal being analyzed in a separate environmental planning document; however, the Navy considered applicable issues raised in the USWTR comments when developing the AFAST EIS.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1220	A-019	3.3.4	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Throughout the DEIS, there is cause for questioning the effort the Navy made in collecting and analyzing data that would inform its assessment of environmental impact from the proposed USWTR. One area of particular concern is the Navy's representation of fish habitat and identification of live/hardbottom areas. Two key concerns are raised here: (1) the SEAMAP data on which the navy relies is outdated and does not include the most recent surveys, which were published in 2001; and (2) the Navy fails to acknowledge the limitations inherent in SEAMAP itself.	This comment is specific to USWTR. The AFAST DEIS/OEIS does not propose construction of an underwater range or any other direct disturbances to the hard bottom. The precise location of the hard bottom areas is not necessary to analyze effects over the broad spectrum of AFAST activities.
1152	A-019	3.4.4	The DEIS states that thousands of sonobuoys, acoustic device countermeasures, mobile acoustic torpedo targets, parachutes and other materials will be deployed and abandoned annually in association with sonar and explosives training. The DEIS reveals no consideration of retrieving these devices as an alternative to dumping them in the ocean. Instead, the DEIS discounts the impact of this large scale solid waste disposal and simply notes that sonobuoys and other abandoned devices would corrode, degrade, and eventually be incorporated into bottom sediments.	Refer to section 4.3.2 for reasons debris is left in the environment. Sonobuoys and parachutes are designed to sink after use; therefore, it would be extremely difficult to retrieve them. The best available science is used to assess impact of expended materials on the marine environment.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1216	A-019	3.4.4	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* The Navy's plan to discard parachutes and assemblage within the USWTR are at odds with proposed measures in the Take Reduction Plan, which are designed to reduce entanglement in fishing nets and lines and thereby reduce mortality. As discussed above, the parachutes may mimic the action of coastal gill nets and the assemblage poses hazards comparable to those posed by fishing lines. We encourage the Navy to re-examine these measures to better account for potential impacts on bottlenose dolphins.	Refer to section 4.3.2 for reasons debris is left in the environment. Sonobuoys and parachutes are designed to sink after use; therefore, it would be extremely difficult to retrieve them. The best available science is used to assess impact of expended materials on the marine environment.
302	A-002	3.2.2	We recognize the Navy has conducted analyses of the currently available data to develop their results of when and where marine mammals occur. Although we understand the decisions must be made with this current data, we ask the Navy to recognize the uncertainties associated with this data and with their analyses due to a lack of published material on marine mammal presence in our area.	The marine mammal density estimates used in the analysis reflect a compilation of the most recent data and information on the occurrence, distribution, and densities of marine mammals. Please reference Section 3.2.2, Marine Species Density Determinations, for additional information.
1056	A-010	3.6	There is no reason for the limited presentation of information on distribution of fin whales, minke whales, and other species when information is readily available and used by corporate project proponents.	Chapter 3 describes typical distribution of marine mammals including these high-use areas. The marine mammal density estimates used in the acoustic analysis of this DEIS were compiled from the most recent NMFS survey data. Refer to the AFAST web site for density reports for the AFAST study area.

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1057	A-010	3.6	By grouping at least four beaked whale species into the single genus of mesoplodon (DEIS at 3-65); the Navy has understated risk to individual populations.	The beaked whales' species were grouped because there was a paucity of biological information available for individual species. The marine mammal density estimates used in the acoustic analysis of this DEIS were compiled from the most recent NMFS survey data. Bycatch and stranding data, while not useful in determining marine species' densities, is used to assess species' presence in specific areas. Please refer to Section 4.4.10 for discussion of effects.
1058	A-010	3.6	As with beaked whales, the Navy treats the two pilot whale species present in the AFAST study area-long-finned and short-finned pilot whales-as though they were a single species. Apparently, bycatch and genetic data provided to the Atlantic Trawl Gear Take Reduction Team and Atlantic Pelagic Longline Take Reduction Team, which are convened pursuant to the Marine Mammal Protection Act to address bycatch mortality, have not been incorporated in the species summaries, although these data can be used to delineate the distributions of each species.	Refer to Section 3.6.1.2.21 for a discussion on both short-finned and long-finned pilot whales, as well as an explanation of the reason for grouping the two species (for example, common grouping of the species in surveys because of difficulty in differentiating the two from a distance).
1059	A-010	3.6	The DEIS does not consider data presented to take reduction teams for various Atlantic stocks of odontocetes.	Refer to Section 3.6.1.2, which includes updated survey numbers of various odontocetes.
1060	A-010	3.6	In addition, the Navy has not incorporated the latest information on bycatch and mortality events in its discussion of various marine mammal populations. For example, the Atlantic stock of harbor porpoises ... It is difficult to see how the estimated take of harbor porpoises under the Navy's no-action alternative can so easily be dismissed as insignificant.	The most current bycatch and mortality data is used to assess species' status. AFAST EIS/OEIS is addressing the potential effects associated with the use of sonar only. The EIS was updated with 2008 data of survey results, and behavioral estimates were updated with the new data. Overall effects to the marine mammals are addressed in cumulative impacts. Effects to individual populations are addressed as part of the NMFS rule-making during the LOA process.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
655	A-021	3.6.1	The Eastern Seaboard is rich in marine animal diversity. There is a rapid change in sea temperature off the East Coast because of the Gulf Stream, so both tropical and temperate species overlap ranges in the region. Dolphin species found in the areas include bottlenose, common, striped, spinner, and Risso's and Atlantic white-sided dolphins. Whale species include pilot, fin, minke, pygmy and dwarf sperm, humpback, sei and sperm whales. This area is also home to beaked whale species and the highly endangered North Atlantic right whale, of whom only 300 individuals remain.	Please refer to Section 3.6 for discussion of the marine mammals likely to be present in the AFAST Study Area.
454	A-026	3.6.1	Of course, even in species where the knowledge of their distribution is great, individuals can be found in many unexpected locations and/or times of the year. For instance, right whales have been seen off of Philadelphia harbor in winter, and humpback and right whales have been seen off the mid- and southeast-Atlantic in the summer.	The Navy acknowledges that individuals may occur in other locations, but the primary distribution of species, as stated in section 3.6.1, is in observed areas based on best available data.
403	I-154	3.6.1	The Eastern Seaboard is rich in marine animal diversity. There is a rapid change in sea temperature off the East Coast because of the gulf Stream, so both tropical and temperate species overlap ranges in the region. Dolphin species found in the areas include bottlenose, common, striped, spinner, and Risso's and Atlantic white-sided dolphins. Whale species include pilot, fin, minke, pygmy and dwarf sperm, humpback, sei and sperm whales. This area is also home to beaked whale species and the highly endangered North Atlantic right whale, of whom only 300 individuals remain.	Please reference Section 3.6.1 for a description of the marine mammals potentially present along the East Coast and in the Gulf of Mexico. Each subsection provides a description of each species, including diving behaviors, hearing capabilities, and distribution.
1389	I-160	3.6.1	The location of these studies is usually right where marine mammal migratory and feeding routes are, leading to inevitable conflict.	Please refer to Section 3.6 for a discussion of marine mammals likely to occur in the AFAST Study Area.
889	G-010	3.6.1.1	Numerous federally-listed species (e.g. sperm whales, North Atlantic right whale) inhabit waters within the project area.	Section 3.6.1.1 summarizes the species, including ESA listed species that inhabit the AFAST Study Area.

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1113	A-010	3.6.1.1.1	The Navy appears to understate the degree to which right whales are present in New England waters during the winter months. See DEIS 3-34. In fact, data from NMFS's right whale sightings advisory system ("SAS") show right whales off New England in virtually every month of the year, with considerable numbers of sightings throughout winter. Within the past year, passive acoustic monitoring buoys have documented almost daily use of Stellwagen Bank and of waters in and around critical habitat in the Great South Channel, in virtually all areas where buoys have been placed; and SAS data show right whales in both Cape Cod and the Great South Channel throughout the winter months, and significant concentrations around and to the north of Jeffrey's Ledge through late fall and into winter.	Please refer to Section 3.6.1.1.1, which states right whales are present in and around these areas year-round.
1114	A-010	3.6.1.1.1	Contrary to the Navy's assumptions, the SAS reports sightings of right whales in the mid-Atlantic through the spring and even into late summer.	Please refer to Section 3.6.1.1.1.
1115	A-010	3.6.1.1.1	The Navy mischaracterizes the water of George and Florida as the only area in which right whales birth their calves. In fact, with expanded survey effort, sightings in recent years suggest that the calving grounds extend off northern Georgia and South Carolina and possibly as far north as Cape Fear.	Please see revised section 3.6.1.1.1
1377	A-010	3.6.1.1.1	In general, the sources cited on right whales date largely from the 1980s, and much of the information is outdated and incomplete or incorrect. More recent sources of information, including NMFS' own SAS data and Baumgartner and Mate's tagging study (which indicates a wider summertime use of the Gulf of Maine and the mid-Atlantic than represented in the Navy's modeling), present a more complex picture of habitat use than the DEIS assumes. The risk to right whales is likely to have been underestimated.	Please refer to Section 3.6.1.1.1 for additional and updated information on right whale surveys

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1209	A-019	3.6.1.1.1	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* According to tracking data collected and plotted by a scientist with the Provincetown Center for Coastal Studies, the entangled right whale that was tracked off the North Carolina coast during December 2005 was determined to be traveling north in December, similarly, another right whale tracked in 2002 (whale #1427) was determined to be traveling south in July (it was tracked all the way to Georgia at the hottest time of the year). Additionally, sightings of right whales have been recorded much farther offshore than statements in the DEIS would suggest.	Refer to 3.6.1.1.1 for information related to the occurrence of the North Atlantic right whale.
1480	A-028	3.6.1.1.1	The DEIS (3.6.1.1.1) states that right whale "dives of 5 to 15 minutes (min) or longer have been reported." Given this, and the fact that noise sources could rapidly move into new areas of ocean, should right whales be engaging in longer dives, in or near to this new location, these whales would very likely go undetected. While mitigation measures for the explosive source sonobuoys call for a minimum of 30 minutes of monitoring the area before detonation, the likelihood of detecting a right whale engaging in longer dives in that 30 minute period is minimal even under optimal observation conditions. Therefore, the potential for right whales being exposed to noise levels likely to cause Level B and Level A harassment is high. Please address this issue.	The modeling results presented in the AFAST EIS assume no mitigation measures; therefore, effects could potentially be lessened by implementation of the mitigation measures. Based on the modeling results, no right whales will be exposed to sound levels likely to result in Level A harassment (potential injury). Please refer to Section 5.4 for a discussion of mitigation effectiveness.

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1482	A-028	3.6.1.1.1	Given the Navy's often repeated claim of being committed to environmental stewardship, it would seem like this rather small task of reporting right whale sightings in order to reduce the threat of ship strikes, would be a simple task readily embraced as Navy policy. Why is it that the Navy sought exemptions from the Mandatory Ship Reporting System?	The Navy does report right whale sightings during calving season. The DEIS states that the Navy is not required to report its ships' position, course, speed or destination.
1206	A-019	3.6.1.2.4	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Beaked whales are known to be highly sensitive to anthropogenic noises	Refer to Section 3.6.1.2.4 for information related to beaked whales hearing and acoustics.
1159	A-019	3.6.1.4.1	The federally endangered West Indian Manatee is also found in this region of the coast, in both estuarine and coastal waters. Manatees are slow-moving mammals whose populations have been harmed – and in some areas decimated – by collisions with boats and other water craft.	Refer to Section 3.6.1.4.1 for a description and potential occurrence of the West Indian manatee. Most sonar activities would take place more than 12 NM offshore, beyond manatees' habitat.
777	G-011	3.6.2	Additionally, several state and federally-listed whales and marine mammals are located in the project vicinity.	All marine mammals were taken in to consideration within the analysis.
1116	A-007	3.6.3	Chapter 3, Marine Mammals, Cetacean Stranding Events - Research: March 7, 2007, the Atlantic Fleet Active Sonar had been used prior to a Blainsville beaked whale stranding on the Outer Banks. The whale was bleeding from both ears.	Active sonar was not used within a minimum of 150 NM and 2 weeks prior to the stranding. Therefore the local stranding network investigators found no causal relationship to sonar.
1174	A-019	3.7.1	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* In the EIS, we hope to find evidence of study on the hearing abilities of turtles and their behavioral responses to marine noise.	Refer to Sections 3.7.1 and 4.5.1.

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774	G-011	3.7.2.3	2(b) Findings. The DCR-DHR has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plan and animal species, unique or exemplary natural communities, and significant geologic formations. According to the information on DCR's files, the Loggerhead sea turtle (*Caretta caretta*, G3/S1B,S1N/LT/LT), has been documented within the project area.	The Navy is consulting with NMFS under the ESA for sea turtles and marine mammals.
1166	A-019	3.8	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* Fisheries: Among the factors that must be considered are impacts on areas designated or being considered for designation as Essential Fish Habitat and Habitat Areas of Particular Concern, and impacts on the economics of commercial and recreational fishing, including charters. This review should include an analysis of landings, easily obtainable from NOAA.	Refer to Section 3.8 and 4.6. In addition, refer to Sections 4.15 for information related to potential impacts to commercial and recreational fishing.
884	G-006	3.8	Essential Fish Habitat (Section 3.8): We find the Navy's description of EFH to be inadequate. It merely describes the classification systems used by the National Marine Fisheries Service (NMFS) and the federal fishery management councils, and lists the federally managed fish species for which EFH has been designated. This section only describes a few of the general habitat characteristics (e.g., current temperatures) and broad faunal distributions (e.g., northern vs. southern, temperate vs. tropical) within the OPAREAS. There is no mention of specific, designated EFH types in this section. Several habitat considered by NMFS to be EFH are also significant habitats included in the North Carolina Coastal Habitat Protection Plan (CHPP, Street et al., 2005).	Refer to enhanced material on EFH in Section 3.8 and 4.6.

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887	G-006	3.8	There is no mention of hard bottom habitat, which is designated EFH in the south Atlantic and Gulf of Mexico and was specifically mentioned in DMF scoping comments for this project. Additionally, hard bottom is one of the six major fish habitat types in the CHPP. Quattrini and Ross (2006) documented the importance of this habitat to a variety of fishes (117 species) utilizing the Johnson-Sea-Link submersible.	Refer to enhanced material on EFH in Section 3.8 and 4.6.
1167	A-019	3.9	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* Close coordination with scientists that are developing a better understanding of the ways in which fish create, use and rely on noises, and the degree to which active sonar might interfere with these essential communications is imperative. Measures to mitigate harm to these important species, many of which serve as prey for other, larger species (including marine mammals), such as seasonal restrictions on the conduct of training activities, are also essential for a thorough review.	Refer to Sections 3.9 and 4.7.
1137	I-036	3.9	Many charter captains, tournament, recreational and commercial fishermen in North Carolina have observed a pronounced negative impact on fish when the Navy is using sonar. Many of them have commented on this for USWTR DEIS. This is important because our NC coastal economy depends on the fishing industry. There are literally hundreds of fishing tournaments held almost every week of the year off the North Carolina coast.	Refer to Section 3.9 and 4.7 for additional information.

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582	I-098	3.9.2	Finally - I know I have one minute left - larval fish - it was only briefly mentioned in what I saw so far - have very thin swim bladders. They still use sound to locate reefs and locate habitats that are appropriate for them. The higher frequency sounds that may not affect adult fish could possibly affect the larvae and juvenile stages of fish, impacting mortality due to sonar - due to the Navy's mid-frequency sonar and their explosive sonobuoys need to be tested on larval fish. We need more research in that area as well. Again, you cannot say that this will have no significant impact if the research has not been done. And those are my short comments.	Refer to section 3.9.2 on fish acoustics.
893	G-006	3.9.2.1	We commend the Navy for the completeness of the discussion of fish acoustics and hearing in Section 3.9.2.1. Please note the page 3-174, line 6 refers to the "clupeid genus". The Clupeidae are a family of fish, within which there are several sub-families and within these sub-families, several genera.	Please refer to revised Section 3.9.2.1.
896	G-006	3.9.3.1.2	Section 3.3 describes the occurrence of marine fish species in the various OPAREAS. With regard to the examples of species listed in Table 3-15, please see the attached 2007 DMF Stock Status report, which can also be found online: http:www.ncfisheries.net/stocks/index.html. This report lists all of the commercially and recreationally important species that are landed in North Carolina. We recognize that Table 3-15 was not meant to be an exhaustive list; however there are significant omissions (e.g., King and Spanish mackerel).	Refer to revised Table 3-15.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1222	A-019	3.10.4	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Among the many seabirds that congregate in the ocean waters offshore North Carolina are some that are endangered. The Bermuda Petrel (*Pterodroma cahow*) is perhaps the most critically endangered seabird in the world.	Refer to Section 3.10.4 for a discussion of threatened and endangered seabirds likely to occur in the AFAST Study Area.
819	G-005	3.10.4	Section 3.10.4 incorrectly lists least terns as endangered. While the California and interior U.S. populations of least terns are listed as endangered, the Atlantic coastal population is not federally listed. It is, however, state listed in many states.	The least tern is listed as federally endangered in several states, including some with coastlines in the AFAST study area (i.e., Louisiana, Mississippi). For this reason it will remain as is in the EIS/OEIS.
820	G-005	3.10.4	Bermuda petrels. The DEIS states, "Since their species only nests on islets off Bermuda, the Carolina sightings are considered rare. This species is not expected to be encountered in the study area. " According to the Draft Southeast United States Regional Waterbird Conservation Plan (Hunter, W., J. Collazo, B. Noffsinger, B. Winn, D. Allen, B. Harrington, M. Epstein and J. Saliva, 2005. U.S. Shorebird Conservation Plan, Southeaster Coastal Plains -- Caribbean Regional Fish and Wildlife Service, Atlanta, GA.) "Recent documentation provides evidence that foraging areas (for Bermuda petrels) include the Gulf Stream waters off of NC." IT is our understanding that the Gulf Stream is at or adjacent to the proposed site so the presence of Bermuda petrels in the area shouldn't be ruled out.	Concur. Refer to updated section 3.10.4

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765	G-011	3.10.4	The waters of the Chesapeake Bay and Delmarva Peninsula represent important wintering and foraging areas for numerous sea ducks and seabirds, including several thousand northern gannets (*Morus bassanus*), which are fish eating aerial divers that often forage from an elevation of 150-200 ft. (Doug Forsell, unpublished data). Moreover, the area serves as a major migration corridor for tens of thousands of surf scoters (*Melanitta perspicillata*) and black scoters *(Melanitta nigra*) that pass through the area on their way to wintering grounds in the Chesapeake Bay or to states further south (Doug Forsell, unpublished data). In addition, Virginia's Eastern Shore seaside lagoon system and barrier island chain serve as globally important stopover areas and migration corridors for thousands of shorebirds annually. The Shore supports various species breeding terns, gulls, wading birds, shorebirds, rails, waterfowl and other waterbirds.	The majority of activities associated with the AFAST EIS/OEIS would be conducted outside 12 NM line. Potential seabirds likely to be present are discussed in Section 3.10. In addition, refer to Section 4.8 for a discussion of potential effects to seabirds.
766	G-011	3.10.4	The barrier islands also provide important nesting habitat for the federally threatened piping plover (*Charadrius melodus*). Beach nesting birds include the state threatened Wilson's plovers (*Charadrius wilsonia*), least terns (*Sterna antillarum*), a state species of special concern, American oystercatchers *(Maematopus Palliatus*), a species of high concern in the U.S. Shorebird Conservation Plan, and common terns (*Sterna hirundo*), brown pelicans (*Pelecanus occidentalis*), royal terns (*Sterna maxima*), sandwich terns (*Sterna sandvicensis*), and Forster's terns (*Sterna foresteri*). Several species of wading birds, waterfowl, and gulls are also known to nest on the barrier islands. Approximately 10 breeding pairs of the State Threatened peregrine falcon (*Falco peregrinus*) nest in the Eastern Shore's seaside lagoon system located westward of the barrier islands. Moreover, thousands of shorebirds and sea ducks use the barrier islands and lagoon system as stopover sites during spring and fall migration and as a wintering area.	None of the activities associated with the AFAST EIS/OEIS would entail the use of the shoreline or coastal waters associated with the barrier islands.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
955	G-002	3.13	The ONMS recommends adding information regarding general regulations promulgated under the NMSA to the heading text for Section 3-13 (page 3-192). General text should include the following main points: sanctuary regulations under 15 CPR Part 922 generally prohibit, from within the boundaries of any sanctuary, discharge or deposit of any material or other matter, (although specific discharge prohibitions and exceptions vary from site to site); in some cases, material discharge or deposited outside a sanctuary that subsequently enters the sanctuary and injures a sanctuary resource or quality is also prohibited; most sanctuaries prohibit (with some exceptions) drilling into, dredging or otherwise altering the seabed.	See revised Section 3.13.
957	G-002	3.13	In addition, it is recommended that, in outlining sanctuary-specific regulations in regional subsections, regulations relevant to military activities should be specified for each site according to NMSA regulations at 15 CFR Part 922. These regulations are similar but differ somewhat between sites. As mentioned in the cover, we are requesting additional information at this time to determine what sanctuary regulations might be violated and the significance of the potential effects in order to determine if consultation may be required.	Please see revised Section 2.6.
901	G-006	3.17	Commercial and Recreational Fishing (section 3.17): With regard to recreational fishing tournaments in the southeaster OPAREAS (Section 3.17.2.1.3), it should be noted that fishing tournaments can and do regularly occur any day of the week; they are not restricted to weekends. We would like clarification on how the Navy determined the six biggest tournaments (e.g., number of participants, number of fish landed, weight of fish landed, etc.). The Big Rock Blue Marlin Tournament, operated out of Morehead City, NC, is one of the top ten fishing tournaments on the southeastern coast with respect to number of participants. Please see attached list of the North Carolina Governor's Cup Billfish Conservation Series fishing tournaments. (Attached copy of flyer for 2008 Governor's Cup Participating Tournaments.)	Please refer to revised Section 3.17.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1168	A-019	3.19	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* Diving: Current and more accurate mapping of popular dive sites is imperative. Information about the potential impact of sonar on human divers was lacking in the DEIS for the USWTR and must be contained in the AFAST EIS. Mitigation should include detailed descriptions of a warning system that would be employed to notify divers of planned use of sonar.	Refer to Sections 3.19 and 4.17 for additional information.
358	A-001	4	The Navy's operational requirements should not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
984	A-008	4	What will happen to fish that happen to be near the path of torpedoes? What about sea turtles and other organisms in the area?	There is a remote chance of fish being impacted by a torpedo. There has never been a recorded instance of sea turtle or marine mammal being struck by a torpedo, and because there are a limited number of exercise torpedoes expended during the AFAST activities, the chance of an animal being impacted is remote.
1403	A-008	4	Equip parachutes used for aircraft-launched torpedoes, sonobuoys, etc. with biodegradable material, break-away couplings and minimal knots in lines, to reduce entanglements with marine life.	Biodegradable parachutes are currently being researched by the Navy. Please refer to Chapter 4 for a discussion of potential entanglement effects associated with expended materials and marine life.
279	A-009	4	We share this planet with some of the most magnificent creatures in the universe and there is a great need to protect our country and the economies of those coastal areas where so much activity takes place.	Please reference Chapter 4 for the analytical results associated with recreational boating; commercial and recreational fishing; commercial shipping; scuba diving; marine mammal watching; Coastal Zone Management Act consistency; as well as environmental justice and risks to children.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1370	A-010	4	The proposed activities also implicate the Clean Air Act and Clean Water Act as well as other statutes protecting the public health. The Atlantic Fleet's exercises cannot legally be undertaken absent compliance with these and other laws.	The majority of AFAST activities will occur outside of territorial waters, where these regulations do not apply. Where the Navy's activities do occur within territorial waters, the Navy operates in compliance with the Clean Air Act and Clean Water Act.
584	A-011	4	I took the time to attend the August 14, 2006 hearing at Beaufort's Duke Marine Lab and was concerned to hear the potential damage to sea life in this area. Active sonar damage to whales, turtles and dolphins leading to injury, death and disorientation. Strandings, injuries and deaths have been linked to incidents around Hawaii, North Carolina, US Virgin Islands, Bahamas, the Canary Islands, and Alaska	Please reference Sections 4.4 and 4.5 for the potential effects to marine mammals and sea turtles. In addition, the Navy is consulting with NMFS under the ESA for sea turtles and marine mammals. Please refer to Appendix E for a discussion of each of the respective stranding.
586	A-011	4	I took the time to attend the August 14, 2006 hearing at Beaufort's Duke Marine Lab and was concerned to hear the potential damage to sea life in this area. Ingestion of parachute debris from many thousands of discarded sonobuoys.	Please reference the ingestion potential discussion in Sections 4.4.12.2.1 (marine mammals) and 4.5.3.2.1 (sea turtles).
228	A-013	4	The Navy's operational requirements do not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
900	A-016	4	In view of the evidence related to the impacts of human-generated undersea noise, including active sonar use, on marine animals and the international action and calls for pre-caution over the introduction of anthropogenic noise into our oceans, we strongly urge the Navy to reconsider its planned action.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
1063	A-016	4	The Navy's operational requirements should not supersede its marine stewardship obligations. Other navies use more effective mitigation procedures which, in some cases, the Navy has adhered to, demonstrating that operational effectiveness need not be compromised for the sake of protecting the marine environment.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
24	A-018	4	#2. The Navy and the scientific community agree that AFAST does have an affect on marine mammals - the closer to the testing site, the greater the damage.	Implementation of mitigation measures will reduce the likelihood of near-range effects. Please see Chapter 5..
327	A-018	4	I urge the Navy to take measures to reduce the harm of active sonar that it poses to the whales, dolphins and fish and what it's doing now to actively do analysis on our environment and on our economy.	Please refer to Chapter 4 for the results of the environmental effects analysis, as well as Chapter 5 for mitigation and conservation measures.
547	A-019	4	Now, in addition to entrusting our safety within the realm of the Navy and our other armed forces, we also expect these armed forces to protect our national interests and other important natural resources. It's not just safety to humans that we're concerned about. It's also safety to the environment and the natural resources that we hold hear and that many of us use to make a living.	Please refer to the analysis of potential effects contained within Chapter 4 and proposed mitigation measures within Chapter 5.
1162	A-019	4	Additional protections would be needed to ensure the safety of human divers and to safeguard these natural, cultural and recreational resources.	Please refer to Sections 4.14, 4.15, 4.17, 4.18, and 4.19 for information related to the analysis on recreational activities and cultural resources.
1185	A-019	4	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Unfortunately, our overall view of the DEIS is that it has failed to comply with NEPA's mandate. Each section repeats, without explanation or analysis, that the action (or portion thereof considered for that section) is unlikely to have any effect, significant or otherwise, on the marine environment or the natural resources supported by that environment.	Please refer to the analysis of potential effects contained within Chapter 4.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
648	A-021	4	The Navy's operational requirements should not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
664	A-021	4	As the science on the impacts of ocean noise grows, so do the findings relating to its impacts on marine life. Without comprehensive knowledge of its impacts on all marine life, precaution must prevail.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation measures.
665	A-021	4	The Marine Mammal Protection Act prohibits the "taking" of marine mammals without DoC permission. The Navy disingenuously states that since "most animals" will not be impacted by its preferred action, it will have no significant impact and cause no significant harm to populations of marine mammals, turtles, fish, fish habitat, invertebrates or sea birds.	The Navy has initiated consultation with the National Marine Fisheries Service in accordance with the Endangered Species Act and Marine Mammal Protection Act for marine mammals. In addition, the Navy has initiated consultation with the National Marine Fisheries Service in accordance with the Endangered Species Act for sea turtles.
1004	A-023	4	I am no scientist, but I cannot, and do not, believe the Navy's requirements should supersede in any manner its commitment to marine life obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
448	A-026	4	While we acknowledge the importance of having proper training exercises for Navy personnel, in today's world there is no reason that there need be a conflict with marine life, especially marine mammals. These animals could be sensitive to the sounds produced during Navy training exercises as well as the associated vessel activities, at times with fatal consequences.	Please reference Chapter 4 for the results of the environmental analysis associated with the Proposed Action.
50	A-028	4	However, under NEPA, the Navy should not be building any pre-decisional case. Rather, NEPA mandates that it take a hard look at the environmental consequences of its actions through a genuine, unbiased and rigorous investigation. The Navy's approach is the exact opposite of what NEPA requires.	Please refer to the analysis of potential effects contained within Chapter 4.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1424	A-028	4	…the overall conclusion made by this DEIS, that AFAST activities will not significantly impact, or harm the environment, is not accurate, and cannot be supported scientifically.	No significant impact or harm is anticipated based on best available science. The Navy is consulting with NMFS in accordance with the Marine Mammal Protection Act and Endangered Species Act.
530	E-001	4	This could have long-lasting negative impacts on our state's wildlife with no economic or environmental benefit to the citizens of North Carolina. There is no question in my mind that this training would have significant lasting harm on our coastal ecology.	Please refer to Chapter 4 for the results of the environmental analyses.
1405	G-014	4	All aspects of marine mammal ecology including feeding behavior, communication, mating, and the rearing of young may be adversely impacted by the Navy's use of active sonar.	Refer to Section 4.4.3.4 for a discussion of the behavioral aspects of the analytical framework.
72	I-002	4	Fleet training is important but so is responsibility to our ocean environment and the impact sonar has on marine life.	Please refer to Chapter 4 for results of the environmental analysis.
283	I-006	4	Now, the biggest threat that I think faces any organization or group, no matter what the basis, that the largest threat is lack of knowledge and lack of research. I believe from my own understanding that sea mammals of many different species are being affected by this ongoing program of sonar research. I believe that emphatically.	Please reference Chapter 4 for the results of the environmental analysis associated with the Proposed Action.
286	I-006	4	but I believe so far, I believe that this testing is having an affect on the sea life, especially mammal sea life and it's -	Please reference Chapter 4 for the results of the environmental analysis associated with the Proposed Action.
77	I-010	4	I am earnestly concerned about the potentially disastrous and lethal consequences of high-powered sonar blasts of the marine life throughout the area.	Please refer to Chapter 4 for results of the environmental analysis.
350	I-012	4	I believe in these points: The Navy's operational requirements should not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
742	I-014	4	The Navy's operational requirements should not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
435	I-026	4	The Navy's operational requirements should not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
156	I-028	4	The Navy's operational requirements do not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
1105	I-033	4	The Navy's operational requirements should not supersede its marine stewardship obligations	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
248	I-040	4	As the science on the impacts of ocean noise grows, so do the findings relating to its impacts on marine life. Without comprehensive knowledge of its impacts on all marine life, precaution must prevail.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation measures.
249	I-040	4	The Marine Mammal Protection Act prohibits the taking of marine mammals without DoC permission. The Navy disingenuously states that since most animals will not be impacted by its preferred action, it will have no significant impact and cause no significant harm to populations of marine mammals, turtles, fish, fish habitat, invertebrates or sea birds.	The Navy has initiated consultation with the National Marine Fisheries Service in accordance with the Endangered Species Act and Marine Mammal Protection Act for marine mammals. In addition, the Navy has initiated consultation with the National Marine Fisheries Service in accordance with the Endangered Species Act for sea turtles.
265	I-040	4	The Navy's operational requirements should not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
158	I-042	4	As a coastal resident and observer of marine life, the Navy must regard its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation measures.
525	I-043	4	I hope the Navy will consider the impact of sonar technology on whales, dolphins, porpoises, sea turtles and other marine wildlife. No animal should become a casualty of military drills.	Please refer to Chapter 4 for the results of the environmental effects analysis. In addition, the Navy is consulting with NMFS under the ESA for sea turtles and marine mammals.

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389	I-045	4	The Navy's operational requirements should not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
384	I-048	4	I implore the Fleet Project Manager and the Navy to please, please, please be more considerate of our helpless sea life! It is more important to do so, than you realize. We really are held accountable for all we do in this life, often within this lifetime. All "Life" has a purpose. Please consider this.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
268	I-049	4	The Navy's operational requirements do not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
148	I-051	4	Please do not endanger any mammal with your sonar. Please do not endanger fish and other ocean life with your sonar. Please keep the public freely informed about your tests, when and where, and what action was taken to protect life and health of all. We do need defense, but at what cost to our health and happiness, and to our oceans health and wellbeing for all? No life needs to be destroyed to do your tests. Thank you for accepting comments.	Please refer to Chapter 4 for the results of the environmental analysis. While the location of the actual active sonar activity is classified, the Navy will employ the mitigation measures contained within Chapter 5.
714	I-052	4	We respectfully request that the Navy respect the welfare of this marine life and act accordingly - and in a responsible manner.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
150	I-057	5	I do not support these exercises. Under NO circumstances do I think that the Navy's operational requirements should supersede its marine stewardship obligations. Please face up to the fact that sonar kills marine animals. At the very least, please stop nighttime exercises. Thanks you. Sincerely, Peter George	Please refer to Section 5.5.1 for a discussion of why the Navy must train at night.
140	I-060	4	Navy operations should not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
576	I-062	4	Your operational requirements should not supersede your marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and

Comment Number	Commenter Number	Section Number	Comment	Comment Response
				conservation measures.
695	I-069	4	5.) What are the positive environmental and/or economic impacts for North Carolina? 6.) What are the negative environmental and/or economic impacts for North Carolina?	Please refer to Chapter 4 for the results of the environmental analysis, including individual sections after 4.4.6 which break down individual operating areas under each marine resource and economic category.
697	I-069	4	7.) The Navy states that sonar would do no major harm to sea turtles and marine mammals such as whales and dolphins, but it could affect the behavior of animals. Will the Navy please explain in detail its scientific data for this reasoning and if hearing is involved, couldn't it be fatal?	Major harm to sea turtles and marine mammals is not anticipated based on best available science, and the Navy does not anticipate behavioral effects will cause mortality. In addition, the Navy is consulting with NMFS under the ESA for sea turtles and marine mammals.
710	I-069	4	14.) If and how or will the researchers working for the Navy determine that marine life would not be affected between the shoreline of Onslow Bay and the 65 mile range off shore of your proposed preferred location, including the trunk line? Please include all details.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. Please refer to Chapter 4 for the results of the environmental analysis.
618	I-070	4	The Navy's operational requirements should not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
634	I-070	4	As the science on the impacts of ocean noise grows, so do the findings relating to its impacts on marine life. Without comprehensive knowledge of its impacts on all marine life, precaution must prevail.	Please refer to Chapter 4 for a summary of all potential environmental effects and Chapter 5 for a discussion of mitigation and conservation measures.

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635	I-070	4	The Marine Mammal Protection Act prohibits the "taking" of marine mammals without DoC permission. The Navy disingenuously states that since "most animals" will not be impacted by its preferred action, it will have no significant impact and cause no significant harm to populations of marine mammals, turtles, fish, fish habitat, invertebrates or sea birds.	The Navy has initiated consultation with the National Marine Fisheries Service in accordance with the Endangered Species Act and Marine Mammal Protection Act for marine mammals. In addition, the Navy has initiated consultation with the National Marine Fisheries Service in accordance with the Endangered Species Act for sea turtles.
336	I-076	4	The Navy's operational requirements do not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation measures.
424	I-080	4	I'm asking you to be fully aware of the impact these trainings will have and to rethink your strategies in going through with this.	Please refer to Chapter 4 for the results of the environmental analysis.
395	I-088	4	The Navy's operational requirements should not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
728	I-091	4	The numbers for "Total Annual Sonar and Explosive Source Exposures" and "Total Annual Explosive Source Exposures" indicate opposite choices on behalf of animals' safety.	Total annual sonar and explosive source exposures were used for marine mammal exposures, while total annual explosive source exposures was used only for sea turtles. The species of marine mammals and sea turtles are not present in the AFAST study area at the same density levels and therefore exposures vary. Sonar training areas were developed based on the most acoustically sensitive species, which were certain species of marine mammals. See Appendix D.
720	I-094	4	The Navy's operational requirements should not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
1140	I-101	4	The Navy's operational requirements should not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
174	I-103	4	I am opposed to your use of mid-frequency act (MFA) sonar because of its harmful effects on marine animals.	Please refer to Chapter 4 for the results of the environmental analysis.
235	I-109	4	The Navy's operational requirements do not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
4	I-111	4	It is long overdue for the Navy to acknowledge the damage it does to marine mammals. The longer the Navy denies it, the more hostile the public will become to sonar use off our shores.	Please refer to the analysis of potential effects contained within Chapter 4.
562	I-114	4	We the citizens are trusting you to be the stewards of our great aquatic resources and to exercise judgment and care. Please do not let us and future generations down!	Please refer to the analysis of potential effects contained within Chapter 4 and proposed mitigation measures within Chapter 5.
460	I-116	4	It is impossible to be sure that sonar will not adversely affect marine life. The Navy has already showed its wanton disregard for the environment with the OLF in NC.	Please reference Chapter 4 for the results of the environmental analysis associated with the Proposed Action.
549	I-126	4	Please do not conduct sonar testing. It has been shown to be harmful to whales and other sea mammals who are very far away	Please refer to the analysis of potential effects contained within Chapter 4.
224	I-137	4	The Navy's operational requirements should not supersede its marine stewardship obligations	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
529	I-141	4	TODAY....I must disagree with what the Navy is doing with DEIS. It is harming aquatic life. Responsible scientists have shown this.	Please refer to Chapter 4 for the results of the environmental analyses.
592	I-143	4	The Navy's operational requirements should not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
197	I-147	4	The Navy's operational requirements should not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
343	I-149	4	The Navy's operational requirements do not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
136	I-152	4	Please, NO SONAR in the coastal waters off Charleston! The marine mammals as well as birds will be harmed and some may become extinct if this goes forward.	Conducting active sonar activities in multiple locations is necessary to ensure that the range of environments and features likely to be encountered in an actual conflict are experienced during training. Please refer to Section 2.6 for a discussion of operational requirements associated with the proposed action. In addition, please refer to Chapter 4 for the results of the environmental analysis.
374	I-154	4	The Navy's operational requirements should NOT supersede its marine stewardship obligations;	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
382	I-154	4	To add insult to literally injury of other sentient beings, my hard earned tax dollars, and those of many other Americans are irresponsibly misused to torture and kill our planet's besieged and rapidly vanishing marine life. I strongly urge you to read my enclosed fact sheet, and become vitally aware of the devastating impact on peaceful, vulnerable, and our precious remaining marine mammals that these continued Naval exercises are agonizingly inflicting.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
422	I-154	4	The Marine Mammal Protection Act prohibits the "taking" of marine mammals without DoC permission. The Navy disingenuously states that since "most animals" will not be impacted by its preferred action, it will have no significant impact and cause no significant harm to populations of marine mammals, turtles, fish, fish habitat, invertebrates or sea birds.	The Navy has initiated consultation with the National Marine Fisheries Service in accordance with the Endangered Species Act and Marine Mammal Protection Act for marine mammals. In addition, the Navy has initiated consultation with the National Marine Fisheries Service in accordance with the Endangered Species Act for sea turtles.
365	I-155	4	I have read quite a bit on the Navy's use of mid-frequency active sonar and how it negatively effects the marine life. I do not support any activity which harms the ocean animal life.	Please refer to Chapter 4 for the results of the environmental analyses and Chapter 5 for mitigation and conservation measures.
852	I-158	4	The environmental damage of AFAST will likely be devastating to marine mammals and other species.	Refer to Chapter 4 for the results of the environmental effects analysis.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1363	A-010	4.20, Appendix F	…the Navy has declined to engage in consistency review both for certain states and certain of its activities. …although, it has prepared consistency determinations for the states of Connecticut, Florida, Georgia, Texas, and Virginia…, these submissions appear to cover only those activities, like in-port testing, that actually occur within the state's coastal zone. This narrow approach plainly violates the CZMA's federal consistency requirements and, indeed, has already been rejected by the courts. NRDC v. Winter 2007 WL 2481037 at *8-9 (C.D.Cal. 2007).	Coastal determinations are based on the enforceable policy of individual states as approved by NOAA.
1364	A-010	4.20, Appendix F	Navy has failed to prepare consistency determinations for at least some states whose coastal resources would be affected. Most notably, it promises to present a negative determination to North Carolina-even though hundreds of hours of sonar training would place off the coast of that state, in the Cherry Point Operating Area, and even though the enforceable policies of the state's coastal zone management program clearly demand it. It is discouraging to see the Atlantic Fleet repeat the same legal violations that the Navy has seen rejected in the Pacific. The Navy must fulfill its CZMA commitments.	Coastal determinations are based on the enforceable policy of individual states as approved by NOAA.
326	A-018	4.20	Sometimes the Navy does not estimate correctly its impact and I think that's why we are concerned.	Please refer to Section 4.2 for a description of the scientific and analytical basis for determining significance during the environmental analyses.
849	G-015	4.20	The DEIS indicates that the Navy intends to prepare a negative determination for Maine and most other East Coast and Gulf states rather than a consistency determination to address its obligation under the Coastal Zone Management Act's federal consistency provision. See DEIS, p.4-177. The final EIS should include further explanation of the basis for the Navy's decision.	The U.S. Navy has reviewed the enforceable policies of each state's CZMP located within the study area and will prepare Negative Determinations pursuant to 15 CFR § 930.35 for the state of Maine. The Consistency Determination for the Proposed Action is contained in Appendix F.
560	I-099	4.2	The burden of proof is on the Navy. You need to convince us that your sonar work is harmless to these species. Thanks for paying attention.	Please refer to the analysis of potential effects contained within Chapter 4.

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36	I-151	4.2	And so this is a wonderful thing. And as the gentleman said before, the research out there was wonderful, and everybody out there was very, very knowledgeable, answered all my questions and were very polite. However, I felt that the research was a little bit biased towards the Navy's position, and I would just like to see, in the next presentation the Navy has, more information, to be more objective. That's it. Thank you.	Please refer to Section 4.2, Scientific and Analytical Basis for Determining Significance. Additionally, the introductory paragraph of each subsection in Chapter 4 explains the methodology used in the respective analysis.
979	A-008	4.3	The draft EIS does not fully consider the long-term impacts discarded debris and toxins, and how they will cumulatively affect marine organisms and the aquatic food chain into the future. What will be the total amounts of materials discharged each year?	Refer to Section 4.3 and Table 4.1 for further information.
822	A-015	4.3	Finally, the large amount of waste that the Navy discards during its operations presents another significant problem unaddressed by this DEIS. The sonobuoys, torpedoes and other equipment, including batteries and line, and the chemicals attendant in naval operations all pose hazards to marine mammals, sea turtles and other species. They also pose serious danger to fishing and recreational vessels. Captain Joe Shute has circulated pictures of two large metal containers he pulled from the sea before they were able to damage his ship, and gave testimony that if they were to hit a vessel it would likely be severely damaged or even sunk. The Navy must look at options for retrieving its detritus.	Items used in training exercises that can be recovered (i.e., remain on the surface: torpedoes, targets, etc) are recovered. Please refer to 4.3.2 for a discussion about the inability to recover marine debris. Also, AFAST expended materials sink. Please refer to animal entanglement sections including 4.4.12.2 and 4.5.3.2. Refer to Section 4.3 for the results of the marine habitat analysis.
823	G-005	4.3	We are concerned with the cumulative amounts of litter associated with the dispersal of materials for the proposed AFAST. In addition, it is extremely difficult to understand the cumulative impacts of the multiple releases of various hazardous materials on the marine environment. While there is discussion of releases of hazardous material from individual sources, there is little discussion of cumulative impacts from multiple sources over many years.	The potential impacts from training materials expended during AFAST activities is summarized in Section 4.3.2. Section 4.3.2.1 states "Over time, the amount of materials will accumulate on the ocean floor. However, the active sonar activities using sonobuoys will not likely occur in the exact same location each time. Additionally, the materials will not likely settle in the same vicinity due to ocean currents."

Comment Number	Commenter Number	Section Number	Comment	Comment Response
909	G-006	4.3	Marine Habitat (Section 4.3): We remain concerned about the impacts fish habitat from expended sonobuoys, torpedo ballast, and other training targets on bottom substrate as a source of both debris and contamination.	It was determined that no significant impact from expended materials will occur. Refer to Section 4.3.2 for additional information.
1343	G-023	4.3	We are further concerned that habitat that is not covered by parachutes may be contaminated by discarded batteries and lead weights.	Please refer to Section 4.3 for the results of the analyses associated with the marine habitat. As described in Section 4.3.2.1, the weights are comprised of 2-ounce steel materials (i.e., lead weights). Also refer to Section 4.6.1 for a discussion of the essential fish habitat.
571	I-140	4.3	Okay. I have pictures here of some cases last June when the Navy was having maneuvers off the beach here. I was coming in from charter fishing, and I came off a wave and I just about hit this big yellow block in the water. And I stopped and turned around to see what it was. And it was a 65-pound airtight metal case floating in the water. And it said "2 of 2." And I said - well, you know, I get a lot of shipments, so I'm smart enough to figure out there's one more around here somewhere. So I looked, and about a hundred yards off to the port, there was another one floating there, and it was miraculously "1 of 2." So I pocked - I said, "We'll pick them up and take them in." I said, "They might be worth - you know, somebody might want them back." And like I said, they both weighted 65 pounds apiece. Now, a small hull boat, or even a big hull boat coming off of a swell or a wave and not seeing this, that can create a lot of damage, especially to the propulsion gear, whether it be a straight inboard or whether it be an outboard, either one, or if it knocked a hole in the boat. I tried to find out - I called Cherry Point. They said, "Is it an explosive?" I said, "No." They said, We don't want it. Throw it back." Okay. I called the Coast Guard, and finally I got the Coast guard to come pick these up. And I found that they were some sort of a vacuum-testing equipment that they Navy uses. In fact, it's got the U.S. Department of the Navy stamped on the outside of the case. And what I'm bringing up is this - I'm not the only one that finds these after maneuvers. You can speak with any of the charter boat captains. Unfortunately, I don't see very many of them here tonight. There are not a whole lot of people here tonight at all. But after I found these cases, I called down to the waterfront. I said, "Look guys. Y'all are out there more than I am. Do you see much of this?" They said, "Oh, man, it's out there all over the place." He said, "You got weight line," and said, "you run into this all over the place." And speaking of the gentleman that e-mailed him - I put these on the Internet - he's an ex-Navy man.	Please refer to section 4.3 for discussion of expended materials. Materials expended during AFAST would sink.

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			He said, "Yeah, we use that equipment all the time." Said that they had a bad habit of breaking down. I said, "Well, what do you do?" He said, "We pitched it over the side." So what worries me is the more frequency we have out there, the more trash there's going to be on the water. When I'm talking about trash, I'm not talking about paper trash. I'm talking about heavy-duty objects that can really damage and affect people's property and boats, and the safety in lives. And I went through all this other stuff at the last meeting. But this was just something new that I wanted to bring up. I have the pictures here if anybody wants to see the,. But this can definitely damage and cause problems and personal property injury.	
912	G-006	4.3.1	While the abiotic characteristics (e.g., temperature, pH, dissolved oxygen, etc) of sediments and the surrounding water column may hinder leaching of battery constituents, the cumulative effect of the continued buildup of metals and metallic compounds (from batteries and target housing) is likely to result in negative impacts to habitat. Page 4-2, line 42 states that bioaccumulation data were obtained from previous battery studies, yet no information is presented. DMF respectfully requests that these data be available in the EIS/OEIS.	Please refer to updated Section 4.3.1 for information on study.
1156	A-019	4.3.2	Many items used in Navy training activities present potential hazards to navigation. With sonar in particular, these items include sonobuoys, unrecovered torpedoes and targets, parachutes, guidance cables and flex hoses. The DEIS asserts that all sonobuoys will scuttle as designed, parachutes and other discarded accessories will sink, and that all torpedoes and targets will be recover, yet offers no evidence to validate these assertions despite its experience with these practices in the South Atlantic, as well as other oceans.	The Navy has no documented instances of the materials that would be expended during AFAST activities causing any hazards to navigation.
839	G-008	4.3.2	Well over 30,000 sonobuoys, with their lead chloride, cuprous thiocyanate, lithium iron disulfide or silver chloride batteries and parachute assemblies, will be lost. The Navy should consider the feasibility of taking steps to retrieve the sonobuoys and particularly the parachutes as part of the training exercises.	It has been determined that these devices will have no significant impact to the marine habitat. Reasons why sonobuoys are not retrieved is discussed in Section 4.3.2.

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876	G-021	4.3.2	DCM recognizes that the Navy would be only one of many potential sources of marine debris. To partially mitigate this adverse effect, DCM recommends that the Navy implement a public education effort that will facilitate the reporting of any debris that may wash ashore, be found floating in the water, or interfere with fishing activities. The public education program could consist of a variety of activities, including but not limited to: a toll-free number for reporting debris, a brochure, notice to mariners, and a partnership between the Navy and volunteer organizations doing coastal cleanup events.	The Navy has several programs in place to mitigate marine debris. Naval personnel and equipment regularly participate in coastal cleanup events.
1344	G-023	4.3.2	The DEIS/OEIS indicates that annually, an estimated 35,539 expendable instruments will be left behind in various OPAREAs from the Gulf of Mexico to the Gulf of Maine. We recommend that the Navy consider the feasibility of retrieving the sonobuoys, and particularly the parachutes, as part of the AFAST training exercises, rather than leaving this significant amount of debris on the ocean floor.	Sonobuoys and parachutes are designed to sink after use; therefore, it would be extremely difficult to retrieve them. Refer to Section 4.3 for additional information.
982	A-008	4.3.4	Although the hydrogen cyanide will diffuse, the cumulative, long-term effects of this are not in the EIS. What will be the total discharge per training run? What will be the total discharge of hydrogen cyanide each year?	Please see Table 4.1 in reference to number of torpedoes discharged.
1026	A-010	4.4	In this case, the Navy's assessment of impacts on marine mammals is consistently undermined by its failure to meet these fundamental responsibilities of scientific integrity, methodology, investigation, and disclosure. As with the Navy's initial Draft Environmental Impact Statement for the Undersea Warfare Training Range, the DEIS excludes a great deal of relevant information adverse to the Navy's interest, uses approaches and methods that would not be acceptable to the scientific community, and ignores whole categories of impacts. In short, it leaves the public with an analysis of environmental harm - behavioral, auditory, and physiological - that is at odds with established scientific authority and practice.	The Navy relied on all available literature, but placed a high degree of confidence on peer-reviewed literature.

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1212	A-019	4.4	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* The Navy also fails to consider the potential cumulative impacts from multiple sound exposures. A study jointly conducted by the Navy and NMFS states that research on temporary threshold shifts from multiple sound exposures is being conducted and cautions that "the precise relationship between TTS onset for comparable SEL values from either single or multiple exposures is unknown." Over time, multiple exposures could lead to impaired hearing abilities, as studies on the effects of sound on terrestrial mammals has shown.	By modeling individual sources and adding their footprints individually, the analysis slightly overestimates the number of exposures and therefore accounts for the cumulative effect of multiple systems operating simultaneously. Repeated TTS-level exposures to the same animal over time are not likely due to the small zone of influence for TTS and the Navy's mitigation measures.
1214	A-019	4.4	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* As NMFS has stated, the loss of even one animal from the small existing population from non-natural causes could push the species over the brink of extinction. Considerably more investigation and analysis is warranted before taking further action.	The Navy has initiated consultation with the National Marine Fisheries Service in accordance with the Endangered Species Act and Marine Mammal Protection Act. Implementation of mitigation measures will reduce the likelihood of near-range effects (PTS and TTS). See Chapter 5.
671	A-021	4.4	The Navy admits that its MFA sonar levels, calculated using the Navy's own questionable numbers, will cause an estimated 120 animals to become deaf - a death sentence since marine mammals use sound for essential life functions. Further, it expects over 20,000 animals to suffer temporary deafness (which can also lead to death) and tens of thousands to be behaviorally impacted.	Please refer to Sections 4.4.11 and 4.4.12 for a summary of all potential acoustic effects to marine mammals as a result of sound. In addition, please refer to Chapter 5 for mitigation measures and Chapter 6 for potential for cumulative impacts.

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54	A-028	4.4	I think the basing of the sound exposure thresholds, which were largely based on several studies of captive, trained marine mammals from only a couple of species, for that to be applied to all marine mammals in the wild, both odontocetes and mysticetes, is just total - and also the pinnipeds and manatees, et cetera, it doesn't hold water. It's really ridiculous. It's totally unscientifically sustainable.	Contrary to the statement that the data from TTS studies is inapposite, the Navy relies upon these studies because they are the most controlled studies of behavioral reactions to sound exposure available and provide the greatest amount of data. The studies recorded baseline behavior of the test subjects over many sessions so that behavioral alterations could be defined as a deviation from normal behavior. The sound exposure level received by each animal was recorded and quantified. The exposure signals used were close to the frequencies typically employed by MFA sonar. No other study provides the same degree of control or relevance to signal type as the TTS studies from which much of the behavioral response thresholds are derived. The data from these studies are the "best available" scientific data both with respect to quality and quantity. Data from animals in the wild were utilized when sufficient information on animal behavior (both baseline and reactionary) and sound exposure levels existed. This is unfortunately a sparse amount of data. Utilization of the copious other studies with inadequate control, observational periods, or ability to determine exposure levels of the animals introduces a large amount of guesswork and estimation that weakens any numerical association between behavioral reactions and sound exposure. Furthermore, the deficiencies of the TTS studies referred to in the comment were acknowledged in the original behavioral analysis. Please see "Finneran, J. J., and Schlundt, C. E. (2004). "Effects of intense pure tones on the behavior of trained odontocetes,"

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				(SSC San Diego, San Diego, CA)," in particular section 5.1.1 which details the limitations of the data collection and analysis. The NMFS is aware of these deficiencies yet still approves of the usage of the data at this time because of the quality and quantity of the data. As quality data continues to be collected on animals in the wild, the relevance of the behavioral data collected during the TTS studies will decrease and they will eventually be replaced. However, at this time, they provide the best available data for assessing the relationship between behavioral reactions and sound exposure.
804	I-009	4.4	The Navy MUST PROVE conclusively that the sonar does NO DAMAGE to the whales and dolphins.	Please refer to Sections 4.4.11 through 4.4.13 for a summary of potential acoustic and nonacoustic effects to marine mammals.
78	I-010	4.4	It has already been proven repeatedly in other locations that these exercises destroy whales, driving various species to the very brink of extinction!	Please refer to Sections 4.4.11 through 4.4.13 for a summary of potential acoustic and nonacoustic effects to marine mammals.
812	I-037	4.4	Marine mammals and other species 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 (sonar) interferes with these and other functions, which may eventually cause death or disablement.	Please refer to Sections 4.4.11 and 4.4.12 for a summary of all potential acoustic effects to marine mammals as a result of sound. In addition, please refer to Chapter 5 for mitigation measures and Chapter 6 for potential for cumulative impacts.
250	I-040	4.4	The Navy admits that its MFA sonar levels, calculated using the Navy's own questionable numbers, will cause an estimated 120 animals to become deaf-a death sentence since marine mammals use sound for essential life functions. Further, it expects over 20,000 animals to suffer temporary deafness (which can also lead to death) and tens of thousands to be behaviorally impacted.	The data from these studies are the "best available" scientific data both with respect to quality and quantity. Data from animals in the wild were utilized when sufficient information on animal behavior (both baseline and reactionary) and sound exposure levels existed. This is unfortunately a sparse amount of data. Utilization of the copious other studies with inadequate control, observational periods, or ability to determine exposure

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				levels of the animals introduces a large amount of guesswork and estimation that weakens any numerical association between behavioral reactions and sound exposure. Furthermore, the deficiencies of the TTS studies referred to in the comment were acknowledged in the original behavioral analysis. Please see "Finneran, J. J., and Schlundt, C. E. (2004). "Effects of intense pure tones on the behavior of trained odontocetes," (SSC San Diego, San Diego, CA)," in particular section 5.1.1 which details the limitations of the data collection and analysis. The NMFS is aware of these deficiencies yet still approves of the usage of the data at this time because of the quality and quantity of the data. As quality data continues to be collected on animals in the wild, the relevance of the behavioral data collected during the TTS studies will decrease and they will eventually be replaced. However, at this time, they provide the best available data for assessing the relationship between behavioral reactions and sound exposure.
563	I-041	4.4	The Navy needs to prove conclusively that the sonar does not damage these marine mammals that has not been done to my satisfaction.	Effects to marine mammals are discussed in Section 4.4
166	I-047	4.4	Consideration for the health and welfare of these animals: dolphins, whales, especially the North Atlantic right whale of whom only 300 individuals remain, must be given as the AFAST Study proceeds.	The Navy has initiated consultation with the National Marine Fisheries Service in accordance with the Endangered Species Act and Marine Mammal Protection Act.
556	I-061	4.4	Whales and other oceanic mammals need to be protected from harmful sonar. If the whales of the Pacific were deemed sufficiently in danger from the affects of sonar use by the Navy then the whales of the Atlantic surely are in the same danger. Please stop the use of sonar which is damaging to oceanic mammals.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis for marine mammals.

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1378	I-100	4.4	I would like to stop the sonar project because even though you don't think so, it might be killing whales and dolphins.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis.
408	I-154	4.4	A growing body of research confirms that human-generated noise-especially the type of MFA sonar to be used at the AFAST Study Area-can disturb, harm and kill marine life.	Please refer to Sections 4.4.11 and 4.4.12 for details related to the acoustic effects analysis.
423	I-154	4.4	The Navy admits that its MFA sonar levels, calculated using the Navy's own questionable numbers, will cause an estimated 120 animals to become deaf-ad death sentence since marine mammals use sound for essential life functions. Further, it expects over 20,000 animals to suffer temporary deafness (which can also lead to death) and tens of thousands to be behaviorally impacted.	Implementation of mitigation measures will reduce the likelihood of near-range effects (PTS and TTS). Please see Chapter 5..
486	I-159	4.4	The DEIS noise thresholds for temporary threshold shift (temporary hearing loss) and for physical injury are far, far too high. In the real world, marine animals will experience these effects at much lower noise levels, and in far greater numbers than estimated by the DEIS. These thresholds have been based on flawed assumptions.	The criteria for Temporary Threshold Shift and Permanent Threshold Shift are supported by the National Marine Fisheries Service and are based on the best available science.
1497	A-028	4.4	…the DEIS fails again to recognize that reverberation can extend the duration of the noise so that pulse lengths become long; it also attempts to minimize the potential for masking due to the narrow frequency band but avoids the fact that many marine animals use sound in this frequency and will therefore be affected by masking from AFAST activities.	Distinct acoustic environments were modeled to account for various acoustic effects in AFAST. Reverberations such as those that occurred in the Bahamas stranding event are not likely to occur in the AFAST Study Area.
1102	A-010	4.4.1	(3) The model fails to consider the possible synergistic effects of using multiple sources, such as ship-based sonars, in the same exercise, which can significantly alter the sound field, and fails to consider the combined effects of multiple exercises, which, as NMFS indicates, may have played a role in the 2004 Hanalei Bay strandings;	By modeling individual sources and adding their footprints individually, the analysis slightly overestimates the number of exposures and therefore accounts for the cumulative effect of multiple systems operating simultaneously Synergistic effects are not well-studied and can only be accounted for qualitatively.

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1146	A-019	4.4.1	Another flaw that pervades the entire DEIS is the improper equation of the absence of research with an absence of impacts. Research scientists have long lamented the Navy's refusal to disclose information about its sonar use. This secrecy impedes the ability of the scientific community to observe and monitor impacts to marine life and draw conclusions from necropsies of animals that have been stranded and died, or washed ashore. Consequently, there is little direct information available from which scientists can draw conclusions about the impact of sonar on individual species, much less the full range of marine life.	Please see section 4.4.1 for a discussion on the analysis of acoustic systems.
1121	A-007	4.4.2	The dose-response approach does not take into account factors such as an animal's perception of the sound, including non-auditory effects or potential masking impacts, the cumulative and synergistic effects of several noise sources and possible long-term impacts.	Please refer to the revised Section 4.4.2.
1021	A-010	4.4.2	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; avoidance behavior, which can lead to abandonment of habitat or migratory pathways; disruption of biologically important behaviors such as mating, feeding, nursing, or migration, or loss of efficiency in conducting those behaviors; aggressive (or agnostic) behavior, which can result in injury; masking of biologically meaningful sounds, such as the call of predators or potential mates; chronic stress, which can compromise viability, suppress the immune system, and lower the rate of reproduction; habituation, causing the animals to remain near damaging levels of sound, or sensitization, exacerbating other behavioral effects; and declines in the availability and viability of prey species, such as fish and shrimp.	Please refer to the revised Section 4.4.3; including updated analytical framework (conceptual biological framework). Per Section 4.7 and 4.9, there will be no significant impact to fish or invertebrates.

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1030	A-010	4.4.2	Third, the numbers do not reflect other non-auditory physiological impacts, as from stress and from chronic exposure during development, which are discussed further among "Other Impacts on Marine Mammals" (below)	Please refer to the revised Section 4.4.3; including updated analytical framework (conceptual biological framework).
1072	A-010	4.4.2	See id. 1508.8(a). It must also take into account the activity's indirect effects. This requirement is particularly critical in the present case given the potential of sonar exercises to cause significant long-term impacts not clearly observable in the short or immediate term.	Refer to the revised conceptual framework discussion in Section 4.4.2 (conceptual biological framework).
1091	A-010	4.4.2	(2) dismisses the potential for sonar to injure whales at sea, grossly mischaracterizing the literature;	Refer to revised analytical framework, (conceptual biological framework) Section 4.4.3.
1101	A-010	4.4.2	(2) Navy does not properly account for reasonably foreseeable reverberation effects (as in the Haro Strait incident), giving no indication that its modeling sufficiently represents areas in which the risk of reverberation is greatest;	The Navy uses the most current range-dependent propagation models.
1103	A-010	4.4.2	(4) In assuming animals are evenly distributed, the model fails to consider the magnifying effects of social structure, whereby impacts on a single animal within a pod, herd, or other unit may affect the entire group;	Refer to Section 4.4.3.
1108	A-010	4.4.2	(6) The model, in assuming that every whale encountered during subsequent exercises is essentially a new whale, does not address cumulative impacts on the breeding, feeding, and other activities of species and stocks.	The Navy analysis does not assume that each exposure represents a "new whale;" however, it is not possible to accurately predict how many times an individual animal may (or may not) be exposed to a sonar source annually.

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1213	A-019	4.4.2	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Perhaps even more relevant, if feeding behavior is disrupted repeatedly and is combined with other noise events that mask communications among whales or interfere with a whale's navigational abilities, the cumulative effects of multiple sound exposures and disruptions could prove fatal. This is of particular concern with regard to right whales.	Please refer to the revised Section 4.4.3; including updated analytical framework (conceptual biological framework).
53	A-028	4.4.2	We're going to be submitting written comments in detail, but just a few points. I think one of the things that the Navy has not taken into consideration enough is the effects of stress, including from low levels of sound. It doesn't have to be necessarily high. I think the Navy really needs to look more at stress, not just in marine mammals either. Stress can have very serious biological consequences, as I'm sure you're aware.	Refer to revised Section 4.4.3.
1483	A-028	4.4.2	Do the authors of the DEIS believe these whales to be immune to the effects of stress? If so, what are the grounds for that belief? The omission of any discussion on AFAST-induced stress in right whales further weakens the credibility of this DEIS.	The potential for marine mammals to experience stress is discussed in Section 4.4.3.
1486	A-028	4.4.2	The omission of any discussion on AFAST-induced stress in ESA-listed whales further weakens the credibility of this DEIS.	The potential for marine mammals to experience stress is discussed in Section 4.4.3.
1406	G-014	4.4.2	In addition, animals distressed by the use of active sonar may become more susceptible to disease or predation by species that are not directly affected themselves.	Refer to Section 4.4.3 for a discussion of the analytical framework (conceptual biological framework), which assisted in ordering and evaluating the potential responses of marine mammals to sound.
241	I-040	4.4.2	A growing body of research confirms that human-generated noise-especially the type of MFA sonar to be used at the AFAST Study Area-can disturb, harm and kill marine life.	Please refer to Section 4.4.3 for a description of the analytical framework (conceptual biological framework) used in assessing a marine mammals response to sound.

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520	I-043	4.4.2	Sonar can induce fatal organ hemorrhaging in whales and other marine mammals.	Neither the National Marine Fisheries Service nor the Navy anticipates a marine mammal stranding or mortality as a result of active sonar activities. Please refer Section 4.4.3.3.2 for discussion on direct and indirect tissue effects.
615	I-079	4.4.2	If it is having that kind of effect in temporary loss - I don't know what the study shows, but it seems to me that over a constant period of loosing your hearing - and these whales' hearing is the same as their sight. For a temporary period of time - I don't know how long - I would think that that is not a good thing to loose for a while.	Refer to 4.4.3, revised conceptual biological framework.
491	I-128	4.4.2	Of special concern is the possible disruption of the communication and navigational abilities of many marine species.	Please reference Section 4.4.3 for a discussion of the analytical framework (conceptual biological framework) used to assess marine mammal response to active sonar.
1449	A-028	4.4.2.2	Where is the discussion of AFAST activities causing physiological effects resulting from increased noise levels? Where is the discussion of how it might affect pregnancy and birth rates? Where is the discussion on the effects of increased noise levels upon a young animal's development? If increased stress leads to increased aggression, what might the impacts of this be? How might increased stress levels resulting from AFAST activities add to the stress levels marine animals may already be bearing due to other anthropogenic sound sources? As the oceans are oftentimes already filled with sound from these other sources, the addition of even low levels of sound from AFAST will likely increase stress levels. How might increased stress levels resulting from AFAST operations add to stress levels caused by threats that are not acoustic in nature? The failure of this DEIS to discuss the issue of stress in marine animals resulting from AFAST activities clearly demonstrates its failure to sincerely investigate what the real consequences of AFAST might be. Please directly address the questions raised here.	Stress is discussed in Section 4.4.3.3.

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1064	A-010	4.4.2.3	The Navy fails to adequately assess the impact of "stress" on marine mammals…stress…alone or in combination with other stressors,…may weaken a cetacean's immune system, making it "more vulnerable to parasites and diseases that normally would not be fatal. …if they are resident animals exposed repeatedly to a variety of stressors in the AFAST study area. Yet despite the potential for stress in marine mammals and the significant consequences that can flow from it, the Navy assumes that such effects would be minimal. We note that substantial work on noise-related "stress" in marine mammals is shortly to be published, and we encourage the Navy to revise its DEIS accordingly.	Please refer to revised Section 4.4.3.3.
1270	A-028	4.4.2.3	All of these effects (animals being confused, disoriented, panicked or injured by exposure to the noise) might result from exposure to one loud noise source, and would probably only increase were there to be other noise sources, as will often be the case in AFAST exercises.	Synergistic effects are not well-studied. The best available science was used to predict marine mammal reactions.
996	A-008	4.4.3	Sonar-related beaked whale strandings may have been caused by rapid ascent from deep dives. However, they do not appear to be the only cetaceans to be prone to injury associated with rapid decompression. Stranded Risso's dolphins (*Grampus griseus*), common dolphins (*Delphinus delphis*) and one harbor porpoise (*Phocoena phocoena*) have been found with gas bubbles in their blood vessels and gas-filled cavities in internal organs (Jepson et al., 2003). These are symptoms consistent with decompression sickness. Sperm whale (*Physeter macrocephalus*) bones have also been found to show signs of decompression sickness (Wood Hole Oceanographic Institute, 2004). It is possible that these other species may become injured as a result of rapid ascent from exposure to active sonar use, but this has not been considered in the draft EIS.	It has not been established that whales get "the bends," as explained in Section 4.4.3 The issue raised and other potential hypotheses with regards to causes of marine mammal strandings, remain highly speculative.

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1029	A-010	4.4.3	Second, the DEIS fails to take proper account of published research on bubble growth in marine mammals, which separately indicates the potential for injury and death at levels far lower than the Navy proposes. According to the best available scientific evidence, as represented by multiple papers in flagship journals such as Nature and Veterinary Pathology, gas bubble growth is the causal mechanism most consistent with the observed injuries; in addition, it was singularly and explicitly highlighted as plausible by an expert panel convened by the Marine Mammal Commission, in which the Navy participated. The Navy's argument to the contrary simply misrepresents the available literature. What is more, the default assumption in the DEIS - that whales suffer injury only through the physical act of stranding itself (or through direct tissue injury) - has been soundly rejected in the literature. The Navy's refusal to consider these impacts is insupportable under NEPA. 42 C.F.R. Sections 1502.22, 1502.24.	It has not been established that whales get "the bends," as explained in Section 4.4.3. The issue raised and other potential hypotheses with regards to causes of marine mammal strandings, remain highly speculative.
1254	A-028	4.4.3	The DEIS states (4.4.12.2) states "It is unlikely that the short duration of sonar pings will be long enough to drive bubble growth to any substantial size, if such a phenomenon occurs." Please explain what this assumption is based on. And why had the DEIS neglected to mention here that reverberation effects could extend the duration of the ping?	Please refer to Section 4.4.3.3.2 and supporting references.
1255	A-028	4.4.3	The DEIS (4.4.12.2) states "However, an alternative but related hypothesis has also been suggested: stable bubbles could be destabilized by high-level sound exposures such that bubble growth then occurs through static diffusion of gas out of the tissues." What is it that leads the DEIS to assume that high levels of sound would be required to produce this effect?	Please refer to Section 4.4.3.3.2 and supporting references.
1490	A-028	4.4.3	The DEIS (4.4.12.3) states that "Further, although it has been argued that traumas from recent beaked whale strandings are consistent with gas emboli and bubble-induced tissue separations (Jepson et al., 2003) there is no conclusive evidence of this and complicating factors are associated with introduction of gas into the venous system during necropsy." Is the DEIS suggesting that the evidence of these effects seen in all the necropsies were there only as a result of these necropsies? If so, please explain how the DEIS had determined that this is the case.	It has not been established that whales get "the bends," as explained in Section 4.4.3.3.2. The issue raised and other potential hypotheses with regards to causes of marine mammal strandings, remain highly speculative.

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1253	A-028	4.4.3	…references to important work that has been done on these subjects have not even been mentioned. Why has his "discussion neglected to mention here a paper by the Navy's own Navy Marine Mammal Program by D.S. Houser, R. Howard, and S. Ridgeway, entitled "Can diving-induced tissue nitrogen supersaturation increase the chance of acoustically driven bubble growth in Marine mammals?", published in the Journal of Theoretical Biology in 2001? Where is the discussion of J.R. Potter's paper entitled "A possible mechanism for acoustic triggering of decompression sickness symptoms in deep-diving marine mammals" presented in Taiwan in April of 2004? Fernandez et al., (2005) and Jepson et al., (2005) and the issue of tissue damage resulting from gas and embolic syndrome?	Acknowledged. The Navy used the best available scientific data including all relative published peer-reviewed material.
277	A-009	4.4.4	There seems to be a real question as to the distance at which sonar, especially mid- and high-intensity sonar impacts marine mammals and so we are in a difficult situation, especially when we are going up the coast or across the coastal water areas in order to try to do the training that you're talking about.	Refer to Section 4.4.4 for a discussion of the integration of regulatory and biological frameworks, as well as Figures 5-1 and 5-2 for the typical ranges for the most powerful and common active sonar and explosive sonobuoys.
1444	A-028	4.4.4	Given the fact that the Finneran and Schlundt study has been so widely criticized by marine mammal scientists and by NMFS itself, it is unclear why the Navy would even want to continue to make use of this study.	Contrary to the statement that the data from TTS studies is inapposite, the Navy relies upon these studies because they are the most controlled studies of behavioral reactions to sound exposure available and provide the greatest amount of data. The studies recorded baseline behavior of the test subjects over many sessions so that behavioral alterations could be defined as a deviation from normal behavior. The sound exposure level received by each animal was recorded and quantified. The exposure signals used were close to the frequencies typically employed by MFA sonar. No other study provides the same degree of control or relevance to signal type as the TTS studies from which much of the behavioral response

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				thresholds are derived. The data from these studies are the "best available" scientific data both with respect to quality and quantity. Data from animals in the wild were utilized when sufficient information on animal behavior (both baseline and reactionary) and sound exposure levels existed. This is unfortunately a sparse amount of data. Utilization of the copious other studies with inadequate control, observational periods, or ability to determine exposure levels of the animals introduces a large amount of guesswork and estimation that weakens any numerical association between behavioral reactions and sound exposure. Furthermore, the deficiencies of the TTS studies referred to in the comment were acknowledged in the original behavioral analysis. Please see "Finneran, J. J., and Schlundt, C. E. (2004). "Effects of intense pure tones on the behavior of trained odontocetes," (SSC San Diego, San Diego, CA)," in particular section 5.1.1 which details the limitations of the data collection and analysis. The NMFS is aware of these deficiencies yet still approves of the usage of the data at this time because of the quality and quantity of the data. As quality data continues to be collected on animals in the wild, the relevance of the behavioral data collected during the TTS studies will decrease and they will eventually be replaced. However, at this time, they provide the best available data for assessing the relationship between behavioral reactions and sound exposure.

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1437	A-028	4.4.4.2	The DEIS (4.4.4.2) states "Injury, as defined in previous rulings (NOAA 2001, 2002, a), is the destruction or loss of biological tissue. The destruction or loss of biological tissue will result in an alteration of physiological function that exceeds the normal daily physiological variation of the intact tissue." By this definition, it seems like TTS should be classified as an injury, and therefore Level A harassment, as it is highly unlikely that wild marine mammals experience TTS on a daily basis.	The thresholds used in the acoustic modeling have been approved by the National Marine Fisheries Service. In addition, the Navy is consulting in accordance with the Marine Mammal Protection Act and Endangered Species Act.
1126	I-036	4.4.4.2	*All comments from this commenter are specific to USWTR. The comments were reviewed and the most relevant ones pulled out.* The DEIS has selected Temporary Threshold Shift (TTS) and Permanent Threshold Shift (PTS)- that is, auditory impacts- as the relevant (and sole) measures on which to base standards for level A and level B harassment (as defined for the military in the MMPA) and to calculate impact levels. However just as with free ranging behavioral research, there is no consensus in the scientific community regarding the use of TTS and PTS (the latter of which has never actually been measured) as the basis for standards and models. This lack of consensus encompasses both the suitability of TTS and PTS as criteria for determining injury or harassment and the applicability of the results from a few captive animals of a few species to all marine mammals.	The criteria for Temporary Threshold Shift and Permanent Threshold Shift are supported by the National Marine Fisheries Service and are based on the best available science.
992	A-008	4.4.5	The EIS uses the sound level threshold of 215 decibels (dB) and above for Level QA harassment (potential injury to a marine mammal) and sound levels below 215 dB down to 195 dB for Level B harassment (disruptions of natural behavioral patterns to a point where they are abandoned or significantly altered). We request that the Navy consider this from the Ocean Studies Board (2005): "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 µPa."	The risk function was developed to account for potential responses down to 120 dB. The Navy research continues to look into the causal mechanisms of marine mammal strandings related to sonar. Please refer to Appendix E for a discussion of specific stranding events that have been putatively linked to potential sonar operations.

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1027	A-010	4.4.5	There are gross problems with the Navy's thresholds here. A. Injury Threshold. The Navy fixes its highest threshold of 215 dB re 1 microPa2-s - which it considers the ground floor for direct physical injury - on the amount of energy necessary to induce permanent hearing loss (or "threshold shift") in marine mammals. DEIS at 4-39. Beneath this decision lies an assumption that the tissues of the ear are "the most susceptible to physiological effects of underwater sound" (DEIS at 4-31, 33), and, indeed, a few paragraphs are spent in an effort to set aside other types of injury that have been identified or observed. Unfortunately, the Navy's position is inconsistent with the scientific literature, with the legal standard of review, and with recent court decisions. See NRDC v. Winter, 527 F.Supp.2d 1216 (C.D. Cal. 2008), aff'd_F.3_,2008 WL 565680 (9th Cir. 2008); Ocean Mammal Institute v. Gates, 2008 WL 564664 (D. Hawaii 2008).	The "identified or observed" injuries referred to in the comment have not been directly linked to sound exposure and may result from other processes related to the behavior of the animal. The Navy's position is consistent with the interpretation of the scientific literature and no scientific literature exists that demonstrates a direct mechanism by which injury will occur as a result of sound exposure levels less than those predicted to cause PTS in a marine mammal.
1028	A-010	4.4.5	First the DEIS disregards data gained from actually whale mortalities. The best available scientific evidence, as reported in the peer-reviewed literature, indicates that sound levels at the most likely locations of beaked whales beached in the Bahamas strandings run far lower than the Navy's threshold of injury here: approximately 150-160 dB re 1 microPa for 50-150 seconds, over the course of the transit. A further modeling effort, undertaken in part by the Office of Naval Research suggests that the mean exposure level of beaked whales, given their likely distribution in the Bahamas' Providence Channels and averaging results from various assumptions, may have been lower than 140 dB re 1 microPa. (In another context, where it wishes to dismiss evidence of impacts to hearing at lower levels than its standard allows, the Navy refers to the statistical mean as "the best unbiased estimator." DEIS at 4-41.) Factoring in duration, then, evidence of actually sonar-related mortalities would compel a maximum energy level ("EL") threshold for serious injury on the order of 182 dB re 1 microPA2-s, at least for beaked whales. Indeed, to pay at least some deference to the literature, the Navy - under pressure from NMFS - has previously assumed that non-lethal injury would occur in beaked whales exposed above 173 dB re 1 microPa2-s. The Navy's claim that no beaked whales would suffer injury, let alone serious injury or mortality, because none would be exposed to levels above 215 dB re 1 microPa is simply not tenable.	The analytical methodology used in this EIS/OEIS was developed in close coordination with NMFS. This represents the best available and most applicable science with regard to analysis of effects to marine mammals from MFA/HFA sound sources. While recognizing there is incomplete and unavailable information with regard to behavioral impacts on marine mammals (see Section 4.4.5), the risk function curve extends to 120 dB SPL specifically to encompass uncertainty and the potential for behavioral reactions in marine mammal species that may be affected by sounds perceived at levels just above ambient in some areas during some parts of the year in East Coast and Gulf of Mexico waters.

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1031	A-010	4.4.5	Fourth, the Navy's exclusive reliance on energy flux density as its unit of analysis does not take other potentially relevant acoustic characteristics into account. For example, an expert group commissioned by the Office of Naval Research in 2003 to provide recommendations on mitigation suggested that peak power may matter more to beaked whales mortalities than integrated energy. Reflecting this uncertainty, the Navy should establish a dual threshold for marine mammal injury.	The analytical methodology used in this EIS/OEIS was developed in close coordination with NMFS. This represents the best available and most applicable science with regard to analysis of effects to marine mammals from MFA/HFA sound sources. While recognizing there is incomplete and unavailable information with regard to behavioral impacts on marine mammals (see Section 4.4.5), the risk function curve extends to 120 dB SPL specifically to encompass uncertainty and the potential for behavioral reactions in marine mammal species that may be affected by sounds perceived at levels just above ambient in some areas during some parts of the year in East Coast and Gulf of Mexico waters.
1040	A-010	4.4.5	b. Hearing loss threshold. First, the Navy's extrapolation of data from bottlenose dolphins and belugas to all cetaceans is not justifiable. Given the close association between acoustic sensitivity and threshold shift, such an approach must presume that belugas and bottlenose dolphins have the best hearing sensitivity in the mid-frequencies of any cetacean. Yet, as noted below at subsection c ("Threshold for Significant Behavioral Change"), harbor porpoises and killer whales are more sensitive over part of the mid-frequency range than are the two species in the SPAWAR and Hawaii studies. Furthermore, the animals in the studies may not represent the full range of variation even within their own species, particularly given their age and situation: the SPAWAR animals, for example, have been housed for years in a noisy bay.	The TTS work conducted by Nachtigall, Finneran, Schlundt and others are widely recognized by the scientific community as representing the best information available. The thresholds and criteria were developed in cooperation with NMFS and as more data becomes available, the methodology and thresholds will be revised as warranted.

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1043	A-010	4.4.5	In other words, the Navy's own graphic indicates that a 190 dB re 1 microPa2-s threshold would have fit its data better than the threshold it established and would have had the advantage of being marginally more conservative given the enormous uncertainties - yet there is no justification in the DEIS for the choice it made. The Navy's assumption of a 195 re 1 microPa2-s EL threshold in the present DEIS, as in all documents that depend on the same methodology, is arbitrary and capricious.	Please refer to Section 4.4.5.2.
1044	A-010	4.4.5	In the AFAST study area, the Navy estimates that sonar training will result each year in approximately 2.75 million behavioral takes of marine mammals. The Hawaii data suggests that this take level - while still very large - represents far less than what the Navy would have predicted had it continued to use the previous EL-based standard of 173 re 1 microPa2-s.	The analytical methodology used in this EIS/OEIS was developed in close coordination with NMFS. This represents the best available and most applicable science with regard to analysis of effects to marine mammals from MFA/HFA sound sources. While recognizing there is incomplete and unavailable information with regard to behavioral impacts on marine mammals (see Section 4.4.5), the risk function curve extends to 120 dB SPL specifically to encompass uncertainty and the potential for behavioral reactions in marine mammal species that may be affected by sounds perceived at levels just above ambient in some areas during some parts of the year in East Coast and Gulf of Mexico waters.
1048	A-010	4.4.5	First, the Navy again relies on inapposite studies of temporary studies threshold shift in captive animals for its primary source of data. Marine mammals scientists have long recognized the deficiencies of using captive subjects in behavioral experiments, and to blindly rely on this material, to the exclusion of copious data on animals in the wild, is not supportable by any standard of scientific inquiry.	Contrary to the statement that the data from TTS studies is inapposite, the Navy relies upon these studies because they are the most controlled studies of behavioral reactions to sound exposure available and provide the greatest amount of data. The studies recorded baseline behavior of the test subjects over many sessions so that behavioral alterations could be defined as a deviation from normal behavior. The sound exposure level received by each animal was recorded and quantified. The exposure signals used were close to the

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				frequencies typically employed by MFA sonar. No other study provides the same degree of control or relevance to signal type as the TTS studies from which much of the behavioral response thresholds are derived. The data from these studies are the "best available" scientific data both with respect to quality and quantity. Data from animals in the wild were utilized when sufficient information on animal behavior (both baseline and reactionary) and sound exposure levels existed. This is unfortunately a sparse amount of data. Utilization of the copious other studies with inadequate control, observational periods, or ability to determine exposure levels of the animals introduces a large amount of guesswork and estimation that weakens any numerical association between behavioral reactions and sound exposure. Furthermore, the deficiencies of the TTS studies referred to in the comment were acknowledged in the original behavioral analysis. Please see "Finneran, J. J., and Schlundt, C. E. (2004). "Effects of intense pure tones on the behavior of trained odontocetes," (SSC San Diego, San Diego, CA)," in particular section 5.1.1 which details the limitations of the data collection and analysis. The NMFS is aware of these deficiencies yet still approves of the usage of the data at this time because of the quality and quantity of the data. As quality data continues to be collected on animals in the wild, the relevance of the behavioral data collected during the TTS studies will decrease and they will eventually be replaced. However, at this time, they provide the best available data

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				for assessing the relationship between behavioral reactions and sound exposure.
1049	A-010	4.4.5	The SPAWAR studies have several other major deficiencies that NMFS, among others, has repeatedly pointed out; and in relying so heavily on them, the Navy has once again ignored the comments of numerous marine mammal behaviorists on the Navy's USWTR DEIS, which sharply criticize the Navy for putting any serious stock in them.	Contrary to the statement that the data from TTS studies is inapposite, the Navy relies upon these studies because they are the most controlled studies of behavioral reactions to sound exposure available and provide the greatest amount of data. The studies recorded baseline behavior of the test subjects over many sessions so that behavioral alterations could be defined as a deviation from normal behavior. The sound exposure level received by each animal was recorded and quantified. The exposure signals used were close to the frequencies typically employed by MFA sonar. No other study provides the same degree of control or relevance to signal type as the TTS studies from which much of the behavioral response thresholds are derived. The data from these studies are the "best available" scientific data both with respect to quality and quantity. Data from animals in the wild were utilized when sufficient information on animal behavior (both baseline and reactionary) and sound exposure levels existed. This is unfortunately a sparse amount of data. Utilization of the copious other studies with inadequate control, observational periods, or ability to determine exposure levels of the animals introduces a large

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				amount of guesswork and estimation that weakens any numerical association between behavioral reactions and sound exposure. Furthermore, the deficiencies of the TTS studies referred to in the comment were acknowledged in the original behavioral analysis. Please see "Finneran, J. J., and Schlundt, C. E. (2004). "Effects of intense pure tones on the behavior of trained odontocetes," (SSC San Diego, San Diego, CA)," in particular section 5.1.1 which details the limitations of the data collection and analysis. The NMFS is aware of these deficiencies yet still approves of the usage of the data at this time because of the quality and quantity of the data. As quality data continues to be collected on animals in the wild, the relevance of the behavioral data collected during the TTS studies will decrease and they will eventually be replaced. However, at this time, they provide the best available data for assessing the relationship between behavioral reactions and sound exposure.
1069	A-010	4.4.5	For all these reasons, the thresholds of injury, hearing loss, and significant behavioral change utilized by the Navy in this DEIS are fundamentally inconsistent with the scientific literature on acoustic impacts, and, indeed, with marine mammal science in general, and, if used to support a Record of Decision, would violate NEPA.	The Navy and NMFS, in the role as regulator and as a cooperating agency, developed the risk function for analysis of impacts using the best available and applicable science. As described in Southall et al (2004) and as discussed in Sections 4.4.5 and 4.4.6, there is paucity of data upon which to base threshold criteria; however, the Navy is following the recommendations of NMFS and using the criteria established by NMFS through a process of scientific review and recommendation

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1100	A-010	4.4.5	It is difficult to fully gauge the accuracy and rigor of these models with the paucity of information that the DEIS provides; but even from the description presented here, it is clear that they are deeply flawed. Among the non-conservative assumptions that are implicit in the model: (1) As discussed above, the thresholds established for injury, hearing loss, and significant behavioral change are inconsistent with the available data and are based, in part, on assumptions not acceptable within the field.	The analytical methodology used in this EIS/OEIS was developed in close coordination with NMFS. This represents the best available and most applicable science with regard to analysis of effects to marine mammals from MFA/HFA sound sources. While recognizing there is incomplete and unavailable information with regard to behavioral impacts on marine mammals (see Section 4.4.5), the risk function curve extends to 120 dB SPL specifically to encompass uncertainty and the potential for behavioral reactions in marine mammal species that may be affected by sounds perceived at levels just above ambient in some areas during some parts of the year in East Coast and Gulf of Mexico waters.
935	A-016	4.4.5	Though the numbers of animals that the Navy predicts its proposal will impact are worryingly high, we believe them to be gross underestimates of the real numbers of animals potentially at risk because of the thresholds the Navy is using to predict behavioral disturbance and levels of deafness. The Navy is using 215 dB (re 1 mPa2-s) as the threshold above which below which it says permanent deafness (PTS) will occur and 195 dB (re 1 mPa2-s) as the threshold above which it says temporary deafness (TTS) will occur. Behavioral impacts are predicted based on a dose-response function. The threshold numbers are based on Navy-funded studies involving a few captive animals of a couple of species, including terrestrial animals, who were also presumably habituated to noise.	The criteria for Temporary Threshold Shift and Permanent Threshold Shift are supported by the National Marine Fisheries Service and are based on the best available science.

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1218	A-019	4.4.5	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Moreover, research with which the Navy has been involved notes that some cetaceans, including some species of dolphin, exhibit avoidance behaviors at received exposure levels lower than 140 dB rms re: 1 µPa. Despite this evidence, the Navy does not discuss the potential effects of such avoidance behaviors, nor does it characterize avoidance as harassment. This oversight must be corrected, as species that are more sensitive to sound and other noises may be harassed at levels lower than those assumed by the Navy.	The analytical methodology used in this EIS/OEIS was developed in close coordination with NMFS. This represents the best available and most applicable science with regard to analysis of effects to marine mammals from MFA/HFA sound sources. While recognizing there is incomplete and unavailable information with regard to behavioral impacts on marine mammals (see Section 4.4.5), the risk function curve extends to 120 dB SPL specifically to encompass uncertainty and the potential for behavioral reactions in marine mammal species that may be affected by sounds perceived at levels just above ambient in some areas during some parts of the year in East Coast and Gulf of Mexico waters.

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1038	A-027	4.4.5	Over the past five years the Navy has compelled NMFS/NOAA, the agency directly charged with enforcement of the MMPA, to raise Level B Physiological Harassment from 120 dB, a level accepted for several decades prior to the emergence of high intensity active sonar. In 2004, MMPA level B Harassment levels rose to 185 dB, an increase of 65 dB on the logarithmic scale. NMFS and the Navy also sought to set a precedent during the North Carolina training range activities for an increase of MMPA Level B Harassment levels to 195 dB.	The first established sonar MFA criteria was established for the Rim of the Pacific exercise in 2006, and was 173 dB SEL. The analytical methodology used in this EIS/OEIS was developed in close coordination with NMFS. This represents the best available and most applicable science with regard to analysis of effects to marine mammals from MFA/HFA sound sources. While recognizing there is incomplete and unavailable information with regard to behavioral impacts on marine mammals (see Section 4.4.5), the risk function curve extends to 120 dB SPL specifically to encompass uncertainty and the potential for behavioral reactions in marine mammal species that may be affected by sounds perceived at levels just above ambient in some areas during some parts of the year in East Coast and Gulf of Mexico waters.
55	A-028	4.4.5	I think the fact that the Navy talks about or sets a threshold for physical injury, without clarifying that as being a threshold for acoustic or injury to the hearing, is improper and misleading, because we know that marine mammals are being injured and actually at much, much lower levels of received sound than the Navy's threshold for physical injury. It doesn't make any sense, and it's misleading.	As stated in Section 4.4.4.1, " In this EIS/OEIS, the smallest amount of PTS (onset-PTS) is taken to be the indicator for the smallest degree of injury that can be measured. The acoustic 2 exposure associated with onset-PTS is used to define the outer limit of the Level A harassment zone. "
1251	A-028	4.4.5	The DEIS (4.4.11.2.4) states that "Acoustic analysis indicates that no beaked whales will be exposed to sound levels likely to Result in Level A harassment." This analysis is based upon flawed assumptions that have been used in this, and other, Navy sonar EISs which have allowed noise thresholds, including the threshold for Level A harassment, to be set unreasonably high.	Refer to Section 4.4.4.1 for the development of criteria and threshold for physiological effects.

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1439	A-028	4.4.5	The DEIS cannot state, with any certainty, that the tissues of the ear are the most susceptible to physiological effects as it still is not known whether in vivo bubble growth is brought on by sonar sound, or the behavioral reactions of marine mammals to that sound. If bubble growth is brought on by the sound itself, as has been theorized, then that statement is clearly not true, and the threshold for injury is obviously way out of line on that basis alone…	It has not been established that whales get "the bends," as explained in Chapter 4. The issue raised and other potential hypotheses with regards to causes of marine mammal strandings, remain highly speculative.
1442	A-028	4.4.5	Harbor porpoises and orcas are thought to have better hearing sensitivity over part of the mid-frequency range than do bottlenose dolphins and beluga whales, who were the subjects of much of the research cited above. The same may be true for other marine mammals whose hearing sensitivities are not yet known. Given this, and the connection between hearing sensitivity and threshold shift, even if the thresholds that have been based on these few studies were justifiable thresholds for bottlenose dolphins and belugas (which they are not), they are still too high for harbor porpoises and orcas, and perhaps, many other species of marine mammals.	The analytical methodology used in this EIS/OEIS was developed in close coordination with NMFS. This represents the best available and most applicable science with regard to analysis of effects to marine mammals from MFA/HFA sound sources. While recognizing there is incomplete and unavailable information with regard to behavioral impacts on marine mammals (see Section 4.4.4.1), the risk function curve extends to 120 dB SPL specifically to encompass uncertainty and the potential for behavioral reactions in marine mammal species that may be affected by sounds perceived at levels just above ambient in some areas during some parts of the year in East Coast and Gulf of Mexico waters.

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1125	I-036	4.4.5	*All comments from this commenter are specific to USWTR. The comments were reviewed and the most relevant ones pulled out.* Relying solely on the reactions of a small number of trained captive bottlenose dolphins and white whales to establish criteria and thresholds for behavioral effects is unacceptable.	The analytical methodology used in this EIS/OEIS was developed in close coordination with NMFS. This represents the best available and most applicable science with regard to analysis of effects to marine mammals from MFA/HFA sound sources. While recognizing there is incomplete and unavailable information with regard to behavioral impacts on marine mammals (see Section 4.4.4.1), the risk function curve extends to 120 dB SPL specifically to encompass uncertainty and the potential for behavioral reactions in marine mammal species that may be affected by sounds perceived at levels just above ambient in some areas during some parts of the year in East Coast and Gulf of Mexico waters.
1602	I-162	4.4.5	Various comments recommend the B parameter and the data used should be revised given that, ". . . 120 dB re 1uPa has broadly been found as the value at which 50 percent of individuals respond to noise . . ." Elsewhere (in reference to response studies), Dr. Bain states that ". . . many looked at changes in migration routes and found that 50 percent of migrating whales changed course to remain outside the 120 dB re 1uPa contour (citing to Malme et al. 1983, 1984);" and that ". . . mysticetes exposed to a variety of sounds associated with the oil industry, typically 50 percent exhibited responses at 120 dB re 1uPa."	These comments are factually inaccurate. The single citation provided for the repeated assertion that 50 percent of marine mammals will react to 120 db re 1uPa is Malme et al. (1983, 1984). Malme et al. (1983, 1984) in fact indicated that for migrating whales, a 50-percent probability of response occurred at 170 dB for a continuous, low frequency sound source that is very different from MFA sonar.
1603	I-162	4.4.5	Under the headings "Introduction", "Unconditional Effects", and "Conditional Effects", various comments allege that there is the potential for some Level B exposures (TTS or risk function) to potentially result in injury and that the Navy's analysis, therefore, underestimates the number of Level A injurious takes that may occur.	In prior rulemakings, NMFS established that exposures resulting in Level A and B harassment cannot be considered to overlap, otherwise the regulatory distinction between the two criteria would be lost and the required quantification of takes would be ambiguous. To facilitate the regulatory process, the Final EIS/OEIS maintained a clear and distinct division between Level A and Level B Harassment as

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				required by NMFS.
1604	I-162	4.4.5	Various comments state, "Population level effects of Level A on populations are relatively easy to assess, as individuals that are killed are obviously removed from the population, and those that are injured are more likely to die whenever the population is next exposed to stress."	The Navy agrees with the comment and notes that the recently documented increase in the number of endangered humpback whales in the Hawaii Range Complex, where decades of MFA sonar training and RDT&E activities have occurred, strongly suggests that there is an absence of Level A effects from those activities.
1605	I-162	4.4.5	These comments argue that there are additional datasets, including datasets not considered by NMFS and the Navy that should have been considered. Not having done so resulted in the model underestimating takes.	The data sources these comments present as requiring such consideration involve contexts that are neither applicable to the proposed actions nor the sound exposures resulting from those actions. For instance, the comments' citation to Lasseau et al. involve disturbance to a small pod of dolphins exposed to 8,500 whale-watching opportunities annually. This is nothing like the type or frequency of action that is proposed by the Navy for the HRC. In a similar manner, the example from noise used in drive fisheries is not applicable to Navy training. Navy training involving the use of active sonar typically occurs in situations where the ships are located miles apart, the sound is intermittent, and the training does not involve surrounding the marine mammals at close proximity. Furthermore, suggestions that effects from acoustic harassment devices and acoustic deterrent devices, which are relatively continuous, high frequency

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				sound sources (unlike MFA sonar) and are specifically designed to exclude marine mammals from habitat, are also fundamentally different from the use of MFA sonar. Finally, reactions to airguns used in seismic research or other activities associated with the oil industry are also not applicable to MFA sonar, since the sound or noise source, its frequency, source level, and manner of use is fundamentally different.
1606	I-162	4.4.5	The comments present a notional set of values in tabular form to be considered as sensitivity analysis in evaluation of the risk function parameters and datasets.	The values suggested as parameters, the results of which are presented in the above mentioned tables, are not reasonable given that environmental conditions have ambient noise (i.e., naturally occurring background noise) levels at or above those suggested by the comments as behavioral harassment "B" basement values. The use of these results for examination of potential uncertainty and bias in the risk function as presented in the Final EIS/OEIS is, therefore, not informative or applicable.
1607	I-162	4.4.5	Harbor porpoise considerations.	Recognizing the particular sensitivity of this species, NMFS has specified the use of a separate step function using a received level of 120 dB to account for level B harassment.
1595	I-162	4.4.5	Data were incorrectly interpreted in developing the Risk Function. Errors included failure to recognize the difference between the mathematical basement value and the biological basement value "where the likelihood of observed and predicted takes becomes non-negligible."	Having a lower basement value would not result in any significant number of additional takes. This is demonstrated in the Final EIS/OEIS (Table 4.10) showing that less than 1 percent of the predicted number of takes resulted from exposures below 140 dB. Accordingly, while lowering the basement value from 120 dB to something "far lower than 110

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				dB" would change the risk function curve, it is not likely to result in any appreciable increase in the number of takes. In addition, lowering the basement value below the present 120 dB would involve modeling for impacts occurring below naturally occurring ambient background noise (section 3.5). The commenter further suggests that the criteria used to establish the risk function parameters should reflect the biological basement where any reaction is detectable. The MMPA did not intend to regulate any and all marine mammal behavioral reactions as suggested by the comment. Congress's intent is reflected in the 2003 amendments to the MMPA which re-defined harassment as applied to military readiness activities: "(i) any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild (Level A Harassment); or (ii) any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where such behavioral patterns are abandoned or significantly altered (Level B Harassment)." Therefore, Congress, by amending the MMPA, specifically did not intend to regulate any and all behavioral reactions as the comment suggests. NMFS, as the regulator, specified the data sets and parameters for use in the risk function analysis.

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1596	I-162	4.4.5	Data were incorrectly interpreted in developing the Risk Function. Errors included presenting a Risk Function K value having a 100 percent probability of a take as value resulting in 50 percent probability.	NMFS, as a cooperating agency and in its role as the MMPA regulator, reviewed all available applicable data and determined there were specific data from three data sets that should be used to develop the criteria. NMFS then applied the risk function to predict exposures that resulted in exposures that NMFS may classify as harassment. (This is described in the Final EIS/OEIS in Section 4.4.5.) NMFS developed two risk curves based on the Feller adaptive risk function, one for odontocetes and pinnipeds and one for mysticetes, with input parameters of B=120dB, K=45, 99 percent point = 195 dB, 50 percent point = 165 dB. Only data sets with continuous, low frequency sound sources (drilling, aircraft or machinery) provided a K value that would have approached a 100 percent probability of a response but these are not applicable to MFA sonar.
1597	I-162	4.4.5	Using data from captive marine mammals is problematic.	Data sets from wild animals were incorporated into development of the risk function parameters specifically to address this concern and these are presented in Section 4.4.5.3. Additionally, as discussed in Domjan 1998, and as cited in the Final EIS/OEIS, animals in captivity can be more or less sensitive than those found in the wild. It does not follow, therefore, that the risk function modeling underestimates takes.
1598	I-162	4.4.5	The model underestimates takes because of uncertainty arising from “inter-specific variation” or from, “broad confidence intervals.”	The risk function methodology assumes variations in responses within the species and was chosen specifically to account for uncertainties and the limitations in available data. NMFS considered all available data sets and, as discussed above, made a determination as to the best data currently available. While the data sets have limitations, they constitute

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				the best available science.
1599	I-162	4.4.5	The model has limitations. It does not account for "social factors," and is likely to underestimate takes.	The commenter was concerned that if one animal is "taken" and leaves an area then the whole pod would likely follow. As explained in Appendix H to the Final EIS/OEIS, the model does not operate on the basis of an individual animal but quantifies the exposures NMFS may classify as takes based on the summation of fractional marine mammal densities. Because the model does not consider the many mitigation measures that the Navy utilizes when it is using MFA sonar, to include MFA sonar power down and power off requirements should mammals be spotted within certain distances of the ship, if anything, it overestimates the amount of takes.
1600	I-162	4.4.5	Takes occur at greater distances than predicted by the model resulting in greater duration of exposure, more often, and greater cumulative effects. Corrections need to be made for bias, and greater correction for species with less data.	Modeling accounts for exposures NMFS may classify as takes at distances up to 125 kilometers as described in the Final EIS/OEIS (Appendix H). As discussed in Appendix H of the Final EIS/OEIS, the AFAST Study Area contains a total of 36 distinct environmental provinces with specific sound propagation characteristics. These represent the various combinations of nine bathymetry provinces, three Sound Velocity Profile provinces, and three bottom loss classes.. Using these sound propagation characteristics, the risk function modeling resulted in less than 1 percent of the exposures that NMFS may classify as a take occurring between 120 dB and

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				140 dB (Section 4.4). Risk function data sets and the parameters, such as the basement values, were chosen to account for uncertainties and for species for which there was less or no data regarding hearing thresholds. The area encompassed by this sound propagation, as determined by NMFS for exposures that may constitute harassment, avoids a bias toward underestimation because the risk function parameters were designed with this in mind.
1041	A-027	4.4.5.2	How can any serious marine biologist claim that the TTS is the same for all 85 cetacean species?	The TTS work conducted by Nachtigall, Finneran, Schlundt and others are widely recognized by the scientific community as representing the best information available. The thresholds and criteria were developed in cooperation with NMFS and as more data becomes available, the methodology and thresholds will be revised as warranted.
1047	A-027	4.4.5.2	There were only dubious and discredited studies that examined less than 5 species at low acoustic levels and concluded that no harm would be done to all 85 species at levels using over 1000 times more energy.	The TTS work conducted by Nachtigall, Finneran, Schlundt and others are widely recognized by the scientific community as representing the best information available. The thresholds and criteria were developed in cooperation with NMFS and as more data becomes available, the methodology and thresholds will be revised as warranted.
1440	A-028	4.4.5.2	…the DEIS (4.4.5.2) states "The sound exposure stimuli (tones) and relatively large number of test subjects (five dolphins and two white whales) make the Schlundt et al. (2000) data the most directly relevant TTS information for the scenarios described in this EIS/OEIS." Is seven really a "relatively large number"? It is hard to imagine how the DEIS can justify extrapolating the test results from such tiny numbers of individuals to all the individual marine mammals in the ocean. Please explain why this is justified.	The TTS work conducted by Nachtigall, Finneran, Schlundt and others are widely recognized by the scientific community as representing the best information available. The thresholds and criteria were developed in cooperation with NMFS and as more data becomes available, the methodology and thresholds will be revised as warranted.

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1441	A-028	4.4.5.2	The research cited in the DEIS (4.4.5.2), upon which thresholds were established for TTS, PTS, and to a degree, behavioral disturbance, were based upon a very small number of individuals from only several species. How can the results from this research possibly be extrapolated to make claims about the threshold levels for all other marine mammals? Please explain how this is justified.	The TTS work conducted by Nachtigall, Finneran, Schlundt and others are widely recognized by the scientific community as representing the best information available. The thresholds and criteria were developed in cooperation with NMFS and as more data becomes available, the methodology and thresholds will be revised as warranted.
850	I-158	4.4.5.2	The DEIS noise thresholds for temporary threshold shift (temporary hearing loss) and for physical injury are far, far too high. In the real world, marine mammals will experience these effects at much lower noise levels, and in far greater numbers than estimated by the DEIS. These thresholds have been based on flawed assumptions.	The criteria for Temporary Threshold Shift and Permanent Threshold Shift are supported by the National Marine Fisheries Service and are based on the best available science.
513	I-158	4.4.5.2	The DEIS noise thresholds for temporary threshold shift (temporary hearing loss) and for physical injury are far, far too high. In the real world, marine animals will experience these effects at much lower noise levels, and in far greater numbers than estimated by the DEIS. These thresholds have been based on flawed assumptions. The DEIS concludes that Navy mitigation measures will protect marine mammals during AFAST activities. But this conclusion, like others throughout the DEIS, is based on extremely flawed assumptions.	The criteria for Temporary Threshold Shift and Permanent Threshold Shift are supported by the National Marine Fisheries Service and are based on the best available science.
1443	A-028	4.4.5.3	How does the Navy justify setting such high thresholds for TTS and PTS, when so little is known about the hearing sensitivities of so many species? Please explain.	The analytical methodology used in this EIS/OEIS was developed in close coordination with NMFS. This represents the best available and most applicable science with regard to analysis of effects to marine mammals from MFA/HFA sound sources.

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1122	A-007	4.4.6	Predicting the probabilities of population responses to a sound while ignoring individual animals is problematic if that individual is a key individual to that population. For the North Atlantic right whale for example, the impacts of a stressor on an individual can have population level impacts.	The dose function analysis does account for the action of individuals. No long term effects to North Atlantic right whales were anticipated. The impacts to right whales will be addressed in the biological opinion issued by NMFS.
1123	A-007	4.4.6	In some circumstances, cetaceans seem to react to the change in received level, rather than the received level per se, or whether a noise source is approaching the animal or not. Clearly, dosage is not the only, or possibly even the most important factor to consider in determining the dose-response function approach.	The analytical methodology used in this EIS/OEIS was developed in close coordination with NMFS. This represents the best available and most applicable science with regard to analysis of effects to marine mammals from MFA/HFA sound sources. While recognizing there is incomplete and unavailable information with regard to behavioral impacts on marine mammals (see Section 4.4.4.1), the risk function curve extends to 120 dB SPL specifically to encompass uncertainty and the potential for behavioral reactions in marine mammal species that may be affected by sounds perceived at levels just above ambient in some areas during some parts of the year in East Coast and Gulf of Mexico waters.

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1055	A-010	4.4.6	We must insist that the Navy provide the public with its propagation analysis for the Haro Strait event, and also describe precisely how this data set along with results from the SPAWAR and Nowacek et al. studies, were factored into its development of the behavioral risk function.	There is significant ambiguity regarding the behavior and responses of Jpod killer whales prior to the point of closest approach of the USS Shoup. There is also significant discrepancy among scientists who have viewed the video images of the animals during the point of closest approach. Researchers on the water with the animals at the time did note some apparent changes in behavior earlier in the event, although these are not reported in the records provided to NMFS as being nearly so pronounced as during the point of closest approach. Given the uncertainties, limited records, and differences of opinion, those exposures that seemed to clearly affect the behavior of the animals was used. Also, a range of exposure estimates was determined for each ‘ping’ from the USS Shoup. The values used in the DEIS represent the mean of that range, not the maximum. Please refer to the dose response information in Section 4.4.5.3.2 as well as the description of the data sources used in Section 4.4.5.3.2.
1061	A-010	4.4.6	For species that travel in tight knit groups, an effect on certain individuals can adversely influence the behavior of the whole. (Pilot whales for example, are prone to mass strand for precisely this reason; the plight of the 200 melon-headed whales in Hanalei Bay, and of the "J" pod of killer whales in Haro Strait, as described below, may be pertinent examples.) Should those individuals fall on the more sensitive end of the spectrum, the entire group or pod can suffer significant harm at levels below what the Navy would take as the mean. In developing its "K" parameter, the Navy must take account of such potential indirect effects. 42 C.F.R. Section 1502.16(b).	The Haro Strait event was considered when developing the risk function.

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1062	A-010	4.4.6	The discussion in the DEIS speaks repeatedly of uncertainty in defining the risk function and recapitulates, in its summary of the earlier methodology, the benefits implicit in the use of a criterion that takes duration into account. It is therefore appropriate for the Navy to set dual thresholds for behavioral effects, one based on SPLs and one based on energy flux density levels ("EL")	Refer to the risk function section 4.4.5 for development and section 4.4.5.3.6 for limitations of the risk function.
1065	A-010	4.4.6	By placing great weight on the SPAWAR data, excluding other relevant data, and misusing the Haro Strait data, the Navy has produced a risk function that is belied by the existing record: one that clearly demonstrates high risk of significant behavioral impacts from mid-frequency sources, including mid-frequency sonar, on a diverse range of wild species (e.g., right whales, minke whales, killer whales, harbor porpoises, Dall's porpoises) at levels below the function curve.	The analytical methodology used in this EIS/OEIS was developed in close coordination with NMFS. This represents the best available and most applicable science with regard to analysis of effects to marine mammals from MFA/HFA sound sources. While recognizing there is incomplete and unavailable information with regard to behavioral impacts on marine mammals (see Section 4.4.4.1), the risk function curve extends to 120 dB SPL specifically to encompass uncertainty and the potential for behavioral reactions in marine mammal species that may be affected by sounds perceived at levels just above ambient in some areas during some parts of the year in East Coast and Gulf of Mexico waters.
953	A-016	4.4.6	The Navy states that to assist in addressing this lack of data, it is funding a series of controlled exposure experiments on wild whales, the first of which took place in the Bahamas in 2007. Yet preliminary results from this experiment support a much lower threshold fro behavioral impacts than the Navy is using. In the experiment, only one successful playback experiment on a beaked whale was achieved and in it a tagged Blainsville beaked whale displayed a probable behavioral response at a received level of MFA sonar of 145 dB re 1mPa (rms). The precautionary principle should be applied and the Navy should, at a minimum curb its activities around known areas of high marine mammal density and at times when marine animals are expected to be present.	The risk function curve looks to affects down to 120dB. The study has not yet been completed and data has not been compiled. The Navy will utilize the data from this and other ongoing studies for use in future environmental documents. The preferred alternative is discussed in Section 2.7.

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954	A-016	4.4.6	The dose-response approach does not take into account factors such as an animal's perception of the sound, including non-auditory effects or potential masking impacts, the cumulative and synergistic effects of several noise sources and possible long-term impacts.	The risk-function approach does account for the animals' perception of sound. Please refer to Section 4.4.3, Conceptual Biological Framework for a response to non-auditory effects and masking. By modeling individual sources and adding their footprints individually, the analysis slightly overestimates the number of exposures and therefore accounts for the cumulative effect of multiple systems operating simultaneously Synergistic effects are not well-studied and can only be accounted for qualitatively. The confluence of factors associated with some strandings discussed in Section 4.3.14 are avoided to the maximum extent practicable.
1435	A-028	4.4.6	The noise thresholds do not accurately reflect levels of sound at which marine animals, if exposed to that sound, may be killed, injured, stressed, or behaviorally disrupted.	Please refer to Section 4.4.4.1 for a discussion of the criteria and thresholds used to estimate potential behavioral effects. These thresholds have been approved by the National Marine Fisheries Service.
1489	A-028	4.4.6	If stable bubbles could be destabilized by sound exposures of 150 dB (RMS) or lower, leading to injuries and or mortalities in whales and other marine mammals, then clearly, the DEIS sound exposure threshold of 215 dB for physical injury has been set far too high and needs to be adjusted accordingly. If in fact, marine mammals are being injured or killed by sonar sound, or their behavioral reactions to sonar sound at received levels this low, as certainly appears to be the case, then obviously the numbers of animals being injured or killed has been greatly underestimated by the DEIS. Please directly respond to this issue.	Please refer to Section 4.4.4.1 for a discussion of the criteria and thresholds used to estimate potential behavioral effects. These thresholds have been approved by the National Marine Fisheries Service.

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31	I-151	4.4.6	I learned tonight that the Navy's current sonar training regimen is the No Action Alternative - I think that's No. 1 - and the status quo currently. I quite understand the necessity of having a naval force which is properly trained and able to detect and react to any and all enemy attacks. However, the information that I have read about the naval sonar plan and the information that was presented outside in the lobby does not convince me that the effect on marine animals that use echolocation is sufficient. In one of the pamphlets it says the behavioral effects altered mating habits, confusion, migration, beached whales and dolphins.	Please refer to Section 4.4.4.1 for a discussion of the criteria and thresholds used to estimate potential behavioral effects. These thresholds have been approved by the National Marine Fisheries Service.
1445	A-028	4.4.6.4	Because of the highly social nature of some marine mammals, if the behavior of even one sensitive individual within the group is disturbed, the consequences for the group as a whole can be catastrophic. Please clarify how the DEIS acoustic risk function takes this issue into account. Given this issue, how can the DEIS approach reasonably be considered conservative?	Refer to Section 4.4.10, where group reactions are discussed as part of updated material.

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1052	A-010	4.4.6.5	Second, the Navy appears to have misused data garnered from the Haro Strait incident - one of only three data sets it considers - by including only those levels of sound received by the "J" pod of killer whales when the USS Shoup was at its closest approach (see discussion below at section A.2).	There is significant ambiguity regarding the behavior and responses of "J" pod killer whales prior to the point of closest approach of the USS Shoup. There is also significant discrepancy among scientists who have viewed the video images of the animals during the point of closest approach. Researchers on the water with the animals at the time did note some apparent changes in behavior earlier in the event, although these are not reported in the records provided to NMFS as being nearly so pronounced as during the point of closest approach. Given the uncertainties, limited records, and differences of opinion, those exposures that seemed to clearly affect the behavior of the animals was used. Also, a range of exposure estimates was determined for each 'ping' from the USS Shoup. The values used in the DEIS represent the mean of that range, not the maximum.

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1446	A-028	4.4.6.5	The DEIS (4.4.6.5) states "In May 2003, killer whales (*Orcinus orca)* were observed exhibiting behavioral responses while the USS SHOUP was engaged in MFA sonar operations in the Haro Strait in the vicinity of Puget Sound, Washington. Although these observations were made in an uncontrolled environment, the sonar field that may have been associated with the sonar operations had to be estimated, and the behavioral observations were reported for groups of whales, no individual whales, the observations associated with the USS Shoup provide the only data set available of the behavioral responses of wild, non-captive animal upon exposure to the AN/SQS-53 mid-frequency sonar." The DEIS neglects to mention here the observed behavioral responses of Dall's porpoises and a minke whale, as well as the stranding of a number of harbor porpoises.	As stated in Appendix E, Cetacean Stranding Report, there was nothing unusual in the observed behavior of the Dall's porpoise. In addition, there is no way to assess if any unusual behaviors were present in the orca J-Pod, or if present, were in reaction to vessel disturbance from one of the many nearby whale watching vessels, use of sonar, another potential causal factor, or combination of factors. Further, there is no evidence of acoustic trauma within the harbor porpoises, and the identification of probable causes of stranding or death in several animals further supports the conclusion that harbor porpoise strandings were unrelated to the sonar activities. Refer to Appendix E for additional information.
1447	A-028	4.4.6.5	In July 2004, around 200 melon-headed whales, a species normally found only in deeper waters, swam into the shallows of Hanalei Bay during Navy RIMPAC exercises. The DEIS should have incorporated the observations made during this incident, and the reconstructed sound field into the data sources used for risk function.	The fidelity of the information available is not sufficient to incorporate into the risk function discussion.

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1119	A-007	4.4.6.5	The Navy's use of the dose-response function to predict behavioral impacts to marine mammals has many flaws, among them: 1. The data set used in the development of the dose-response predictions is based on one set of controlled exposure experiments on a small number of captive toothed whales and two surveys on wild baleen whales. The Navy should not be using such limited data sets to predict behavioral impacts, especially given the enormity of the AFAST proposal.	The analytical methodology used in this EIS/OEIS was developed in close coordination with NMFS. This represents the best available and most applicable science with regard to analysis of effects to marine mammals from MFA/HFA sound sources. While recognizing there is incomplete and unavailable information with regard to behavioral impacts on marine mammals (see Section 4.4.4.1), the risk function curve extends to 120 dB SPL specifically to encompass uncertainty and the potential for behavioral reactions in marine mammal species that may be affected by sounds perceived at levels just above ambient in some areas during some parts of the year in East Coast and Gulf of Mexico waters.
1120	A-007	4.4.6.5	The Navy is funding a series of controlled exposure experiments on wild whales to assist in addressing the lack of data with this approach, the first of which took place in the Bahamas in 2007. Preliminary results from this experiment support a much lower threshold for behavioral impacts than the Navy is using. In the experiment, only one successful playback experiment on a beaked whale was achieved and in it a tagged Blainsville beaked whale displayed a probable behavioral response at a received level of MFA sonar of 145 dB re 1 µPa [rms].	The analytical methodology used in this EIS/OEIS was developed in close coordination with NMFS. This represents the best available and most applicable science with regard to analysis of effects to marine mammals from MFA/HFA sound sources. While recognizing there is incomplete and unavailable information with regard to behavioral impacts on marine mammals (see Section 4.4.4.1), the risk function curve extends to 120 dB SPL specifically to encompass uncertainty and the potential for behavioral reactions in marine mammal species that may be affected by sounds perceived at levels just above ambient in some areas during some parts of the year in East Coast and Gulf of Mexico waters.

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1448	A-028	4.4.6.7	The DEIS (4.4.6.7) states "This 120 dB level is taken as the estimate received level (RL) below which the risk of significant change in a biologically important behavior approaches zero for the MFA sonar risk assessment." How can a basement value for risk of 120 dB be supported, given research such as Richardson et al. (1995), which demonstrates behavioral reactions in whales by noise at around that level?	The values used in the EIS analysis, including the basement value, are based on three sources of data: temporary threshold shift experiments conducted at SPAWAR Systems Center and documented in Finneran, et al (2001, 2003, 2004 and 2005); reconstruction of sound fields produced by the USS Shoup associated with the behavioral responses of killer whales observed in Haro Strait and documented in DOC, 2005; DON, 2003; and Fromm, 2004a, 2004b; and observations of the behavioral response of North Atlantic right whales exposed to alert stimuli containing mid-frequency components documented in Nowacek et al, 2004. The input parameters, as defined by NMFS, are based on the best available science at this time. Refer to Section 4.4 for additional information.
1360	A-010	4.4.9	Just as important, the Navy-despite repeated requests-has not released or offered to release CASS/GRAB or any of the other modeling systems or functions it used to develop the biological risk function or calculate acoustic harassment and injury…These models must be made avoidable to the public, including the independent scientific community, for public comments to be meaningful under NEPA and the Administrative Procedure Act...And guidelines adopted under the Data (or Information) Quality Act also requires their disclosure...and the Defense Department's own data quality guidelines mandate that "influential" scientific material be made reproducible as well.	The model will be subject to independent peer review for conferences or journal submissions, but has been reviewed by acoustic experts. Based on the information provided in the EIS/OEIS, others with the required technical expertise can use the existing information to calculate similar results. The CASS/GRAB program is not available for public release; however, approximate results can be obtained using other mathematical models commonly available to those with the technical expertise to utilize those tools.
463	I-013	4.4.9	and the process used to estimate the number of marine mammal takes for the no action alternative.	The methodology for estimating the number of marine mammals in the No Action Alternative is the same as for the action alternatives.

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474	I-013	4.4.10	Comment 3 - Uncertainty in the data and the acoustic models should be addressed. There is much we do not know about marine mammal behavior and marine mammal distribution and population levels. It is understood that a decision must be made using the best available scientific information, but this is not the same as saying that uncertainties in the best available data can be ignored.' The estimated marine mammal takes due to acoustic effects come from models that make assumptions and simplifications, and use input data (e.g. marine mammal population sizes and distribution) that in some cases is very uncertain. Some accounting for the uncertainty associated with the data and the models should be made, even if it is a qualitative judgment. 'Recommendations. 5. Devise a means to evaluate and account for uncertainties in the data used to model acoustic exposure. Devise a means to evaluate and account for uncertainties in acoustic effects modeling results caused by the model's simplifications and assumptions.	Refer to discussion of uncertainty in section 4.4.10.2 and qualitative comparison of alternatives in last section of Chapter 4.
477	I-013	4.4.10	Additionally, uncertainties in the data and acoustic effects model are not accounted for in the comparison of alternatives.	Refer to discussion of uncertainty in Section 4.4.10.2 and qualitative comparison of alternatives in last section of Chapter 4.
1134	I-036	4.4.10	*All comments from this commenter are specific to USWTR. The comments were reviewed and the most relevant ones pulled out.* The (USWTR) DEIS treats “low occurrence” as equivalent to “unknown occurrence” (they are lumped together). This is unacceptable. These two are not the same and must be addressed separately. This is another example of the inappropriate way in which the DEIS treats scientific uncertainty.	The AFAST EIS/OEIS acknowledges instances of limited or unknown occurrence data. Refer to Section 4.4.10 for additional information.

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810	A-015	4.4.10	Third, the Navy once again makes the baseless claim in its environmental assessment in Chapter 4 that little or no information on impacts to various species equals little or no impacts to them. This is untrue, and when dealing with a matter of this much importance environmentally and economically, the Navy should take the precautionary principle as its guidance. The precautionary principle states that if an action or policy might cause severe or irreversible harm, in the absence of a scientific consensus that harm would not ensue, the burden of proof falls on those who would advocate taking the action. While not precluding action from being taken, strong precautionary measures should be taken even if all cause and effect relationships are not established. The Navy's sonar activities fall into the category of such an action.	Exposure numbers for four species occurring within the AFAST Study Area could not be calculated due to the lack of appropriate data needed to generate density estimates. However, potential effects to these species were qualitatively analyzed.
997	A-008	4.4.10	Page 4-93 states that right whales will be exposed to levels of sound great enough to cause behavioral disturbance: “Acoustic analysis indicates that up to 555 North Atlantic right whales may be exposed to levels of sound likely to result in Level B harassment under the No Action Alternative, 210 under Alternative 1, 197 under Alternative 2, and 495 under Alternative 3.” This could easily be an underestimate, as Nowacek et al. (2004) showed that North Atlantic right whales (*Eubalaena glacialis*) respond to acoustic alarms at received levels of under 150 dB.	Results of the research by Nowacek et al. (2004) indicated that right whales reacted to multiple "alert stimuli" which were developed specifically to elicit a response. These stimuli had a limited similarity to tactical sonar systems. In addition, Nowacek et al. was one of three primary references used to derive the risk function curve which accounts for effects down to 120 dB SPL.
923	A-016	4.4.10	However, using its modeling, the Navy predicts that for its preferred alternative, each year its active sonar use in the preferred action will cause: over 2 1/2 million marine mammals to be behaviorally impacted; over 20,608 to experience temporary deafness; and 120 to be exposed to active sonar at levels sufficient to cause permanent deafness (a deaf cetacean is a dead cetacean). The Navy claims that its modeling predictions are before mitigation measures are put in place, but the proposed mitigation measures are severely flawed as outlined below and cannot be relied upon to prevent harm.	TTS is a temporary reduction of hearing sensitivity over a subset of the hearing range. Likewise PTS is a permanent reduction of hearing sensitivity over a subset of the hearing range. Reduction of hearing sensitivity should not be construed as deafness. The mitigation measures described in Chapter 5 will reduce the likelihood of TTS and likely prevent any incidence of PTS.

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1211	A-019	4.4.10	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* In the (USWTR) DEIS, the Navy repeatedly states that whales will not be disturbed by sonar, and that even temporary behavior effects would occur only after exposure to relatively high levels of received sound.	Please refer to Sections 4.4.10 and 4.4.11 for a summary of potential acoustic and nonacoustic effects to marine mammals.
1247	A-028	4.4.10	Given this, and given the unreasonably high noise thresholds for TTS and Level A impacts, the potential for marine mammals being exposed to noise levels that will result in behavioral disruption as well as Levels B and A harassment is greatly underestimated in this DEIS.	Please see 4.4.10 for a Summary of Potential Effects by Marine Mammal Species.
1249	A-028	4.4.10	The discussion of how increased stress resulting from AFAST activities might affect marine animals is either totally inadequate or missing altogether from the pages of this DEIS. Where is the discussion of this issue in regards to marine mammals?	Please refer to section 4.4.10 for discussion of Acoustic Effects on Marine Mammals, and revised Section 4.4.11 for a discussion of long-term effects due to multiple exposures. Also, see Section 4.4 for revised conceptual framework discussion on stress.

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1290	A-028	4.4.10	The DEIS has failed to adequately investigate what the real impacts may be of using multiple noise sources in the AFAST activities, including those with lower source levels. It has failed discuss how these multiple noise sources may act to confuse and disorient marine mammals (or other marine animals), and how this may lead to more severe effects in greater numbers than the DEIS has estimated. It has also failed to adequately investigate how all these various sources of noise, when combined with other non-AFAST noise, can further add to the effects mentioned above. Additionally, there is no discussion of how all these acoustic effects may increase the likelihood of impacts that are non-acoustic, such as entanglements and ship strikes.…the DEIS was written in an attempt to build the case that the AFAST activities will have no significant impact upon the environment. In other words, the Navy has already come to its “conclusion”, and made its decision, and the DEIS was then written so as to build a case that would support that conclusion and decision.	By modeling individual sources and adding their footprints individually, the analysis slightly overestimates the number of exposures and therefore accounts for the cumulative effect of multiple systems operating simultaneously. Refer to Sections 4.4.10 and 4.4.11 for additional information.
1329	A-028	4.4.10	…the number of beaked whales that are exposed to AFAST produced noise levels that will result in physical injuries and death, will in all likelihood, be far greater than the zero estimated by this DEIS.	There has been no scientific evidence that sonar can cause direct mortality. The Navy uses best available science to estimate effects.
1330	A-028	4.4.10	…given all of the uncertainty that is stated above in regard to beaked whale populations and stocks, how can it possibly be determined that no more than negligible impacts will occur to them, especially given beaked whale's proven vulnerability to naval mid-frequency sonars? Please address this issue in a clear and direct manner.	Based on the modeling results, no beaked whales will be exposed to sound levels likely to result in Level A harassment (potential injury). In addition, mortalities are not expected to occur. Please refer to Section 4.4.5 for a discussion of the criteria and thresholds used to estimate potential effects. These thresholds have been approved by the National Marine Fisheries Service.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1331	A-028	4.4.10	Given the vulnerability of beaked whales to naval sonar, and the likelihood of injuries and deaths resulting from AFAST exercises going unobserved and unreported, 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? Please address this question.	Based on the modeling results, no beaked whales will be exposed to sound levels likely to result in Level A harassment (potential injury). In addition, mortalities are not expected to occur.
1333	A-028	4.4.10	Should AFAST produced noise cause beaked whales to alter their behavior in such a way as to result in vivo bubble growth, or, if it causes them to strand, then obviously, the effects of this behavioral harassment would be rather serious, and could not be considered short-term.	It has not been established that whales get "the bends," as explained in Chapter 4. The issue raised and other potential hypotheses with regards to causes of marine mammal strandings remain highly speculative.
1334	A-028	4.4.10	…beaked whales will need a lot more help than that offered by the mitigation measures if they are to avoid more dramatic negative impacts, and in higher numbers, that those estimated by this DEIS. Please discuss how the difficulty in detecting beaked whales will likely lead to both higher number of exposures to AFAST produced noise than has been estimated here, and higher numbers of both Level B and Level A harassment as a result of those exposures.	The modeling results presented in the AFAST EIS assume no mitigation measures; therefore, effects could potentially be lessened by implementation of the mitigation measures. Based on the modeling results, no beaked whales will be exposed to sound levels likely to result in Level A harassment (potential injury). In addition, mortalities are not expected to occur. Please refer to Section 4.4.5 for a discussion of the criteria and thresholds used to estimate potential effects. These thresholds have been approved by the National Marine Fisheries Service. The DEIS considered whale detection probabilities in the density estimates used ot analyze number of exposures.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1335	A-028	4.4.10	In fact, it is very likely, given the impact that a single Navy sonar exercise had on the resident population of beaked whales in the Bahamas in March of 2000, that AFAST activities will have extremely significant impacts, and cause extremely significant harm to beaked whales under all the alternatives.	The Bahamas stranding event had unique contributory factors, such as unusual underwater bathymetry, intensive use of multiple sonar units, limited egress, in addition to the presence of beaked whales. These contributory factors are not present within the AFAST Study Area.
1336	A-028	4.4.10	How is it that the DEIS acoustic analysis estimated such very high numbers of Level B exposures under the No Action Alternative and Alternative 3, but also estimated zero Level A exposures? If harbor porpoises will be exposed to AFAST noise at levels that will result in Level B harassment hundreds of thousand of times, how has the DEIS determined that none will be exposed to noise that will result in Level A harassment? Is this due to the DEIS assumption that before harbor porpoises were within the 215 dB soundfield, they would have been detected by lookouts? If not, please explain the basis for this determination.	The modeling results presented in the AFAST EIS assume no mitigation measures. Due to the low threshold level of response observed in harbor porpoises, a step function threshold of 120 dB SPL was used to estimate harbor porpoise Level B responses. Therefore, the larger zone of influence to 120 dB explains the higher number of Level B responses without an equivalently higher number of Level A responses.
1337	A-028	4.4.10	…an even greater number of harbor porpoises are likely to be physically injured than just those who enter into the 215 dB soundfield.	Based on the modeling results, no harbor porpoises will be exposed to sound levels likely to result in Level A harassment (potential injury). In addition, mortalities are not expected to occur.
1475	A-028	4.4.10	"…limited active sonar activities would take place in the vicinity of manatee habitat. Therefore, in accordance with NEPA, there will be no significant impacts to manatees form AFAST activities in territorial waters under the No Action Alternative, Alternative 1, Alternative 2, or Alternative 3." So states the DEIS (4.4.11.1.7). Has the DEIS concluded that because AFAST activities are "limited", they cannot have impacts? If so, this is not a valid conclusion, as impacts might occur even if an activity takes place only once, and even if it only takes place over a short span of time. How has the DEIS concluded that AFAST activities will not cause injuries to Manatees? Where is the discussion for TTS or Level A Harassment impacts on manatees resulting from AFAST activities?	The DEIS states that the impact to manatees will be limited and will not be significant. Refer to Section 4.4.10.3.7 for discussion of the analysis on manatees.

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1476	A-028	4.4.10	…the DEIS has neglected to mention the potential for AFAST activities to increase stress levels, this time in manatees. Do the authors of the DEIS believe that manatees are not susceptible to stress? If so, what are the grounds for that belief?	The potential for marine mammals to experience stress is discussed in Section 4.4.3.3.1.
886	G-010	4.4.10	The potential impact of sonar on baleen and toothed whale populations is unknown.	Please refer to Sections 4.4.10 and 4.4.11 for a summary of all potential acoustic effects to marine mammals as a result of sound. In addition, please refer to Chapter 5 for mitigation measures and Chapter 6 for potential for cumulative impacts.
976	G-017	4.4.10	The DEIS correctly notes that the estimated exposures are not equivalent to the number of individuals exposed, that some animals may receive multiple exposures, and others may receive non over the course of the period of analysis. Nevertheless, each species account, starting with right whales on page 4-93, begins with "up to xxx [species name here] may be exposed…." this is most obviously nonsensical for species like the right whale, whose actual numbers are well known (about 300 to 350) and are well below the estimated number of exposures, in this case 555. Similarly, there are probably non 754,347 individual bottlenose dolphins being exposed or 69,569 harbor seals. The more correct statement is that there are 69,569 exposures, but that it is impossible to estimate the distribution of exposures among the population of harbor seals in the analyzed area.	Please refer to revised text in Section 4.4.10.
498	I-075	4.4.10	The problem is that the proposed exercises predictably will injure and kill large numbers of many species of marine mammals.	Neither the National Marine Fisheries Service nor the Navy anticipates a marine mammal stranding or mortality of beaked whales as a result of active sonar activities. Please refer to Section 4.4.10 for the results of the acoustical analyses.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
716	I-096	4.4.10	The type of MFA sonar to be used at the AFAST Study Area can disturb, harm and kill marine life as attested to be the United Nations, the European Parliament and the World Conservation Union.	Please refer to Sections 4.4.10 and 4.4.11 for a summary of all potential acoustic effects to marine mammals as a result of sound. In addition, as stated in Appendix E, there are five stranding events that have been putatively linked to potential sonar operations. Please refer to Appendix E for additional information.
717	I-096	4.4.10	The Navy admits that its sonar levels will cause deafness and expects over 20,000 animals to suffer deafness, and tens of thousands to be behaviorally impacted.	Please refer to Sections 4.4.10 and 4.4.11 for a summary of all potential acoustic effects to marine mammals as a result of sound. In addition, please refer to Chapter 5 for mitigation measures and Chapter 6 for potential for cumulative impacts.
70	I-122	4.4.10	Migrating manatees and many other mammals and fish species would be similarly affected.	Please refer to Sections 4.4.10 through 4.4.12 for a summary of potential acoustic and nonacoustic effects to marine mammals, as well as Section 4.7 for a summary of effects to marine fish.
1210	A-019	4.4.10	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Despite the paucity of data and the cautionary notes of expert scientists, the Navy presents its determination of "no adverse effect" with a degree of confidence that cannot be justified. According to NMFS, it is important to protect the right whale's migration corridor as it is to protect its seasonal residence areas to avoid collisions. The mid-Atlantic region is a vital corridor between feeding areas and calving grounds, especially for pregnant females and mother-calf pairs. Considering the poor survival rate for breeding female North Atlantic right whales, it is particularly important that this corridor be protected to the maximum extent possible.	Please refer to to vessel transit mitigations for the entire east coast in Chapter 5.

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450	A-026	4.4.10	This is particularly important when it relates to endangered species, such as the North Atlantic right whale. The accidental death of even a single right whale from Navy training exercises would be a blow to their recovery.	Please refer to Section 4.4.10.1.
1244	A-028	4.4.10	AFAST activities may not only affect these species, but are likely to have significant negative impacts on them as well.	The Navy has entered into consultation with NMFS in accordance with the Marine Mammal Protection Act and Endangered Species Act.
1479	A-028	4.4.10	The DEIS (4.4.11.1.1) states "Additionally, even thought the right whales may exhibit a reaction when initially exposed to active energy, the exposures are not expected to be long-term due to the likely low received acoustic energy and relatively short duration of potential exposures." For the reasons stated in the two paragraphs above and the following two paragraphs, this DEIS expectation is based on flawed assumptions and is therefore unjustified. It is not clear why the DEIS expects that right whale exposures would be of a relatively short duration.	Because of the relatively brief sound transmissions associated with AFAST activities, where sound transmissions are occurring over a short period of time, the DEIS states that impacts could occur but would not be significant.
1484	A-028	4.4.10	The DEIS claims that "Lookouts would likely detect" each of the five ESA-listed species. Given the fact that some AFAST activities will occur in less than ideal observation conditions, including night time, the probability of detection will be further reduced, thereby increasing the likelihood of exposure and potential effects. Thus, the number of ESA-listed species exposures indicated by acoustic analysis is likely an underestimate of actual exposures and is not, in any way, conservative.	The modeling results presented in the AFAST EIS assume no mitigation measures; therefore, effects could potentially be lessened by implementation of the mitigation measures.

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1217	A-019	4.4.10	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* The Navy's discussion of anticipated impacts to dolphins and porpoises from sonar exposure is similarly lacking. For example, Finneran et al (2005), which appears to provide the basis for the Navy's determination that dolphins will experience no more than temporary behavioral alterations from sonar exposure, used dolphins that had a significant degree of mid-frequency hearing loss (>50 kHz) prior to the study. These hearing impairments likely skewed the results of the study, as hearing-impaired dolphins would not be expected to respond to sound in the same way as dolphins with fully functioning hearing. While the study may nevertheless be relevant to the assessment of impacts, the Navy must disclose the limitations of the study and explain how the results can reliably be extrapolated to predict effects on wild dolphins in their natural habitat.	The TTS work conducted by Nachtigall, Finneran, Schlundt and others are widely recognized by the scientific community as representing the best information available. Refer to Section 4.4.10 for the estimated exposures for non-ESA listed species.
829	G-008	4.4.10	The modeling of acoustic effects to marine mammals in section 4.4 revealed some striking differences in impacts to certain species between these two scenarios. Most notable was that for the harbor porpoise, a species of general concern, listed by the State pursuant to section 26-306 of the Connecticut General Statues. As stated on page 4-121, "acoustic analysis indicates that up to 286,132 harbor porpoises may be exposed to levels of sound likely to result in Level B harassment under the No-Action Alternative, 28 under Alternative 1." Reductions in modeled exposure levels, although less dramatic, were reported for a number of other species, while exposure levels actually increased for a few species, particularly the common dolphin.	The Alternative 1 boxes are not coastal, but offshore, and harbor porpoises tend to be a coastal species. Other species' densities could be greater offshore than in inshore areas. Exposure numbers are greatly dependent on marine mammal densities.

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1066	A-010	4.4.11	Sixth, as noted below in the discussion of Cumulative Impacts, the Navy's threshold is applied in such a way as to preclude any assessment of long-term behavioral impacts on marine mammals. It does not account, to any degree, for the problem of repetition: the way that apparently insignificant impacts, such as subtle changes in dive times or vocalization patterns, cab become significant if experienced repeatedly or over time.	The Navy is studying the long-term population effects of sonar and is also developing a monitoring plan as part of this EIS/OEIS effort.
1332	A-028	4.4.11	…TTS can either directly or indirectly result in long-term impacts including injury and death, as well as a reduced ability to reproduce or care for young. Obviously, all of these effects might affect annual rates of recruitment and survival.	4.4.11.2 for a discussion of long-term impacts.
1252	A-028	4.4.11.1	…an EIS that seriously investigated the environmental consequences of AFAST activities would take a good, long, and hard look at how ship noise might affect stress levels in marine mammals already stressed by other sources of anthropogenic noise.	Please see section 4.4.11.1 for a discussion on the effects of Ship Noise on marine mammals.
1496	A-028	4.4.11	Why has the DEIS declined to mention this finding when "addressing" the likelihood of prolonged exposure? Why has the effect of reverberation not been discussed here?	Distinct acoustic environments were modeled to account for various acoustic effects in AFAST. Reverberations such as those that occurred in the Bahamas stranding event are not likely to occur in the AFAST Study Area.
1248	A-028	4.4.11	As was stated above, short-term behavioral impacts, as well as TTS, can lead directly or indirectly to long-term impacts, including death and a reduced ability to reproduce or care for young.	Please refer to 4.4 for a full discussion of marine mammal response to sound.
33	I-151	4.4.11	...because in the cased of the Armed Forces, this is a relatively-new-in-terms-of-years program, and the long-term effects are not known. And I make an analogy. For instance, Agent Orange was once believed to be safe, but I think we're all familiar with the long-term effects of Agent Orange, or napalm. So that is why I think the Navy should reconsider the no Action Plan. Thank you very much.	Please refer to Section 4.4.11.3, Potential for Long-Term Effects, for more information on long-term effects.

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1499	A-028	4.4.11	…where is the discussion of exposures to sound in the air from in-air sound? Please discuss this potential.	Please refer to 4.4.11.3 for discussion of effects from in-air sound.
987	A-008	4.4.12	Right whales and other baleen whales tend to feed with their mouths open and, as a result, become tangled in fishing gear. Baleen whales could also become entangled in flex hoses or guidance wire before it has sunk to the bottom, as could other marine life, such as sea turtles or sea birds.	Flex hoses and guidance wires do not form loops, like most fishing gear in which animals become entangled. Please see Section 4.4.12.2.2.3 for additional information.
989	A-008	4.4.12	Sperm whales frequently spend time at the ocean floor, and have been entangled in trans-Atlantic cable. It is possible that sperm whales or other deep-diving marine mammals may become tangled with flex hoses or guidance wire after it has sunk to the bottom; this information should have been included in the draft EIS.	Since the mid-1950s there have been no documented whale entanglements in submarine cables, presumably due to advances in cable building and laying technology (Norman and Lopez, 2002). In order to become entangled, a sperm whale would have to make physical contact with a suspended and/or anchored section of cable. Sufficient slack would need to be present in the suspended cable to make entanglement a possibility. As summarized in Section 4.4.12.2.2.3, the torpedo guidance wire has a low tensile strength (19 kg [42 lb]) and can be broken by hand. If a whale encountered the guidance wire on the ocean floor, the wire would be quickly broken. Additionally, the guidance wire is streamed in a straight line behind the exercise torpedo, and would settle on the ocean bottom in a relatively straight line with minimal loops and subsequent possibility for entanglement. In addition, the torpedo flex hose is also distributed in a straight line from the exercise torpedo, and due to its weight, will sink directly to the ocean bottom. It will settle along the sea floor with no looping and minimal curvature, and for this reason the potential for entanglement is

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				insignificant (DON, 1996). Norman, S. A., and A. L. Lopez, 2002. Update on marine mammal interactions with undersea cables. Unpublished manuscript. NOAA Alaska Fisheries Science Center, 7600 Sand Point Way NE, Seattle, WA 98115. 19 pp. Department of the Navy (DON), 1996. Environmental Assessment of the Use of Selected Navy Test Sites for Development Tests and Fleet Training Exercises of the MK 48 Torpedoes. Program Executive Office Undersea Warfare, Program Manager for Undersea Weapons. CONFIDENTIAL.
1053	A-027	4.4.10	Although the AFAST training area is along the major cetacean migration route for many species, including the rare North Atlantic right whale, and areas where resident whales are found, the Navy also concludes that there were be little, if any, impact.	Refer to Section 4.4.10.3.2. In addition, the Navy is consulting with NMFS in accordance with the ESA and MMPA.

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1067	A-010	4.4.12.1	The Navy fails to consider the risk of ship collisions with large cetaceans, which is only exacerbated by the use of active acoustics.	Ship strikes are discussed in Section 4.4.12.1 and Chapter 5. Results of the research by Nowacek et al (2004) where right whales reacted to multiple "alert stimuli" that were developed specifically to elicit a response, with a limited similarity to tactical sonar systems.
1171	A-019	4.4.12.1	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* A “hard look” at the impacts necessarily includes an analysis of the risk of collisions between training vessels and the North Atlantic Right Whale.	Refer to section 4.4.12.1 for discussion on ship strikes and marine mammals.
1501	A-028	4.4.12.1	…right whales could be very seriously impacted if the dramatic surfacing behavior observed in the Nowacek study caused it to be struck by a ship. Why has this potential not been discussed by this DEIS?	In the Nowacek et al. (2004) study, right whales were purposely exposed to "alert stimuli" to elicit a response reacted to multiple "alert stimuli" that were developed specifically to elicit a response, with a limited similarity to tactical sonar systems. Ship strikes are discussed in Section 4.4.12.1 and Chapter 5.
1502	A-028	4.4.12.1	…the Navy has killed at least one (not counting the fetus being carried) pregnant right whale while reportedly following these very same measures. Why has the DEIS declined to mention this incident, which seems so relevant to the discussion?	Refer to section 4.4.12.1 for discussion on ship strikes and marine mammals.
1503	A-028	4.4.12.1	Furthermore, if it is an endangered marine mammal (or sea turtle) which is struck, the impact cannot be considered insignificant. Should it be another North Atlantic right whale that is struck by a Navy or other vessel as a result of AFAST activities, then of course, the impact would be extremely significant, and could only bring this species closer to extinction.	The Navy is consulting with NMFS under the ESA for ship strikes.

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1257	A-028	4.4.12.2	Bottom currents do happen, and bottom-feeders do swim along the sea floor to feed, so why is the probability for entanglement low? It should also be pointed out that other animals that do not necessarily have bottom-feeding habits also swim along the sea floor at times, and will therefore be vulnerable to becoming entangled.	Please refer to revised text in Section 4.4.12.2. All expended materials that are used in AFAST activities do sink. In order to become entangled, a marine mammal would have to make physical contact with a suspended and/or anchored section of cable. Sufficient slack would need to be present in the suspended cable to make entanglement a possibility. As summarized in Section 4.4.13.2.3, the torpedo guidance wire has low tensile strength (19 kg [42 lb]) and can be broken by hand. If an animal encountered the guidance wire on the ocean floor, the wire would be quickly broken. Additionally, the guidance wire is streamed in a straight line behind the exercise torpedo, and would settle on the ocean bottom in a relatively straight line with minimal loops and subsequent possibility for entanglement. The torpedo flex hose is also distributed in a straight line from the exercise torpedo, and due to its weight, will sink directly to the ocean bottom. It will settle along the sea floor with no looping and minimal curvature, and for this reason the potential for entanglement is insignificant (DON, 1996). Due to size and shape, other materials do not pose an entanglement threat.
1258	A-028	4.4.12.2	Why are these items (parachutes) so difficult to ingest? If it is because they are larger than marine animal's normal food items, or because of their "larger size", this may not be an effective obstacle for ingestion, as many species of marine mammals are large or very large and possess large mouths capable of opening wide.	Refer to revised section 4.4.12.2.

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1259	A-028	4.4.12.2	…the (torpedo guidance) wire may chaff, or otherwise irritate the skin or cause infection. Even if it is true that in all cases the torpedo guidance wire sinks to the bottom and remains un-looped, animals feeding at the bottom may still be entangled by the wire if the wire get snagged between their baleen plates or tangled around the jaw or flipper.	The guidance wire is of low tensile strength and can be broken by hand. If an animal were to become entangled, the wire would most likely break. Refer to Section 4.4.12.2 for additional information.
1261	A-028	4.4.12.3	With regard to direct strikes, the DEIS would have done well to at least mention the fact that over several months in early 1996, five right whales were found dead near an area where the Navy had just engaged in several live-fire exercises just outside of right whale critical habitat off the Florida and Georgia coasts. …neglected to mention the discovery of NMFS, in June of 2002, of a headless right whale calf just to the south of where the Navy later admitted to engaging in live-fire bombing exercises in the Gulf of Maine. These exercises took place only 50 miles north of right whale critical habitat. The DEIS should have mentioned these incidents in this discussion.	Under the Proposed Action, the Navy will not be conducting live-fire exercises.
994	A-008	4.4.13	On page 4-137, the Navy states that it is requesting authorization for 10 serious injury or mortality takes for beaked whales. It does not state what time frame this taking of beaked whales may occur in (is this per year? For the next decade?) but says that this overestimates the potential effects to marine mammals. The Sierra Club disputes this.	As stated in Section 4.4.13, the request for 10 serious injury or mortality takes for beaked whale species was made even though both the National Marine Fisheries Service nor the Navy anticipates a marine mammal stranding or mortality of beaked whales. This request would be for a one year period. Please refer to Section 4.4.13 for additional information.
1089	A-010	4.4.13	In its analysis, the Navy capriciously (1) denies the potential for beaked whale mortalities during the myriad training and testing activities proposed for the AFAST study area;	AFAST sonar activities are not conducted in locations similar to those where sonar-related beaked whale strandings have occurred in the past.
1098	A-010	4.4.13	(4) fails to consider the potential for strandings and mortalities in other species of cetaceans; and	It was considered but the analysis did not lead us to conclude that a stranding would occur. Please refer to Section 4.4.13 and Appendix E for additional information.

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1099	A-010	4.4.13	(5) assumes that the Navy's failure to observe mortalities during past sonar training is probative of a lack of mortalities, despite the lack of any remotely adequate monitoring system.	As part of the AFAST EIS, a detailed monitoring program has been developed.
925	A-016	4.4.13	The Navy is asking the National Marine Fisheries Service (NMFS) for permission to kill or injure up to 10 beaked whales stating this is a precautionary "overestimate" and admitting that it wants to avoid investigation should a beaked whale be found "dead coincident with Navy activities" because it would "unnecessarily interfere with Navy training exercises." This cavalier attitude to the deaths of marine life is shocking.	As stated in Section 4.4.13, the request for 10 serious injury or mortality takes for beaked whale species was made even though neither the National Marine Fisheries Service nor the Navy anticipates a marine mammal stranding or mortality of beaked whales. Please refer to Section 4.4.13 for additional information.
672	A-021	4.4.13	The Navy is asking the DoC for permission to kill or injure up to 10 beaked whales-those known to strand most often as a result of MFA sonar use.	As stated in Section 4.4.13, the request for 10 serious injury or mortality takes for beaked whale species was made even though neither the National Marine Fisheries Service nor the Navy anticipates a marine mammal stranding or mortality of beaked whales. Please refer to Section 4.4.13 for additional information.
673	A-021	4.4.13	It also admits wanting to avoid investigation should a beaked whale be found "dead coincident with Navy activities" because it would "unnecessarily interfere with Navy training exercises."	The intent for requesting the 10 serious injury or mortality takes is to ensure that the Navy could continue to conduct active sonar activities while the National Marine Fisheries Service conducts its investigation. Neither the National Marine Fisheries Service nor the Navy anticipates a marine mammal stranding or mortality of beaked whales as a result of active sonar activities. Please refer to Section 4.4.13 for additional information.

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1127	I-036	4.4.13	*All comments from this commenter are specific to USWTR. The comments were reviewed and the most relevant ones pulled out.* There is a very real probability that cetacean strandings, serious injuries, and deaths will occur over the long term operation.	See Section 4.4.13 for discussion on probability of mortality as a result of mortality from AFAST sonar activities.
251	I-040	4.4.13	The Navy is asking the DoC for permission to kill or injure up to 10 beaked whales-those known to strand most often as a result of MFA sonar use.	As stated in Section 4.4.13, the request for 10 serious injury or mortality takes for beaked whale species was made even though neither the National Marine Fisheries Service nor the Navy anticipates a marine mammal stranding or mortality of beaked whales. Please refer to Section 4.4.13 for additional information.
252	I-040	4.4.13	It also admits wanting to avoid investigation should a beaked whale be found dead coincident with Navy activities because it would unnecessarily interfere with Navy training exercises.	The intent for requesting the 10 serious injury or mortality takes is to ensure that the Navy could continue to conduct active sonar activities while the National Marine Fisheries Service conducts its investigation. Neither the National Marine Fisheries Service nor the Navy anticipates a marine mammal stranding or mortality of beaked whales as a result of active sonar activities. Please refer to Section 4.4.13 for additional information.
637	I-070	4.4.13	The Navy is asking the DoC for permission to kill or injure up to 10 beaked whales-those known to strand most often as a result of MFA sonar use.	As stated in Section 4.4.13, the request for 10 serious injury or mortality takes for beaked whale species was made even though neither the National Marine Fisheries Service nor the Navy anticipates a marine mammal stranding or mortality of beaked whales. Please refer to Section 4.4.13 for additional information.

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638	I-070	4.4.13	It also admits wanting to avoid investigation should a beaked whale be found "dead coincident with Navy activities" because it would "unnecessarily interfere with Navy training exercises."	The intent for requesting the 10 serious injury or mortality takes is to ensure that the Navy could continue to conduct active sonar activities while the National Marine Fisheries Service conducts its investigation. Neither the National Marine Fisheries Service nor the Navy anticipates a marine mammal stranding or mortality of beaked whales as a result of active sonar activities. Please refer to Section 4.4.13 for additional information.
425	I-154	4.4.13	The Navy is asking the DoC for permission to kill or injure up to 10 beaked whales-those known to strand most often as a result of MFA sonar use.	As stated in Section 4.4.13, the request for 10 serious injury or mortality takes for beaked whale species was made even though neither the National Marine Fisheries Service nor the Navy anticipates a marine mammal stranding or mortality of beaked whales. Please refer to Section 4.4.13 for additional information.
426	I-154	4.4.13	It also admits wanting to avoid investigation should a beaked whale be found "dead coincident with Navy activities" because it would "unnecessarily interfere with Navy training exercises."	The intent for requesting the 10 serious injury or mortality takes is to ensure that the Navy could continue to conduct active sonar activities while the National Marine Fisheries Service conducts its investigation. Neither the National Marine Fisheries Service nor the Navy anticipates a marine mammal stranding or mortality of beaked whales as a result of active sonar activities. Please refer to Section 4.4.13 for additional information.
1023	A-010	4.5	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.	Refer to Section 4.5 for information on sea turtle hearing. In addition, the Navy is consulting with NMFS under the ESA for sea turtles and marine mammals.

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1161	A-019	4.5	Concerns have also been raised about impacts to juveniles that hide in the sargassum rafts and adults that navigate coastal waters. These impacts are associated with the parachutes and lines that will be deposited in the range that could drown or be ingested by the turtles, potential interference with navigation and communication caused by the sonar itself, and potential interference with navigation caused by electromagnetic disturbances from the transmittal of data through the instrumented range.	The Undersea Warfare Training Range (USWTR) is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. Refer to Section 4.5 for the results of analysis on sea turtles. In addition, the Navy is consulting with NMFS under the ESA for sea turtles and marine mammals.
1176	A-019	4.5	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* Recognition of the turtle sanctuary established by the state of North Carolina, and sanctuaries created by other states, should be evident, with an analysis of the impact training activities will have on these areas and the purposed for which they were created.	Turtle sanctuaries are only applicable to trawling and inclusion of information about sanctuaries is not appropriate for the AFAST EIS/OEIS.
1201	A-019	4.5	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* The Navy's analysis of the potential impacts to sea turtles is lacking in several important respects and does not meet the "hard look" standard imposed by NEPA. These omissions also undermine the Navy's assertion that its activities will not result in a taking of sea turtles listed as threatened or endangered pursuant to the Endangered Species Act.	Refer to Section 4.5 for the results of the analysis associated with sea turtles. In addition, the Navy is consulting with NMFS under the ESA for sea turtles and marine mammals.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1459	A-028	4.5	While it may well be true that sea turtles best sensitivity is in the lower frequency range, that does not mean that they are unable to hear and make use of sound in the mid-frequency range. In fact, it is conceivable that sounds in this range play an important role in the lives of sea turtles. The DEIS seems to have determine that this is not the case. What is the basis for this determination?	Although mid-frequency hearing has not been studied in many sea turtle species, most of those that have been tested, exhibit low audiometric and behavioral sensitivity to low frequency sound. Further, sea turtles rely on sensory systems other than hearing to navigate and sonar systems used during AFAST activities are at frequency ranges higher than the optimal hearing capabilities of sea turtles.
780	G-011	4.5	Coordination with the Virginia Department of Game and Inland Fisheries (DGIF), and the FWS to ensure compliance with protected species legislation due to the legal status of the Loggerhead sea turtle.	The Navy is providing a Coastal Consistency Determination for the State of Virginia. The U.S. Fish and Wildlife Service has jurisdiction over impacts to sea turtles on land. However, any potential impacts associated with AFAST activities would occur during operations at sea; as such, the Navy is consulting with NMFS in accordance with the Endangered Species Act.
569	I-007	4.5	6. Why is the Navy pursuing a special permit from the National Marine Fisheries Service to harass€ endangered species and sea turtles rather than protecting endangered species and sea turtles?	As stated in Section 1.4.4, the Endangered Species Act (ESA) requires that federal agencies ensure that the proposed actions are not likely to jeopardize the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of a critical habitat. Second, if an agency's proposed action would "take" a listed species, then the agency must obtain an incidental take statement from the responsible regulatory agency. The Navy has entered into early consultation with the National Marine Fisheries Service under Section 7 of the Endangered Species Act.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
83	I-011	4.5	The Navy must fully evaluate and address the impacts to sea turtles as a result of navigation and communication interference caused by sonar.	Sea turtles rely on sensory systems other than hearing to navigate. In addition, the sonar systems used during AFAST activities are at frequency ranges higher than the optimal hearing capabilities of sea turtles. Please refer to Section 4.5 for additional information.
93	I-023	4.5	The Navy must fully evaluate and address the impacts to sea turtles as a result of navigation and communication interference caused by sonar.	Sea turtles rely on sensory systems other than hearing to navigate. In addition, the sonar systems used during AFAST activities are at frequency ranges higher than the optimal hearing capabilities of sea turtles. Please refer to Section 4.5 for additional information.
207	I-053	4.5	The Navy must fully evaluate and address the impacts to sea turtles as a result of navigation and communication interference caused by sonar.	Sea turtles rely on sensory systems other than hearing to navigate. In addition, the sonar systems used during AFAST activities are at frequency ranges higher than the optimal hearing capabilities of sea turtles. Please refer to Section 4.5 for additional information.
1547	I-065	4.5	The Navy must fully evaluate and address the impacts to sea turtles as a result of navigation and communication interference caused by sonar.	Sea turtles rely on sensory systems other than hearing to navigate. In addition, the sonar systems used during AFAST activities are at frequency ranges higher than the optimal hearing capabilities of sea turtles. Please refer to Section 4.5 for additional information.
1554	I-073	4.5	The Navy must fully evaluate and address the impacts to sea turtles as a result of navigation and communication interference caused by sonar.	Sea turtles rely on sensory systems other than hearing to navigate. In addition, the sonar systems used during AFAST activities are at frequency ranges higher than the optimal hearing capabilities of sea turtles. Please refer to Section 4.5 for additional information.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1559	I-087	4.5	The Navy must fully evaluate and address the impacts to sea turtles as a result of navigation and communication interference caused by sonar.	Sea turtles rely on sensory systems other than hearing to navigate. In addition, the sonar systems used during AFAST activities are at frequency ranges higher than the optimal hearing capabilities of sea turtles. Please refer to Section 4.5 for additional information.
1565	I-104	4.5	The Navy must fully evaluate and address the impacts to sea turtles as a result of navigation and communication interference caused by sonar.	Sea turtles rely on sensory systems other than hearing to navigate. In addition, the sonar systems used during AFAST activities are at frequency ranges higher than the optimal hearing capabilities of sea turtles. Please refer to Section 4.5 for additional information.
1572	I-119	4.5	The Navy must fully evaluate and address the impacts to sea turtles as a result of navigation and communication interference caused by sonar.	Sea turtles rely on sensory systems other than hearing to navigate. In addition, the sonar systems used during AFAST activities are at frequency ranges higher than the optimal hearing capabilities of sea turtles. Please refer to Section 4.5 for additional information.
142	I-131	4.5	The Navy must fully evaluate and address the impacts to sea turtles as a result of navigation and communication interference caused by sonar.	Sea turtles rely on sensory systems other than hearing to navigate. In addition, the sonar systems used during AFAST activities are at frequency ranges higher than the optimal hearing capabilities of sea turtles. Please refer to Section 4.5 for additional information.
1583	I-138	4.5	The Navy must fully evaluate and address the impacts to sea turtles as a result of navigation and communication interference caused by sonar.	Sea turtles rely on sensory systems other than hearing to navigate. In addition, the sonar systems used during AFAST activities are at frequency ranges higher than the optimal hearing capabilities of sea turtles. Please refer to Section 4.5 for additional information.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1587	I-142	4.5	The Navy must fully evaluate and address the impacts to sea turtles as a result of navigation and communication interference caused by sonar.	Sea turtles rely on sensory systems other than hearing to navigate. In addition, the sonar systems used during AFAST activities are at frequency ranges higher than the optimal hearing capabilities of sea turtles. Please refer to Section 4.5 for additional information.
1204	A-019	4.5.1	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* The Navy asserts that sea turtles have limited hearing abilities and thus will not experience adverse effects from the use of sonar in the USWTR.	Refer to Section 4.5.1 for additional information.
1462	A-028	4.5.2	While the DEIS (4.5.2) does allow that sea turtles may be affected by explosive source sonobuoys, including the effects of TTS, PTS, and onset slight lung injury, it predicts no mortality for sea turtles. Is this presumption based on the idea that any sea turtles close enough to the source would be protected by the Navy mitigation measures?	The results are based on acoustic modeling taking into account the footprint and density of sea turtles in the IEER event area. Refer to Appendix H for additional information on the modeling. In addition, the Navy is consulting with NMFS under the ESA for sea turtles and marine mammals.
817	A-015	4.5.3	Lack of addressing the effects sonar and the gear associated with naval exercises can have on sea turtles, which use N.C. beaches as nesting grounds and regularly pass the N.C. coast.	Please refer to Section 4.5 for a summary of potential nonacoustic effects to sea turtles. In addition, the Navy is consulting with NMFS under the ESA for sea turtles and marine mammals.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1175	A-019	4.5.3	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* We also hope to find evidence of coordination and consultation with scientists who conduct surveys and maintain maps of sightings to ensure a comprehensive and accurate identification of species that should be included in the analysis. This "hard look" required by NEPA, specifically includes an analysis of the risk of entanglement with parachute lines, suffocation/drowning by parachutes, ingestion of parachutes and collision with vehicles associated with sonar training exercises.	Refer to Section 4.5.3 for the results of the analysis associated with potential nonacoustic effects to sea turtles. In addition, the Navy is consulting with NMFS under the ESA for sea turtles and marine mammals.
1432	A-028	4.5.3	While the DEIS improperly dismisses the possibility of AFAST activities affecting sea birds, it does acknowledge that, in regards to explosive source sonobuoys, "training exercises may affect ESA-listed species", and that according to the Navy's own acoustic analysis, those effects could include Permanent Threshold Shift (PTS) to the leatherback and loggerhead turtles. The CZMA requires that a "federal agency shall submit a Consistency Determination when it determines that its activity may have either a direct or an indirect effect on a state's coastal zone or resources", DEIS (4.20). Federal actions occurring even outside of a state's coastal zone can still affect that state's land or water use or natural resources, and are still subject to federal consistency review. Given the fact that the animals mentioned above are listed in the Maine Endangered Species Act and are therefore included as resources protected by the enforceable policies of the Maine Coastal Program, and given that the DEIS itself states that these animals may be affected by AFAST activities, including impacts that are injurious, the Navy, in order to comply with CZMA, must prepare a Consistency Determination for the state of Maine. Please respond directly to this point.	Coastal determinations are based on the enforceable policy of individual states as approved by NOAA.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1469	A-028	4.5.3	Given the fact that increased stress levels can lead to effects such as reduced reproductive success, this could have very serious consequences for sea turtles, all of which are threatened or endangered. Did this DEIS determine that sea turtles are not susceptible to stress? Or did it determine that sea turtles are not susceptible to stress resulting from AFAST activities? If the authors of the DEIS came to either of these conclusions, please explain how.	AFAST active sonar activities are at frequency ranges higher than the optimal hearing capabilities of sea turtles. Sea turtles could be exposed to TTS levels of sound by use of the explosive source sonobuoy, although these instances are limited and intermittent. Impacts to sea turtles are also being examined through consultation with NMFS under ESA.
1463	A-028	4.5.3.1	It is good to see that the DEIS acknowledges that vessel strikes can cause major wounds and fatalities in sea turtles, but it is hard to understand how, when these things happen to threatened and endangered species, those impacts can be considered insignificant. Please explain.	The impacts are directly associated with the likelihood of a strike occurring. The Navy has initiated consultation with the National Marine Fisheries Service in accordance with the Endangered Species Act.
1202	A-019	4.5.3.2	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* The Navy's assertion that turtles will not become entangled in parachute lines or ingest the parachutes must be reconsidered. Sea turtle scientists have reported finding sea turtles entangled in large cargo nets and even in plastic chairs, the fact that these items are large, easily visible to turtles, and obviously not a food source did not serve to protect sea turtles from harm, contrary to the Navy's assumptions.	As discussed in Section 4.5.3.2.1, parachutes are weighted to sink below the surface within 15 minutes. Most AFAST ASW activities occur in deeper waters, so once the parachutes sink below the sea turtle's typical depth range the materials should not pose an entanglement hazard.
1464	A-028	4.5.3.2	The DEIS (4.5.3.2) states "Many of the components are metallic and will sink rapidly." What is the potential for injury, should these rapidly sinking metal objects strike a sea turtle?	For an injury to occur, a sea turtle would have to be in the immediate location of sonobuoy deployment. Given the mitigation measures outlined in Chapter 5, the potential for injury is considered low.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1465	A-028	4.5.3.2	Would an inspection reveal a strike if the object struck was softer material which would not necessarily leave a mark on or otherwise damage the torpedo or its guidance wire?	Yes. The data recording package would recognize a strike even of soft material, and the strike would be reported. This has never been reported.
1466	A-028	4.5.3.2	The DEIS (4.5.3.2.4) states that "Due to its weight, the flex hoses will rapidly sing to the bottom upon release. With the exception of a chance encounter with the flex hose while it is sinking to the sea floor, a marine animal would be vulnerable to entanglement only if its diving and feeding patterns placed it in contact with the bottom." Many marine animals do in fact swim and feed near or at the bottom, and so are vulnerable to entanglement.	Flex hoses do not form loops due to its stiffness. Therefore, there is no risk of entanglement.
1468	A-028	4.5.3.2	the reconnaissance procedures referred to above are not effective and will not ensure that sea turtles won't be impacted by direct physical contact or direct strikes. Therefore, the DEIS underestimates the likelihood of these impacts occurring.	Impacts to sea turtles are being determined through consultation with NMFS.
1342	G-023	4.5.3.2	We are also concerned about the impacts of discarded sonobuoys on sea turtles. Specifically, we are concerned that sea turtles may become entangled in discharged sonobuoy parachutes, and that the parachutes may cover sea grass, vegetation or crabs on the sea floor on which they feed.	As discussed in Section 4.5.3.2.1, the overall possibility of sea turtles becoming entangled in parachute cable assemblies is remote due to the materials being negatively buoyant and the mitigation measures outlined in Chapter 5. Sonobuoys are typically used in deeper waters where sea turtles are less likely to bottom feed.
1365	A-010	4.6	The Atlantic Fleet's sonar training area contains such habitat. As discussed at length above, Anti-Submarine Warfare exercises alone have the significant potential to adversely affect at least the waters, and possibly the substrate, on which fish in these areas depend. Under the MSA, a thorough consultation is required.	Refer to revised Section 4.6.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
916	G-006	4.6	Essential Fish Habitat (Section 4.6): DMF has concerns similar to those outlines above for Section 4.3. The DEIS/OEIS states that activities will not occur in marine sanctuaries, near reefs, wrecks or other areas of relief and structure and therefore no impacts to structures are anticipated. However, EFH, for many of the South Atlantic fishes which are economically important to North Carolina includes the following (which are not listed in the DEIS/OEIS): Gulf stream (snapper grouper, King/Spanish mackerel, dolphin/wahoo shrimp), all coastal inlets (King/Spanish mackerel), sandy shoals off capes (King/Spanish mackerel) medium to high profile outcroppings on and around shelf break zone from shore to at least 600 ft (snapper/grouper), live/hard bottom (snapper grouper). Please see the attached list of EFH for the South Atlantic Fishery Management Council and at the following site: http://www.safmc.net/Portals/0/EFH/EFH%20Table.pdf. As stated previously, the DEIS/OEIS also fails to mention the proposed deepwater coral EFH-HAPCs. Given the extent of EFH in the study area, we believe that the conclusion of no significant impact to EFH is inadequate.	Refer to revised Section 4.6.
701	I-004	4.6	We wonder about the possible impacts to the ocean bottom and any coral populations from both sonar activities themselves and any abandoned hardware.	Refer to Section 4.6 for a discussion of potential effects to essential fish habitat, which includes hardbottom, softbottom, and other areas.
1460	A-028	4.6.1	Although low-frequency hearing has not been studied in many sea turtle species, most of those that have been tested, exhibit low audiometric and behavioral sensitivity to low-frequency sound. It appears that if there were the potential for the mid frequency sonar to increase masking effects for any sea turtle species it would be expected to be minimal." Please clarify how the lack of studies regarding sea turtle sensitivity to low-frequency sound justifies the DEIS assumption that mid-frequency sonar noise will not mask sounds important to sea turtles.	There was an error in this sentence. It was corrected to read, "Although mid-frequency hearing has not been studied in many sea turtle species, most of those that have been tested, exhibit low audiometric and behavioral sensitivity to low frequency sound."

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1461	A-028	4.6.1	Please explain why the DEIS apparently believes that any masking that is to occur would result only in minimal effects. If a sea turtle is struck and injured or killed by a ship because of the turtle's inability to hear the ship resulting from the masking sound of another ship, or from the use of sonar or other acoustic sources, then that effect could hardly be described as minimal.	Unlike marine mammals, researchers have found that sea turtles use non-acoustic cues in migration and particularly in movement related to hatchling activity, nesting, and long-distance migrations. As such, it appears that sea turtles rely on sensory systems other than hearing to navigate.
1022	A-010	4.7	Impacts on fish are of increasing concern due to several recent studies demonstrating hearing loss and widespread disruption in commercial species of fish and to reports, both experimental and anecdotal, of catch rates plummeting in the vicinity of noise sources.	Based on best available science, per Section 4.7, there will be no significant impact to fish.
1075	A-010	4.7	…the Navy dismisses the notion that fisheries in the area would suffer economic loss (DEIS at 4-167), even though…its activities appear to have disrupted fishing in the past. But,…, the available evidence underscores the need for a more serious and informed analysis than the DEIS currently provides. The Navy must meaningfully assess the economic consequences of reduced catch rates on commercial and recreational fisheries and on marine mammal foraging in the AFAST study area.	Sonar exposure to fish population is transient in nature because the use is intermittent and the sources are moving; therefore, no chronic exposures are expected. Please see revised text in Sections 4.7 and 6.4.1.7.2.
1076	A-010	4.7	The Navy's current and proposed activities pose risks to marine wildlife beyond ocean noise: injury or death from collisions with ships, bioaccumulation of toxins, and the like. Indeed, many of the same concerns that apply to marine mammals (and are discussed above) apply to fish, sea turtles, and other biota as well. The Navy must adequately evaluate impacts and propose mitigation for each category of harm. 42 C.F.R. 1502.14, 1502.16.	These issues are discussed in Chapters 3 through 6. In addition, the Navy is consulting with NMFS under the ESA for sea turtles and marine mammals.
585	A-011	4.7	I took the time to attend the August 14, 2006 hearing at Beaufort's Duke Marine Lab and was concerned to hear the potential damage to sea life in this area. Creation of "fish dead" zone due to fish perceiving the signals as warnings of predators.	Most fish do not hear mid-frequency range. There is no evidence to conclude that fish that do hear mid-frequencies perceive those sounds as sounds of a predator. Refer to Section 4.7 for additional information.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
816	A-015	4.7	Lack of information being established about the effect of sonar on finfish that use sound for foraging, communication and navigation. This is a significant oversight of both environmental and economic impacts, given the importance of the commercial and recreational fisheries in North Carolina.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.
662	A-021	4.7	Intense ocean noise also can injure and kill fish	Please refer to Section 4.7 for the analysis of potential effects to fish.
663	A-021	4.7	with studies showing that commercial catch rates can decrease up to 80 percent when loud sounds is in the area.	Refer to revised Section 4.7.
1051	A-027	4.7	The Navy's DEIS ignores potential destruction of fisheries claiming the training range would impact neither fish nor their habitat. However, the North Carolina Department of Marine Fisheries takes the position that use of high intensity acoustic devices will severely impact commercial fisheries.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. Please refer to Section 4.7, Marine Fish.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
880	G-021	4.7	DCM received, on March 26, 2008, a copy of the comment letter on the DEIS from the North Carolina Division of Marine Fisheries (NCDMF). The NCDMF, in their letter, found that the DEIS was not "adequate with regard to its analysis of impacts of the proposed project to fish species." The NCDMF letter also states that there "are important fishery resources under DMF jurisdiction within the VACAPES, CHPT and CHASTN OPAREAS. (Emphasis added). The NCDMF letters raises the potential that proposed Atlantic Fleet Sonar Training could have a reasonable foreseeable effect on North Carolina's coastal resources. The NOAA finding on the coastal zone reauthorization amendment go on to state "Therefore, the term 'affecting' is to be construed broadly." (Emphasis added) Based on the information provided by the NCDMF it appears there could be a reasonable foreseeable effect of the proposed Atlantic Fleet Sonar Training on North Carolina's coastal resources. DCM requests that the Navy further evaluate this matter.	Please refer to updated Section 4.7.
691	I-003	4.7	To my knowledge, scientific study has not demonstrated that active sonar is safe for fish populations. Rather, there is strong evidence that at least some fish species use sound for important life functions and could be significantly disrupted by military active sonar.	Most fish do not hear mid-frequency range sonar. Please refer to Section 4.7 for additional information.
246	I-040	4.7	Intense ocean noise also can injure and kill fish,	Please refer to Section 4.7 for the analysis of potential effects to fish.
632	I-070	4.7	Intense ocean noise also can injure and kill fish	Refer to Section 4.7 for the effects analyses related to fish.
633	I-070	4.7	with studies showing that commercial catch rates can decrease up to 80 percent when loud sounds is in the area.	Refer to revised Section 4.7.
499	I-075	4.7	Commercial fish catches are also certain to suffer huge losses.	Refer to revised Section 4.7.
718	I-096	4.7	Studies demonstrate that commercial fish catch rates can decrease by up to 80% when loud sound is introduced in a marine area.	Refer to revised Section 4.7.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
416	I-154	4.7	Intense ocean noise also can injure and kill fish	Please refer to revised Section 4.7 for the analysis of potential effects to fish.
417	I-154	4.7	with studies showing that commercial catch rates can decrease up to 80 percent when loud sounds is in the area.	Refer to revised Section 4.7.
860	I-158	4.7	There is growing evidence that naval sonars and other sources of intense underwater noise are harming fish, and therefore threaten fisheries.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.
1000	A-008	4.7.1	The EIS states on 4-158 that there will be no significant impact to fish populations under any of the alternatives from either active sonar or explosive source sonobuoy. This runs counter to studies that have shown mid-frequency active sonar can cause mortality in herring, as mentioned on pages 4-153 and 4-155. Page 4-154 states, "Individual juvenile fish with a swim bladder resonance in the frequency range of the operational sonars, and especially hearing specialists such as some clupeid species, may experience injury or mortality." Page 4-157 notes that navigation by larval fish is also vulnerable to masking from active sonar use.	The reference study cites no population effect. Masking effects to fish are transitory and of short-term duration as ships utilizing sonar are in transit.
1001	A-008	4.7.1	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 (Roundtree, 2002). Many fish species could be disturbed or harmed as a result of sonar use. The fish's lateral line system contains diverse receptors that are highly sensitive to various conditions in the water, including sound. The Sierra Club does not agree with the Navy's determination that there will be no significant impact to fish populations as a result of active sonar activities.	Please refer to revised Section 4.7.1.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1073	A-010	4.7.1	The Navy capriciously dismisses the potential for significant adverse impacts on fish. First, while admitting that mid-frequency sonar can cause significant injury at distances of hundreds of feet, and having previously noted (with reference to Norwegian studies) that "some sonar levels have been shown to be powerful enough to cause injury to particular size classes of juvenile herring from the water's surface to the seafloor." …the Navy now claims that Atlantic and Gulf of Mexico populations would not suffer significant impacts. …-a conclusion that fails to take into account the Navy's higher source levels, the specific ecology of Atlantic and Gulf of Mexico fish populations, the potential for cumulative effects, and the differential impacts that activities in spawning areas may have.	Sonar may cause some temporary behavioral impacts to alewife and blueback herring due to their hearing sensitivity, but those impacts would be temporary and infrequent as a sonar ship operating mid-frequency sonar transits an area. Additionally, the source levels analyzed in this DEIS/OEIS are comparable with those in the study.
1074	A-010	4.7.1	While admitting that mid-frequency noise can alter behavior, the DEIS improperly relies entirely on two studies on acoustic deterrent devices, otherwise known as "pingers":… Further, the Navy dismisses a clearly relevant study of dolphin sounds and their impact on silver perch mating signals-a study that NMFS and state regulators have cited as reason for concern. The Navy must rigorously analyze the potential for behavioral, auditory, and physiological impacts on fish, including the potential for population-level effects, using models of fish distribution and population structure and conservatively estimating areas of impact from the available literature.	Please see revised Section 4.7.1.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1242	A-028	4.7.1	"Threshold shifts are temporary, and considering the best available data, no data exist that demonstrates any long term negative effects on marine fish from underwater sound associated with sonar activities. Further, while fish may respond behaviorally to mid-frequency sources, this behavioral modification is only expected to be brief and not biologically significant." DEIS (4.7.1). Do the authors of the DEIS believe that because threshold shift is temporary, negative impacts cannot occur within that period of time? Is the DEIS stating that, for instance, because the threshold shift is limited in time, a fish whose hearing has been impaired temporarily, and is therefore unable to detect the sound of a predator, cannot be eaten by that predator? If this is what the DEIS is suggesting, it is unreasonable, and completely without scientific merit. Please respond to this point.	Please refer to 4.7.1 for an analysis of environmental consequences for marine fish from Mid-Frequency and High Frequency Sonar. Refer to section 4.4 for thorough discussion of marine mammals and sound effects, as well as harm and assessment. TTS in Marine Mammals is discussed in 4.4.5.2.
1455	A-028	4.7.1	The DEIS (4.7.1) states that "Hearing capability data only exists for fewer than 100 of 27,000 species of fish" and then goes on to say "studies indicate most marine fish are hearing generalists and have their best hearing sensitivity at or below 0.3 KHz." Given what is stated in the first part of the sentence above, the second part of the sentence is clearly an assumption, and has no proper place in this DEIS.	In order to assess potential impacts, data from existing studies was extrapolated. However, it is known that hearing specializations in marine species are quite rare and that most marine fish are considered hearing generalists, which are limited to detection of the particle motion component of low frequency sounds at relatively high sound intensities. The statement regarding the best hearing sensitivity in fish at or below 0.3 kHz is made by an established scientist.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1456	A-028	4.7.1	The DEIS (4.7.1) states "The inability to hear ecologically important sounds due to the interference of other sounds (masking) has implications for reduced fitness; potentially leaving fish vulnerable to predators, unable to locate prey, sense their acoustic environment, or unable to communicate acoustically (McCauley et al., 2003)." A little later, the DEIS says "However, most marine fish species are not expected to detect sound in the mid-frequency range of the operational sonars used in the proposed action, and therefore, the sound sources do not have the potential to mask key environmental sounds." Given the fact that the hearing capability data exists for fewer than 100 or 27,000 species of fish, the above stated expectation is an inappropriate assumption and should not be used in this DEIS. If the statement above is not an assumption, please explain on what information this expectation is based.	It is known that hearing specializations in marine species are quite rare and that most marine fish are considered hearing generalists, which are limited to detection of the particle motion component of low frequency sounds at relatively high sound intensities. The statement regarding the best hearing sensitivity in fish at or below 0.3 kHz is made by an established scientist. This statement is based on the best available science.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1457	A-028	4.7.1	Do the authors of the DEIS believe that because "no data exist", that long-term negative effects on marine fish from underwater sound associated with sonar activities cannot occur? If this assumption is not based on the lack of data, what is it based on? Please respond to this.	No; however, there is no information available that suggests that exposure to non-impulsive acoustic sources results in significant fish mortality on a population level. Mortality has been shown to occur in one species, a hearing specialist, however, the level of mortality was considered insignificant in light of natural daily mortality rates. Experiments have shown that exposure to loud sound can result in significant threshold shifts in certain fish that are classified as hearing specialists (but not those classified as hearing generalists, which the majority of fish are classified as). Threshold shifts are considered temporary, and considering the best available data available, no data exist that demonstrate any long-term negative effects on marine fish from underwater sound associated with sonar activities. While fish may respond behaviorally to mid-frequency sources, this behavioral modification is only expected to be brief and not biologically significant.
921	G-006	4.7.1	Marine Fish (Section 4.7): The DEIS/OEIS contains a comprehensive review of the literature regarding the ecological importance of hearing in fish and the observed impacts of mid-frequency active sonar on certain fish species and families. DMF is very concerned about the potential impacts of mid-frequency active sonar on river herring (alewife and blueback herring).	Sonar may cause some temporary behavioral impacts to river herring due to their hearing sensitivity, but those impacts would be temporary and infrequent as a sonar ship operating mid-frequency sonar transits an area.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
927	G-006	4.7.1	As noted in the DEIS/OEIS, alewife and blueback herring are both species of concern, as well as hearing specialists (Schilt, 2007). DMF and the state of North Carolina have made significant investments to determine the causes of this decline and to take appropriate actions to restore river herring populations within our jurisdiction. In December 2006, the North Carolina Marine Fisheries Commission enacted a harvest moratorium on river herring in order to maximize the potential for recovery. Chronic exposure to sonar could negatively impact these efforts.	Sonar may cause some temporary behavioral impacts to alewife and blueback herring due to their hearing sensitivity, but those impacts would be temporary and infrequent as a sonar ship operating mid-frequency sonar transits an area.
575	I-098	4.7.1	The first one is with regard to masking - the masking issue of marine fish on page 4-157. It says, "Most marine fish tested do not have sensitivities in the mid-frequency range." And that's a Yes statement, but I want to point out that most of the fish that occur in the areas where the Navy proposes to use its sonar have not been tested for their hearing sensitivity. So we absolutely do not know and cannot make the statement that is made in the document that, you know, there will be no impact to the fish, because in the absence of evidence, not an assertion that there will be no effect. Is that clear? Does that make sense? Most marine fish in the area have not been tested, so - that's the first bit of research that needs to be done.	Hearing capability data only exists for fewer than 100 of the 29,000 fish species. As such, it has been necessary to extrapolate data from species with known hearing ranges. The Navy continues to fund marine research and use the best available research as it becomes available.
581	I-098	4.7.1	Second, "no data exists", it says - I'm quoting from that same section - "to indicate that marine fishes are affected by sonar activities, but fish do respond to mid-frequency sounds, specifically other predators." This is an area of my personal interest and research, and my colleagues at East Carolina University. It's wrong, I think, to dismiss the idea that - it does on to the next sentence to say that because there's no data to exist - that exists to indicate that fishes - marine fishes are affected by sonar activities. That's because we haven't really tested all the fishes against the Navy sonar and the sound levels that have been used in the past. So we need to do those tests. So, again, more research is required by the Navy before it concludes that there is no effect or significant impact.	Hearing capability data only exists for fewer than 100 of the 29,000 fish species. As such, it has been necessary to extrapolate data from species with known hearing ranges. The Navy continues to fund marine research and use the best available research as it becomes available.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1458	A-028	4.7.2	the DEIS (4.7.2) states "Fish that are located in the water column, in proximity to the source of detonation could be injured, killed, or disturbed by the impulsive sound and possibly temporarily leave the area." It then goes on to say "Most fish species experience large number of natural mortalities, especially during early life stages, and therefore any small level of mortality caused by the AFAST activities involving explosive source sonobuoys (AN/SSQ-110A) will most likely be insignificant to the population as a whole." Would the above claim, as to the insignificance of mortalities, be true if the species being impacted is in serious decline, as so many fish species are today, or is threatened or endangered?	As stated in Section 3.9.4, four endangered species (the shortnose sturgeon, subadult and adult Gulf sturgeon, the smalltooth sawfish, and Atlantic salmon) were evaluated for potential occurrence within the AFAST Study Area. However, it was determined that these species are unlikely to be present. Refer to Section 6.4.1.7 for the cumulative impacts analysis.
930	G-006	4.7.2	Despite a thorough review of the potential impacts of sonar on marine fish and acknowledgement that data on hearing capabilities exist for relatively few species, the DEIS/OEIS concludes that because "no data exist that demonstrate any long-term negative effects on marine fish from underwater sound associated with sonar activities" (p. 4-158) that there will be no significant impact to fish populations. Lack of data does not equate to lack of impact; numerous studies exist that document the negative effects of chronic exposure to sub-lethal levels of a variety of stimuli.	Refer to updated Section 4.7. Sonar may cause some temporary behavioral impacts to some fish species due to their hearing sensitivity, but those impacts would be temporary and infrequent as a sonar ship operating mid-frequency sonar transits an area.
85	I-011	4.7.3	Impacts on these and other species like the federally endangered shortnose sturgeon must be fully evaluated by the Navy.	Please refer to Section 4.7.3 for results of the environmental analysis conducted on endangered fish species.
95	I-023	4.7.3	Impacts on these and other species like the federally endangered shortnose sturgeon must be fully evaluated by the Navy.	Please refer to Section 4.7.3 for results of the environmental analysis conducted on endangered fish species.
105	I-034	4.7.3	Impacts on these and other species like the federally endangered shortnose sturgeon must be fully evaluated by the Navy.	Please refer to Section 4.7.3 for results of the environmental analysis conducted on endangered fish species.
209	I-053	4.7.3	Impacts on these and other species like the federally endangered shortnose sturgeon must be fully evaluated by the Navy.	Please refer to Section 4.7.3 for results of the environmental analysis conducted on endangered fish species.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1557	I-073	4.7.3	Impacts on these and other species like the federally endangered shortnose sturgeon must be fully evaluated by the Navy.	Please refer to Section 4.7.3 for results of the environmental analysis conducted on endangered fish species.
1561	I-087	4.7.3	Impacts on these and other species like the federally endangered shortnose sturgeon must be fully evaluated by the Navy.	Please refer to Section 4.7.3 for results of the environmental analysis conducted on endangered fish species.
1567	I-104	4.7.3	Impacts on these and other species like the federally endangered shortnose sturgeon must be fully evaluated by the Navy.	Please refer to Section 4.7.3 for results of the environmental analysis conducted on endangered fish species.
1574	I-119	4.7.3	Impacts on these and other species like the federally endangered shortnose sturgeon must be fully evaluated by the Navy.	Please refer to Section 4.7.3 for results of the environmental analysis conducted on endangered fish species.
1579	I-131	4.7.3	Impacts on these and other species like the federally endangered shortnose sturgeon must be fully evaluated by the Navy.	Please refer to Section 4.7.3 for results of the environmental analysis conducted on endangered fish species.
1585	I-138	4.7.3	Impacts on these and other species like the federally endangered shortnose sturgeon must be fully evaluated by the Navy.	Please refer to Section 4.7.3 for results of the environmental analysis conducted on endangered fish species.
1589	I-142	4.7.3	Impacts on these and other species like the federally endangered shortnose sturgeon must be fully evaluated by the Navy.	Please refer to Section 4.7.3 for results of the environmental analysis conducted on endangered fish species.
1368	A-010	4.8	As the Navy acknowledges, migratory birds occur within the Atlantic Fleet's sonar use area. The Navy must therefore consult with the Secretary of the Interior regarding measures to minimize and monitor the effects of the proposed range on migratory birds, as required.	The Navy has determined there will be no incidental takes of migratory birds in accordance with MBTA.
1362	A-010	4.8	The Navy must consult with NMFS over blue whales, fine whales, humpback whales, North Atlantic right whales, sei whales, sperm whales, green sea turtles, Kemp's ridley sea turtles, olive ridley sea turtles, hawksbill sea turtles, leatherback sea turtles, loggerhead sea turtles, Bermuda petrels, gulf sturgeon, least terns and roseate terns, all of which are listed under the (ESA) Act.	The Navy has initiated consultation with NMFS on marine mammals and sea turtles. There will be no effect to threatened or endangered sea birds due to AFAST activities. Refer to Section 4.8.3.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1160	A-019	4.8	In the original DEIS for the USWTR, the Navy failed to identify impacts to colonial and pelagic birds, even though the possible locations for the USWTR were near important bird areas along the Gulf Stream where these birds congregate and roost. As set forth in more detail in our January 2006 comment letter, impacts to these birds must be considered. Sonar may disturb birds resting on the surface of the water or diving for prey, and birds may become entangled in the parachutes and lines dropped from aircraft and boats using the range.	The Undersea Warfare Training Range (USWTR) is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. Refer to Section 3.10 for a description of seabirds likely to occur within the Study Area and Section 4.8 for the results of the effects analysis on seabirds.
1221	A-019	4.8	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Despite the abundance of seabirds in this region and its ecological significance, the Navy has ignored seabirds in its environmental review. Without analysis, citation or discussion, the Navy asserts that the operation of the USWTR will have no impact on seabirds. This assertion contradicts the scientific evidence on the behavior, migratory patterns, and causes of mortality for a variety of species of seabirds. The omission is a critical flaw, violating not only NEPA's "hard look" requirement but also the Endangered Species Act; several critically endangered species of seabirds congregate in this area offshore North Carolina.	Refer to Section 4.8 for a discussion of potential effects to seabirds.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1225	A-019	4.8	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Indirect effects <to seabirds> include disruption of prey species; if populations decline, birds will be affected.	Refer to Section 4.8.
1471	A-028	4.8	The DEIS did not look at the possibility that AFAST activities might increase stress levels in sea birds. Is the conclusion then that sea birds are not susceptible to stress? If so, please describe the basis for this conclusion.	Because of the extremely short period of time that sea birds spend under water, and the AFAST activities occur as discreet training events. Sea birds would have limited exposure to sound stressors during sonar activities and therefore would not change the conclusion of the DEIS.
821	G-005	4.8	Seabirds and migratory birds. There is very little if any data on impacts of sonar on birds. We are concerned with impacts to seabirds and of greater concern, the potential impacts to prey resources through use of sonar and loss of hard bottom habitat.	The summary of effects to seabirds in Section 4.8 is based on all known information on the subject.
767	G-011	4.8	Millions of migratory landbirds (passerines and raptors) also funnel through the lower Delmarva Peninsula each fall making it one of the most important staging areas along the Atlantic flyway. Forest and shrub habitats located at the southern tip of the Delmarva Peninsula serve as a major foraging and resting areas for many landbirds. To date, little is known about landbird occurrences over Virginia's nearshore waters and virtually no information exists regarding flight paths to and from land based stopover sites.	AFAST EIS/OEIS is addressing the use of mid- and high-frequency sonars. Unless the migratory birds are submerged during feeding they would not be affected. Refer to Section 4.8 for a discussion of potential effects to seabirds.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
773	G-011	4.8	Conduct research on avian and bat species' use of coastal and offshore areas and what, if any, impacts upon them may result from the proposed activities.	We analyzed species that had a potential to be affected through the Navy's use of sound in the water. Species that did not have the potential to be affected were not analyzed. Refer to Section 4.8 for additional information
82	I-011	4.8	The impacts to birds from sonar and land based infrastructure in critical habitats such as the Cape Romain National Wildlife Refuge and Bird Key-Stono Heritage Preserve must be evaluated and mitigated.	Cape Romain encompasses barrier island/salt marsh habitats that extend for 22 miles along the Atlantic coast. The refuge consists of 35,267 acres of beach and sand dunes, salt marsh, maritime forests, tidal creeks, fresh and brackish water impoundments and 31,000 acres of open water. Bird Key Stono is an estuarine sandbar comprising approximately 20 acres at the mouth of the Stono River in Charleston County. The active sonar activities under the proposed action will occur outside these two areas; therefore, an analysis to impacts to critical habitats is not warranted. In addition, no land based activities will occur under the proposed action. As such, there will be no effect to land based infrastructure and an analysis is not warranted.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
92	I-023	4.8	The impacts to birds from sonar and land based infrastructure in critical habitats such as the Cape Romain National Wildlife Refuge and Bird Key-Stono Heritage Preserve must be evaluated and mitigated.	Cape Romain encompasses barrier island/salt marsh habitats that extend for 22 miles along the Atlantic coast. The refuge consists of 35,267 acres of beach and sand dunes, salt marsh, maritime forests, tidal creeks, fresh and brackish water impoundments and 31,000 acres of open water. Bird Key Stono is an estuarine sandbar comprising approximately 20 acres at the mouth of the Stono River in Charleston County. The active sonar activities under the proposed action will occur outside these two areas; therefore, an analysis to impacts to critical habitats is not warranted. In addition, no land based activities will occur under the proposed action. As such, there will be no effect to land based infrastructure and an analysis is not warranted.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
103	I-034	4.8	The impacts to birds from sonar and land based infrastructure in critical habitats such as the Cape Romain National Wildlife Refuge and Bird Key-Stono Heritage Preserve must be evaluated and mitigated.	Cape Romain encompasses barrier island/salt marsh habitats that extend for 22 miles along the Atlantic coast. The refuge consists of 35,267 acres of beach and sand dunes, salt marsh, maritime forests, tidal creeks, fresh and brackish water impoundments and 31,000 acres of open water. Bird Key Stono is an estuarine sandbar comprising approximately 20 acres at the mouth of the Stono River in Charleston County. The active sonar activities under the proposed action will occur outside these two areas; therefore, an analysis to impacts to critical habitats is not warranted. In addition, no land based activities will occur under the proposed action. As such, there will be no effect to land based infrastructure and an analysis is not warranted.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
206	I-053	4.8	The impacts to birds from sonar and land based infrastructure in critical habitats such as the Cape Romain National Wildlife Refuge and Bird Key-Stono Heritage Preserve must be evaluated and mitigated.	Cape Romain encompasses barrier island/salt marsh habitats that extend for 22 miles along the Atlantic coast. The refuge consists of 35,267 acres of beach and sand dunes, salt marsh, maritime forests, tidal creeks, fresh and brackish water impoundments and 31,000 acres of open water. Bird Key Stono is an estuarine sandbar comprising approximately 20 acres at the mouth of the Stono River in Charleston County. The active sonar activities under the proposed action will occur outside these two areas; therefore, an analysis to impacts to critical habitats is not warranted. In addition, no land based activities will occur under the proposed action. As such, there will be no effect to land based infrastructure and an analysis is not warranted.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1546	I-065	4.8	The impacts to birds from sonar and land based infrastructure in critical habitats such as the Cape Romain National Wildlife Refuge and Bird Key-Stono Heritage Preserve must be evaluated and mitigated.	Cape Romain encompasses barrier island/salt marsh habitats that extend for 22 miles along the Atlantic coast. The refuge consists of 35,267 acres of beach and sand dunes, salt marsh, maritime forests, tidal creeks, fresh and brackish water impoundments and 31,000 acres of open water. Bird Key Stono is an estuarine sandbar comprising approximately 20 acres at the mouth of the Stono River in Charleston County. The active sonar activities under the proposed action will occur outside these two areas; therefore, an analysis to impacts to critical habitats is not warranted. In addition, no land based activities will occur under the proposed action. As such, there will be no effect to land based infrastructure and an analysis is not warranted.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1553	I-073	4.8	The impacts to birds from sonar and land based infrastructure in critical habitats such as the Cape Romain National Wildlife Refuge and Bird Key-Stono Heritage Preserve must be evaluated and mitigated.	Cape Romain encompasses barrier island/salt marsh habitats that extend for 22 miles along the Atlantic coast. The refuge consists of 35,267 acres of beach and sand dunes, salt marsh, maritime forests, tidal creeks, fresh and brackish water impoundments and 31,000 acres of open water. Bird Key Stono is an estuarine sandbar comprising approximately 20 acres at the mouth of the Stono River in Charleston County. The active sonar activities under the proposed action will occur outside these two areas; therefore, an analysis to impacts to critical habitats is not warranted. In addition, no land based activities will occur under the proposed action. As such, there will be no effect to land based infrastructure and an analysis is not warranted.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1558	I-087	4.8	The impacts to birds from sonar and land based infrastructure in critical habitats such as the Cape Romain National Wildlife Refuge and Bird Key-Stono Heritage Preserve must also be evaluated and mitigated.	Cape Romain encompasses barrier island/salt marsh habitats that extend for 22 miles along the Atlantic coast. The refuge consists of 35,267 acres of beach and sand dunes, salt marsh, maritime forests, tidal creeks, fresh and brackish water impoundments and 31,000 acres of open water. Bird Key Stono is an estuarine sandbar comprising approximately 20 acres at the mouth of the Stono River in Charleston County. The active sonar activities under the proposed action will occur outside these two areas; therefore, an analysis to impacts to critical habitats is not warranted. In addition, no land based activities will occur under the proposed action. As such, there will be no effect to land based infrastructure and an analysis is not warranted.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1564	I-104	4.8	The impacts to birds from sonar and land based infrastructure in critical habitats such as the Cape Romain National Wildlife Refuge and Bird Key-Stono Heritage Preserve must be evaluated and mitigated.	Cape Romain encompasses barrier island/salt marsh habitats that extend for 22 miles along the Atlantic coast. The refuge consists of 35,267 acres of beach and sand dunes, salt marsh, maritime forests, tidal creeks, fresh and brackish water impoundments and 31,000 acres of open water. Bird Key Stono is an estuarine sandbar comprising approximately 20 acres at the mouth of the Stono River in Charleston County. The active sonar activities under the proposed action will occur outside these two areas; therefore, an analysis to impacts to critical habitats is not warranted. In addition, no land based activities will occur under the proposed action. As such, there will be no effect to land based infrastructure and an analysis is not warranted.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1571	I-119	4.8	The impacts to birds from sonar and land based infrastructure in critical habitats such as the Cape Romain National Wildlife Refuge and Bird Key-Stono Heritage Preserve must be evaluated and mitigated.	Cape Romain encompasses barrier island/salt marsh habitats that extend for 22 miles along the Atlantic coast. The refuge consists of 35,267 acres of beach and sand dunes, salt marsh, maritime forests, tidal creeks, fresh and brackish water impoundments and 31,000 acres of open water. Bird Key Stono is an estuarine sandbar comprising approximately 20 acres at the mouth of the Stono River in Charleston County. The active sonar activities under the proposed action will occur outside these two areas; therefore, an analysis to impacts to critical habitats is not warranted. In addition, no land based activities will occur under the proposed action. As such, there will be no effect to land based infrastructure and an analysis is not warranted.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
141	I-131	4.8	The impacts to birds from sonar and land based infrastructure in critical habitats such as the Cape Romain National Wildlife Refuge and Bird Key-Stono Heritage Preserve must be evaluated and mitigated	Cape Romain encompasses barrier island/salt marsh habitats that extend for 22 miles along the Atlantic coast. The refuge consists of 35,267 acres of beach and sand dunes, salt marsh, maritime forests, tidal creeks, fresh and brackish water impoundments and 31,000 acres of open water. Bird Key Stono is an estuarine sandbar comprising approximately 20 acres at the mouth of the Stono River in Charleston County. The active sonar activities under the proposed action will occur outside these two areas; therefore, an analysis to impacts to critical habitats is not warranted. In addition, no land based activities will occur under the proposed action. As such, there will be no effect to land based infrastructure and an analysis is not warranted.
1223	A-019	4.8.1	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Most seabirds dive underwater for their food, and thus, presumably will be exposed to sonar blasts. Because birds hear within the range of the mid-frequency sonar planned for use in this area, they are likely to detect the sonar and experience some degree of behavioral and possibly physiological impacts. Surface vibrations could cause startle effects that disrupt feeding patterns and cause birds to expend additional energy.	As stated in Section 4.8.1, little is known about the general hearing or underwater hearing capabilities of sea birds, although research suggests an in-air maximum auditory sensitivity between 1 and 5 kHz for most species. In addition, it is highly unlikely that a seabird would be exposed to active sonar while foraging due to the relatively short dive time. Refer to Section 4.8 for additional information.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1470	A-028	4.8.1	"...There is no evidence seabirds use underwater sound. Seabirds spend a small fraction of time submerged. Seabirds could rapidly fly away from the area and disperse to other areas if disturbed. Do the authors of the DEIS believe hat because seabirds don't "use" sound underwater, they therefore cannot be affected by this sound? If so, please explain how this conclusion was reached.	A review of available literature indicates the most extensive research has focused on pile-driving and seismic surveys. During these studies, airguns have not caused any harm, and explosives have resulted in injury only when the seabirds occurred near the detonation (Turnpenny and Nedwell, 1994). In general, seabirds spend a short period of time underwater, and rarely fully submerge themselves while feeding. If they do submerge themselves, they typically perform such activities for a short period of time. For example, the Northern gannet has the longest recorded dive depth and dive time of 15 m (49 ft) in 30 seconds (Mowbray, 2002). It is highly unlikely that a seabird would be exposed to active sonar while foraging due to the very short dive time, nor that active sonar use would coincide with the dive of a seabird. As such, while seabirds could be affected by underwater sound, it is unlikely that they would be.
1472	A-028	4.8.2	The DEIS (4.8.2) attempts to minimize the potential for sea birds to be impacted by explosive source sonobuoys, using the often repeated, but unreasonable and unscientific argument that because of the short periods of time se birds spend underwater, "it is extremely unlikely that the detonation of the explosive source sonobuoy (AN/SSQ-110A) will coincide with the dive of a seabird." Does the DEIS assume that for sea birds to be impacted by detonations of explosive source sonobuoys, they have to be underwater, and cannot be impacted if they are on the water surface? If so, what is this assumption based on?	Explosive source sonobuoys are used to determine a submarine's location. As such, detonations would occur at depth rather than at the surface. It is unlikely that a bird at the water surface.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1473	A-028	4.8.3	…Atlantic puffins, who are threatened, should be included in this list. Please explain why they are excluded from the list. Razorbills, who are also threatened, and who overwinter south of their breeding range in coastal waters in the Gulf of Maine, and sometimes occur as far south as New Jersey, should also be included in this list. What is the basis for their exclusion?	Atlantic puffins and razorbills are Maine state-listed species. These two species are not federally listed as threatened or endangered. Moreover, AFAST activities will not be occurring within Maine state waters.
1224	A-019	4.8.4	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Birds can become entangled in parachutes and assembly, preventing them from flying and possibly drowning them.	Refer to Section 4.8.4 for results of the analysis related to sea bird entanglement.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1451	A-028	4.9	While there is indeed almost no information on the hearing ability of invertebrates, that cannot be used as a basis to assume that they cannot hear some AFAST activities, nor that invertebrates have to be able to hear the noise created by these activities to be impacted by them. Please explain, in a direct manner, what is the basis for the Navy belief that in order to be impacted by noise, an animal must be able to hear that noise.	As stated in Section 4.9, there is very little information available regarding the hearing capability of marine invertebrates. Wilson et al. (2007) exposed squid to sound pressure levels ranging from 179 to 193 dB re 1 mPa2-s to determine whether toothed whale echolocation clicks can incapacitate squid and whether squid can detect and respond to such clicks. No behavioral changes were reported in the squid when exposed to the two types of echolocation clicks. The results of the experiment did not reveal any behavioral change in squid. Since little information is available on marine invertebrates and their hearing, the results of Wilson et al., (2007) are assumed to be indicative of various marine invertebrates. If marine invertebrates are unable to detect or respond to sound, it is unlikely there is a significant impact to them from sound.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1453	A-028	4.9	The DEIS has failed to address some rather important information regarding the impact of sound on invertebrates. It Is well known that some whales and dolphins are able to produce sounds that can cause injuries in marine invertebrates. It is possible that sounds, including sounds in other frequencies, that are produced by AFAST activities, might do the same.	As stated in Section 4.9, there is very little information available regarding the hearing capability of marine invertebrates. Wilson et al. (2007) exposed squid to sound pressure levels ranging from 179 to 193 dB re 1 mPa2-s to determine whether toothed whale echolocation clicks can incapacitate squid and whether squid can detect and respond to such clicks. No behavioral changes were reported in the squid when exposed to the two types of echolocation clicks. The results of the experiment did not reveal any behavioral change in squid. Since little information is available on marine invertebrates and their hearing, the results of Wilson et al., (2007) are assumed to be indicative of various marine invertebrates. If marine invertebrates are unable to detect or respond to sound, it is unlikely there is a significant impact to them from sound.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1454	A-028	4.9	The strandings of squid reported in Guerra et al. (2004) also occurred coincident with seismic surveys. Then there is the research done on the effects of seismic noise on snow crabs (DFO 2004), which also revealed impacts to the organs from exposure to this noise. While seismic noise differs in some ways from that of mid-frequency sonars and the noise created by explosive source sonobuoys, it does share some characteristics, including its intensity. Since we do not know precisely which characteristics of the seismic sound caused these reactions in the squid and snow crabs, it is possible that some of the intense noise sources that will be in use in the AFAST activities may have similar effects. The omission of this information weakens the credibility of this DEIS. Please explain why the DEIS fails to recognize the relevance these studies may have for the noise produced by AFAST activities and the potential for that noise to impact marine invertebrates.	Seismic surveys are high intensity, low frequency impulsive sounds. Specifically, airguns rapidly release compressed air with source levels between 215 and 230 dB re 1 μPa-m, and the highest energies fall in the range of 0.01 to 0.3 kHz. While details of the five strandings associated with the October 2001 were not provided, Guerra et al., (2004) noted the four stranded giant squid discovered in September 2003 were associated with acoustic pulses that produced low frequency (<100 Hz), high intensity (200 dB) sound. The females ranged in size from 67 kg (148 lbs) and 127 cm (4 ft) mantle length (ML) to 140 kg (309 lbs) and 177 cm (6 ft) ML. The male was 66 kg (146 lbs) and 122 cm (4 ft) ML. It is difficult to extrapolate data on airguns to sonar. In addition, the DFO (2004) document acknowledged that the test and control sites were different in temperature, substrate, and food availability. Their conclusions stated that the seismic survey did not cause any acute or mid-term mortality of the crab, nor was there any evidence of changes to feeding. Further, embryo survival rate was unaffected by the seismic survey.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
999	A-008	4.9.1	Page 4-162 states "very little information available regarding the hearing capability of marine invertebrates. However, no effects to marine invertebrates are anticipated from active sonar since acoustic transmissions are brief in nature." It is completely inappropriate to assume that since little is known about the effects of sound on invertebrates, that no impacts are likely. Marine invertebrates are incredibly diverse and are a vital underpinning of the food chain.	Most marine invertebrates cannot hear sound because they do not possess the physical structures needed to detect sound. The few invertebrates that may detect sound could experience infrequent and temporary effects because ships utilizing sonar are in transit. However, most invertebrates have a similar to the surrounding seawater and therefore are not capable of feeling physical effects from sound. Please see revised text in Section 4.9.1 for additional information.
1024	A-010	4.9.1	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.	Most marine invertebrates cannot hear sound because they do not possess the physical structures needed to detect sound. The few invertebrates that may detect sound could experience infrequent and temporary effects because ships utilizing sonar are in transit. However, most invertebrates have a similar to the surrounding seawater and therefore are not capable of feeling physical effects from sound. Please see revised text in Section 4.9.1 for additional information.
1366	A-010	4.11	The Navy indicates that it will not presently consult with any of the Sanctuaries within the AFAST region-…-even though none of these protected areas would be excluded under its preferred alternative. Since the Navy's exercises would cause injury and mortality of species, consultation is clearly required if sonar use takes place either within or in the vicinity of the sanctuaries or otherwise affects their resources. The mere claim that the Navy would avoid adverse impacts "to the maximum extent practicable" does not, of course, obviate consultation. Since sonar may impact sanctuary resources even when operated outside their bounds, the Navy should indicate how close it presently operates, or foreseeable plans to operate, to each of these areas.	The Navy states in the AFAST EIS/OEIS that it will consult with the National Marine Sanctuaries officials if future training requirements dictate we need to train in the sanctuaries. Please refer to revised Sections 4.11 and 6.4.1.12.1 for additional information.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1367	A-010	4.11	…the Sanctuaries Act is intended to "prevent or strictly limit the dumping into ocean waters of any material that would adversely affect human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities", and prohibits all persons, including Federal agencies, from dumping materials into ocean waters, except as authorized by the Environmental Protection Agency. The Navy has not indicated its intent to seek a permit under the statute.	The Navy states in the AFAST EIS/OEIS that it will consult with the National Marine Sanctuaries officials if future training requirements dictate we need to train in the sanctuaries. Please refer to revised Sections 4.11 and 6.4.1.12.1 for additional information.
961	G-002	4.11	The ONMS believes that there is an error on page 4-163, resulting in a confusing introductory paragraph to section 4-11. It is our understanding that the words "No Action Alternative" should be deleted from the first sentence, making this paragraph identical to the paragraph found in Section 6.4.1.12 on page 6-75, which read as follows: "Under Alternative, Alternative 1, Alternative 2, and Alternative 3, the U.S. Navy will not conduct active sonar activities in the Stellwagen Bank, USS Monitor, Gray's Reef, Flower Garden and Florida Keys National Marine Sanctuaries. Therefore, there would be no effect to the Stellwagen Bank, USS Monitor, Gray's Reef, Flower Garden and Florida Keys National Marine Sanctuaries under Alternative 1, Alternative 2 or Alternative 3. Under the No Action Alternative, the Navy could conduct active sonar activities; however, at the present time, the Navy does not conduct active sonar activities in the Stellwagen Bank, USS Monitor, Gray's Reef, Flower Garden and Florida Keys National Marine Sanctuaries.	Text corrected in EIS/OEIS as needed.

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965	G-002	4.11	The information provided in Section 4-11 should be significantly expanded to include a sanctuary-by-sanctuary and alternative-by-alternative assessment of impacts associated with proposed AFAST activities. The information provided should be sufficient that the ONMS can evaluate definitively what proposed activities (including vessel transits) will take place within sanctuaries, what proposed activities will take place within buffer zones around the sanctuaries (under Alternative 3) and what proposed activities will take place outside sanctuaries but are likely to and/or may result in impacts to sanctuary resources due to exposure to underwater sound and/or materials expended during operations. Discussion of activities taking place outside sanctuaries which may or are likely to affect sanctuaries should include sanctuary and alternative-specific exposure estimates (mortality, PTS, TTS, and “dose-function” for marine mammal and sea turtle species within sanctuaries, as well as discussion of possible impacts to acoustically-active fish species) and should evaluate the probability and/or rate that materials expended due to AFAST activities will enter sanctuary waters. With the inclusion of more information, the ONMS could then assess the environmental impacts associated with AFAST activities on a sanctuary-by-sanctuary and alternative-by-alternative basis in order to best advise the Navy regarding the need for consultation under both site regulations and section 304(d) of the NMSA.	AFAST activities will not be conducted in National Marine Sanctuaries under any of the alternatives.
971	G-002	4.11	The correct names are Flower Garden Banks (not "Flower Garden") and Monitor (not "USS Monitor") National Marine Sanctuaries.	Text corrected in EIS/OEIS as needed.
826	G-005	4.11	The first two paragraphs in this section are conflicting. The initial paragraph states neither the No Action Alternative, Alternative 1, Alternative 2, nor Alternative 3 will allow sonar activities in specifically listed National Marine Sanctuaries. However, the following paragraph states the No Action Alternative could conduct activities in these sanctuaries, but at the present time does not.	Refer to revised Section 4.11.
168	I-059	4.11	The sound of sonar has, as it's documented, deadly affect on marine mammals.	Please reference Section 4.4.11 for a summary of potential acoustic effects by marine mammal species.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1235	A-019	4.14	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* The (USWTR) DEIS is noncommittal about the Navy's use of marine advisories to alert boaters to planned sonar activity. Should the Navy pursue its plans for the USWTR, a three-day notice is a necessity. The Navy also should provide continuous updates during that three-day period to ensure that boaters have sufficient notice and can take measures to protect their equipment, find other areas for fishing and revise plans with clients, if necessary. These advisories are also essential for the diving community, to warn divers of the potential for safety and health threats.	This comment is specific to USWTR. Please see Sections 4.14 and 4.17 for further discussion on affects to recreational boating and diving.
587	A-011	4.15	This sonar range will damage the sports fishing as well as commercial fishing industries without any beneficial offset.	The Undersea Warfare Training Range (USWTR) is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action.
1148	A-019	4.15	Considering the imperiled economic state of many commercial fisheries in the Eastern Atlantic Ocean.	Refer to section 4.15 for a detailed analysis of effects to commercial fishing by geographic region.

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1219	A-019	4.15	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Because of the variety of habitats and proliferation of marine life, this area (North Carolina) has grown in importance for recreational fishing and charter boats, contributing greatly to the region's economy … The (USWTR) DEIS is silent on topics related to the region's significance for fisheries and potential economic impact to those who make their most basic reviews of commercial logbooks that NMFS maintains in Beaufort and the North Carolina Coastal Habitat Protection Plan.	Refer to Section 4.7 for a discussion of potential effects to marine fish, as well as Section 4.15 for a discussion of potential effects to recreational and commercial fishing.
937	G-006	4.15	Commercial and Recreational Fishing (Section 4.15): Given that DMF does not find the DEIS/OEIS adequate with regard to its analysis of impacts of the proposed project to fish species, we do not find the conclusion that neither commercial nor recreational fishing activities will be impacted to be adequate. Any significant impact to fish species will necessarily result in impacts to the participants in those fisheries.	Based on the current science, most species of fish do not hear mid-frequency and high frequency sound. Refer to revised Section 4.6 for additional information.
1416	G-014	4.15	The Navy should be aware of traditional fishing tournaments held in New Jersey that have anglers fishing in the VACAPES OPAREA. Every effort should be made by the Navy to avoid scheduling training in these areas because these historic tournaments are of great economic value to the local and State economies.	As discussed in Section 4.15, because the Navy does not close off ocean areas for active sonar activities; as such, no restrictions to fisherman are imposed. No conflicts to fishing activities would occur.
73	I-002	4.15	That impact is felt by seacoast communities and fishing industries.	Please refer to Section 4.15 for information related to commercial and recreational fishing, and Section 4.20 for information on compliance with the Coastal Zone Management Act.

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694	I-003	4.15	I am deeply concerned about the real possibility that the use of active sonar as described in the DEIS for AFAST could negatively impact North Carolina's recreational and commercial fishing industries, which are essential to the health of my state's economy.	Noted. Please refer to Section 4.15 for potential impacts to recreational and commercial fishing.
700	I-004	4.15	As far as we know, it has not been proven that active sonar does not adversely affect fish populations, which in turn could negatively impact the fishing industry and thus North Carolina's economy.	Refer to Section 4.15 for a discussion of potential effects to recreational and commercial fishing.
84	I-011	4.15	The offshore waters of South Carolina support an economically valuable shrimp industry, as well as habitat for snapper, grouper, wahoo, red drum and migratory pelagic fish.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.
94	I-023	4.15	The offshore waters of South Carolina support an economically valuable shrimp industry, as well as habitat for snapper, grouper, wahoo, red drum and migratory pelagic fish.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.
99	I-032	4.15	Specific precautions must be taken for the wildlife and economy of SC (shrimping, fishing, etc.).	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.
104	I-034	4.15	The offshore waters of South Carolina support an economically valuable shrimp industry, as well as habitat for snapper, grouper, wahoo, red drum and migratory pelagic fish.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.
247	I-040	4.15	with studies showing that commercial catch rates can decrease up to 80 percent when loud sounds is in the area.	Refer to Section 4.15 for the analysis on potential effects to commercial and recreational fishing.
208	I-053	4.15	The offshore waters of South Carolina support an economically valuable shrimp industry, as well as habitat for snapper, grouper, wahoo, red drum and migratory pelagic fish.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1548	I-065	4.15	The offshore waters of South Carolina support an economically valuable shrimp industry, as well as habitat for snapper, grouper, wahoo, red drum and migratory pelagic fish. Impacts on these and other species like the federally endangered shortnose sturgeon must be fully evaluated by the Navy.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.
1556	I-073	4.15	The offshore waters of South Carolina support an economically valuable shrimp industry, as well as habitat for snapper, grouper, wahoo, red drum and migratory pelagic fish.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.
1560	I-087	4.15	The offshore waters of South Carolina support an economically valuable shrimp industry, as well as habitat for snapper, grouper, wahoo, red drum and migratory pelagic fish.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.
1566	I-104	4.15	The offshore waters of South Carolina support an economically valuable shrimp industry, as well as habitat for snapper, grouper, wahoo, red drum and migratory pelagic fish.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.
1569	I-115	4.15	These waters also provide an economically valuable shrimp industry, as well as habitat for snapper, wahoo, grouper, etc. Impacts on these as well as other species should be thoroughly evaluated by the navy.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.
1573	I-119	4.15	The offshore waters of South Carolina support an economically valuable shrimp industry, as well as habitat for snapper, grouper, wahoo, red drum and migratory pelagic fish.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.
143	I-131	4.15	The offshore waters of South Carolina support an economically valuable shrimp industry, as well as habitat for snapper, grouper, wahoo, red drum and migratory pelagic fish. Impacts on these and other species like the federally endangered shortnose sturgeon must be fully evaluated by the Navy.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.

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10	I-132	4.15	I am very concerned about the possible sonar implementation and the potential for damage of the fishery off the coast of NC.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.
11	I-132	4.15	In addition I am concerned over the potential for closure of fishing grounds off shore at the gulf stream for weekend fishermen such as myself. I do not want this implemented off our coast of NC.	Please refer to the analysis presented in Section 4.15, Commercial and Recreational Fishing.
1584	I-138	4.15	The offshore waters of South Carolina support an economically valuable shrimp industry, as well as habitat for snapper, grouper, wahoo, red drum and migratory pelagic fish.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.
1588	I-142	4.15	The offshore waters of South Carolina support an economically valuable shrimp industry, as well as habitat for snapper, grouper, wahoo, red drum and migratory pelagic fish.	Please refer to Section 4.7 for a summary of potential effects to marine fish, as well as Section 4.15 for a summary of potential effects to commercial and recreational fishing.

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1226	A-019	4.17	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Despite the high rates of use of the waters in the area for diving, the DEIS contains no discussion of the potential impacts to divers from exposure to sonar. This oversight is untenable. The scientific literature documents serious physiological impacts from exposure to loud sounds. The Navy is required by federal law to disclose this fact and assess the potential impact to divers exposed to sonar at various distances and SELs. In addition, NEPA requires the Navy to investigate and disclose the potential economic impacts to the coastal diving industry for the use of the USWTR.	Refer to Section 4.17 for the results of the effects analysis for Scuba divers.
280	A-009	4.18.1	This southeastern Virginia area and the Chesapeake Bay area and the mouth out into the Atlantic is one of the most important areas. Tourism drives a good chunk of the economy here in Virginia Beach and tourists love to come and learn about marine mammals. We know that for a fact.	Please reference Section 4.18.1 for information related to potential effects to marine mammal watching.
269	A-009	5	The question of what the Navy intends to do is not a question of stopping the Navy from training. The question is do we significantly protect the marine mammals along the East Coast?	Please refer to Chapter 5 for a description of mitigation and conservation measures.
281	A-009	5	And so we ask again that the Navy take every single precaution in any of these alternatives to make sure that we not shoot ourselves in the foot unnecessarily. Thank you.	Please reference Chapter 5 for mitigation and conservation measures.

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1016	A-010	5	It adopts mitigation that a federal court found to be "woefully inadequate and ineffectual," and fails to prescribe measures that have been used repeatedly by the Navy in the past, used by other navies, or required by the courts.	The Navy is best suited to determine what mitigation it can effectively use during its training and testing activities to mitigate harm to marine mammals while still being able to meet its operational needs to train for the real-world conditions it may face. A thorough understanding of tactical sonar acoustic propagation characteristics, marine mammal physiology and population ecology, and oceanographic vagaries in the waters of the AFAST study area has been a benchmark of the Navy's effective mitigation program.
1355	A-010	5	To comply with NEPA, an agency must discuss measures designed to mitigate its project's impact on the environment…Yet here the Navy does little more than set forth a cribbed set of measures, falling short even of what other navies have implemented for transient exercises and providing no discussion on a variety of other options.	The mitigation measures were determined through consultation with NMFS. Please refer to Chapter 5.
1374	A-010	5	We urge the Navy to revise its analysis consistent with federal law and to provide a mitigation plan that truly maximizes environmental protection given the Navy's actual operational needs.	Mitigation measures were determined in consultation with NMFS, and this document was prepared in accordance with NEPA and EO 12114.
1084	A-016	5	In conclusion, the Navy should be adhering to much stricter mitigation methods in use by other navies for similar exercises and to include those that the Navy when required to, has used before. The Navy should commit to the following at a minimum:	The mitigation measures presented in the AFAST EIS will be reviewed and discussed with NMFS during the consultation process and may be altered as required. Some text explaining the current status and development of the mitigation measures needs to be developed to address the numerous amounts of comments pertaining to inadequacy of the mitigations.
1087	A-016	5	exercises should not be conducted during conditions that are conducive to ducting	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the

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				proposed action.
1096	A-016	5	when an animal is observed within 2,000 yards of the sonar dome, the sonar should be shut down until the animal has left the area	Safety zones will be applied beginning at 2,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
548	A-019	5	And we expect that those interests are going to be protected by our military as well, and that our military will do its best to ameliorate the impacts of its own training measures so that we don't find ourselves in the awkward position of asking for you to protect ourselves from you.	Please refer to the proposed mitigation measures within Chapter 5.
1177	A-019	5	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* Finally, measures to mitigate harm to those endangered animals <sea turtles>, such as seasonal restrictions on the conduct of training activities, should be given careful and thorough consideration.	The Navy is consulting with NMFS in accordance with the Endangered Species Act for sea turtles.

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1183	A-019	5	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* Mitigation: In addition to the measures suggested in the attached comments and in the paragraphs above, more attention is needed to mitigation in general. Measures such as debris recovery, use of alternative, non-toxic materials for non-recoverable materials, use of bio-degradable materials for non-recoverable materials and passive-acoustic monitoring for schools of fish and marine mammals prior to the use of sonar, should be considered and given thorough evaluation.	The Navy minimizes the discharge of debris used in training exercises as much as possible. Items used in training exercises that can be recovered (i.e., remain on the surface: torpedoes, targets, etc) are recovered. The Navy continues to research alternative materials for use in expended materials for future use. Passive acoustic monitoring is not effective for monitoring schools of fish. All personnel engaged in passive acoustic sonar operations would monitor for marine mammal vocalization and report the detection of any marine mammal to the appropriate watch station for dissemination and appropriate action.
1188	A-019	5	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Likewise, the Navy's proposals for mitigation are sorely inadequate, with no evidence of consideration of meaningful efforts to minimize environmental harm.	Please refer to Chapter 5 for a description of mitigation and conservation measures.

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1229	A-019	5	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Pursuant to the CEQ regulations, an agency's EIS must include appropriate mitigation measures and discuss means to mitigate adverse environmental impacts. "(O)mission of a reasonably complete discussion of possible mitigation measures would undermine the 'action-forcing' function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of adverse effects."	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action. These mitigation measures were determined through consultation with NMFS.
1230	A-019	5	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Despite this clear mandate, the (USWTR) DEIS largely ignores mitigation. The measures proposed are of speculative value, and the Navy makes no attempt to document their potential for success.	Please see the mitigation section of Chapter 5 of the AFAST EIS/OEIS.

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1232	A-019	5	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* To lessen the Navy's impact on whales, including the critically endangered right whales, several measures are recommended. …(1) Reduce ship speed. The scientific literature suggests a strong correlation between ship speed and collisions with whales...(2) Adopt a "no whales present" policy for use of sonar. NMFS has proposed to adopt a "no whales present" criterion for suspension of seasonal regulatory measures designed to protect right whales...(3) Modification of sonar protocol. This could include ramp up, turning on the sonar at a relatively low level, giving animals in the area time to move away before the sonar reaches full operating levels. It also could include changing the level or frequency of the sonar to minimize the impact on marine life. (4) Monitoring for avoidance. Tools that are readily available to the Navy and other scientist can reliably locate vocalizing marine mammals on the acoustic range. Passive acoustic monitoring of marine mammals should be included as part of the navy's regular mitigation procedures. Monitoring technologies include passive acoustics (pop-up buoys, sonobuoys and moored buoys), towed passive arrays, telemetry, and predictive modeling. In addition, the Navy could use infrared detection and light amplification during periods of low light (such as nighttime). (5) Monitoring and reporting. The Navy should also include collection of data on the exposures of marine mammals to sonar when it is in use. This data would provide important information on the impacts of marine life to active sonar and would provide scientists with invaluable data for assessing the impacts and range of behavioral responses. (6) Other possibilities include the use of alarms, both audible and visual, to encourage whales to move away from the area, the use satellite imagery to detect whales, and the use of a pilot boat to precede activity in the region.	The mitigation measures were determined through consultation with NMFS. Refer to Chapter 5 for additional information.

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1233	A-019	5	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* To lessen the Navy's impacts on sea turtles, several measures are recommended…(2) The navy should also use biodegradable materials for the parachute and assemblage. Material that biodegrades would limit the hazard to sea turtles from ingestion of debris and entanglement in the assemblage. (3) The Navy should reduce the speed of its vessels traveling through the OPAREA. Slower speeds would reduce the risk of collision with these slow-moving animals. (4) Use of passive and active detection methods recommended for marine mammals would also serve to identify sea turtles and, assuming the Navy avoided the use of sonar or dropping equipment via parachutes when turtles are detected, lower the risk of adverse impacts. Such measures are especially warranted in the late fall and early winter, when sea turtles tend to amass in offshore waters.	The Navy is researching alternative materials to use in expended materials. The Navy uses all available detection methods to spot sea turtles, but the mitigation effectiveness discussion in Chapter 5 acknowledges that interactions could occur. The Navy always exercises prudent seamanship to minimize ship strikes. See Section 4.5.3.1 for a discussion on vessel strikes.

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1234	A-019	5	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Impacts to Hardbottom...(2) Use of biodegradable parachutes and assemblage would reduce the potential impact of breaking off parts of coral colonies and smothering corals and hardbottom and drowning the species that reside there. (3) Detailed mapping to identify the extent and location of hardbottom, including corals and reefs. Knowledge of the location of sensitive and important resources could guide the Navy's planning and avoid adverse impacts. (4) Monitor impacts to deep coral banks and identify areas that have been disturbed or destroyed. Development of this information can aid scientists in understanding the complexity of this unique habitat and help the Navy avoid adverse impacts in the future.	The Navy anticipates no significant impacts to hardbottom areas including coral colonies and reefs. The Navy is researching alternative materials for use in expended materials.
1419	A-019	5	The federally endangered North Atlantic right whale and humpback whale are found in this region, as are the federally endangered manatee. Extreme caution must be taken to ensure the navy's actions will not harm or result in a takings of these protected species. We encourage the Navy to work closely with the NMFS' Protected Resources Division in this regard.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action. In addition, the Navy is consulting with NMFS in accordance with the Marine Mammal Protection Act and Endangered Species Act.

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157	G-004	5	The Delaware Department of Natural Resources and Environmental Control has reviewed the Draft EIS for the AFAST. While no active sonar training is proposed adjacent to Delaware's coastline, we are concerned about potential impacts to marine mammals throughout the mid-Atlantic region from mid-frequency active sonar. As such we request that the Navy consider the following mitigation measures enacted by the Ninth Circuit Court of Appeals for similar Navy exercises off the coast of California: 1. Conduct aerial monitoring for sixty minutes prior to using MF active sonar and implement mitigation and reporting measures in the event of a sighting. 2. Provide lookouts with National Marine Fisheries Service approved training for spotting marine mammals. 3. Use existing passive acoustic monitoring devices to the extent possible to detect presence of marine mammals. 4. Cease or reduce mid-frequency active sonar decibels when marine mammals are spotted within 2,200 yards.	Refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
922	G-010	5	The Navy should provide NMFS with funding to support the MMSN given the complicated nature of diagnosing sonar-related trauma in stranded marine mammals. Likewise, the Navy should communicate the locate of all AFAST training exercises to the NMFS Regional Stranding Coordinators within 24 hours of completion of each event, thereby increasing the probability that sonar-related stranding events may be detected.	The Navy does not provide direct financial support to the Marine Mammal Stranding Network, but cooperates with the MMSN and other agencies involved in responding to stranding. The Navy is prohibiting by law from providing the MMSN with direct funding, but through interagency cooperation provides in-kind assistance during and after stranding events. A stranding protocol was developed in conjunction with NMFS and is discussed more thoroughly in MMPA rulemaking.
856	G-016	5	2. If any cetacean strandings take place near or at the time of the training events, or is an injured or dead marine mammal is sighted by Navy observers, all sonar training activities should be halted (delayed) until the cause of stranding, injury, or death is determined and addressed.	A stranding protocol was developed in consultation with NMFS. Refer to newly developed stranding response protocol in MMPA rulemaking..

Comment Number	Commenter Number	Section Number	Comment	Comment Response
980	G-017	5	On page 5-9, lines 4-10, the Navy describes its plans for coordinating with the National Marine Fisheries Service on occurrences of unusual behavior, live or dead strandings, or observations of floating dead animals within 24 hours of an activity. This seems an unusually short window. We recommend that the coordination begin well in advance of the exercise and continue for as long as a week afterward to account for the potential time lag between when animals are discovered and when the actual interaction might have occurred.	A stranding protocol was developed in consultation with NMFS. Refer to newly developed stranding response protocol in MMPA rulemaking.
983	G-017	5	The details of "coordination" also should be provided so that the point of contact in each organization is clear. Also, criteria pertaining to spatial proximity should be clearly defined. As noted in the DEIS, exercises may range over a considerable area. Clearly, it would not be reasonable to coordinate on a stranding in Maine during an exercise in Texas, but should a stranding in Cape Hatteras trigger coordination with an exercise in northern Florida? How will possible connections be determined based on spatial considerations?	A stranding protocol was developed in consultation with NMFS. Refer to newly developed stranding response protocol in MMPA rulemaking.
75	I-002	5	Please amend your programs to eliminate harmful effects of your training. Thank you for your prompt attention to this matter.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
80	I-011	5	Specific precautions must be taken to protect the federally endangered North Atlantic right whale, humpback whale and manatee.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
87	I-011	5	The DEIS for this project lacked substantive mitigation proposals for the significant impacts resulting from the USWTR.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
90	I-023	5	Specific precautions must be taken to protect the federally endangered North Atlantic right whale, humpback whale and manatee.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
97	I-023	5	The DEIS for this project lacked substantive mitigation proposals for the significant impacts resulting from the USWTR.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
101	I-034	5	Specific precautions must be taken to protect the federally endangered North Atlantic right whale, humpback whale and manatee.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
118	I-065	5	Specific precautions must be taken to protect the federally endangered North Atlantic right whale, humpback whale and manatee.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
1549	I-065	5	The DEIS for this project lacked substantive mitigation proposals for the significant impacts resulting from the USWTR. A number of organizations and scientists have submitted detailed and innovative proposals for mitigating harm to marine life. I urge the Navy to give serious consideration to these proposals.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
119	I-066	5	The DEIS for this project lacked substantive mitigation proposals for the significant impacts resulting from the USWTR. A number of organizations and scientists have submitted detailed and innovative proposals for mitigating harm to marine life. I urge the Navy to give serious consideration to these proposals.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
702	I-069	5	8.) While using sonar, how intense and what distances would the sound be effective for passive, mid-frequency and active? Please answer each with miles and decibels for the proposed Undersea Warfare Training Range at the North Carolina location and also Atlantic Fleet Sonar Training in general.	Sonar ranges vary based on a number of conditions. Passive sonar puts no sound into the water. Refer to Figures 5-1 and 5-2 in Chapter 5 for range to effects information specific to AFAST. Specific ranges are based on water conditions and is classified information. In addition, please refer to the USWTR DEIS for information related to that proposed action.
711	I-069	5	15.) If and how or will the researchers working for the Navy determine that marine life would not be affected within the 661-square-mile USWTR or the surrounding area that the Navy is proposing off Onslow bay? Please include all details.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
1555	I-073	5	Specific precautions must be taken to protect the federally endangered North Atlantic right whale, humpback whale and manatee.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
122	I-073	5	The DEIS for this project lacked substantive mitigation proposals for the significant impacts resulting from the USWTR. A number of organizations and scientists have submitted detailed and innovative proposals for mitigating harm to marine life. I urge the Navy to give serious consideration to these proposals.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
123	I-073	5	Specific precautions must be taken to protect the federally endangered North Atlantic right whale, humpback whale and manatee.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
613	I-079	5	The Navy's information that they provided to us seems to admit or show that there is a behavioral effect on the whales up to 205 kilometers offshore. To me, that is a pretty long ways. According to the information they provided here tonight, there is at least a temporary hearing loss of these right whales - there is only 350 left - up to 2,000 meters from the use of this active sonar. That is - I am not sure if my math is right, but that seems to be over a mile away from the ship.	Generally, TTS occurs within 1,000 meters of a ship using the most powerful mid-frequency sonar. Mitigation measures are developed to protect from the most serious possible effects such as hearing impairment. Refer to Chapter 5 for ranges to effects and mitigation.
127	I-087	5	The DEIS for this project lacked substantive mitigation proposals for the significant impacts resulting from the USWTR. A number of organizations and scientists have submitted detailed and innovative proposals for mitigating harm to marine life. I urge the Navy to give serious consideration to these proposals.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
129	I-104	5	The DEIS for this project lacked substantive mitigation proposals for the significant impacts resulting from the USWTR. A number of organizations and scientists have submitted detailed and innovative proposals for mitigating harm to marine life. I urge the Navy to give serious consideration to these proposals.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
130	I-104	5	Specific precautions must be taken to protect the federally endangered North Atlantic right whale, humpback whale and manatee.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
146	I-115	5	The waters off SC provide habitat for manatees, humpback whales, and right whales (which are endangered!). The impacts of increased traffic and sonar on these species need to be addressed!	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
144	I-119	5	Specific precautions must be taken to protect the federally endangered North Atlantic right whale, humpback whale and manatee.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
133	I-138	5	Specific precautions must be taken to protect the federally endangered North Atlantic right whale, humpback whale and manatee.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
134	I-142	5	Specific precautions must be taken to protect the federally endangered North Atlantic right whale, humpback whale and manatee.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
383	I-154	5	Our unique marine ecosystems are extremely sensitive and intricate, and imperatively important to both our earth's sea and land inhabitants. They MUST be respected and protected for future generations of marine life and humans.	Please refer to Chapter 5 for mitigation and conservation measures.
137	I-156	5	I hope you will reconsider sonar testing in the Atlantic ocean. Specific precautions must be taken to protect the federally endangered North Atlantic right whale, humpback whale and manatee.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
848	I-158	5	The increasing usage of sonar, along with other human generated ocean noise such as shipping, and oil exploration and development, has drastically raised noise levels in the oceans, where many fish and other marine species rely on sound and hearing ability for survival. Yet incredibly the Navy proposes to continue its sound blasting without offering any meaningful protective measures for life in the oceans.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
131	I-161	5	I respectfully request confidentiality, having my name/address withheld from disclosure under the Freedom of Information Act. Thank you. Please note the following: The DEIS for this project lacked substantive mitigation proposals for the significant impacts resulting from the USWTR. A number of organizations and scientists have submitted detailed and innovative proposals for mitigating harm to marine life. I urge the Navy to give serious consideration to these proposals.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
227	I-028	5	The safety of marine life must be considered since it is known that intense sonar levels can kill and injure sea animals by destroying their hearing. Whales and dolphins are extremely vulnerable.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1386	I-160	5	One hundred miles from a sonar activity can result in a destructive 160 decibels. Three hundred miles is still 140 decibels. How can you protect whales by visual sighting when you have already blasted them from 100-500 miles away and done the damage?	Mitigation measures were determined in consultation with NMFS.
522	I-043	5	While I appreciate the Navy's responsibility to safeguard the nation, I urge you to incorporate basic protective measures for marine mammals.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
910	G-010	5	The most prudent approach to reducing impacts is to identify areas of lower such low-density areas cannot be located on an OPAREA-scale, then more vigorous small-scale surveys should be conducted prior to individual AFAST exercises (e.g. some combination of boat-based, passive acoustic and aerial surveys).	Season-specific estimates of marine mammal density were based on NMFS surveys. These densities were used in the alternatives analyses. The Navy is consulting with NMFS under the MMPA to obtain an LOA. Please refer to Section 3.2. Also refer to Chapter 5 for information on pre-training surveys.
813	A-015	5.1	Inadequate attention is paid to the deleterious effects naval activities could have on marine life. And in last years' exemption of the Navy from the Marine Mammal Protection Act, the Navy signaled its lack of attention to mitigating the environmental damage of its actions. This DEIS continues in this direction by: Failing to incorporate scientific advice about the decibel level at which negative effects of sonar can appear.	The Navy's extensive efforts to mitigate any environmental impact from active sonar training is discussed in Section 5.1.
906	A-016	5.1	and c) committing to meaningful mitigation measures that assure the strongest protections for marine animals.	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
1246	A-028	5.1	Because some AFAST noise sources are capable of rapidly moving into new areas of ocean, this movement would diminish the likelihood of marine mammals being detected especially when diving or during times of low visibility.	Lookouts will employ Night Lookout Techniques. Passive sonar is also used at all times to detect the presence of marine mammals. Please refer to Section 5.1.2 for additional information.
644	I-070	5.1	Passive acoustic detection can only detect vocalizing animals, which many whales do not do.	Passive monitoring is one of many tools the Navy uses. Refer to Section 5.1 for other mitigation measures.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1262	A-028	5.1	Because so many conclusions in the DEIS rest upon the notion that the Navy mitigation measures will actually effectively mitigate harmful effects of AFAST activities, those conclusions cannot be considered accurate.	Please refer to section 5.1 on mitigation measures.
958	G-017	5.1	In the absence of such information for the fleet activities described in the AFAST DEIS, we believe it is incumbent upon the Navy to include a plan for obtaining performance data to justify its confidence in such critical mitigation measures as sonar ramp-up, watchstander training effectiveness, and watchstander probability of detecting marine mammals and other species of concern. Validation and verification of system performance is a familiar, well-established, and standard part of research, development, testing, and evaluation processes hat preceded systems acquisition and fleet use. Performing similar verification and validation for measures to mitigate environmental effects would not be unduly costly and would clarify whether the Navy is, in fact, being realistic in its claims regarding its proposed mitigation efforts.	Please see Section 5.5 for mitigation measures considered but eliminated. Refer to Section 5.4 for a discussion of mitigation measure effectiveness. The Navy will continue, in cooperations with NMFS, to study the mitigation effectiveness.
161	I-042	5.1	Planes must be used before exercises to search for marine animals and marine mammal observers must be on ships with MFA sonar.	Bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training. This training has been reviewed by the National Marine Fisheries Service and determined to be suitable training. Please refer to Section 5.1 for more information on lookouts during active sonar activities.
164	I-047	5.1	I am writing to strongly oppose the continued use of mid-frequency active sonar without concern for its harmful effects on marine animals	Please refer to Section 5.1 for mitigation measures related to acoustic effects.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
212	I-064	5.1	It is my understanding that the use of sonar poses significant dangers to an array of sea life. I know that the Navy also estimates frequencies 300 miles away from the source can maintain a decibel level of 140 a level 100 times more intense than the noise threshold of gray whales.	Please reference Figures 5-1 and 5-2, which provide the typical ranges from the most powerful and common active sonar sources used during active sonar activities to received sound energy levels associated with a temporary threshold shift and permanent threshold shift.
216	I-064	5.1	If you find it absolutely imperative to follow through with your sonar testing efforts, you must also incorporate mitigation/protections to minimize the auditory destruction of sea environments. Thank you for your time,	Please refer to Section 5.1 for mitigation measures related to acoustic effects.
217	I-130	5.1	In order not only to protect national security, but also a planet worth living on for the future, I fervently hope the U.S. Navy will take every precaution that its sonar will not damage marine life, whenever humanly possible.	Please refer to Section 5.1 for mitigation measures related to acoustic effects.
359	A-001	5.1.2	Exercises should not be conducted at night, when visibility is poor.	As stated in Section 5.5, the Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
362	A-001	5.1.2	When an animal (including dolphins, who typically bow ride) is observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1401	A-008	5.1.2	Begin surveillance for marine mammals an hour before exercises start, including aerial surveillance and passive sonar monitoring.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities. Passive sonar is also used at all times to detect the presence of marine mammals. Please refer to Section 5.1.2 for additional information.
1402	A-008	5.1.2	At a minimum, reduce sonar power whenever a marine mammal is spotted within 1,500 meters of the vessel and shut it down completely at 500 m.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information.
276	A-009	5.1.2	One of the critical areas that I'm concerned about and a number of other people that I'm associated with is the question of are the parameters around which Navy ships are attempting to protect marine mammals, are those distances significant enough?	Please refer to Figures 5-1 and 5-2 for the typical ranges, or distances, from the most powerful and common active sonar sources used during active sonar activities to received sound energy levels associated with a temporary or permanent threshold shift. Also, please refer to Section 5.1.2.3 for a description of safety zones.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1356	A-010	5.1.2	All of the mitigation that the Navy has proposed for acoustic impacts boils down to the following: a very small safety zone around the sonar vessel, maintained primarily with visual monitoring by onboard lookouts, with aid from non-dedicated aircraft…and passive monitoring...It has been the pattern for the Navy to claw back mitigation with each new set of guidelines, and AFAST is no exception, reducing the safe transit distance in the current national defense exemption from 2000 to 1000 yards...It has been estimated that in anything stronger than a light breeze, only one in fifty beaked whales surfacing in the direct track line of a ship would be sighted; as the distance approaches 1 kilometer, that number drops to zero. The Navy's reliance on visual observation as the mainstay of its mitigation of its mitigation plan is therefore profoundly misplaced.	The safe transit distance has been corrected to 2,000 yards. Refer to mitigation effectiveness discussion in Chapter 5.
229	A-013	5.1.2	The Navy's sonar exercises should not be conducted at night, when visibility is poor.	As stated in Section 5.5, the Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
232	A-013	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
233	A-013	5.1.2	When an animals including dolphins, are observer within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
815	A-015	5.1.2	Failing to take robust mitigation measures recommended by scientists, such as NMFS-trained observers, passive sonar scanning of the area prior to exercise and notification of the public and the scientific community so the effects of the sonar use could be studied and tracked.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities. Refer to Chapter 5 for a discussion of passive sonar. The Navy will cooperate with NMFS to continue to study potential effects.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
959	A-016	5.1.2	The Navy's proposed mitigation methods are woefully inadequate. They include using non-dedicated trained observers to look out for marine mammals and passive acoustic monitoring to listen for vocalizing marine mammals. Even if an animal is spotted and reported within 1,000 yards of the sonar dome the sonar will not be stopped but will be turned down by a mere 6 decibels to 229 decibels - still over 10 million times more intense than the Navy's human diver standard of 145 decibels and over a million times more than the noise level received by the animals in the Bahamas incident of 2000.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
1080	A-016	5.1.2	Similarly, the Australian Navy takes more cautions and significant steps to minimize harm to marine life from sonar exercises. It imposes seasonal and geographic restrictions on the use of mid-frequency active sonar systems at highest power levels and avoids transmissions with source levels greater than 210 dB within 30 nautical miles off certain coastlines during times when whales are likely to be present. It also uses lower power levels in conditions that may produce surface ducting or embayments. It also avoids seamounts and monitors a 4,000 yard safety zone for 30 minutes prior to sonar transmissions which is maintained throughout the active sonar transmissions with an immediate shut-down procedure if a marine mammal is detected within the safety zone. The Navy can and has complied with the Australian Navy's mitigation methods, for example during Operation Talisman Saber in 2007. Therefore for the Navy to be aware of the existence and implications of more stringent mitigation methods, to have implemented them and then to not use them around its own shores is unacceptable.	As stated in Section 5.5, the Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities. Please refer to Section 2.6 for operational requirements, which require the use of certain geographic locations. Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1081	A-016	5.1.2	The Navy has also employed more stringent mitigation measures than it is proposing in this DEIS. During the Rim of the Pacific biennial exercise in 2006 the Navy adopted larger marine mammal safety zones, had at least one dedicated marine mammal observer, implemented restrictions on exercises involving the use of active sonar taking place in channels between islands with steep underwater topography and instituted a reduction of power levels in conditions of low visibility. It must be noted that these improved mitigation procedures for the RIMPAC 2006 exercises were only implemented after the courts deemed the Navy's proposed mitigation to be inadequate and a settlement was reached.	The mitigation measures presented in the AFAST EIS will be reviewed and discussed with NMFS during the consultation process and may be altered as required.
1085	A-016	5.1.2	exercises should not be conducted at night or during other periods when visibility is poor	As stated in Section 5.5, the Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
1093	A-016	5.1.2	at least three trained and dedicated marine mammal observers should be employed on all ships equipped with MFA sonar	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
1094	A-016	5.1.2	dedicated marine mammal aerial surveillance should be employed to look for marine animals an hour before and an hour after an exercise	As stated in Section 5.1.2.2, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities. For safety, ships post lookouts at all times. Please refer to 5.2 for a discussion of aerial surveillance prior to IEER use.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1231	A-019	5.1.2	One such measure, placing observers at the bow of boats, has rightly sparked ridicule from the public. The severe limits of an observer's ability to detect whales are widely documented; an observer can detect whales at a very limited geographic distance – under ideal conditions, no more than 2 km. With deep-diving whales that spend limited time at the surface, such as beaked whales, this limitation is enhanced. The limited utility of this measure increases even more when the observer is inexperienced or lacks proper training, when seas are rough, skies overcast, and, of course, when it is nighttime. While observers can aid other methods of detection, used alone it is of little value.	Please refer to the updated information on mitigation measure effectiveness in Section 5.4.
649	A-021	5.1.2	Exercises should not be conducted at night or during periods when visibility is poor.	As stated in Section 5.5, the Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
652	A-021	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and anti-submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
653	A-021	5.1.2	When an animal (including dolphins, who typically bow ride) is observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information.
1005	A-023	5.1.2	I am informed that many exercises are being conducted at night, or other periods when visibility is poor	The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
1008	A-023	5.1.2	It seems to me that personnel trained and dedicated to marine mammal safety as observers would be a welcome duty assignment, and one that could well carry over very well into civilian life.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.

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1009	A-023	5.1.2	And what are you doing about animals (such as dolphins, for instance) that may come too close to a sonar dome? Is that animal, or animals, safe because the dome is shut down, and free to leave the area unaffected?	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
1264	A-028	5.1.2	Passive acoustic detection of marine mammals is also a very unreliable method of detecting marine mammals. This method is extremely unreliable. The DEIS does not address this issue.	Passive monitoring is one of many tools the Navy uses. Navy sonar operators are trained in recognizing possible marine mammals, as well as fish. Refer to Section 5.1.2 for other mitigation measures.
1268	A-028	5.1.2	The DEIS states "Units shall use training lookouts to survey for marine mammals and sea turtles prior to commencement and during the use of active radar." For how long shall the survey be conducted prior to commencement?	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities. Therefore, the survey is continuous.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
907	G-010	5.1.2	The Navy's emphasis on posting lookouts as the primary operational means of avoiding marine mammal impacts is equally impractical. Many of the marine mammal species most likely to be impacted by AFAST activities (e.g. beaked whales, Kogla sperm whales) are known to be difficult to detect visually.	Section 5.1.2 summarizes all of the mitigation measures in place, including the use of passive sonar.
1408	G-014	5.1.2	It is strongly recommended that: a minimum of two dedicated and three non-dedicated, marine mammal lookouts be posted at all times when active sonar is being used, and that such lookouts be provided with binoculars, night vision goggles, and infrared sensors	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
1409	G-014	5.1.2	A 35 minute time period be used to scan the area for cetaceans, due to the long periods of time during which some cetaceans can remain submerged, before engaging active sonar	As stated in Section 5.1.2.3, units are required to use trained lookouts to survey for marine mammals and sea turtles prior to commencement and during the use of active sonar.
1410	G-014	5.1.2	The use of active sonar should be terminated when marine mammals are spotted within 2,000 meters	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1411	G-014	5.1.2	The use of passive sonar to listen for whales and ensure that they are not within the testing area prior to switching on active sonar is recommended	Passive sonar is also used at all times to detect the presence of marine mammals. Please refer to Section 5.1.2 for additional information.
1412	G-014	5.1.2	Aerial monitoring for at least sixty minutes before sonar use if such use occurs during periods when North Atlantic right whales may be migrating through the area	Refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
865	G-016	5.1.2	Also, in addition to those measures proposed in Chapter 5, we recommend the Navy consider the following mitigation for potential impacts: 1. Because the proposed methods for detection of cetaceans are limited in effectiveness, the Navy should use passive acoustic monitoring (e.g., use of hydrophone arrays) as has been used previously by the Navy and other researchers. These arrays should be compiled routinely in naval exercises.	Passive acoustic detection systems are used during all ASW activities. This is summarized in Section 5.1.2.3
964	G-017	5.1.2	We are also not fully convinced by the rationale for not considering expanded zones of monitoring. Although effective monitoring beyond 1,000 yards may be difficult, it is not impossible. Given the variability of propagation (environmental) conditions, observable animal responses, vessel speeds and maneuvering patterns, improvements in monitoring capacity, and other relevant variables, monitoring of a larger zone around a sound source should remain an option. Even for defense purposes, we would think that the Navy would want to maximize its ability to observe and monitor the environment around its vessels.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
966	G-017	5.1.2	The Commission also believes that the criteria for resuming sonar use or increase of source level following reductions should be modified, most especially with respect to the criterion of ship travel. The current criteria invoke any one of three options: (1) the animal is seen leaving (which rarely occurs), (2) the animal is not seen for 30 minutes (which often happens even if the animal is not a deep diver because successive surfacing are not always seen, or (3) the ship travels 1,000 yards beyond the point at which shut-down or a source level reduction was initially required. The last criterion is problematic because distance traveled and time co-vary. Under this criterion, a ship traveling at 10 knots would be able to resume pinging or increase source level after only three minutes. A ship traveling at 15 knots, also not an unreasonable speed during realistic training, could resume within 2 minutes. It seems unlikely that a vessel traveling at those speeds could even respond to the detection and then resume normal activity within that time frame. Therefore a more realistic and safer course of action might be to adopt a simple rule of 30 minutes for most marine mammals and 60 minutes for deep divers like sperm and beaked whales unless the animal is resighted at a safe range before that time.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information.
88	I-011	5.1.2	A number of organizations and scientists have submitted detailed and innovative proposals for mitigating harm to marine life. I urge the Navy to give serious consideration to these proposals.	Refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
351	I-012	5.1.2	Exercises should not be conducted at night or during other periods when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
354	I-012	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
355	I-012	5.1.2	When an animal (including dolphins, who typically bow ride) is observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
743	I-014	5.1.2	Exercises should not be conducted at night or during periods when visibility is poor.	As stated in Section 5.5, the Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
746	I-014	5.1.2	Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	Please refer to the mitigation section of the AFAST DEIS, section 5.1.2 for information about mitigation procedures. Also refer to Section 5.6, Alternative Mitigation Measures Considered but Eliminated.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
747	I-014	5.1.2	When an animal (including dolphins, who typically bow ride) is observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Bow riding mitigations are addressed in the AFAST EIS/OEIS under Section 5.1.2.4
187	I-018	5.1.2	When an animal (dolphins included) is within 2000 yards of the sonar dome, the sonar should be shut down.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information.
188	I-018	5.1.2	Have onboard 3 trained mammal observers on ships equipped with sonar.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises."
98	I-023	5.1.2	A number of organizations and scientists have submitted detailed and innovative proposals for mitigating harm to marine life. I urge the Navy to give serious consideration to these proposals.	Refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
436	I-026	5.1.2	Exercises should not be conducted at night or during periods when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
439	I-026	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after exercises.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
440	I-026	5.1.2	When an animal (including dolphins, who typically bow ride) is observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
192	I-028	5.1.2	It is possible for the Navy to conduct its sonar exercises AND protect marine life, so the following precautions should be taken: The Navy's sonar exercises should not be conducted at night, when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
195	I-028	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
196	I-028	5.1.2	When an animals including dolphins, are observer within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
603	I-031	5.1.2	Nor has it (the Navy) dedicated observers who can realistically perform their duties.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
100	I-032	5.1.2	A number of organizations have submitted proposals of how to mitigate harm to the environment. Please take these proposals very seriously when proceeding in this matter.	Refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
254	I-040	5.1.2	The Navy says it will use non-dedicated trained observers to look out for animals and passive acoustic monitoring to listen for vocalizing marine mammals.	Bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training. This training has been reviewed by the National Marine Fisheries Service and determined to be suitable training. Please refer to Section 5.1 for more information on lookouts during active sonar activities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
255	I-040	5.1.2	If an animal is detected within 1,000 yards of the sonar dome, the Navy claims it will turn down the sonar by 6 decibels, at 500 yards by 10 decibels, and that it will shut it down if an animal encroaches undetected within 200 yards of the sonar dome.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
259	I-040	5.1.2	I write to ask that the Navy have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine animals an hour before and an hour after an exercise;	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
260	I-040	5.1.2	when an animal (including dolphins, who typically bow ride) is observed within 2,000 years of the sonar dome, the sonar should be shut down until the animal has left the area;	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
262	I-040	5.1.2	Exercises should not be conducted at night or during other periods when visibility is poor;	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
159	I-042	5.1.2	Exercises should not be at night or during poor visibility.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
523	I-043	5.1.2	Please specify low-risk sites for regular sonar tests, determine suitable safety zones around ships that transmit sonar, and decrease the source frequency of sonar signals.	The action alternatives identified areas that met operational criteria while reducing environmental impacts. Please see Chapter 5 for safety zones around ships and power-down procedures implemented by the Navy.
392	I-045	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
393	I-045	5.1.2	When an animal (including dolphins, who typically bow ride) is observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
1542	I-060	5.1.2	Exercises should not be done at night or during poor visibility.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
1544	I-060	5.1.2	Shut down the sonar when animals are within 2000 yards.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
579	I-062	5.1.2	All ships with MFA sonar should have at least 3 trained and dedicated marine mammal observers. The Navy should deploy dedicated marine mammal aerial surveillance to look for marine animals an hour before and after each exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
580	I-062	5.1.2	When an animal, particularly dolphins who bow ride, is observed with 2,000 yards of the sonar dome, the sonar should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
619	I-070	5.1.2	Exercises should not be conducted at night or during periods when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
622	I-070	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
623	I-070	5.1.2	When an animal (including dolphins, who typically bow ride) is observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
641	I-070	5.1.2	If an animal is detected within 1,000 yards of the sonar dome, the Navy claims it will turn down the sonar by 6 decibels, at 500 yards by 10 decibels, and that it will shut it down if an animal encroaches undetected within 200 yards of the sonar dome.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
507	I-075	5.1.2	To conduct exercises only in daylight when visibility is good.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
508	I-075	5.1.2	To have on board trained marine mammal observers and also to use aircraft for surveillance to detect any marine animals that can be located in the area, before and during any sonar exercises.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
509	I-075	5.1.2	And if such animals are found, to shut sonar down completely until such animals have left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
337	I-076	5.1.2	The Navy's sonar exercises should not be conducted at night, when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
340	I-076	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
341	I-076	5.1.2	When an animals including dolphins, are observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
614	I-079	5.1.2	I don't know that you can take any action to mitigate that.	Generally, TTS occurs within 1,000 meters of a ship using the most powerful mid-frequency sonar. Mitigation measures are developed to protect from the most serious possible effects such as hearing impairment. Refer to Chapter 5 for ranges to effects and mitigation.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
419	I-080	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
421	I-080	5.1.2	When an animal (including dolphins, who typically bow ride) is observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
405	I-081	5.1.2	When an animal (including dolphins, who typically bow ride) is observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
407	I-081	5.1.2	The Navy's sonar exercises should not be conducted at night, when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
409	I-081	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
667	I-082	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
668	I-082	5.1.2	When an animal (including dolphins, who typically bow ride) is observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
669	I-082	5.1.2	Exercises should not be conducted at night or during periods when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
396	I-088	5.1.2	The Navy's sonar exercises should not be conducted at night, when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
399	I-088	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
400	I-088	5.1.2	When an animal (including dolphins, who typically bow ride) is observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
751	I-091	5.1.2	*The following comment was a copy of a newspaper letter to the editor submitted by Sandra Krebs along with her other comments. The newspaper letter is signed by "Christine Martin, Virginia Beach"* If other modern navies, such as Australia's, can cause less harm through reasonable shut down zones, reducing power in low visibility conditions, and avoiding sensitive marine mammal habitats, why can't we?	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities. Please refer to Section 2.6 for operational requirements, which require the use of certain geographic locations. Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
291	I-093	5.1.2	Navy should have at least 3 trained and dedicated marine mammal observers on all ships equipped with MFA sonar.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
292	I-093	5.1.2	When an animals including dolphins, are observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
721	I-094	5.1.2	Exercises should not be conducted at night or during periods when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
724	I-094	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
725	I-094	5.1.2	When an animal (including dolphins, who typically bow ride) is observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
1563	I-095	5.1.2	...stop doing such exercises at night or when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
113	I-095	5.1.2	The navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
719	I-096	5.1.2	The Navy should have trained marine mammal observers equipped with MFA sonar and employ non-Navy personnel to conduct marine mammal aerial surveillance to look for marine mammals before and after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
1141	I-101	5.1.2	Exercises should not be conducted at night or when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
1143	I-101	5.1.2	The navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
236	I-109	5.1.2	The Navy's sonar exercises should not be conducted at night, when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
237	I-109	5.1.2	When an animals including dolphins, are observer within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
238	I-109	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
296	I-112	5.1.2	The Navy's sonar exercises should not be conducted at night, when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
297	I-112	5.1.2	When an animals including dolphins, are observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
298	I-112	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
306	I-113	5.1.2	The Navy's sonar exercises should not be conducted at night, when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
309	I-113	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
310	I-113	5.1.2	When an animals including dolphins, are observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
176	I-121	5.1.2	At the very least (poor outcome) do no exercises in poor visibility, night…	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1576	I-121	5.1.2	Have trained and dedicated marine mammal observers on ships with MFA sonar as well as aerial surveillance for marine mammals 1 hr before and after exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
1577	I-121	5.1.2	Animals, including dolphins, seen w/in 2000 yds of sonar, should mean stopping sonar until animals are gone.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
219	I-130	5.1.2	To properly protect marine mammals, the Navy should have three or more marine mammal observers on all MFA sonar using ships and dedicated aerial reconnaissance to detect marine mammals in harm's way one hour before and after the use of MFA sonar.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
220	I-130	5.1.2	Use of MFA sonar should be avoided in the dark and other poor visibility times.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
792	I-135	5.1.2	Exercises should not be conducted at night or during periods when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
795	I-135	5.1.2	When an animal (including dolphins, who typically bow ride) is observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
223	I-137	5.1.2	Your solution of untrained human observers is laughable, especially at night.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
1580	I-137	5.1.2	The Navy should have at least three TRAINED and DEDICATED Marine Mammal Observers on all ships with the sonar and employ dedicated marine mammal aerial surveillance to look for marine animals an hour before and after exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
1581	I-137	5.1.2	When an animals i.e. Dolphin, is observed within 2,000 yards of the sonar down, it should be shut down until the animal leaves the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
323	I-144	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
210	I-147	5.1.2	Should not be conducted at night or when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
211	I-147	5.1.2	The Navy should have at least three trained marine mammal observers on all ships equipped with MFA sonar as well as aerial surveillance to look for marine animals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
213	I-147	5.1.2	When animals including dolphins are observed within 2000 yards of the sonar dome, the sonar should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information.
344	I-149	5.1.2	The Navy's sonar exercises should not be conducted at night, when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
347	I-149	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
348	I-149	5.1.2	When an animals including dolphins, are observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
377	I-154	5.1.2	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise;	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
378	I-154	5.1.2	When an animal (including dolphins, who typically bow ride) is observed within 2,000 yards of the sonar dome, it should be shut down until the animal has left the area;	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
429	I-154	5.1.2	If an animal is detected within 1,000 yards of the sonar dome, the Navy claims it will turn down the sonar by 6 decibels, at 500 yards by 10 decibels, and that it will shut it down if an animal encroaches undetected within 200 yards of the sonar dome.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
433	I-154	5.1.2	Passive acoustic detection can only detect vocalizing animals, which many whales do not do.	Passive monitoring is one of many tools the Navy uses. Refer to Section 5.1.2 for other mitigation measures.
366	I-155	5.1.2	A few points I'd like to address are that your exercises should not be done when visibility is poor	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
367	I-155	5.1.2	or when an animal is seen within 2,000 yards of the sonar dome	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
855	I-158	5.1.2	The DEIS concludes that Navy mitigation measures will protect marine mammals during AFAST activities. But this conclusion, like others throughout the DEIS, is based on extremely flawed assumptions. These measures depend entirely on visually spotting marine mammals (and sea turtles). However, many of these animals can remain submerged for extended durations, some for well over an hour.	As stated in Section 5.1.2.2, "On the bridge of surface ships, there would always be at least three personnel on watch whose duties include observing the water surface around the vessel. In addition to the three personnel on watch, all surface ships participating in ASW exercises would have at least two additional personnel on watch at all times during the exercises." In addition, bridge personnel on ships and submarines; aviation units; and sonar personnel on ships, submarines, and Anti-Submarine aircraft all have personnel that have undergone Marine Species Awareness Training and would act as lookouts during active sonar activities.
857	I-158	5.1.2	And because AFAST exercises will be occurring during varying sea and weather conditions both day and night, the Navy's mitigation measures are absolutely ineffective. Similar measures used by the Navy in its sonar exercises off California have been described by a federal judge ruling on these exercises as being "woefully inadequate and ineffectual."	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
1384	I-160	5.1.2	Claims about protecting marine mammals and sea life are not supported beyond the suggested requirement for the active sonar source to stay 500 yards away from whales. This is unlikely to be successful when it depends on the deck-watcher visual acuity and alertness.	Refer to Section 5.1.2 for information on personnel training.
1385	I-160	5.1.2	When the sonar of greater than 10 kHz has a range of up to 5 miles, the prohibition of staying 200 - 500 yards from the animals is even more unlikely to be enforced, especially when the crew in involved in a concentrated activity. In addition, there is no objective monitoring, no proof, no implementation or verification of this so-called protective procedure.	Please refer to section 5.1.2 for the discussion of dedicated trained lookouts.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
288		5.1.2	The Navy's sonar exercises should not be conducted at night, when visibility is poor.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.
502	I-075	5.1.2	Most marine mammals, as you know, spend the greater part of their time well under water, and are not likely to be sighted even by very well trained observers. More is needed than providing such observers.	Refer to Section 5.1.2 for other mitigation measures.
505	I-075	5.1.2	In addition to choosing a less harmful option, I urge you, and others involved in planning sonar exercises in the AFAST Study Area to take all reasonable measure to minimize the injury and mortality risks to animals that happen to be present when exercises are conducted. You will know best what such measures may be, but among these, the following seem feasible and important:	Refer to Section 5.1.2 for other mitigation measures.
590	I-019	5.1.2	I hope the Navy will take every precaution to protect marine life. What will the Navy be protecting if so much that is worthwhile in nature is destroyed? Life would be very bleak, perhaps impossible.	Please refer to Chapter 5 for mitigation and conservation measures.
1404	A-008	5.1.2	Reduce or shut down sonar power when any of the following factors are present: low-visibility and/or night training; rapid change in underwater bathymetry; multiple sonar-transmitting vessels; chokepoints (area surrounded by land masses); and the historical presence of a significant surface duct (an oceanographic condition that allows sound to travel farther without losing power.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1267	A-028	5.1.2.2	While there may be pedestal-mounted "Big Eye" binoculars "present", they will do nothing to help detect marine mammals (and sea turtles) if they are not being used. The same would be true regarding having binoculars "available" for personnel on lookout and officers on watch on the bridge; if they are not being used, they can do nothing to assist in the detection of these animals. The DEIS (5.1.2.2) states that "After sunset and prior to sunrise, lookouts would employ Night Lookout Techniques in accordance with the Lookout Training Handbook." Are the techniques referred to the ones listed at the bullet below, or are they something besides these?…is it possible that Navy shipboard lookouts would ever feel any pressure that could cause them not to see or report seeing marine mammals?	Trained and qualified Navy Lookouts would use all tools available to carry out their duties. These tools include pedestal-mounted binoculars and night-vision goggles. It is the Lookout's responsibility to report all objects and anomalies in the water to the Officer of the Deck.
	I-130	5.1.2.2	Bow riding dolphins and other marine mammals when detected within 200 yards of the MFA sonar dome, should be cause for the sonar to be turned off for the animal's safety and survival.	Safety zones will be applied beginning at 1,000 yards, which is greater than the typical range to potential cause a temporary or permanent threshold shift. Active sonar transmissions would cease if a marine mammal was detected within 200 yards. Please refer to Section 5.1.2 for additional information. In addition, please refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
905	A-016	5.1.2.3	b) reducing the output levels of its active sonar to the minimum practicable level;	Please refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
1046	A-016	5.1.2.3	The Navy intends to use the active sonar day and night. During hours of inclement weather, poor sea states and darkness, human observers are virtually useless and so the only mitigation method will be passive acoustic monitoring. Passive acoustic monitoring is only adequate for vocalizing animals within range and then only at certain frequencies. The Navy should not be using active sonar during periods of darkness and poor visibility.	The Navy must train in the same manner as it will fight. The mitigation measures in Section 5.1.2.2 include night lookout responsibilities.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1269	A-028	5.1.2.3	"Navy Aircraft participating in exercises at sea would conduct and maintain, when operationally feasible and safe, surveillance for marine species of concern as long as it does not violate safely constraints or interfere with the accomplishment of primary operational duties." When would that be? The "safety zone" described here is far, far too small to actually ensure the safety of marine mammals for the reasons stated in these comments above. In addition, the conditions under which the transmission can be raised back to its maximum offer little assurance that the animal that has been detected will not be subjected to exposures at the maximum level inside this 1000 yard range.	Surveillance for marine species by aircraft personnel augments other mitigation measures and is not limited to sonar activities. Multiple crewmembers on aircraft routinely conduct surveillance as part of their mission. The transit distance required to restart sonar operations has been corrected.
1272	A-028	5.1.2.3	The DEIS states that "Prior to start up or restart of active sonar, operators would check that the safety zone radius around the sound source is clear of marine mammals." Again due to the fact that marine mammals (and sea turtles) often submerge themselves below the surface and can remain submerged for extended time periods, this measure in no way guaranties that these animals will not be in the "safety zone" radius. For how long a time period will operators check for marine mammals prior to start up? For 1 hour? 30 minutes? 1 minute? 30 seconds? Does the Navy have a required time period for this check, or is it left up to the operator to decide?	The Navy individual units maintain surveillance from the time they take off or leave port until the time they land or return to port. The survey period prior to the use of active sonar is left up to the discretion of the acting commander of the exercise.
977	G-017	5.1.2.3	Is it possible to determine range and bearing to the sound or is detection on passive acoustics simply an alert used to cue visual watchstanders? Again, probability of detection performance is not specified and is probably not 90 to 100 percent effective, leaving some doubt as to the overall effectiveness of mitigation monitoring to reduce the risk of death or serious injury to the claimed level.	Please see revised text, Section 5.1.2.3, passive systems are used as a cuing sensor. The modeling results do not reflect the use of mitigation; therefore, we are not implying a level of mitigation effectiveness.
978	G-017	5.1.2.3	On page 5-5, lines 19-21, the mitigation criteria specify that passive acoustics will be used when marine mammals are within 200 yards or less of sonobuoy with active sonar capability. It is not clear how this will be determined or whether it is even possible with current technology.	Detections are made by all available means.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
162	I-042	5.1.2.3	Sonar should be shut down if marine mammals are spotted.	As stated in Section 5.1.2.3, safety zones have been established. Active sonar transmissions would cease if a marine mammal was detected within 200 yards.
1274	A-028	5.1.2.4	How will the ship, or anyone on the ship, conclude that dolphins are deliberately closing in on the ship to ride the bow wave? It is presumptuous for the Navy to assume it knows what the dolphin intention is. They may in fact have other plans. Until the dolphins are actually riding the bow wave, there really is no way to know what their intention is, as they may actually be intending to do something other than ride the bow wave, for instance, crossing around the vessel to its other side. Furthermore, if dolphins do in fact intend to ride the bow wave, they may travel through this main transmission axis to get to the bow. Additionally, once riding the wave, they may then change their course abruptly, and therefore find themselves out of the shallow-wave area and inside of the main transmission axis of the active sonar. Please comment on this potential.	The Navy maintains all mitigation measures until it becomes clear that the dolphins' intentions are clear that it intends to ride the bow wave. Once the dolphin leaves the bow area, mitigation measures will again be implemented. Refer to Section 5.1.2.4 for special conditions applicable to bow-riding dolphins.
256	I-040	5.1.2.4	The Navy will not shut down at all when dolphins ride the bow wave. However, whales and dolphins are diving animals, some staying at depth for over an hour.	Animals that bow ride are typically not deep divers.
642	I-070	5.1.2.4	The Navy will not shut down at all when dolphins ride the bow wave. However, whales and dolphins are diving animals, some staying at depth for over an hour.	Animals that bow ride are typically not deep divers.
430	I-154	5.1.2.4	The Navy will not shut down at all when dolphins ride the bow wave. However, whales and dolphins are diving animals, some staying at depth for over an hour.	Animals that bow ride are typically not deep divers.
258	I-040	5.1.2.5	Passive acoustic detection can only detect vocalizing animals, which many whales do not do.	Passive monitoring is one of many tools the Navy uses. Refer to Section 5.1.2 for other mitigation measures.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1277	A-028	5.1.3.1	The DEIS (5.1.3.1) states that "The Navy will coordinate with the local National Marine Fisheries Service (NMFS) Stranding Coordinator for any unusual marine mammal behavior and any stranding, beached live/dead or floating marine mammals that may occur at any time during or within 24 hours after completion of mid-frequency active sonar use associated with ASW training activities." What is it that leads the DEIS to assume that unusual behavior or strandings resulting from ASW training will only take place during or within 24 hours of completion of these exercises.	A stranding response plan has been developed with NMFS under the MMPA rulemaking.
1415	G-014	5.1.4	The Department of the Navy should also accept responsibility for responding to any strandings and/or rescues of marine species which may be associated with use of active sonar.	As stated in Section 5.1.4, the Navy does and will continue to coordinate with the National Marine Fisheries Service Stranding Coordinators for any unusual marine mammal behavior. This includes any stranding, beached live/dead, or floating marine mammals that may occur coincident with Navy training activities.
1281	A-028	5.2	The DEIS states that "If marine mammals are visually detected within 914 m (1000 yd) of the explosive source sonobuoy (AN/SSQ-110) intended for use, then that payload shall not be detonated. Aircrews may utilize this post once the marine mammals have not been re-sighted for 10 minutes, or are observed to have moved outside the 914m (1000 yd) safety buffer." For the reasons stated above, not seeing marine mammals inside this 10 minute period of time does not mean they are no longer in the so-called "safety zone."	Re-sighting will be changed from 10 minutes to 30 minutes.
1282	A-028	5.2	So if the payload is detonated, any animals remaining in that zone are likely to be injured or killed. And because the noise thresholds used in this DEIS have been set unreasonably high for reasons stated above, TTS, PTS, as well as other injuries and death could occur both inside and outside of this "safety zone" as a result of the blast. This is not effective mitigation, to put it very mildly.	The current mitigation is based on the best available science. As the science evolves, so will the mitigation measures.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1283	A-028	5.2	If sonobuoys with unexploded charges self-scuttle, as indicated in the DEIS, might they explode while sinking to the bottom or after landing, or, if a marine mammal was to come into contact with it? How will reporting sonobuoys that have not scuttled and have not yet exploded help mitigate potential explosions?	Per Chapter 5, aircraft crews will make every effort to detonate the sonobuoy before departing the area. It is rare that an explosive sonobuoy would be scuttled. If that were to occur, the charge is stable and would be highly unlikely to detonate.
361	A-001	5.3	The Navy should have at least three trained and dedicated marine mammal observers on all ships equipped with MFA sonar and employ dedicated marine mammal aerial surveillance to look for marine mammals an hour before and an hour after an exercise.	Please refer to Chapter 5 for a discussion of dedicated trained lookouts.
1118	A-007	5.3	One of the most significant impacts to be considered from the proposed training range is the effect on the highly endangered North Atlantic right whale which migrates through this area as they move from their southeastern calving grounds to their northeast feeding grounds. The proposed training range would add yet another significant threat from intense noise and other effects to this already endangered species. We encourage you to be responsible stewards of all marine life and especially of endangered species.	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action. Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
231	A-013	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
1092	A-016	5.3	areas close to the migration paths of the North Atlantic right whale should be off-limits to Navy traffic during the migration season	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1172	A-019	5.3	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* Finally, measures to mitigate harm to these important species, such as seasonal restrictions on the conduct of training activities and the use of passive acoustics to identify the presence of marine mammals must be evaluated.	Refer to Section 5.3 for mitigation measures related to vessel transit and North Atlantic right whales. The Navy has entered into formal consultation with the National Marine Fisheries Service under Section 7 of the Endangered Species Act.
1236	A-019	5.3	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* We have considerable concern about the potential impacts to marine mammals including right whales within the preferred (USWTR) site (the Cherry Point Operating Area) for several reasons: Right whales are known to migrate along the mid-Atlantic coast as they move to and from their calving ground in the southeast US waters.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
651	A-021	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
1007	A-023	5.3	And I suspect that the migration paths of our endangered North Atlantic right whale are also not off limits during that period of time. C	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
452	A-026	5.3	While the materials issued by the Navy in relation to the AFAST DEIS list a few actions to reduce risk to right whales (training and increasing crewmember vigilance to spot right whales; avoiding head-on approaches to whales and keeping at least 500 yards away from them; reporting whale sightings; participating in a data fusion center), half of these are simply legal requirements for most vessels.	Refer to Section 5.3 for additional information.
453	A-026	5.3	Certainly none of them goes further than simply avoiding conducting training exercises at times and in places where there is a strong possibility that right whales will occur, such as off the southeast US or the mid-Atlantic within 50 miles of shore during their migratory periods (essentially November through April) or offshore in the Gulf of Main at any time of the year.	Refer to Section 5.3 for additional information.
926	G-010	5.3	Special consideration should be given to the potential impacts of AFAST activities on North Atlantic right whales. North Atlantic right whales are among the most endangered baleen whale species. Mortality from vessel collisions is a leading cause of mortality in right whales. As such, the Navy should avoid conducting AFAST exercises within all areas of known right whale occurrence to the maximum extent possible.	Please refer to Section 5.3 for a summary of mitigation measures related to North Atlantic Right whales.
1413	G-014	5.3	The DFW highly recommend that the use of active sonar be minimized during February-April and September-December, when endangered marine mammals (including the critically endangered North Atlantic right whale) transit through the area during their migration.	Refer to Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
843	G-015	5.3	To the extent not covered by the Navy's proposed mitigation measures, DMR suggests provision for seasonal restrictions be given careful consideration; and that torpedo exercises (TORPEX) and anti-submarine (ASW) training activities that might take place in the Critical Marine Habitat Closure area in the Great South Channel where there is a high concentration of northern right whale sightings be afforded particular concern.	Refer to Section 5.3 for mitigation measures related to vessel transit and North Atlantic right whales. The Navy has entered into formal consultation with the National Marine Fisheries Service under Section 7 of the Endangered Species Act.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
832	G-016	5.3	A portion of the Jacksonville Operating Area (JAX OPAREA) site off the Florida coast is within the nearshore block of the federally designated critical habitat and calving grounds of the endangered North Atlantic right whale (*Eubalaena glacialis*), which is used primarily by reproductive females and calves from December through April. As specified in the EIS/OEIS, AFAST activities in the southeast North Atlantic right whale critical habitat may include: object detection/navigational sonar training and maintenance activities for surface ships and submarines while entering and exiting ports located in Kings Bay, Georgia, and Mayport, Florida. In addition, helicopter dipping sonar would occur off of Mayport, Florida, in the established training areas within the right whale critical habitat.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
835	G-016	5.3	While there is uncertainty in predicting right whale occurrence offshore and north of the customary aerial survey routes, data, and anecdotal evidence indicate right whales can occur anywhere from within sighting distance of shore to distances greater than 55 kilometers along the eastern seaboard and outside the critical habitat area long the mid-Atlantic coast.	Refer to Section 5.3 for mitigation measures related to vessel transit and North Atlantic right whales. The Navy has entered into formal consultation with the National Marine Fisheries Service under Section 7 of the Endangered Species Act.
836	G-016	5.3	Due to weather and visibility issues, the ability of Navy observers to detect marine mammals is limited, and their ability to detect right whales is further compounded by the animal's lack of a dorsal fin. The ability to aurally detect right whales in the calving areas is unsure as their vocalization behavior has not been researched extensively enough.	Refer to Section 5.3 for mitigation measures related to vessel transit and North Atlantic right whales. The Navy has entered into formal consultation with the National Marine Fisheries Service under Section 7 of the Endangered Species Act.
854	G-016	5.3	1. Because of the proximity to right whale calving grounds, training activities at the JAX OPAREA near Mayport, Florida, should be avoided from December to April.	Please refer to section 5.1.3 for a discussion of mitigation developed in cooperation with NMFS for sonar activities within right whale critical habitat near Mayport, FL.
858	G-016	5.3	3. All training sites and potential sonar activities, especially those conducted during the right whale calving season, should (as specified in the EIS/OEIS) undergo National Marine Fisheries Service Section 7 consultation.	Refer to Section 5.3 for mitigation measures related to vessel transit and North Atlantic right whales. The Navy has entered into formal consultation with the National Marine Fisheries Service under Section 7 of the Endangered

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				Species Act.
353	I-012	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
745	I-014	5.3	Close to the migration path of endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
186	I-018	5.3	Areas close to the migration path of the N. Atlantic right whale should be avoided.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
387	I-022	5.3	Also please pay particular attention to the migration path of the N. Atlantic right whale which is endangered and should be off limits to naval operations.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussions related to mitigation measures related to vessel transit and north Atlantic right whales.
438	I-026	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.

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194	I-028	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
264	I-040	5.3	and areas close to the migration path of the endangered North Atlantic right whale should be off-limits to Navy traffic during the migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
160	I-042	5.3	Feeding and breeding areas must be completely avoided. During the migration of the endangered right whale, these paths must be off limits to Navy traffic.	Please refer to Section 2.6 for operational requirements, which require the use of certain geographic locations. Mitigation measures have been included for vessel transit for the North Atlantic right whales. Please refer to Section 5.3 for further information.
524	I-043	5.3	Areas close to the migration path of the endangered North Atlantic right whale should be off-limits to Navy traffic during the migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
1109	I-044	5.3	A way to help the whales is to turn off sonar while sailing through whale territory and migration paths.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
391	I-045	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.

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578	I-062	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
621	I-070	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
339	I-076	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
107	I-078	5.3	Regarding mitigation efforts to protect right whale habitat, migration pathways and behavior, I strongly urge cessation of exercises or training during the few winter months in their breeding season along our coast.	Please refer to Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
404	I-081	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
398	I-088	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
290	I-093	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Section 4.4.11 and 4.4.12 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussions related to mitigation measures related to vessel transit and north Atlantic right whales.

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723	I-094	5.3	Areas close to the migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during the migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
112	I-095	5.3	Areas of the endangered north American right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
295	I-112	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Section 4.4.11 and 4.4.12 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussions related to mitigation measures related to vessel transit and north Atlantic right whales.
308	I-113	5.3	The path of migrating whales must be avoided	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
181	I-121	5.3	At the very least (poor outcome) do no exercises... avoid migration paths in migration season.	Please refer to Sections 4.4.11 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
69	I-122	5.3	I am particularly concerned for the Right whale which migrates up and down the SC coast, is endangered, and would be very affected by a sonar test range along its migration path.	Please refer to Section 4.4.10.3 for information related to the potential effects to the North Atlantic right whale and Section 5.3.2 for information related to mitigation measures to this species.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
317	I-123	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.10 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
218	I-130	5.3	Active sonar should not be used near the migration, etc., areas of the endangered North Atlantic Right whale...	Please refer to Sections 4.4.10 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
794	I-135	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.10 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
41582	I-137	5.3	...should be avoided, as well as areas close to the migration path of the right whale.	Please refer to Sections 4.4.10 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
322	I-144	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.10 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
1592	I-147	5.3	Migration paths of No. Atlantic whales should be off limits to the Navy during the migration season.	Please refer to Sections 4.4.10 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
346	I-149	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season.	Please refer to Sections 4.4.10 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
376	I-154	5.3	Areas close to migration path of the endangered North Atlantic right whale should be off limits to Navy traffic during migration season;	Please refer to Sections 4.4.10 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
368	I-155	5.3	or in areas close to the migration path of the right whale.	Please refer to Sections 4.4.10 through 4.4.13 for details related to the acoustic and nonacoustic effects analysis, and Section 5.3 for a discussion related to mitigation measures related to vessel transit and north Atlantic right whales.
859	I-158	5.3	The critically endangered North Atlantic right whale will be pushed even closer to the brink of extinction by AFAST, as some of these exercises will be taking place in and near their breeding, feeding and calving grounds, and along their migratory route.	Refer to Section 5.3 for mitigation measures related to vessel transit and North Atlantic right whales. The Navy has entered into formal consultation with the National Marine Fisheries Service under Section 7 of the Endangered Species Act.
515	I-158	5.3	The critically endangered North Atlantic right whale will be pushed even closer to the brink of extinction by AFAST, as some of these exercises will be taking place in and near their breeding, feeding and calving grounds, and along their migratory route. Other endangered species likely to be impacted are humpback, sei, fin, blue, and sperm whales, manatees, and sea turtles.	Refer to Section 5.3 for mitigation measures related to vessel transit and North Atlantic right whales. The Navy has entered into formal consultation with the National Marine Fisheries Service under Section 7 of the Endangered Species Act.
488	I-159	5.3	The critically endangered North Atlantic right whale will be pushed even closer to the brink of extinction by AFAST, as some of these exercises will be taking place in and near their breeding, feeding and calving grounds, and along their migratory route. Other endangered species likely to be impacted are humpback, sei, fin, blue, and sperm whales, manatees, and sea turtles	Refer to Section 5.3 for mitigation measures related to vessel transit and North Atlantic right whales. The Navy has entered into formal consultation with the National Marine Fisheries Service under Section 7 of the Endangered Species Act.

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1238	A-019	5.3	*A letter from the New England Aquarium, dated January 30, 2006, was provided as an attachment to Ms. Nowlin's comments. Although the letter specifically addresses the USWTR Draft EIS/OEIS, the following comment applies to the AFAST EIS/OEIS:* Under mitigation of collisions with right whales, the navy notes that Navy vessels have already implemented measures as consistent with the Advanced Notice of Propose Rulemaking which dictates speed restrictions within 30 nm of port entrances. The Navy has noted "Navy vessels are required to use extreme caution and operate at a slow, safe speed that is consistent with mission and safety." Since slow, safe speed can be open to interpretation by a ship's captain, it would be important to have this further defined so that a range of speeds that are considered slow, safe speed consistent with mission and safety are clearly understood within the Navy fleet and to the public.	A "slow, safe speed" is situational dependent to allow the ship to maneuver around any navigational hazards (such as right whales) and relies upon the judgment and experience of the Navy captain. .
1284	A-028	5.3.1	The DEIS (5.3.1) state that “During the indicated months, Navy vessels would practice increased vigilance with respect to avoidance of vessel-whale interactions along the mid-Atlantic coast, including transits to and from any mid-Atlantic ports not specifically identified above.” Given the fact that the right whale is critically endangered, and given the Navy’s own record of striking and killing at least one right whale in recent years while undertaking these same mitigation measures, Shouldn’t the Navy policy be one of practicing increased vigilance not only in these areas during these particular times, but in all areas at all times?	The current mitigation is based on the best available science. As the science evolves, so will the mitigation measures. The Navy exercises vigilance during all times while underway to ensure safety of ships as well as marine mammals.
1280	A-028	5.4	The DEIS (5.2) states “Crews shall conduct a minimum of 30 minutes of visual and aural monitoring of the search area prior to commanding the first post detonation. This 30 minute period may include pattern deployment time.” Thirty minutes of monitoring while engaged in other activities will in no way ensure that marine mammals (and sea turtles) are not in the area.	Please refer to Section 5.4 for a discussion of mitigation measure effectiveness.

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257	I-040	5.4	The chance of seeing beaked whales has been calculated by DoC at mere 2 percent during good conditions. Human observers cannot possibly see every animal in the vicinity at all times, and their chances approach zero at night.	Please refer to Chapter 5 for new material on mitigation effectiveness, such as percentage of marine mammals spotted during a marine survey. The Navy is developing a monitoring plan with NMFS to study effectiveness. As stated in Chapter 4, no mitigation is 100 percent effective.
643	I-070	5.4	The chance of seeing beaked whales has been calculated by DoC at mere 2 percent during good conditions. Human observers cannot possibly see every animal in the vicinity at all times, and their chances approach zero at night.	Please refer to Chapter 5 for new material on mitigation effectiveness, such as percentage of marine mammals spotted during a marine survey. The Navy is developing a monitoring plan with NMFS to study effectiveness. As stated in Chapter 4, no mitigation is 100 percent effective.
431	I-154	5.4	The chance of seeing beaked whales has been calculated by DoC at mere 2 percent during good conditions. Human observers cannot possibly see every animal in the vicinity at all times, and their chances approach zero at night.	Please refer to Chapter 5 for new material on the shortcoming of mitigation effectiveness, such as percentage of marine mammals spotted during a marine survey. The Navy is developing a monitoring plan with NMFS to improve effectiveness. As stated in Chapter 4, no mitigation is 100 percent effective.
1015	A-010	5.4	It claims, against generations of field experience, that marine mammals - even cryptic, deep-diving marine mammals like beaked whales - can effectively be spotted from fast-moving ships and avoided.	Refer to Section 5.4 for a discussion of mitigation measure effectiveness.
1263	A-028	5.4	The effectiveness of visual detection, either from trained observers aboard ships and surfaced submarines, or from trained observers in aircraft, is extremely limited……visual detection of marine mammals, as well as sea turtles, is extremely unreliable even for highly trained and highly motivated individuals. The DEIS does not address the unreliability of this form of detection.	Refer to Section 5.4 for a discussion of mitigation measure effectiveness.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1273	A-028	5.4	The DEIS (5.1.2.3) states "Helicopters would observe/survey the vicinity of an ASW exercise for 10 minutes before the first deployment of active (dipping) sonar in the water." For reasons stated above, this brief period for observation and surveying will in no way ensure that marine mammals (or sea turtles) are not in the vicinity or within the "safety zone."	Please refer to Section 5.4 for a discussion of mitigation measure effectiveness.
1289	A-028	5.4	…the Navy proposed mitigation measures are insufficient, and will not be able to adequately "protect marine mammals and federally listed species during active sonar training activities (Section 5.1), use of explosive source sonobuoys (AN/SSQ-110A) (Section 5.2), and associated with vessel transit and right whales (Section 5.3)."	Please refer to Chapter 5 for new material on mitigation effectiveness, such as percentage of marine mammals spotted during a marine survey. The Navy is developing a monitoring plan with NMFS to study effectiveness. As stated in Section 5.4, no mitigation is 100 percent effective.
1478	A-028	5.4	Why has the DEIS neglected to mention some of the findings from Hain et al. (1999)? This study found that even when right whales are known to be in the area, there is only a 33% probability of their being detected even under ideal observation conditions, and that only 11% of right whales are detected when right whales are at distances of more than 1 1/2 miles from observers.	Refer to Section 5.4 for a discussion of mitigation measure effectiveness.
1485	A-028	5.4	When sperm whales spend extended periods of time underwater and up to 83% of their daylight hours underwater, how will Navy lookouts detect sperm whales to ensure that these endanger red animals will not become even more endangered? Please directly address this question.	Please refer to the updated material on mitigation effectiveness in Section 5.4
514	I-158	5.4	These measures depend entirely on visually spotting marine mammals (and sea turtles). However, many of these animals can remain submerged for extended durations, some for well over an hour. Some species are notoriously hard to detect at the surface even under the best observation conditions. And because AFAST exercises will be occurring during varying sea and weather conditions both day and night, the Navy's mitigation measures are absolutely ineffective.	Refer to Section 5.4 for a discussion of mitigation measure effectiveness.

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487	I-159	5.4	These measures depend entirely on visually spotting marine mammals (and sea turtles). However, many of these animals can remain submerged for extended durations, some for well over an hour. Some species are notoriously hard to detect at the surface even under the best observation conditions. And because AFAST exercises will be occurring during varying sea and weather conditions both day and night, the Navy's mitigation measures are absolutely ineffective.	Refer to Section 5.4 for a discussion of mitigation measure effectiveness.
963	G-017	5.4	We have reservations about the rationale for not providing some form of mitigation when strong surface ducts are present. Because the detection and response to such ducts has tactical as well as environmental significance, it should not be burdensome to the Navy to determine whether a strong surface duct is present and impose additional precautions.	Please refer to section 5.6 for a discussion of mitigation measures considered but eliminated.
314	I-008	5.5	by developing other methods of detection and demonstrate our compassion for another species as they have demonstrated their compassion for us. Thank you.	The Navy is developing an Integrated Comprehensive Monitoring Program for marine species in order to assess the effects of training activities and investigate populations trends where active sonar activities occur. Please refer to Section 5.5 for additional details.

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40	A-020	5.5	There is a way around that, and it's called a CEE, a controlled exposure experiment, but those are extremely controversial. And the reason they're controversial is because it's expected that the research would ensonify a whale or dolphin and perhaps cause harm. I represent an animal welfare organization, and we support the need for controlled exposure experiments under extreme caveats. I have dealt with a lot of researcher that I have known for a very long time; and by the way, I started with this process in 1996 when the LFAs first surfaced, and I have been to some 40 meetings and conferences and workshops and hearings ever since. The fundamental of a controlled exposure experiment is to enable someone to put something on the whales to make the whale respond and study their response. We can get around all of the MMPA limitations, get around all of the bad press and all of the scare about harming the whale by using the hundreds of events that the Navy has happen every single year when you test or you train or you operate, just turn on any active sonars. The process would be to allow researchers the Navy would designate to he told where and when to go to be on the scene, so that when an event occurs, they can locate cetaceans, and they monitor them before, during and after the event, and then generate the documents we all want. This can be done only if the Navy tells people where the event is going to occur. And so far, I've talked to several flag officers that refuse to do that. They Navy will not tell scientists where these events occur for science. The purpose of my request is to ask the Navy to reconsider, to find a group of scientists that they can trust, with security clearances, protocols, to enable them to be told where to go to do the research we all need. Thank you.	Please refer to Section 5.5.1, Monitoring, for information related to tagging and monitoring events associated with the Navy's comprehensive monitoring program.
1275	A-028	5.5	One of the primary goals of the ICMP, as stated by the DEIS (5.1.3.1) is to "Assess the effectiveness of the Navy's marine species mitigation." Given the fact that the Navy has proclaimed that its 29 mitigation measures protect marine mammals numerous times in the popular press over the past year, is it reasonable to believe that the Navy, in this assessment, will find that these measures are not adequate and need improvement?	As the ICMP has not been fully implemented, it is impossible to determine what a possible assessment of the program may result in.
1276	A-028	5.5	The DEIS (5.1.3.1) indicates that the ICMP will initiate, or continue studies of, among other subjects, behavioral response. How are these studies to be taken seriously when the Navy has consistently downplayed behavioral responses to sonar such as the 2004 incident at Hanalei Bay and the 2003 incident at Haro Strait, as well as in regards to other noise in controlled exposure experiments?	These events are discussed in Appendix E. The Navy will continue to incorporate best available peer reviewed science into analyses as it becomes available.

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917	G-010	5.5	GDNR recommends that the Navy coordinate with NMFS to develop and implement an effective monitoring program prior to onset of AFAST activities. At a minimum, the ICMP should consider the following objectives: 1) determine the cause of marine mammal mortality and morbidity in individuals exposed to sonar (e.g., physiological impacts, direct vs. indirect effects, what species are most susceptible), 2) estimate numbers of marine mammals "taken" by AFAST activities, 3) determine whether AFAST activities are impacting species at the population level (e.g. changes in species distribution or density, cumulative impacts from increased ocean noise), and 4) use monitoring results to inform and improve mitigation efforts (i.e. adaptive management). The ICMP should be transparent and include on-site and shore-based (i.e. stranding network) components.	These issues are being addressed through consultation with NMFS during the ESA and MMPA process. The Navy will continue to train as stated in Section 1.2.
877	G-021	5.5	However, at this point in time, because the Integrated Comprehensive Monitoring Program (ICMP) has not yet been developed, it is unknown whether or not the ICMP will be able to achieve its stated objectives. DCM recommends that when the ICMP is completed that it be made available for further review and public comment before the sonar training program is implemented.	The monitoring plan is being developed under consultation with NMFS and academic reviewers. The Navy needs to continue training as discussed in Section 1.2, Why We Train.
680	I-038	5.5	The Navy's active sonar training program promotion would benefit from a more conciliatory approach and adoption of a monitoring program/adaptive management framework overseen by an independent third party. Thank you for the opportunity to comment on the DEIS.	Monitoring and adaptive management framework is being conducted in cooperation with the NMFS. The federal agency proposing the action (in this case the Navy) is responsible for conducting the environmental analysis.
1288	A-028	5.5	Regarding the reporting of marine mammal sightings, while it may increase the "workload", surely the Navy can handle communicating such information, even in the midst of exercises. The effort and time involved in making such a communication need not be large…	Refer to Section 5.5. Marine mammal sighting information will be collected as part of the LOA monitoring requirements.
869	G-016	5.5.2	2. Navy assistance in funding research on satellite tagging to improve knowledge of the migratory patterns, both spatial and temporal, of right whales along the eastern U.S. seaboard.	Please refer to Section 5.5.2 for information on the Navy's contributions to research.

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870	G-016	5.5.2	3. Navy collaboration and funding to improve methods of detecting cetaceans and recording their behavioral responses to noise exposure.	Please refer to Section 5.5.2 for information on the Navy's contributions to research.
871	G-016	5.5.2	4. Navy assistance in funding research on the auditory characteristics of baleen whales, especially right whales, as well as physiological and behavioral responses to sounds. More refined information, together with a good model of sound propagation and detection of marine mammal locations are needed to understand and mitigate the potential impacts of these proposed activities.	Please refer to Section 5.5.2 for information on the Navy's contributions to research.
25	A-018	5.5.2	#3. Many universities, well-known scientists believe that more knowledge of impacted area is needed before testing.	Please refer to Section 5.5.2, Research.
39	A-020	5.5.2	Simply put, the prime failure of the EIS, of the whole process, is demonstrated with the sentence that says there is not enough data on what whales, real whales, do with real sonars. There are a lot of efforts to find out, but they all come short of really telling us what the sonars really do that causes whales harm.	Please refer to a discussion of current research projects in Section 5.5.2.
451	A-026	5.5.2	The Navy is capable of minimizing this risk thanks to intensive research efforts in all known portion of their range.	Refer to Chapter 5 for information related to mitigation measures that would be implemented as part of the proposed action.
456	A-026	5.5.2	We also acknowledge that the Navy has recently undertaken important studies of the diving and other behaviors of beaked whales in the North Atlantic to better asses their risk of exposure to sounds we know can be fatal to them. We strongly encourage the Navy to make the findings of these studies available at the earliest possible date. Further, the conclusions of these studies should be used to design further mitigation measures to avoid potential harm to the whales that could be exposed to and affected by such sounds.	Studies are ongoing and have not reached completion. Study conclusions will be considered for Navy planning as soon as results are finalized. Refer to Section 5.5.2 for additional information.

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1279	A-028	5.5.2	The U.S. Navy sponsors seventy percent of all U.S. research concerning the effects of human-generated sound on marine mammals and 50 percent of such research conducted worldwide." Given Navy control over this huge proportion of funding, what is the potential for research results to be affected because of the source of the funding? Research may be adversely affected if those conducting the research felt pressure to achieve certain results that would be favorable to the Navy, or if they feared that funding could be cut off if results were unfavorable to the Navy. Pressure may be felt regardless of whether or not it is explicitly applied. The Navy should acknowledge this real world issue.	The vast majority of Navy-funded research is not conducted by the Navy. Through the Office of Naval Research (ONR), the U.S. Navy funds independent marine mammal research at universities, research institutions, Federal laboratories and private companies. These researchers are acknowledged widely as among the best in the world in their field and they are given the latitude to conduct the research proposed as they see fit. They also are encouraged to publish the results of their research in the open, peer-reviewed scientific literature which is subject to public scrutiny. ONR has not restricted the interpretation or publication of any research it has supported, and it does not require a Navy review of scientific results before they are released. The Navy does not approve the release of scientific results before an investigator submits a paper for outside publication. This research has been favorably reviewed by three National Research Council panels over the past seven years. It was also reviewed three times during that same period by panels of independent experts that returned strongly favorable conclusions concerning the quality of research emerging from the program. All scientists, including both Navy scientists and independent scientists whose research is funded in part by the Navy, validate their work through a variety of methods, including: Membership in acoustic advisory panels, Participation in the Marine Mammal Commission Federal Advisory Committee Act, Participation in academic groups integrated with leading scientists in marine mammal research, Publication in

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				peer reviewed literature, Holding leadership positions within the greater marine mammal research community. The Navy has compiled available information into geographical Marine Resources Assessments, which are comprehensive reviews of peer-reviewed literature, NMFS reports, protected species sightings, stranding reports, and survey data. These comprehensive assessments are being used during analysis of potential environmental effects of sonar training. To suggest this research is tainted is to impugn the academic integrity and reputation of independent scientists and universities involved in this research. (All Federal agencies [FDA, NASA, HLS, NOAA, USFWS, etc.] fund research.) It questions the entire basis of funding research by the Federal government – is all the other research unreliable? Also, finally, at least we are doing the research. It is clearly easier to attack research as tainted rather than accept the unfavorable scientific results that might not support conclusions desired or favored by organizations or individuals potentially hostile to Navy operations.
931	G-006	5.5.2	DMF recommends that the Navy fund research that would fill this data gap.	Refer to Section 5.5.2 for further information on the Navy's research programs.

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934	G-006	5.5.2	Finally, in April 2007 the Navy sponsored a workshop held at Duke University Marine Laboratory that brought together fish acoustics experts and North Carolina fisheries managers to address surrounding the instrumentation of the Undersea Warfare Training Range (USWTR). Both Red Munden and Chip Collier of DMF were in attendance. The workshop proceedings outline a comprehensive list of research tasks, with priority given to the following: bottom mapping, creating an inventory of fish species within the proposed training range, developing swim bladder models to investigate potential acoustic vulnerability of different fish species and life stages, and conducting further experiments to determine hearing capabilities of fish. DMF believes that advancement on these research topics is critical not only to the USWTR but also the development of this DEIS/OEIS. We request that a progress report on these activities be included in the final EIS/OEIS for the proposed project.	A discussion of this workshop has been added to Section 5.5.2. The Navy is pursuing several of these research endeavors which may apply to environmental analysis, but some studies are still being conducted. The results of these efforts will be incorporated in future environmental documents as they become available.
939	G-006	5.5.2	Likewise, Section 5.1.3.2 (Research) should be expanded to include current and future studies regarding acoustic impacts to fish (see comments above).	Information related to the break-out of funding is unavailable. A discussion of past, present, and future research funding is presented in Section 5.5.2.
841	G-008	5.5.2	The research efforts supported by the Navy described in section 5.1.3.2 as Conservation Measures rightly focus on marine mammals. However, this program does not include any funding to address the data gap for sea turtles.	The Navy funds survey and acoustic effects research on sea turtles. The Navy will continue to do so in the future as data gaps are identified. Refer to revised Section 5.5.2 for additional information.
762	G-011	5.5.2	Conduct further research into particularly sensitive areas and seasonal shifts in species aggregations to determine which if the three alternatives (1, 2, or 3) is the most protective of marine life. This recommendation includes additional research on marine mammals, sea turtles, bat, and avian species that might be threatened by the proposed activities of the Navy addressed in the DEIS.	Our results analysis does take into account seasonal density of animals. The Navy continues to do research on acoustics and marine species and this document contains the best available science.

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985	G-017	5.5.2	The Commission concurs that the Navy's investment in research on the effects of noise on marine mammals is significant and an indication of its stewardship commitment, but we question whether there is sufficient information to substantiate the Navy's claim that it accounts for 70 percent of all such research in the United States and 50 percent of all such research worldwide (p. 5-9, lines 22-24).	Please refer to revised text in 5.5.2.
796	I-007	5.5.2	1. Why is the Navy doing piecemeal studies on Sonar on the East Coast instead of a comprehensive environmental study on all Navy Sonar Training on the East Coast?	The AFAST EIS/OEIS is a comprehensive study of all Navy sonar training in the Atlantic Ocean. It does not address other future activities, such as USWTR, which are covered by a separate EIS/OEIS.
201	I-025	5.5.2	Why not consult marine biologists such as Carl Safina when making plans for your tests?	Many marine biologists, scientists, and engineers were part of the planning and document preparation process, but all comments were welcomed.
564	I-041	5.5.2	The east coast oceans are home to the endangered right whale. Not enough comprehensive research has been done.	The Navy has used best available information. In addition, the Navy also funds and supports marine research. Refer to section 5.5.2. The Navy will consult with NMFS under the ESA regarding potential effects to the right whale.
707	I-069	5.5.2	12.) Has the Navy been responsible for any research regarding sonar effects on fishes, small and large and other seafoods that provide food for us humans and other animals?	Please refer to Section 5.5.2 for a summary of associated Navy research.

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1391	I-160	5.5.2	The website claims that the Navy supports research citing SERDP, Environmental Security Technology Certification Program and the DoD Legacy Program. We are curious to know the results of any of this sponsored research about the effects of sonar on marine mammals. Research done by other sources has shown unequivocally that sonar blasts kill whales and dolphins and mass strandings of dead and dying animals are found after active training events.	Through the Office of Naval Research (ONR), the U.S. Navy funds independent marine mammal research at universities, research institutions, Federal laboratories and private companies. These researchers are acknowledged widely as among the best in the world in their field and they are given the latitude to conduct the research proposed as they see fit. They also are encouraged to publish the results of their research in the open, peer-reviewed scientific literature which is subject to public scrutiny. ONR has not restricted the interpretation or publication of any research it has supported, and it does not require a Navy review of scientific results before they are released. Navy does not approve release of scientific results before an investigator submits a paper for outside publication. This research has been favorably reviewed by three National Research Council panels over the past seven years. It was also reviewed three times during that same period by panels of independent experts that returned strongly favorable conclusions concerning the quality of research emerging from the program. All scientists, including both Navy scientists and independent scientists whose research is funded in part by the Navy, validate their work through a variety of methods, including: Membership in acoustic advisory panels, Participation in the Marine Mammal Commission FACA (Federal Advisory Committee Act), Participation in academic groups integrated with leading scientists in marine mammal research, Publication in peer reviewed literature, Holding leadership positions within the greater

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				marine mammal research community. The Navy has compiled available information into geographical Marine Resources Assessments, which are comprehensive reviews of peer-reviewed literature, NMFS reports, protected species sightings, stranding reports, and survey data. These comprehensive assessments are being used during analysis of potential environmental effects of sonar training.
1357	A-010	5.6	Moreover, the Navy's analysis ignores or improperly discounts an array of options that have been considered and imposed by other active sonar users, including avoidance of coastal waters, high-value habitat, and complex topography; the employment of a safety zone more protective than the 1000-yard power-down and 200-yard shutdown proposed by the Navy' general passive acoustic monitoring for whales; special rules for surfacing ducting and low-visibility conditions; monitoring and shutdown procedures for sea turtles and large schools of fish; and many others. The Navy's conclusions are all the more remarkable given recent court decisions finding that the navy can and must do more to reduce harm to protected species from sonar training.	Please see revised mitigation text in Section 5.6. It is critical that Navy be able to conduct Anti-Submarine Warfare training in a variety of environments and bathymetric conditions.

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1358	A-010	5.6	Measures that the Navy should consider include,…(1)Establishment of a coastal exclusion zone for acoustics training and testing, such as one for major exercises that would minimally run at least 25 nm from the 200 meter isobath, or beyond the shelf break and Gulf Stream, whichever is greater; (2) Seasonal avoidance of North Atlantic right whale feeding grounds, calving grounds, and migration corridor; (3) Avoidance of federal and state marine protected areas, including the national marine sanctuaries located along the eastern seaboard and in the Gulf of Mexico; (4) Avoidance of bathymetry likely to be associated with high-value habitat for species of particular concern, including submarine canyons and large seamounts, or bathymetry whose use poses higher risks to marine species; (5) Avoidance of fronts and other major oceanographic features, such as the Gulf Stream, warm core rings, and other areas with marked differentials in sea surface temperatures, which have the potential to attract offshore concentrations of animals, including beaked whales; (6) Avoidance of areas with higher modeled takes or with high-value habitat for particular species, many of which are indicated in the predictive habitat modeling undertaken for the DEIS (see DEIS App. D); (7) Concentration of exercises to the maximum extent practicable in abyssal waters and in surveyed offshore habitat of low value to species; (8) Use of sonar and other active acoustic systems at the lowest practicable source level, with clear standards and reporting requirements for different testing and training scenarios; (9) Expansion of the marine species "safety zone" to a 4 km shutdown, reflecting international best practices, or 2 km, reflecting the standard prescribed by the California Coastal Commission and adopted in NRDC v. Winter, 527 F.Supp.2d 1216 (C.D. Cal. 2008), aff'd_F.3d_, 2008 WL 565680 (9th Cir. 2008); (10) Suspension of relocation of exercises when beaked whales or significant aggregations of other species, such as melon-headed whales, are detected by any means within the orbit circle of an aerial monitor or near the vicinity of an exercise; (11) Use of simulated geography (and other work-arounds) to reduce or eliminate chokepoint exercises in near-coastal environments, particularly within canyons and channels, and use of other important habitat; (12) Avoidance or reduction of training during months with historical significant surface ducting conditions, and use of power-downs during significant surface ducting conditions at other times; (13) Use of additional power-downs when significant surface ducting conditions coincide with other conditions that elevate risk...(14) Planning of ship tracks to avoid embayments and provide escape routes for marine mammals; (15) Suspension or postponement of chokepoint exercises during surface ducting conditions and scheduling of such exercises during daylight hours; (16) Use of dedicated aerial monitors during chokepoint exercises, major exercises, and near-coastal exercises; (17) Use of dedicated passive acoustic monitoring to detect vocalizing species, through established and portable range instrumentation and the use of hydrophone arrays off instrumented ranges; (18) Modification of sonobuoys for	Please see revised mitigation text in Section 5.6. It is critical that Navy be able to conduct Anti-Submarine Warfare training in a variety of environments and bathymetric conditions. Refer to Chapter 5 for a discussion of miltigation measures.

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			passive acoustic detection of vocalizing species; (19) Suspension or reduction of exercises or power-down of sonar outside daylight hours and during periods of low visibility; (20) Use of aerial surveys and ship-based surveys before, during, and after major exercises; (21) Use of all available range assets for marine mammal monitoring; (22) Use of third-party monitors for marine mammal detection; (23) Establishment of long-term research, to be conducted through an independent agent such as the National Fish and Wildlife Foundation, on the distribution, abundance, and population structuring of protected species in the AFAST study area, with the goal of supporting adaptive geographic avoidance of high-value habitat; (24) Application of mitigation prescribed by state regulators, by the courts, by other navies or research centers, or by the U.S. Navy in the past or in other contexts; (25) Avoidance of fish spawning grounds and of important habitat for fish species potentially vulnerable to significant behavioral change, such as wide-scale displacement within the water column or changes in breeding behavior; (26) Avoidance of high-value sea turtle habitat; (27) Evaluating before each major exercise whether reductions in sonar use are possible; given the readiness status of the strike groups involved; (28) Dedicated Research and development of technology to reduce impacts of active acoustic sources on marine mammals; (29) Establishment of a plan and a timetable for maximizing synthetic training in order to reduce the use of active sonar in Atlantic Fleet training; (30) Prescription of specific mitigation requirements for individual classes (or sub-classes) of testing and training activities, in order to maximize mitigation give varying sets of operational needs; and (31) Timely, regular reporting to NOAA, state coastal management authorities, and the public to describe and verify use of mitigation measures during testing and training activities.	
1157	A-019	5.6	Also missing entirely is the rationale for eliminating other mitigation measures.	Please see Section 5.6 for a discussion of Alternative Mitigation Measures Considered but Eliminated.

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1287	A-028	5.6	The DEIS (5.4) here states the reasons for not having to reduce or secure power during low-visibility/night training, or when there is the presence of strong surface ducts. But this raises the question; why have these conditions not been addressed in other areas of this DEIS? Where is the discussion of how these conditions might adversely affect the ability of lookouts to detect marine mammals (and sea turtles)? Where is the discussion of how the presence of surface ducts might enhance the propagation of disruptive or injurious levels of AFAST produced sound, thereby resulting in more impacted animals over larger ocean areas? The fact that the DEIS neglected to address these issues is telling. Both of these problems need to be fully discussed in the Final EIS.	Surface ducts were discussed in Section 5.6, Mitigations Considered but Eliminated.
1601	I-162	5.6	The greater range at which takes would occur requires more careful consideration of habitat-specific risks and fundamentally different approaches to mitigation.	Section 5.6 of the Final EIS/OEIS evaluates alternative or additional mitigations, specifically, as they relate to potential mitigation approaches. The examples of the fundamentally different approaches noted in the comment were addressed in this section of the Final EIS/OEIS. In addition, NMFS has identified general goals of mitigation measures. These goals include avoidance of death or injury, a reduction in the number of marine mammals exposed to received levels when these are expected to result in takes, a reduction in the number of times marine mammals are exposed when these are expected to result in takes, a reduction in the intensity of exposures that are expected to result in takes, and a reduction in adverse effects to marine mammal habitat. As discussed below, NMFS and Navy have identified mitigation measures that are practicable and reasonably effective. For example, the safety zones reduce the likelihood of physiological harm, the number of

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				marine mammals exposed, and the intensity of those exposures. The Navy has determined that mitigation measures will likely prevent animals from being exposed to the loudest sonar sounds or explosive effects that could potentially result in TTS or PTS and more intense behavioral reactions (Final EIS/OEIS, Section 5.1). Mitigation measures that are practicable involve those that reduce direct physiological effects within the TTS and PTS thresholds.
960	G-017	5.6	The Commission generally agrees with the list of rejected mitigation options in Section 5.3 (beginning on page 5-10), but we note that the list is poorly organized, redundant, and therefore confusing. The bulleted list would benefit from some editing to ensure that only one point is addressed per bullet and that redundant information in multiple bullets is eliminated.	Refer to revised Section 5.6.
698	I-004	6	The links between the use of active sonar and both acute and cumulative harm to the ocean ecosystem and marine life cannot be ignored.	Please refer to Chapter 6 for a discussion of cumulative impacts.

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1078	A-010	6	…it is necessary to consider the impacts of the proposed exercise alongside those of other activities in the region, including industrial and commercial activities such as fishing, shipping, and coastal development. As it stands, the Navy says little more than that all of the impacts from its thousands of annual hours of activity would necessarily be "short-term" in nature and therefore would not affect vital rates in individuals or populations. The Navy also offers the bromide that mitigation will preclude any significant or long-term impacts on marine mammals and the marine environment. Not only are both statements factually insupportable given the lack of any population analysis or quantitative assessment of long-term effects in the document…but they misapprehend the definition of "cumulative impact,"…Navy assumes..that its…sonar activities will not result in the serious injury or death of even a single animal. It simply assumes all behavioral impacts are short-term in nature and cannot affect individuals or populations through repeated activity… And, while it states that behavioral harassment…involves a stress response that may contribute to an animal's allostatic load, it again assumes without further analysis that any such impacts would be "incremental, but recoverable."	Please refer to Chapter 6 for an extensive cumulative impacts discussion.
1345	A-010	6	Nor does the Navy consider the potential for acute synergistic effects from sonar training…it does not consider the greater susceptibility to vessel strike of animals that have been temporarily harassed or disoriented by certain AFAST noise sources…Nor does the Navy consider (for example) the synergistic effects of noise with other stressors in producing or magnifying a stress-response. In short, the Navy's conclusion that cumulative and synergistic impacts from AFAST sonar training are insignificant cannot plausibly be supported.	See revised Chapter 6.

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1346	A-010	6	All of these failures of analysis are reflected not only in the Navy's unsupported conclusions about the benignity of AFAST standing alone, but in its broader conclusions about human activities along the eastern seaboard and in the Gulf of Mexico…The idea that all of these events, when taken as a whole, are having at most "moderate", but recoverable, adverse effects" (see DEIS at 6-83) is, to say the least, implausible...Given the scope of the proposed action, the deficiencies of the Navy's cumulative impacts assessment represent a critical failure of the DEIS.	See revised Chapter 6.
1151	A-019	6	The analysis of cumulative impacts in the DEIS is grossly deficient. For example, regarding other training activities it conducts within the Atlantic, the Navy simply states that "there will be takes of marine mammals and effects to endangered species" and that it "will" seek a Letter of Authorization and consult under Section 7 of the Endangered Species Act.	Please see updated Chapter 6.
1158	A-019	6	Due to the projected increases in shipping traffic in this region associated with the expansion of the Port of Charleston (see below); there are heightened concerns about the potential effects on the critically endangered right whale. The cumulative impact of these actions must be thoroughly evaluated.	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1163	A-019	6	In addition to considering the direct impacts from the sonar range to marine life and natural resources in the area, the Navy must examine the cumulative impacts of the proposed project, including impacts from other reasonably foreseeable projects. For the Charleston OPAREA, this assessment must include impacts from the proposed construction of a new marine container terminal at the Charleston Naval Complex site in the Port of Charleston, in addition to the existing terminals already operational at the Port. The new marine container terminal is proposed to be located on the Cooper River near the southern end of the former Charleston Navy Base. It will consist of a three-berth facility designed to accommodate 1,000-foot long ships. The FEIS for this project was published in December 2006 and the record of decision issued April 26, 2007. http://www.porteis.com/project/documents.htm	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits.
1164	A-019	6	The Institute for Water Resources issued Report 00-R-04, "National Dredging Needs Study for U.S. Ports and Harbors: Update 2000," and predicted a national growth rate in container trade projections of 4.52% through 2025. The increase in shipping traffic from increased trade and from the expansion of the Port, combined with activity associated with the sonar range would pose a threat to both adult and newborn right whales that migrate between designated critical habitats off the coast of New England and Canada and summer calving grounds off the coast of Georgia and Florida. This combination could also threaten other important resources.	Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits. In addition, the Navy is consulting with NMFS in accordance with the Marine Mammal Protection Act and Endangered Species Act.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1165	A-019	6	In addition to the Port expansion, the Navy must review the cumulative impacts associated with other operations and actions the Navy currently engages in within the region, as well as its planned future actions. For example, during the past year, the Navy has held scoping meetings along the Atlantic Coast to solicit input on mine warfare training and Navy Atlantic Fleet training and testing. The cumulative impacts from these activities must be examined in the Revised DEIS.	Refer to Section 6.2.11 for a description of past and present military operations, as well as Section 6.3.1 for a description of reasonably foreseeable future military operations. Refer to Section 6.4 for a discussion of cumulative impacts relative to the proposed action.
1178	A-019	6	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* Cumulative Impacts: In the EIS process for AFAST, other sources of ocean noise and habitat disruption must be considered as part of the cumulative impact review. This specifically includes impacts from commercial shipping (there are major ports all along the south Atlantic – including Jacksonville, Florida; Savannah, Georgia; Charleston, South Carolina; Wilmington, North Carolina; and Chesapeake Bay, Virginia and shipping transverses the near shore and off-shore regions in somewhat regular corridors) and recreational boating, seismic activity, and marine pollution (from sewage outfalls, bilge-emptying, and trash).	Refer to Chapter 6 for a description of past, present, and reasonably foreseeable actions, as well as, the cumulative impacts analysis.
1198	A-019	6	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Aside from questions like this, the Navy has a mandatory duty to consider the environmental impacts of other “past, present and reasonably foreseeable future actions.” 40 C.F.R. § 1508.7	Refer to Chapter 6 for a description of past, present, and reasonably foreseeable actions, as well as, the cumulative impacts analysis.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1228	A-019	6	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* The Navy's brief discussion of cumulative impacts indicates a profound misunderstanding of NEPA's requirements. While the Navy does disclose other activities that may have adverse effects on marine life, it does not include any analysis of the synergistic effects of those activities in conjunction with the planned use of the USWTR.	Refer to Chapter 6 for a description of past, present, and reasonably foreseeable actions, as well as, the cumulative impacts analysis.
1291	A-028	6	When this potential for adverse impacts is combined with other threatening factors including, but by no means limited to, the Navy's proposed Undersea Warfare Training Range, entanglement, ship strike, the proposed LNG terminal to be located in Passamaquoddy Bay, and global climate change, to conclude, as the DEIS has, that the cumulative impacts of all these threats combined only have the "potential for moderate, recoverable" impacts, then this conclusion is unsupportable and cannot be justified. On this basis alone, this DEIS has failed to meet its obligations to investigate how impacts of AFAST activities, when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions, will impact the environment.	Please refer to Chapter 6 for an extensive cumulative impacts discussion.
684	I-003	6	The links between the use of active sonar and both acute and cumulative harm to the ocean ecosystem and marine life cannot be ignored.	Please refer to Chapter 6 for a discussion of cumulative impacts.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
81	I-011	6	The cumulative impacts on these species as a result of increased shipping traffic from the SPA port expansion, as well as from sonar must be addressed.	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits.
86	I-011	6	The cumulative impacts of the Navy's proposal in addition to other proposed projects on the coast of South Carolina must be considered. This assessment must include the proposed SPA port expansion, the current port operations and current Navy operations.	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits.
91	I-023	6	The cumulative impacts on these species as a result of increased shipping traffic from the SPA port expansion, as well as from sonar must be addressed.	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits.
96	I-023	6	The cumulative impacts of the Navy's proposal in addition to other proposed projects on the coast of South Carolina must be considered. This assessment must include the proposed SPA port expansion, the current port operations and current Navy operations.	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
102	I-034	6	The cumulative impacts on these species as a result of increased shipping traffic from the SPA port expansion, as well as from sonar must be addressed.	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits.
205	I-053	6	The cumulative impacts on these species as a result of increased shipping traffic from the SPA port expansion, as well as from sonar must be addressed.	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits.
1545	I-065	6	The cumulative impacts on these species as a result of increased shipping traffic from the SPA port expansion, as well as from sonar must be addressed.	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1551	I-066	6	The cumulative impacts of the Navy's proposal in addition to other proposed projects on the coast of South Carolina must be considered. This assessment must include the proposed SPA port expansion, the current port operations and current Navy operations.	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits.
1552	I-073	6	The cumulative impacts on these species as a result of increased shipping traffic from the SPA port expansion, as well as from sonar must be addressed.	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits.
1562	I-087	6	The cumulative impacts of the Navy's proposal in addition to other proposed projects on the coast of South Carolina must be considered. This assessment must include the proposed SPA port expansion, the current port operations and current Navy operations	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits.
1568	I-104	6	The cumulative impacts of the Navy's proposal in addition to other proposed projects on the coast of South Carolina must be considered. This assessment must include the proposed SPA port expansion, the current port operations and current Navy operations	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to

Comment Number	Commenter Number	Section Number	Comment	Comment Response
				increase its vessel transits.
1575	I-119	6	The cumulative impacts of the Navy's proposal in addition to other proposed projects on the coast of South Carolina must be considered. This assessment must include the proposed SPA port expansion, the current port operations and current Navy operations.	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits.
1586	I-138	6	The cumulative impacts of the Navy's proposal in addition to other proposed projects on the coast of South Carolina must be considered. This assessment must include the proposed SPA port expansion, the current port operations and current Navy operations.	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits.
1590	I-142	6	The cumulative impacts of the Navy's proposal in addition to other proposed projects on the coast of South Carolina must be considered. This assessment must include the proposed SPA port expansion, the current port operations and current Navy operations.	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to increase its vessel transits.
1594	I-156	6	The cumulative impacts on these species as a result of increased shipping traffic from the SPA port expansion, as well as from sonar must be addressed.	Refer to Section 6.3.4 for information related to the construction of a new terminal in North Charles by the State Ports Authority. Please refer to section 6.4.1.5 for a discussion of cumulative effects of vessel transit interactions with marine mammals. Under the Proposed Action, the Navy does not propose to

Comment Number	Commenter Number	Section Number	Comment	Comment Response
				increase its vessel transits.
685	I-003	6.1.2	Following US Navy Atlantic Fleet Active Sonar Training activities in January 2005 36 whales were stranded on the beaches of North Carolina's Outer Banks. In March 2007, again subsequent to sonar activities, a Blainsville beaked whale was stranded with injury to both ears evidenced by bleeding.	Active sonar was not used within a minimum of 150 NM and 2 weeks prior to the March 2007 stranding event. Therefore, the local stranding network investigators found no causal relationship to sonar. Refer to Cetacean Stranding Analysis in Appendix E for information related to the January 2005 event.
708	I-069	6.2.1	Also about any economic losses or benefits?	Please refer to Section 6.2.1 for additional information.
1002	A-008	6.4	What will be the cumulative effects of long-term sonar exposure to aquatic populations from AFAST -- as well as other sonar training activities conducted in the Atlantic?	AFAST covers the vast majority of active sonar activities in the Atlantic Ocean along the East Coast and in the Gulf of Mexico. Although long-term effects are not anticipated, we are instituting a monitoring plan to better understand this issue. Refer to Section 6.4 for additional information related to cumulative impacts.
1400	A-008	6.4	The draft EIS does not fully consider the long term impacts discarded debris and toxins, and how they will cumulatively affect marine organism and the aquatic food chain into the future. What will be the total amounts of materials discharged each year?	Refer to Sections 6.4.1.1 through 6.4.1.3 for a discussion of cumulative impacts to sediment quality, marine environment, and water quality from expended materials. Refer to Table 4-1 for the amount of materials discharged each year.
1014	A-010	6.4	It presumes, entirely without analysis, that all of its impacts are short-term in nature and that none will have cumulative effects, even though the same populations would repeatedly be affected.	Although long-term effects are not anticipated, we are instituting a monitoring plan to better understand this issue.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1187	A-019	6.4	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Similarly, the DEIS is devoid of evidence of any serious effort to analyze cumulative impacts; the mere listing of other actions and concerns in the region does not suffice.	Refer to Section 6.4 for a discussion of cumulative impacts relative to the proposed action.
824	A-015	6.4.1	The U.S. military is charged with providing environmental stewardship of our public trust resources as it trains. It must fully assess the cumulative effects of its actions on the environment and communities it affects, take into account the precautionary principle and experience of the scientific and local communities, clean up after itself and make sure it does as little harm as is possible. This DEIS fails to do that. Please remedy this in the next version of this document.	The Navy complies with all applicable regulations. Cumulative impacts from AFAST activities have been thoroughly analyzed, as presented in Section 6.4.1. The Navy minimizes the accumulation of debris as much as possible, as summarized in Section 3.4.4. The best available science is used to assess impact of expended materials on the marine environment.
797	I-007	6.4.1	2. How can there be no cumulative impacts involving the Atlantic Fleet Active Sonar Training (AFAST) and the Navy Undersea Warfare Training Range (USWTR)?	Please refer to Chapter 6 for a discussion of the cumulative impacts.
1153	A-019	6.4.1	While the DEIS contains individualized discussion of the impact of some of the numerous items and chemicals the Navy will discard or release on the range, it does not address the cumulative impact of these actions. Items discarded or released into the ocean environment include the sonobuoys, XBTs, ADCs and EMATTs annually, expended accessories such as parachutes, flex hoses and guidance wires for exercise torpedoes, numerous air launch accessories, rocket components, lead ballast, chemical releases from propulsion systems, batteries and other sources, together with discharges from ships.	See Sections 6.4.1.1, 6.4.1.2, and 6.4.1.3 for a detailed discussion of the cumulative impacts from expended materials on sediment quality, marine debris, and water quality.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1154	A-019	6.4.1	The DEIS should analyze the cumulative impacts of these discharges and releases.	See Sections 6.4.1.1, 6.4.1.2, and 6.4.1.3 for a detailed discussion of the cumulative impacts from expended materials on sediment quality, marine debris, and water quality.
1155	A-019	6.4.1	A significant oversight here is the lack of analysis of impacts of discarded hoses and lines to sea birds, whales and sea turtles. Each of these categories of marine animals can become entangled in discarded fishing lines and plastics, resulting in starvation or drowning. This impact is of special concern for endangered species, for which the continued existence of the entire species is at risk. The cumulative impact of these various sources of entanglement must be evaluated, and measures to mitigate the harm caused by Naval operations developed and employed.	See Sections 6.4.1.5 (marine mammals), 6.4.1.6.1 (sea turtles), and 6.4.1.9.1 (seabirds) for discussions of cumulative impacts of expended materials.
941	G-006	6.4.1	Section 6.4.1 states that "…commercial and recreational fishing…are not required to comply with NEPA or analyze potential effects." For clarity, actions proposed by the federal fishery management councils and promulgated by NMFS to manage fishing activities within the EEZ are required to comply with NEPA (16 U.S.C. Section 1854(c)(7)).	Please refer to revised text in Section 6.4.1.
1407	G-014	6.4.1	The production of the proposed acoustics will add to an existing and increasing cacophony of anthropogenic noise pollution that may already be negatively impacting species of conservation concern.	Refer to Section 6.4.1.4 for the cumulative impacts from sound in the water.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
974	G-002	6.4.1.12	"Because AFAST activities do occur within the vicinity of the NMS, it is determined that there is a potential for minor, but recoverable, cumulative effects to the NMS under the No Action Alternative, Alternative 1, Alternative 2, and Alternative 3. The impacts would be temporary and localized and would not be significant (page 6-75 to 6-76). Again, the ONMS is unable to concur with this conclusion as the DEIS/OEIS does not contain sufficient information on the spatial and temporal extents of proposed activities as well as the level of potential effects to sanctuaries.	AFAST activities will not be conducted in National Marine Sanctuaries under any of the alternatives. Text will be clarified as needed in the EIS/OEIS.
74	I-002	6.4.1.16	And the long term devastation may not be reversible.	Please refer to Section 6.4.1.16 for information related to the cumulative impacts to the commercial and recreational fishing industries.
948	G-006	6.4.1.16.2	Section 6.4.1.16.2 states that the proposed action will not result in any significant incremental cumulative impacts to either commercial or recreational fishing. Please see our comments on Sections 4.7 and 4.15. Impacts to fish and/or fish habitat that accrue over time will directly affect participates in the commercial and recreational fishing sectors.	For the reasons described in revised Sections 4.7 and 4.15, no revisions to Section 6.4.1.16.2 will be made.
1434	A-028	6.4.1.2	Because these materials will remain in the environment, it is unclear why the DEIS assumes they will not have any impacts upon ocean life. What is very clear is the failure of the DEIS to evaluate in a scientific manner the potential for these materials to have a cumulative adverse impact upon this life. The AFAST DEIS reveals little concern on the part of the Navy, but a lot of denial, regarding the impacts of the large quantity of trash, or "expendables" as the DEIS prefers to call it, the Navy will annually dump into the marine environment.	Refer to Section 6.4.1.2 for cumulative impacts associated with marine debris.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1070	A-010	6.4.1.3	The DEIS generally fails to consider the cumulative impacts of these toxins on marine mammals, from past, current, and proposed exercises. Careful study is needed into the way they might disperse and circulate around the islands and how they may affect marine wildlife. The Navy's analysis of hazardous materials is therefore incomplete. Navy's analysis cannot be limited only to direct effects.	Please refer to Section 6.4.1.3 and Table 6.19, referring to water quality and cumulative impacts. Also refer to Table 4-1 for a listing of expended materials.
1068	A-010	6.4.1.5	Sixth, as noted below in the discussion of Cumulative Impacts, the Navy's threshold is applied in such a way as to preclude any assessment of long-term behavioral impacts on marine mammals. It does not account, to any degree, for the problem of repetition: the way that apparently insignificant impacts, such as subtle changes in dive times or vocalization patterns, cab become significant if experienced repeatedly or over time.	The Navy is studying the long-term population effects of sonar and is also developing a monitoring plan as part of this EIS/OEIS effort.
1203	A-019	6.4.1.6	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* In 2000, NOAA's Turtle Expert Working Group (TEWG) reported that the northern subpopulation of loggerheads (which occurs from North Carolina south to northeast Florida) is stable or declining, and that the primary causes of strandings and mortality are entanglements and marine debris and pollution.	Refer to Section 6.4.1.6 for cumulative impacts to sea turtles.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
943	G-006	6.4.1.7.2	Section 6.4.1.7.2 states that impacts to fish stocks from the proposed project would be "minor and recoverable" as well as "temporary and localized and therefore insignificant". Until further research has been completed regarding impacts to fish species from chronic exposure to sonar, DMF must respectfully disagree with this statement. This section also states that "implementation of mitigation measures designed to avoid significant or long-term impacts would further protect marine life and environment." If mitigation measure beyond those proposed in Section 5 for marine mammals are being considered, please include these in the DEIS/OEIS.	Please see revised text in 6.4.1.7.2 and 4.7. Also, please note that sonar exposure to fish population is transient in nature because the use is intermittent and the sources are moving; therefore, no chronic exposures are expected.
947	G-006	6.4.1.8.2	We must also disagree with the statement in Sections 6.4.1.8.2 the proposed action will only have "minor, but recoverable" and no significant cumulative impacts to EFH. Please see our comments above regarding Section 4 and impacts to EFH and marine habitat from expended components. We believe that continued accumulation of these components over time is likely to alter EFH.	Please refer to revised sections 6.4.1.8.2 and 4.6.
566	I-007	6.5	2. How can there be no cumulative impacts involving the Atlantic Fleet Active Sonar Training (AFAST) and the Navy Undersea Warfare Training Range (USWTR)?	There is a potential for minor and moderate, but recoverable, adverse cumulative impacts to various environmental resources. Refer to Section 6.5 for additional information.
1182	A-019	B	*The following comment was taken from a letter dated December 1, 2006 entitled Scoping Comments for Atlantic Fleet Active Sonar Training.* In addition, effective coordination and communication with other agencies, including Army Corps of Engineers, state agencies such as the Virginia Department of Environmental Quality, North Carolina Department of Environmental and Natural Resources, South Carolina Department of Health and Environmental Control and Georgia Department of Natural Resources (including agencies responsible for marine fisheries, wildlife resource and coastal management) is necessary to ensure a thorough identification of important resources and special consideration.	As listed in Table B-1 in Appendix B, the AFAST EIS/OEIS was distributed to all states located within the AFAST Study Area, as well as various federal agencies.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1295	A-028	B	Although COAST emailed, faxed, and sent a letter by certified mail requesting a copy of the AFAST EIS/OEIS, we have not yet received either the copy, or any response. We did, however receive a CD version of the EIS/OEIS, along with a letter on AFAST EIS/OEIS release information, which included the sentence; “Due to the expense and resources necessary to produce a large volume, please accept the enclosed CD.” On March 6, 2008, I attended the AFAST Public Hearing in Boston. At that time, I spoke to one Navy participant in the open house segment of the hearing, and then to another Navy participant during a break in the public hearing about wanting to get a paper copy of the AFAST EIS/OEIS. Both of these individuals said that this would not be a problem and that they would see to it that I received a paper copy. However, COAST has yet to receive a copy.	Hard copies have been distributed to the libraries listed in Appendix B, and the entire document is available for viewing and downloading on the project website. Due to the overall large size of the document, and the cost and resources involved in printing and shipping each hard copy, electronic copies (via CD) were sent to those persons requesting a copy of the EIS/OEIS. However, due to the multiple requests for a hard copy, a copy was sent to Mr. Wray on April 25th.
928	G-017	D	The models used in Appendices D and H and the data to run them suffer from the same problem; it is not possible to follow the model calculations and reconcile outcomes with input.	Appendix D was a surrogate analysis to help us identify geographic areas for the alternatives. Additional information on the modeling will be available with the release of the newest technical report, Appendix H.
1431	A-028	D	…the Navy will prepare Negative Determinations for the states of Alabama, Delaware, Louisiana, Maine, Maryland, Massachusetts, Mississippi, New Hampshire, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, and South Carolina. While it is not recognized in this DEIS, AFAST activities will likely have impacts on the coastal waters and resources of all of these states. The DEIS failure to recognize this stems from the deficiencies in the DEIS described below. In some cases, a state may not include the protection of some of these resources as part of the enforceable policies of its coastal management program. However, others states do and at a minimum, consistency determinations should have been prepared for those states.	Coastal determinations are based on the enforceable policy of individual states as approved by NOAA.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
942	G-017	D	The use of two different risk estimation protocols to establish the alternative operating areas (Appendix D) and calculate estimated takes for those areas (Appendix H) results in additional uncertainty and concern. The authors of the DEIS clearly state that they did this largely for computational simplicity and savings of time and effort in setting up the alternatives and this seems a reasonable course of action. However, the methods applied in Appendix D may be responsible for some of the unexpected and paradoxical results in Table ES-3, which raises questions about the reliability of the exposure estimates as a basis for selecting among the alternatives. It is not clear to us that the exercise described in Appendix D actually had the intended effect of optimizing the balance between relocating sonar activity and reducing exposures, which was the stated intent of Alternatives 1, 2, and 3. Therefore, the Marine Mammal Commission recommends that the Navy alter or augment its risk analysis in Appendix D to provide the information that the reader would need to evaluate the analyses of costs and risks, which provide the basis for informed selection among alternatives.	The surrogate analysis was developed to help the Navy develop the alternatives. It was not part of the modeling or final analysis of environmental effects. The methodology used in Appendix D was used primarily to reduce effects to endangered and particularly sensitive species.
990	G-017	D	Similarly, it is not clear how the 100-hour exposure histories in Appendix D or the exercise-specific exposure histories used in Appendix H were derived from the actual operating parameters of ships conducting various ASW activities (e.g., ping interval, ship speed, and area of coverage or other similarly relevant data). If there were simplifying assumptions about the source being stationary or if simplifying techniques were used to produce averaged sound fields over some coarse scale, this did not come through clearly in the DEIS or appendices.	Acoustic analysis used actual operating parameters from ships conducting ASW to construct footprints. These footprints were averaged together between sonar operating modes to simplify the analysis. Acoustic provincing was used to classify areas of similar sound propagation. Refer to the revised Appendix H.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
995	A-008	E	Not all whales that are affected by sonar are likely to strand or wash up on shore. Many whales may sink and never be seen. Sonar-related injuries to whales may occur far from shore and as a result, many more whales may be dying than are found stranded on shore. In addition, once a whale does wash up on shore, it is extremely difficult to determine whether a sonar-related injury or decompression sickness is the cause of death unless the animal is discovered very shortly after it has died. This makes it difficult to accurately determine the extent of serious injury or mortality resulting from active sonar and undermine the Navy's determination that it is underestimating potential effects to marine mammals.	There have been no scientific findings of direct sonar-related injury.
1017	A-010	E	Although mass mortalities of beaked whales have resulted from the single transit of a sonar ship, the DEIS concludes that no animals would suffer serious injury or die during the many thousands of hours of sonar training.	There are no documented cases beaked whale mass strandings caused by a single transit of a sonar ship. Refer to Appendix E on cetacean stranding.
1083	A-010	E	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. Indeed, it is not even certain that some beaked whale species naturally strand in numbers.	Refer to Appendix E for a discussion of stranding events that the Navy acknowledges may have been linked to sonar operations.
1376	A-010	E	Stranding and Mortalities Associated with Mid-Frequency Sonar ...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.	Refer to Appendix E for a discussion of stranding events that the Navy acknowledges may have been linked to sonar operations.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
945	A-016	E	In the wild, animals display wide variety, just as humans do, with not only different species exhibiting different hearing capabilities, but also different ages, different sexes, and even merely different individuals of the same species displaying different sensitivities to noise. The empirical evidence proves that these threshold levels are too high since animals have stranded and died at received levels of active sonar over ten thousand times lower than 195 dB.	Please refer to Appendix E for discussion for discussion of 2000 Bahamas stranding, and the factors associated with that event.
26	A-018	E	The Navy has acknowledged that sonar (mid-frequency) has caused the deaths of beaked whales.	Please refer to Appendix E for a discussion of beaked whale stranding events associated with potential naval operations.
325	A-018	E	In the past the Navy has acknowledged that it has created probably some deaths to whales. There's been other strandings of whales when sonar has been associated with sonar.	Please refer to Appendix E for a discussion of beaked whale stranding events associated with potential naval operations.
1189	A-019	E	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Perhaps the more glaring oversight concerns the omission of any reference to the strandings – and death – of more than three dozen whales representing three different species near Oregon Inlet in January of this year (2006) within twenty four hours following the Navy's use of mid-frequency sonar in the area.	As stated in Appendix E, there are five stranding events that have been putatively linked to potential sonar operations. Please refer to Appendix E for additional information.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1207	A-019	E	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* Two of these three species – sperm and pilot whales – were represented in the mass stranding that occurred near Oregon Inlet, North Carolina, in Dec. 2005, within hours of the Navy's use of mid-frequency sonar in the area. (It is inexplicable that DEIS fails to even mention this event, and oversight that, if uncorrected, would constitute an egregious violation of NEPA).	Refer to Appendix E.
43	A-020	E	As a specific, you fail to reference Balcomb at all concerning beached whales.	Refer to revised Appendix E.
44	A-020	E	Robert Brownell was not referenced properly as far as his data concerning beached whales in Japan.	Appendix E reflects the Navy's interpretation of the available scientific literature.
45	A-020	E	A third one would be all of the stranding data that was presented, the events that were discussed, were biased to an extraordinary degree. Where the particulars were pulled away, the science wasn't presented or understood properly, and the events were reported in a very Navy-neutral way.	The conclusions presented in Appendix E are based on the facts that have been derived from all available scientific information.
658	A-021	E	The Scientific Committee of the International Whaling Commission has found that the evidence linking military sonar to whale strandings is "very convincing, and appears overwhelming."	As stated in Appendix E, there are five stranding events that have been putatively linked to potential sonar operations. Please refer to Appendix E for additional information.
660	A-021	E	Sonar-related strandings have occurred in the Canary Islands, Greece, Bahamas, Madeira, Washington State, Hawaii, North Carolina, and Southern Spain, amongst other locations. The 2000 Bahamas incident involved 16 whales of three species stranded along 150 miles of shoreline as naval ships used MFA sonar in the area.	All of the listed stranding events are discussed in Appendix E. Please refer to Appendix E for each respective events description, findings, and conclusions.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
661	A-021	E	The Navy has acknowledged that its sonar use resulted in the deaths of the whales. Similarly, in the report of the Hanalei Bay, Hawaii live-stranding of up to 200 melon headed whales, the DoC said the Navy's MFA sonar use was a "plausible, if not likely contributing factor" in the event, which resulted in the death of a calf.	As stated in Appendix E, the conclusion for this stranding event was based primarily on the basis that there was an absence of any other compelling explanation. At the time of the Hawaii stranding, there was also a simultaneous event in Rota. In addition, the Hawaii incident does not share the characteristics observed with other mass strandings of whales coincident with sonar activity. Please refer to Appendix E for additional information.
56	A-028	E	I think that the fact that you - the Navy has in this current Draft Environmental Impact Statement, touched on only a few of the better known stranding events associated with sonar is really improper and, again, misleading, because there are numerous strandings that have occurred alongside with sonar use, and it's very misleading to people who read these documents and think, oh, these are the cases. Anyways, I'll leave it there. I will be submitting written comments.	As stated in Appendix E, the state of science cannot yet determine if a sound source alone causes strandings, or if other factors must co-occur in conjunction with sound. Therefore, only those stranding events that have been putatively linked to potential sonar operations are discussed.
1278	A-028	E	Has the DEIS determined that it is not possible for marine mammals who have been injured as a result of ASW training to stay alive for periods over 24 hours, and then to be stranded? If the DEIS has determined this, please explain how.	The confluence of events leading to stranding is not well understood.
1296	A-028	E	While it may be accurate, in some cases, to say that the causative reason for impacts are not yet known, the significance of the impacts is pretty clear; injured and dead animals, resulting in, at least in the case of the 2000 Bahamas mass stranding, population level impacts. Aside from that, the marine mammal mortalities mentioned below (perhaps with the exception of the 2004 Alaska stranding) are in fact associated with mid-frequency active sonar effects, or (in the case of the 1996 mass stranding in Greece), with naval sonar that had components in the mid-frequency range. To characterize these strandings as “potentially” associated is misleading.	As stated in Appendix E, there are five stranding events that have been putatively linked to potential sonar operations. Please refer to Appendix E for additional information.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1297	A-028	E	It is interesting to note how the DEIS (E.7) attempts to dismiss the possibility for non-beaked whale species to be stranded or otherwise impacted by MFA sonar, with statements such as the following in regard to the 2000 Bahamas stranding incident; "No similar conclusion as to the potential cause of stranding could be reached for the spotted dolphin and minke whale. The spotted dolphin was in overall poor condition for examination, but showed indication of long-term disease. Although, no analysis of the minke whale was conducted, baleen whale stranding events have not been associated with either low-frequency or mid-frequency sonar use (ICES, 2005a, 2005b)." *The DEIS wording here is confusing. There were actually two minke whales who stranded in the Bahamas incident.*	Correct. The first paragraph in the description section and last paragraph in the conclusion section have been revised to clarify the number of minke whales.
1301	A-028	E	The DEIS discussion of the 1996 mass stranding on the coast of Greece failed to mention some important information regarding this event. According to NATO's report on this incident, SACLANTCEN M-133 (Annex G), the first whale that stranded was 40 km from the source vessel an hour after the sonar exercise began. It has been estimated that because beaked whales swim at a maximum of 15 km per hour, that this whale must have been 25 km from the sonar source. That is a very considerable distance. If this whale sustained injuries at that distance from the sonar source, it makes the DEIS 1000 yd "safety zone" look silly. Please discuss this issue.	The discussion in the DEIS is based on published, peer-reviewed analysis of the event. Refer to Section 4.4.5 for additional discussion of physiological effects.
1302	A-028	E	At that distance, the received level of sound was calculated by the Navy (NATO, Annex G) to be around 150 dB. If this (stranded beaked whale, Greece, 1996) whale sustained injuries at around the received level of 150 dB, then clearly, there is something very wrong with the DEIS noise threshold of 215 dB for physical injury and Level A harassment. Please address this issue.	The criteria for Temporary Threshold Shift and Permanent Threshold Shift are supported by the National Marine Fisheries Service and are based on the best available science.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1304	A-028	E	How is it that the DEIS failed to mention that in the case of the 2000 Bahamas mass stranding event, the resident population of beaked whales, which was the subject of years of on-going research including the photo-identification of individuals, either abandoned the area, or were mostly killed (Balcomb and Claridge 2001)? That this population-level effect occurred after only one sonar event is extremely troubling. What might be the effect of on-going sonar events? Please address these issues directly.	According to Claridge (2006), small vessel surveys were conducted off the Bahamas from 1997 through 2002. It was determined that Cuvier's beaked whale sighting rates declined between 1998 and 2001, with no sightings for a 20-month period (May 2000 – February 2002). It is important to note that the sighting rate was in a declining pattern prior to the 2000 event. In addition, during this same time period, there was an increase in sightings for sperm whales. It is likely that sperm whales, which are also deep divers, were competing with beaked whales for similar food sources, which led beaked whales to travel to other areas for food.
1306	A-028	E	Again, if these whales sustained injuries at these received levels, then clearly, the DEIS noise threshold of 215 dB for physical injury and Level A harassment is not justified. Please address this issue.	The criteria for Temporary Threshold Shift and Permanent Threshold Shift are supported by the National Marine Fisheries Service and are based on the best available science.
1308	A-028	E	Madeira, 2000. The DEIS here state "Three Cuvier's beaked whales stranded on two islands in the Madeira Archipelago, Portugal, from May 10-14, 2000 (Cox et al., 2006)." The DEIS should have mentioned the fact that a fourth whale was found floating dead by fisherman, but this whale was not brought to the shore, and no necropsy was performed on it. Again, this points to the fact that not all whales who are injured or killed as a result of exposure to naval sonars wind up on the beach. Injuries and mortalities can, and do occur at sea. In all likelihood, this is where the majority of impacts occur, and as a result, go unobserved and unrecorded. Please address this issue in a direct manner.	As stated in the first paragraph of Appendix E, "When a live or dead marine mammal swims or floats onto shore and becomes 'beached' or incapable of returning to sea, the event is termed a 'stranding.'"

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1311	A-028	E	(Haro Straight 2003 Stranding Event) What is it that has led the authors of the DEIS to assume that marine mammals who have been exposed to MFA sonar would only strand immediately, or in less than 36 hours? Why does the DEIS assume that marine mammals cannot strand after a period of 36 hours following exposure to Navy sonar?…it is unreasonable to assume that marine mammals need to have stranded within 36 hours in order to consider the stranding associated with exposure to sonar. Please discuss this issue.	There is no evidence to suggest that marine mammals have stranded long after exposure to sonar or at great distances from the source.
1312	A-028	E	(Haro Straight 2003 Stranding Event) Regarding the DEIS assumption that stranded animals need to be spatially co-located to have their stranding be associated with mid-frequency sonar; why has the DEIS assumed that animals still living but injured, following exposure to sonar, cannot swim to other locations and/or be carried by ocean currents to other locations before stranding, or before dying at sea and then stranding?	Where sonar has been a causal factor of stranding, the marine mammals and sonar sources were in close proximity and strandings occurred within 24 hours of exposure. There is no evidence to suggest that marine mammals have stranded long after exposure to sonar or at great distances from the source.
1313	A-028	E	(Haro Straight 2003 Stranding Event) Might not this enable animals impacted by the same exposure to end up in different locations? Given the estimated mean exposure level of less than 140 dB for the whales involved in the Bahamas incident, and the great distances that sound at this level can travel through the water, then clearly animals can already be spatially separated by substantial distances when they experience that exposure, and may then travel in opposite directions before stranding, perhaps days or weeks later. Therefore, they would spatially co-located even though impacted by the same sonar use. Please address the potential for this to occur. If the authors of the DEIS have concluded that this is not possible, please explain how this conclusion was reached.	Where sonar has been a causal factor of stranding, the marine mammals and sonar sources were in close proximity and strandings occurred within 24 hours of exposure. There is no evidence to suggest that marine mammals have stranded long after exposure to sonar or at great distances from the source.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1315	A-028	E	(Haro Straight 2003 Stranding Event) It is possible that observers reported seeing different types of behavior because they did. Why has the DEIS assumed that the J-Pod orcas would only react with one form of behavior to an exposure of sonar? Why is it so hard to imagine the whales reacting in a variety of ways? Is it not possible for reactions to vary form individual to individual? Could not behavioral reactions also vary over a period of time, if for instance, whales tried different behaviors in an attempt to minimize the threat of the exposure? Has the DEIS somehow concluded that whales can only react in one particular manner if they are to be considered to be reacting to a sonar exposure? If so, what is this conclusion based upon?	Potential effects to marine mammals are based on the best data available, as discussed in Section 3.2. These effects are summarized in Section 4.4.
1316	A-028	E	(Hanalei Bay 2004 Stranding Event) It would have been helpful to the reader if the DEIS had indicated that the Navy initially denied that sonar was related to the whale's behavior, and that they had not used the sonar before the whales entered the bay. Later, the story changed when the Navy said that it had used its sonar, but only starting an hour after the whales had already entered the bay. Later on, the story changed again when the Navy finally admitted that several Navy ships had in fact been using their sonar during the day and night previous to the whales entering the bay, and that a Japanese ship participating in the exercises had used its sonar around 15 minutes prior to the whales entering the bay. Why did the Navy's story change two times before admitting to the fact that its sonar had been in use before the whales entered the bay?	This event is analyzed in detail by a separate document, which was also used as a source of information for this DEIS. Refer to National Oceanic and Atmospheric Administration (NOAA), 2006b, NOAA Fisheries Service Releases Final Report on 2004 Stranding of Melon-headed Whales in Hawaii, NOAA News, 27 April 2006..
1317	A-028	E	(Hanalei Bay 2004 Stranding Event) Regarding specific traumas, why does the DEIS assume that whales have to be injured, and only show specific symptoms of that injury, in order that they be considered to have been impacted by their exposure to the sonar?	Short of close proximity of a sound source in a stranding event or evidence of acoustic injury, there is no scientific way to show that sonar caused a stranding. As stated in Appendix E, marine mammals may strand for a number of reasons.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1318	A-028	E	(Hanalei Bay 2004 Stranding Event) Regarding species composition, does the DEIS assume that for marine mammals to be impacted by exposure to sonar, there has to be more than one species, or that one of the species must be a beaked whale species, or that melon headed-whales are not susceptible to being impacted by sonar?	The EIS/OEIS did not implicitly or explicitly make that assumption.
1319	A-028	E	(Hanalei Bay 2004 Stranding Event) While no conclusive link has been made between the Navy USWEX exercises in April of 2007, and the strandings of one pygmy sperm whale on the island of Lanai, and another pygmy sperm whale on Maui, it is not accurate to state that no strandings have been associated with ASW training in the Hawaiian Islands. Has the DEIS concluded there is no link between the USWEX exercises and these strandings? If so, please explain the basis for this conclusion.	The April 2007 event is still being investigated and has not been attributed to any Navy activity.
1321	A-028	E	(Japan, 1980-2004) The DEIS state that "none of the strandings occurred during or within weeks after any DON exercises." Would these DON exercises include activities such as Active Sonar Maintenance or any other use of the sonar?	DON exercises in this context would consist of any use of active sonar by a Navy unit.
1325	A-028	E	(North Carolina 2005 Stranding Event) The DEIS inclusion of the weather map of regional radar imagery for the East Coast (including North Carolina) on July 14 (Figure E-4) while colorful, does nothing to make more plausible the DEIS suggestion that this weather event was a more likely factor in the stranding than was the sonar.	The weather map is included as it illustrates the severe weather event present during this stranding event. This weather caused flooding, high winds, and several tornadoes. Numerous studies have correlated marine mammal strandings to severe weather events.

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1593	A-028	E	Where in the DEIS is the discussion of the mass stranding of nine Cuvier's beaked whales which took place on the coast of Greece, the year after the 1996 mass stranding? This mass stranding event also coincided with naval activity, and should have been included in the discussion. Where in the DEIS discussion of the other mass stranding events that have occurred in the Canary Islands which have been also linked to naval operations? Where is the discussion of the 1985 mass stranding involving 10-12 Cuvier's and Gervais' beaked whales? This event coincided with naval operations (Simmonds and Lopez-Jurado 1991; Martin et al., 2004) Why was it not discussed here? Where is the discussion of the 1988 mass stranding of 2 Blainville's, over 15 Cuvier's, and 3 Gervais' beaked whales, a northern bottlenose dolphin whale, and 2 pygmy sperm whales? This stranding coincided with the naval exercise FLOTA 88 (Simmonds and Lopez-Jurado, 1991; Martin et al., 2004).Where is the discussion of the 1989 mass stranding of 2 Blainville's, over 15 Cuvier's, and 3 Gervais' beaked whales? This stranding also coincided with naval exercises known as CANAREX 89 (Simmonds and Lopez-Jurado 1991; Martin et al., 2004).Regarding the 1985, 1988, and 1989 mass stranding events above; it is known that naval ships with MFA sonar were involved in these naval operations. All of these mass strandings should have been discussed in this DEIS. Where is the discussion of the 1998 stranding of a beaked whale at Vieques at the same time naval exercises were starting off the coast. The 1999 stranding of four beaked whales in the U.S. Virgin Islands should have been discussed as well. The Navy COMPTUEX exercises were beginning offshore when the stranding occurred. A wildlife official from the Virgin islands reported hearing "loud naval sonar." The DEIS should have considered the unusual mortality event which took place along the coast of Taiwan in 2005. This event involved 23 animals, including 13 dwarf sperm whales, 2 pygmy sperm whales, 2 Longman's beaked whales, 2 Blainville's beaked whales, 2 striped dolphins, a pantropical spotted dolphin, and a short finned pilot whale. Chinese naval exercises were taking place near Taiwan involving ASW components.	Stranding events were included in the DEIS because sonar had been implicated as the cause of the stranding event. Other stranding events were not included because it has not be explicitly determined that sonar was a contributory factor.
1327	A-028	E	…prior to the deployment of high-intensity mid-range sonars in the 1960's, mass strandings of Cuvier's beaked whales were extremely rare events (Friedman 1989) The ever- growing number of these previously rare stranding events should have been included in this discussion. Why has it been neglected?	Cuvier's beaked whales (*Ziphius cavirostris*) are the most frequently reported beaked whale to strand, with at least 19 stranding events from 1804 through 2000 (DoC and DON, 2001; Smithsonian Institution, 2000).

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1328	A-028	E	One thing that is missing from this section of the DEIS, and from the DEIS as a whole, is an acknowledgment of the fact that while some whales beach themselves, or are washed ashore dead following exposure to naval sonar, others don't. It is very likely that a great many whales (and other marine mammals) are being injured and killed by naval sonars, but their injuries and deaths are not discovered, and therefore will not be recorded.	There has been no scientific evidence that sonar can cause direct mortality.
883	G-010	E	Exposure to mid-frequency sonar has been implicated in numerous toothed whale mortality events.	Please refer to Appendix E for a copy of the Cetacean Stranding Report.
699	I-004	E	Following US Navy Atlantic Fleet Active Sonar Training activities in January 2005 36 whales were stranded on the beaches of North Carolina's Outer Banks. In March 2007, again subsequent to sonar activities, a Blainsville beaked whale was stranded with injury to both ears evidenced by bleeding.	Active sonar was not used within a minimum of 150 NM and 2 weeks prior to the March 2007 stranding event. Therefore, the local stranding network investigators found no causal relationship to sonar. Refer to Cetacean Stranding Analysis in Appendix E for information related to the January 2005 event.
287	I-006	E	we're getting more and more beaching of sea mammals and it seems to keep dropping out, almost like if you graph it out. It's almost like equates, you know, in a highly - well, scratch that. It equates very well to the testing that you're doing and on a time basis, like within weeks of testing your sonar, you get more beaching of sea mammals, and I think that needs more input and more research. Thank you very much.	Please reference Appendix E, Cetacean Stranding Report, for additional information.
682	I-007	E	It is a known fact that after Navy Sonar Training off the North Carolina coast, strandings and deaths have occurred of many marine mammals with bleeding ears which indicates ruptured eardrums. The main cause of ruptured eardrums is sonar.	Please refer to Appendix E for each respective events description, findings, and conclusions.
583	I-016	E	Naval high-intensity MFA sonars have now been implicated in the mass strandings and deaths of whales, dolphins, porpoises and numerous incidents around the world stretching back for five decades. There is no compelling evidence indicating that marine mammals are not the sonar's only victims.	As stated in Appendix E, there are five stranding events that have been putatively linked to potential sonar operations. Please refer to Appendix E for additional information.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
1128	I-036	E	*All comments from this commenter are specific to USWTR. The comments were reviewed and the most relevant ones pulled out.* The scientific record clearly supports a link between naval mid-frequency sonar and the least beaked whale strandings (although other species have been involved) (see e.g. Simmonds and Lopez-Jundo 1991; IWC/SC 2004). To ignore this growing consensus in the scientific community is arbitrary and capricious and thus violates the law.	Refer to Sections 3.6.3, 4.4.14, 6.1.2, and Appendix E for additional information.
1138	I-036	E	Also many people, including scientists, think that the AFAST training WAS responsible for the unusual stranding of 36 whales of three different species on North Carolina's Outer Banks.	As stated in Appendix E, there are five stranding events that have been putatively linked to potential sonar operations. Please refer to Appendix E for additional information.
242	I-040	E	The Scientific Committee of the International Whaling Commission has found that the evidence linking military sonar to whale strandings is every convincing, and appears overwhelming.€	As stated in Appendix E, there are five stranding events that have been putatively linked to potential sonar operations. Please refer to Appendix E for additional information.
244	I-040	E	Sonar-related strandings have occurred in the Canary Islands, Greece, Bahamas, Madeira, Washington State, Hawaii, North Carolina, and Southern Spain, amongst other locations. The 2000 Bahamas incident involved 16 whales of three species stranded along 150 miles of shoreline as naval ships used MFA sonar in the area.	All of the listed stranding events are discussed in Appendix E. Please refer to Appendix E for each respective events description, findings, and conclusions.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
245	I-040	E	The Navy has acknowledged that its sonar use resulted in the deaths of the whales. Similarly, in the report of the Hanalei Bay, Hawaii live-stranding of up to 200 melon headed whales, the DoC said the Navy's MFA sonar use was a plausible, if not likely contributing factor in the event, which resulted in the death of a calf.	As stated in Appendix E, the conclusion for this stranding event was based primarily on the basis that there was an absence of any other compelling explanation. At the time of the Hawaii stranding, there was also a simultaneous event in Rota. In addition, the Hawaii incident does not share the characteristics observed with other mass strandings of whales coincident with sonar activity. Please refer to Appendix E for additional information.
253	I-040	E	The source level of the Navy's sonar is 235 decibels-about a billion times more intense than the sonar that caused whales to strand and die in the Bahamas incident.	The source level of the Navy's sonar has not changed. As stated in Appendix E, during the Bahamas marine mammal mass stranding, the average source levels of pings varied from 223 dB (AN/SQS-56) to 235 dB (AN/SQS-53C). However, the Bahamas stranding event had unique contributory factors, such as unusual underwater bathymetry, intensive use of multiple sonar units, limited egress, and the presence of beaked whales. Refer to Appendix E for additional details.
521	I-043	E	Mid-frequency sonar exercises have been linked with the mass strandings of whales in the Canary Islands, Bahamas and Japan. In fact, the International Whaling Commission states that overwhelming scientific evidence supports the claim that military sonar provokes mass strandings of whales.	All of the listed stranding events are discussed in Appendix E. Please refer to Appendix E for each respective events description, findings, and conclusions.
689	I-069	E	Now for some questions regarding the use of sonar - and I expect these to be answered: 1.) How can you say no harm will be done to marine life and the ocean when 36 or 37 whales were stranded on the Outer Banks of North Carolina in January of 2005 after the Atlantic Fleet had been doing active sonar training nearby? Was this even mentioned in the current DEIS?	As stated in Appendix E, the National Marine Fisheries Service was unable to determine any causative role that sonar may have played in the stranding event. Refer to Cetacean Stranding Analysis in Appendix E for additional information.

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690	I-069	E	2.) Did not this also occur to a Blainsville beaked whale on the Outer Banks in March 2007 under similar circumstances?	Active sonar was not used within a minimum of 150 NM and 2 weeks prior to the March 2007 stranding event. Therefore, the local stranding network investigators found no causal relationship to sonar.
704	I-069	E	9.) Wasn't active sonar training associated with stranded whales in the Canary Islands in 2002 and also in the Bahamas in 2007?	As stated in Appendix E, there are five stranding events that have been putatively linked to potential sonar operations. Please refer to Appendix E for additional information.
705	I-069	E	10.) Has a cause been established for the stranding of marine mammals near Virginia Beach and Cape Hatteras during the last several months of 2007? Has it ever been established that sonar use will not harm marine life more than 200 nautical miles from it?	The causes for these events have not yet been determined. There is currently no proof that sonar use will harm marine life more than 200 nautical miles from it.
629	I-070	E	The Scientific Committee of the International Whaling Commission has found that the evidence linking military sonar to whale strandings is "very convincing, and appears overwhelming."	As stated in Appendix E, there are five stranding events that have been putatively linked to potential sonar operations. Please refer to Appendix E for additional information.
630	I-070	E	Sonar-related strandings have occurred in the Canary Islands, Greece, Bahamas, Madeira, Washington State, Hawaii, North Carolina, and Southern Spain, amongst other locations. The 2000 Bahamas incident involved 16 whales of three species stranded along 150 miles of shoreline as naval ships used MFA sonar in the area.	All of the listed stranding events are discussed in Appendix E. Please refer to Appendix E for each respective events description, findings, and conclusions.
631	I-070	E	The Navy has acknowledged that its sonar use resulted in the deaths of the whales. Similarly, in the report of the Hanalei Bay, Hawaii live-stranding of up to 200 melon headed whales, the DoC said the Navy's MFA sonar use was a "plausible, if not likely contributing factor" in the event, which resulted in the death of a calf.	As stated in Appendix E, the conclusion for this stranding event was based primarily on the basis that there was an absence of any other compelling explanation. At the time of the Hawaii stranding, there was also a simultaneous event in Rota. In addition, the Hawaii incident does not share the characteristics observed with other mass strandings of whales coincident with sonar activity. Please refer to Appendix E for additional information.

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636	I-070	E	The Navy admits that its MFA sonar levels, calculated using the Navy's own questionable numbers, will cause an estimated 120 animals to become deaf-ad death sentence since marine mammals use sound for essential life functions. Further, it expects over 20,000 animals to suffer temporary deafness (which can also lead to death) and tens of thousands to be behaviorally impacted.	Implementation of mitigation measures reduce the likelihood of exposure resulting in PTS or TTS. The analysis presented in the EIS does not take into account the reduction in exposures resulting from implementation of these measures.
639	I-070	E	Inadequate precautions: The source level of the Navy's sonar is 235 decibels-about a billion times more intense than the sonar that caused whales to strand and die in the Bahamas incident.	The source level of the Navy's sonar has not changed. As stated in Appendix E, during the Bahamas marine mammal mass stranding, the average source levels of pings varied from 223 dB (AN/SQS-56) to 235 dB (AN/SQS-53C). However, the Bahamas stranding event had unique contributory factors, such as unusual underwater bathymetry, intensive use of multiple sonar units, limited egress, and the presence of beaked whales. Refer to Appendix E for additional details.
500	I-075	E	The exact extent of likely lethal effects of the proposed exercises cannot be fully known in advance, of course, but it is already well established that MFA sonar use has had deadly consequences for marine life in many other parts of the world. Sonar-related strandings are just one indicator. Marine mammal corpses washing ashore is another, but there is no reason to suppose that all or even most sonar-related fatalities end up on beaches.	Neither the National Marine Fisheries Service nor the Navy anticipates a marine mammal stranding or mortality as a result of active sonar activities. Please refer to Appendix E for the cetacean stranding report.
834	I-077	E	In the year 2000, the sonar trial in (the) Bahamas caused 17 whales to be beached and 7 to die from hemorrhaging around the ears, according to NOAA. The Navy claims in their brochure on Potential Effects on Marine Life that from 1996-2006, they could only correlate 5 mammal strandings to sonar (out of 51 stranded and 37 mortalities).	Refer to Appendix E for further information.

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3	I-111	E	In 2005, 34 whales beached themselves off the Outer Banks, and the Navy knows full well it was because of the sonar exercises by the Aircraft Carrier Battle Group U.S.S. Teddy Roosevelt that were occurring in that area at the same time.	As stated in Appendix E, the National Marine Fisheries Service was unable to determine any causative role that sonar may have played in the stranding event. The presence of a severe weather event passing through North Carolina is a possible, if not likely, contributing factor to the stranding event.
222	I-137	E	The Navy admits it expects 20,000 animals to suffer temporary deafness (which can lead to death) and tens of thousands to be behaviorally impacted. The source level of the sonar is 235 decibels - about a billion times more intense than the sonar that caused the whales to strand and die in the Bahamas.	The source level of the Navy's sonar has not changed. As stated in Appendix E, during the Bahamas marine mammal mass stranding, the average source levels of pings varied from 223 dB (AN/SQS-56) to 235 dB (AN/SQS-53C). However, the Bahamas stranding event had unique contributory factors, such as unusual underwater bathymetry, intensive use of multiple sonar units, limited egress, and the presence of beaked whales. Refer to Appendix E for additional details.
739	I-146	E	Mid-frequency systems have been implicated in numerous strandings of whales worldwide. Many instances of strandings have been documented after Navy active sonar training e.g. March 2000 off Bahamas 4 different species of whales stranded on beaches, bleeding internally around their brains and ears; 2004 - 200 whales died off Hawaii, etc.	The AFAST EIS/OEIS discusses marine mammal stranding events in Appendix E
371	I-154	E	I have recently become angrily aware that the Navy conducts training exercises out of its myriad installations dotted along the East Coast and Gulf of Mexico; some of these and similar exercises have resulted in mass strandings of marine mammals.	As stated in Appendix E, there are only five stranding events associated with potential naval operations. None of these events are located within the AFAST Study Area. For a description of these and other global stranding events, please refer to Appendix E.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
380	I-154	E	I have long been furiously aware of the highly dangerous, often deadly consequences to all marine life irresponsibly posed by many naval activities. It is a documented fact that such Naval exercises as MFA sonar are the cause of many marine animal strandings, and also injuries and deaths at sea.	As stated in Appendix E, there are only five stranding events associated with potential naval operations. None of these events are located within the AFAST Study Area. For a description of these and other global stranding events, please refer to Appendix E. Refer to Sections 4.4.11 through 4.4.13 for the results of the acoustic and nonacoustic effects analysis.
410	I-154	E	The Scientific Committee of the International Whaling Commission has found that the evidence linking military sonar to whale strandings is "very convincing, and appears overwhelming."	As stated in Appendix E, there are five stranding events that have been putatively linked to potential sonar operations. Please refer to Appendix E for additional information.
414	I-154	E	Sonar-related strandings have occurred in the Canary Islands, Greece, Bahamas, Madeira, Washington State, Hawaii, North Carolina, and Southern Spain, amongst other locations. The 2000 Bahamas incident involved 16 whales of three species stranded along 150 miles of shoreline as naval ships used MFA sonar in the area.	All of the listed stranding events are discussed in Sections E.7 and E. 8 of Appendix E. Please refer to Appendix E for each respective events description, findings, and conclusions.
415	I-154	E	The Navy has acknowledged that its sonar use resulted in the deaths of the whales. Similarly, in the report of the Hanalei Bay, Hawaii live-stranding of up to 200 melon headed whales, the DoC said the Navy's MFA sonar use was a "plausible, if not likely contributing factor" in the event, which resulted in the death of a calf.	As stated in Appendix E, the conclusion for this stranding event was based primarily on the basis that there was an absence of any other compelling explanation. At the time of the Hawaii stranding, there was also a simultaneous event in Rota. In addition, the Hawaii incident does not share the characteristics observed with other mass strandings of whales coincident with sonar activity. Please refer to Appendix E for additional information.

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427	I-154	E	The source level of the Navy's sonar is 235 decibels-about a billion times more intense than the sonar that caused whales to strand and die in the Bahamas incident.	The source level of the Navy's sonar has not changed. As stated in Appendix E, during the Bahamas marine mammal mass stranding, the average source levels of pings varied from 223 dB (AN/SQS-56) to 235 dB (AN/SQS-53C). However, the Bahamas stranding event had unique contributory factors, such as unusual underwater bathymetry, intensive use of multiple sonar units, limited egress, and the presence of beaked whales. Refer to Appendix E for additional details.
853	I-158	E	MFA sonar has been closely linked with numerous mass-stranding events around the globe.	Please refer to Appendix E for the cetacean stranding report.
512	I-158	E	Navy ships, submarines, and aircraft will be deploying high-intensity mid-frequency active (MFA) sonar and other intense acoustic devices for anti submarine warfare and mine warfare training. I am sure that you are aware that Naval high-intensity MFA sonars have now been implicated in the mass strandings and deaths of whales, dolphins and porpoises in numerous incidents around the world stretching back for five decades. There is also compelling evidence indicating that marine mammals are not the sonars only victims. The increasing usage of sonar, along with other human generated ocean noise such as shipping, and oil exploration and development, has drastically raised noise levels in the oceans, where many fish and other marine species rely on sound and hearing ability for survival.	Neither the National Marine Fisheries Service nor the Navy anticipates a marine mammal stranding or mortality as a result of active sonar activities. Please refer to Appendix E for the cetacean stranding report. Refer to Chapter 6 cumulative effects discussions on ocean noise.

Comment Number	Commenter Number	Section Number	Comment	Comment Response
485	I-159	E	Naval high-intensity MFA sonars have now been implicated in the mass strandings and deaths of whales, dolphins and porpoises in numerous incidents around the world stretching back for five decades. There is also compelling evidence indicating that marine mammals are not the sonars only victims. The increasing usage of sonar, along with other human generated ocean noise such as shipping, and oil exploration and development, has drastically raised noise levels in the oceans, where many fish and other marine species rely on sound and hearing ability for survival.	Please refer to Appendix E for the cetacean stranding report. Refer to Chapter 6 cumulative effects discussions on ocean noise.
1387	I-160	E	The March 2000 Bahamas incident, the July 2004 Yokosuka incident are just two examples of dreadful destruction of these innocent animals.	Refer to Appendix E for a discussion of stranding events that the Navy acknowledges may have been linked to sonar operations.
1541	I-024	E	…I believe that this testing is having an affect on the sea life, especially mammal sea life and it's--we're getting more and more beaching of sea mammals and it seems to keep dropping out, almost like if you graph it out.	Please refer to Appendix E for the Cetacean Stranding Report.
967	G-017	ES	On page ES-1, line 27 the word "forth" should be substituted for "fourth."	Text has been corrected.
986	G-017	G	The introduction to basic principles of physical acoustics in Appendix G is a useful adjunct to the DEIS. It could usefully be expanded by including more information on ocean acoustic principles that are relevant to the risk calculations, such as factors affecting seasonal average propagation statistics and factors producing strong deviations from seasonal averages, such as internal tides, fronts, and surface ducts or mixing.	There are number of publicly available sources of underwater acoustics, see references in Appendix G (G.6).
1375	A-010	H	We also urge the Navy to make available to the public the data and modeling on which its analysis is based.	Refer to the acoustic modeling technical report incorporated as Appendix H.

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902	G-017	H	However, the use of those risk criteria to estimate exposures is not adequately explained. Specifically, the characteristics and extent of the 36 "acoustic provinces" used to determine transmission loss in a given area are not shown or described. The DEIS and its appendices state that these provinces are irregularly shaped, but they do not provide a graphic or set of descriptive parameters that would allow one to assess the overlap of acoustic provinces with marine mammal distribution data, as indicated in Figure D-7, that produces the sometimes surprising results in Table ES-3.	Refer to map in NUWC modeling technical report in Appendix H.
988	G-017	H	In Appendix H, the complex and difficult process of exposure calculation is explained in some detail, but even for members of our Commission and staff familiar with this process, there are areas where additional explanation, illustrative figures, or other information would have helped. For example, a figure illustrating how the disc-shaped zones of exposure were constructed from eigenray calculations at 45-degree intervals would have been helpful, and a figure illustrating how the depth-dependent exposures were compressed into a single depth-independent area value would have also been useful. The latter illustration seems especially important as integration across the 2-meter depth intervals seems to have differed for shallow and deep water and for species with known vertical "habitat" information (dive data) versus those for which there are no data about maximum or "usual" dive depths.	Refer to revised Appendix H.
991	G-017	H	For impulse sources such the SSQ-110 sonobuoy or gunnery exercises, the stated assumption on page H-12, lines 4-7, is that these are single discrete events and that thee is no need to accumulate recurrent exposures, but it seems possible that individual animals could receive exposures to multiple sonobuoy pings or multiple gunnery discharges within a relatively confined space and period of time. More explanations seem warranted to clarity this point.	There are no gunnery events associated with the AFAST analysis. Please refer to revised Section 4.4.7 and Appendix H.

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472	I-013	H	3. If future training needs do in fact dictate a requirement for increased training in environmentally sensitive areas, then the appropriate course is to define the increased training levels and repeat the EIS/OEIS, including updating the acoustic effects analysis to account for the new, now defined, training needs. The rationale for selecting the no action alternative states that future needs can change quickly. It is understood that repeating the EIS/OEIS may be a lengthy process, however in case of a Yes national security emergency there are provisions for exemptions to the environmental regulations. (Again, it is noted the current EIS/OEIS states that all of the alternatives considered, including alternative 3, meet the screening criteria that were established to determine operational needs.)	This estimate is based on the best knowledge about Navy training. Navy training exercises occur over a large area and analysis was based on where exercises typically occur. If future training was substantially increased or actual effects are substantially different than described, the Navy would review its environmental analysis and employ adaptive management. Any future changes would also be addressed in the MMPA renewal process.
929	G-017	H	The models used in Appendices D and H and the data to run them suffer from the same problem; it is not possible to follow the model calculations and reconcile outcomes with input.	Additional information on the modeling will be available with the release of the newest technical report, Appendix H.
933	G-017	H	The description in Appendix H of how exposures were estimated describes a 1-km radius disc around each ping event that clearly does not accommodate the subsequently added analysis for dose-response. The analysis of dose-response involves a much larger zone of influence that is not uniform within its bounds, but instead involves (and must account for) decreasing exposure with increasing range from the source.	Please refer to revised text in Appendix H.
936	G-017	H	Page H-6, line 8, refers to a set of figures (Figures 4.3-9) illustrating CASS/GRAB propagation loss calculations that might have offered some insight into how the exposure fields were generated. However, those figures seem to have been eliminated from the DEIS.	Figure reference was deleted.

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946	G-017	H	The Marine Mammal Commission also recommends that the Navy better explain and illustrate the exposure estimation process in Appendix H to enable the reader to understand, if not verify, the process by which exposure numbers were derived. Doing so is necessary to reconcile the exposure estimates in Table ES-3 with Navy sound production patterns under the four alternatives and with animal distribution and density.	Please refer to Appendix H.
465	I-013	H	Uncertainties associated with the data and models used to develop the estimates of marine mammal takes.	Data and models used to develop the estimates of marine mammals takes was based on best available scientific data.
469	I-013	H	The models for the acoustic effects analyses take into account the estimated calendar of the training exercises and their location within the OPAREAS (page H-13, lines 4-8). Therefore, the acoustic effects estimates are based on some assumption of where the training exercises will be located.	Correct. Please refer to Chapter 2, Tables 2-2 and 2-3.
363	A-001	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
89	A-003	Not Applicable	We do not want permanent Sonar ranges anywhere off the coast of South Carolina, especially off the coast of Charleston. The authors of the Constitution must be rolling in their graves!	The USWTR is a separate proposal being analyzed in a separate environmental planning document. A USWTR will not be construction under the AFAST proposed action.
274	A-009	Not Applicable	In this particular situation I would hope that the operative action of the Navy will be commensurate with the ninth circuit court's opinion that it has just rendered in southern California, a sanctuary in Hawaii. The rules and regs are pretty clear now through that court decision, and I would hope that the Navy will follow that and comply with that so that we can have the same protections here on the East Coast.	This case is ongoing and does not effect the AFAST EIS/OEIS.

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1025	A-010	Not Applicable	In nearly every respect, the Navy's DEIS fails to meet the high standards of rigor and objectivity established under NEPA.	The overall effects to the population from this and other actions, to be addressed as part of the LOA process, and NMFS final rule. The EIS/OEIS is prepared by the Department of the Navy in compliance with the National Environmental Policy Act (NEPA), the Council no Environmental Quality, the Department of the Navy procedures for implementing NEPA, and Executive Order 12114.
234	A-013	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.

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808	A-015	Not applicable	NCCF has serious concerns about the AFAST DEIS as it, like the earlier DEIS for the USWTR, is inadequate in several respects. First, there are currently three Navy environmental assessments going on for sonar and explosives use (among other activities) in the same geographic region off the North Carolina coast: The USWTR, the AFAST and the assessment of the Cherry Point Operations Area or OPAREA. Treating these activities as if they were isolated provides an incorrect picture of Navy activities in the region. They all will take place in the same area, and as such, the Navy must address their total cumulative impacts on marine like, the ocean environment and the affected local communities, as is required in an environmental impact statement that fulfills the intent of the National Environmental Policy Act.	Courts have rejected similar NEPA segmentation challenges, upholding federal agencies' decisions to organize and plan their actions in a reasonable or rational manner. Segmentation allows an agency to avoid the NEPA requirement that an EIS be prepared for all major federal actions with significant environmental impacts by dividing an overall plan into component parts, each involving action with less significant environmental effects. Here, the AFAST EIS/OEIS document is not seeking to avoid the greater scrutiny and procedural requirements of an EIS, where an EIS/OEIS is being prepared and provides an in-depth analysis of the environmental consequences which may result from the Navy's use of active sonar along the east coast and in the Gulf of Mexico. The Tactical Training Theater Assessment and Planning (TAP) documents concerning the Virginia Capes, Charleston/ Jacksonville, and Navy Cherry Point Range Complexes and the Undersea Warfare Training Range (USWTR) document are all also EISs/OEISs. While the AFAST EIS/OEIS addresses the Navy's use of active sonar as described in the AFAST proposed action, other activities not similar to the Navy's use of sonar as described by the proposed action are addressed in separate documents (e.g., NAVSEA new ship construction sea-trials Overseas Environmental Assessment [OEA]). Agencies are permitted to address projects separately if they may logically be viewed in isolation; the question is whether the projects have independent

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				utility or logical termini. Under the regulatory guidelines, a project that bears some relationship to a larger undertaking can nevertheless be segregated as long as the project: (1) is of sufficient length to address environmental matters of a broad scope; (2) has independent utility or independent significance; and (3) will not restrict consideration of alternatives for other reasonably foreseeable actions. Courts have found that even a modest showing of independent utility is sufficient to rebut a claim of segmentation. The USWTR is addressed in a separate document because it has independent utility; USWTR concerns the construction and installation of an underwater range for MFAS ASW training, unlike the ASW training discussed in AFAST and the other types of naval training that takes place in the TAP documents. Furthermore, the chapters on cumulative effects in the USWTR EIS/OEIS and AFAST EIS/OEIS will capture the cumulative impacts of all past, present, and reasonably foreseeable direct and indirect effects from mid-frequency active sonar to the marine environment. With regard to the TAP documents concerning the Virginia Capes, Charleston/ Jacksonville, and Navy Cherry Point Range Complexes, the naval training events described in each document are geographically driven where not all training events can occur in each range due to unique training requirements (e.g., use of live ordnance by Navy tactical jets operating off a carrier vice inert at a nearby land range

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				can only be accomplished in the JAX OPAREA). In contrast, a primary factor for AFAST as a stand alone document is the fact that ASW for major exercises takes place over several OPAREAs. Also, ASW training is not dependent on the other types of naval training events. Moreover, the Navy is considering the cumulative impacts of all past, present, and reasonably foreseeable direct and indirect effects of the AFAST and TAP actions in the cumulative effects chapters in each of the documents.
1097	A-016	Not Applicable	an after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.

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1196	A-019	Not applicable	*The following comment was taken from an attached letter dated January 30, 2006 entitled Draft Overseas Environmental Impact Statement/Environmental Impact Statement for the Proposed Undersea Warfare Training Range. Since this letter specifically addresses USWTR, a proposed action analyzed in a separate environmental planning document, relevant comments are included as comments received on the AFAST EIS/OEIS.* It is our understanding that the bombing ranges the military currently operates in eastern North Carolina have posed environmental and safety threats, as unexploded ordnance is left behind in fishing and popular recreation areas.	This comment is outside the scope of the AFAST EIS/OEIS. The AFAST EIS/OEIS does not propose the use of any bombs.
42	A-020	Not Applicable	Most scientists that will review your EIS will find flaws. There are specific areas that you've continued to ignore. There is a boilerplate aspect to some of the portions that were written. I don't know quite why. It could be modified by now.	As discussed in Section 3.2, the best available scientific data was used in the assessment of potential effects.
646	A-021	Not Applicable	There are many people who CARE about the Welfare of Marine Life! Marine life on the Eastern Seaboard may be at risk. On the heels of several successful lawsuits challenging the US Navy's use of mid-frequency active (MFA) sonar because of its harmful effects on marine animals (They have to listen to sounds they do not want to hear and there is nor escape. Imagine listening to music you hate continuously!), plans are still underway to formalize and increase training exercises into the massive Atlantic Fleet Active Sonar Training (AFAST) Study Area.	As stated on Page 1-1, "The activities involving active sonar described in this EIS/OEIS are not new and do not involve significant changes in systems, tempo, or intensity from past activities."
654	A-021	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.

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534	A-022	Not Applicable	PenderWatch and Conservancy, together with many people here, have been very involved in reviewing and challenging plans for the offshore sonar training range, located just offshore here in Onslow Bight. In response to a Freedom of Information Act request, the Navy posted 866 comment letters received in response to that Draft Environmental Impact Statement. We know that additional comment letters were submitted, but the Navy chose to post 866 of those letters. We have read every one of those letters and report to you that 95 percent of the letters expressed either direct opposition to the plans or expressed very strong concerns about the lack of thoroughness of that Draft Environmental Impact Statement.	The environmental effects associated with the proposed Undersea Warfare Training Range (USWTR) are discussed in a separate environmental planning document. Please refer to the USWTR website for updates to this project.
442	A-022	Not Applicable	Please consider my attached letter of January 18, 2006 on the USWTR DEIS as a comment letter on this subject DEIS.	All applicable comments will be categorized.
445	A-022	Not Applicable	I'm writing to comment on the subject EIS. In 2004 the State of North Carolina adopted the Coastal Habitat Protection Plan (CHPP). This is a comprehensive strategic plan with goals of protecting our entire coastal habitat. It was developed after several years of extensive work by a task force of our Department of Environment and Natural Resources (DENR). There was active participation in the input and draft comment stages by numerous citizens and citizen-based groups. I was active in those processes. All relevant state agencies and commissions reviewed the strategic and all have committed to a full and successful implementation. DENR is responsible for the implementation and monitoring compliance with, and success of, CHPP. Now that CHPP has been fully adopted, everything that is done concerning our coast is required to be in compliance with CHPP. This includes actions by individuals, businesses, state agencies and our state legislature.' The subject EIS does not even mention CHPP. I respectfully request that when the EIS is reissued as a second draft that the Navy commits to following the letter and spirit of CHPP in the sonar range matter just as everyone else who lives or does business in North Carolina is required to do.	The CHPP only applies to the coastal zone off the state of NC, does not directly apply to federal agencies. It is up to the state agencies to determine the applicability of the CHPP to a federal agency action. The Navy has determined, based upon the preferred alternative, that there is no impact to the NC coastal zone. Negative consistency determination will be followed.

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1010	A-023	Not applicable	Are all exercises being reported (documenting ship positions, sonar use, and any other available information) publicly, and at no charge?	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
458	A-026	Not Applicable	Thank you for the opportunity to comment on this important issue. We trust that the Navy will take the proper actions to fulfill the public mandate of environmental and marine species protection by only conducting training exercises in areas after taking every reasonable measure to reduce the risk of harming species, including designating Areas of Increased Awareness.	In the process of this EIS, the Navy has worked with NMFS to develop appropriate mitigation measures applicable to the AFAST study area.
1452	A-028	Not applicable	The idea that effects cannot take place, or are unlikely to occur within brief time periods is an idea that is repeated throughout previous Navy sonar EISs and is repeated again and again in this DEIS. Please directly explain what it is that leads the Navy to assume that effects cannot take place within brief periods of time.	Because of the relatively brief sound transmissions associated with AFAST activities, where sound transmissions are occurring over a short period of time, the DEIS states that impacts could occur but would not be significant.
951	G-006	Not Applicable	Attachments: 1.) Stock status of important coastal fisheries in North Carolina, 2007; 2.) South Atlantic Fishery Management Council's EFH Designations; 3.) 2008 Governor's Cup Participating Tournaments.	Attachments received, applicable information will be incorporated into FEIS.

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759	G-011	Not Applicable	Bats: Bats are periodically seen aboard sea vessels and in and around coastal areas. There is very little information about how to if these species use areas off the coast for migration or foraging.	Bats may migrate along coastlines over water and can apparently be blown far out to sea at times. Exhausted bats flying far out to sea both individually and in flocks have been reported to alight on ships and be transported to unintended destinations. Most records are from the North Atlantic Ocean (Griffin, 1940). Additionally, bats can sometimes roost in or on ships in port and may be transported as a consequence. (Murphy and Nichols, 1913). Given the constant level of activity on US Navy ships while in port, it is unlikely that bats would intentionally roost on a naval vessel. The likelihood of occurrence of bats in an exercise area is also highly unlikely. Regardless, the sonar activities taking place in an exercise would have no effect on any bats that may occur in the exercise area, as bats do not dive underwater as do sea birds. For these reasons, the Proposed Action would have no significant impact on bats. Murphy RC, Nichols JC. Long Island flora and fauna. I. The bats (order Chiroptera). The Museum of the Brooklyn Institute of Arts and Sciences Science Bulletin 1913;2:1-15. Griffin DR. Migrations of New England bats. Bulletin of the Museum of Comparative Zoology at Harvard College 1940;76:217–46.

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764	G-011	Not Applicable	1(b). Agency Findings. The "General Comments" section above lists federal and state threatened and endangered species located within and adjacent to the areas of proposed sonar activity. See the above section for a discussion of these species. In addition, the Eastern Shore of Virginia has been designated a United Nations International Man and Biosphere Reserve, a U.S. Department of the Interior National Natural Landmark, a National Science Foundation Long Term Ecological Research Site and a Western Hemisphere International Shorebird Reserve Network site. These designations underscore the fact that the lower Delmarva Peninsula and adjacent waters still maintain significant biological diversity and have ecological value of global importance. With the exception of a few private conservation organizations and therefore are protected from future development in perpetuity.	AFAST activities would be occurring at sea and would not require or result in any land development.
19	G-022	Not applicable	-This is an acknowledgement only- State agencies must review certain proposals prior to receiving Mississippi Department of Archives and History reviews any proposals involving construction with cultural resources and historic preservation. Mississippi Department of Environmental Quality, Office of Pollution Control, review applications in accordance with the Federal Water Pollution Control Act. The Mississippi Department of Marine Resources reviews applications for consistency with the coastal program. If applications are for projects of local impact, they should be sent to the appropriate planning and development district as the same time. Please note that one of our requirements is the use of Standard Form 424. The Department of Finance and Administration prepares and distributes a weekly log listing pertinent information contained on this form. Our address is 1301 Woolfolk Bldg., Suite E - Jackson, MS 39201 and our phone number is (601) 359-6762.	A Coastal Zone Management Act Negative Determination will be submitted to the appropriate state agency.

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696	I-003	Not Applicable	It is unclear why the Navy is proposing a fixed sonar range (the USWTR) before it has answered the many questions and comments from the public about the AFAST. Both the spirit and the letter of NEPA and APA direct that all proposals for active sonar activities and projects off our state's coast be put forth in a single EIS for comprehensive public comment.	The AFAST EIS/OEIS is a comprehensive study of all Navy sonar training in the Atlantic Ocean and Gulf of Mexico. It does not address other future activities, such as USWTR, which are addressed in a separate EIS/OEIS.
703	I-004	Not Applicable	We would also like to know why the Navy is proposing a fixed sonar range (the USWTR) before it has answered the many questions from the public about the AFAST? It would make better sense for the public if all sonar proposals had been handled in one EIS.	The AFAST EIS/OEIS is a comprehensive study of all Navy sonar training in the Atlantic Ocean. It does not address other future activities, such as USWTR, which are covered by a separate EIS/OEIS. USWTR involves construction of a range and only focuses on a small portion of ASW training activities.
679	I-007	Not Applicable	The AFAST Draft EIS/OEIS is not a comprehensive study and is therefore flawed and inaccurate. A comprehensive study of the Navy's Sonar Training on the east coast must be made which would necessarily include the AFAST and the USWTR being studied together.	AFAST analyzes all training sonar operations on the East Coast and in the Gulf of Mexico. USWTR analyzes the installation of a fixed range and a concentration of some shallow water, mostly unit level, sonar operations in that area.
683	I-007	Not Applicable	The AFAST Draft EIS/OEIS is not comprehensive and does not have the evidence to support the study's conclusions and therefore the study needs to be scratched and a new study of Navy Sonar Training on the East Coast needs to be done. This study must include both the AFAST and the USWTR and more scientific research on the effects of sonar use.	AFAST analyzes all training sonar operations on the East Coast and in the Gulf of Mexico. USWTR analyzes the installation of a fixed range and a concentration of some shallow water, mostly unit level, sonar operations in that area.
801	I-007	Not Applicable	6. Why is the Navy pursuing a special permit from the National Marine Fisheries Service to "harass" endangered species and sea turtles rather than protecting endangered species and sea turtles?	The ESA requires that federal agencies, in consultation with the responsible wildlife agency (e.g., NMFS), ensure that proposed actions are not likely to jeopardize the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of a critical habitat (16 U.S.C. 1536 [a][2]). Regulations implementing the ESA expand the consultation requirement to include those

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				actions that “may affect” a listed species or adversely modify critical habitat.
12	I-008	Not applicable	'We all know sound travels much faster and further below the water than above it. Science indicates dolphins and whales know where each other are located by using their sonar. Science has now shown us they each say their own name (as a unique sound signature) plus the individual's name they are calling to. We know they are a high order of sea life and that they have a sophisticated social system. Possibly, their communication system is helpful when whaling ships are approaching, likely their biggest threat to survival today? Also, their food supply is dwindling due in no small part to the chemicals leaching into the oceans through the polluted and dirty water that continuously drains from landfills and other contaminated areas throughout the world. They have no other place to live! Whales and dolphin are facing these major challenges to their survival and now the Navy has escalated its war on this species by blasting them with incomprehensible sonic sound levels that surely confuses and disorients them, makes their world uninhabitable. Likely, they commit suicide by beaching themselves in ever increasing numbers because they have been unable to tolerate this war being waged upon them. The earth needs these gentle beings for the important role they play in its ecology. They demonstrate very rare interspecies compassion, by the many instances of dolphins and whales protecting human lives from sharks. What are we doing?	Please refer to the analysis of potential effects contained within Chapter 4.
356	I-012	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
748	I-014	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.

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189	I-018	Not applicable	An after action report for each exercise showing ship position and sonar use should be made public.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
203	I-025	Not Applicable	I urge that written reports of all naval tests that affect ocean wildlife be documented with respect to sonar use and ship positions. These reports should be available to the American public at no cost.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
441	I-026	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
198	I-028	Not applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.

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1136	I-036	Not Applicable	There should be one EIS that covers everything.	Courts have rejected similar NEPA segmentation challenges, upholding federal agencies' decisions to organize and plan their actions in a reasonable or rational manner. Segmentation allows an agency to avoid the NEPA requirement that an EIS be prepared for all major federal actions with significant environmental impacts by dividing an overall plan into component parts, each involving action with less significant environmental effects. Here, the AFAST EIS/OEIS document is not seeking to avoid the greater scrutiny and procedural requirements of an EIS, where an EIS/OEIS is being prepared and provides an in-depth analysis of the environmental consequences which may result from the Navy's use of active sonar along the east coast and in the Gulf of Mexico. The Tactical Training Theater Assessment and Planning (TAP) documents concerning the Virginia Capes, Charleston/ Jacksonville, and Navy Cherry Point Range Complexes and the Undersea Warfare Training Range (USWTR) document are all also EISs/OEISs. While the AFAST EIS/OEIS addresses the Navy's use of active sonar as described in the AFAST proposed action, other activities not similar to the Navy's use of sonar as described by the proposed action are addressed in separate documents (e.g., NAVSEA new ship construction sea-trials Overseas Environmental Assessment [OEA]). Agencies are permitted to address projects separately if they may logically be viewed in isolation; the question is whether the projects have independent

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				utility or logical termini. Under the regulatory guidelines, a project that bears some relationship to a larger undertaking can nevertheless be segregated as long as the project: (1) is of sufficient length to address environmental matters of a broad scope; (2) has independent utility or independent significance; and (3) will not restrict consideration of alternatives for other reasonably foreseeable actions. Courts have found that even a modest showing of independent utility is sufficient to rebut a claim of segmentation. The USWTR is addressed in a separate document because it has independent utility; USWTR concerns the construction and installation of an underwater range for MFAS ASW training, unlike the ASW training discussed in AFAST and the other types of naval training that takes place in the TAP documents. Furthermore, the chapters on cumulative effects in the USWTR EIS/OEIS and AFAST EIS/OEIS will capture the cumulative impacts of all past, present, and reasonably foreseeable direct and indirect effects from mid-frequency active sonar to the marine environment. With regard to the TAP documents concerning the Virginia Capes, Charleston/ Jacksonville, and Navy Cherry Point Range Complexes, the naval training events described in each document are geographically driven where not all training events can occur in each range due to unique training requirements (e.g., use of live ordnance by Navy tactical jets operating off a carrier vice inert at a nearby land range

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				can only be accomplished in the JAX OPAREA). In contrast, a primary factor for AFAST as a stand alone document is the fact that ASW for major exercises takes place over several OPAREAs. Also, ASW training is not dependent on the other types of naval training events. Moreover, the Navy is considering the cumulative impacts of all past, present, and reasonably foreseeable direct and indirect effects of the AFAST and TAP actions in the cumulative effects chapters in each of the documents.

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675	I-038	Not Applicable	For many years I have been involved in groundwater contamination issues here on Cape Cod that have resulted from military training activities at the Massachusetts Military Reservation (MMR) by the U.S. Army and Air Force and their respective National Guard units. Last August the Massachusetts Army National Guard (MANG) and the regulators (U.S. Environmental Protection Agency and Massa. Department of Environmental Protection) proposed to resume training at some of the ranges at Camp Edwards with lead ammunition (which had been banned by the WPA cease fire order). A public outreach program was put in place and hearings were held. The MANG accommodated the concerns of the Massachusetts Chapter - Sierra Club by putting in place a monitoring program embedded within an adaptive management framework (developed by the state's Environmental Management Commission) that was agreeable to all parties. EPA gave approval to this project moving forward to accommodate the MANG training activities scheduled for August 2007, subject to periodic review of the success of the monitoring/adaptive management regime. Additional ranges are in the process of being certified for the use of lead ammunition under this program. Since MANG troops are periodically deployed to Iraq and Afghanistan and placed in harms way. I feel that this more conciliatory approach between the military, regulators and concerned citizens is a model that the Navy should consider. It has taken many years to develop the infrastructure and dialog required to move forward in an expeditious fashion on making military training compatible with environmental protection.	NEPA provides a forum for public involvement in federal deciosion making.
677	I-038	Not Applicable	The situation in regards to active sonar training on the west coast is a worst case scenario for developing reasonable restrictions that will ensure the protection of wild places/wild things without altering our basic environmental protection laws (and getting involved in endless litigation). The U.S. Navy should develop an alternative approach to resolving these conflicts. The MMR model might contain some useful ideas for this alternative approach. The military has spent over a billion dollars on cleaning up the groundwater pollution on Cape Cod that resulted from past military training and has diverted extensive personnel resources to resolving the conflicts between the military, regulators and concerned citizens.	NEPA provides a forum for public comment to generate involvement in federal decision making.

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261	I-040	Not Applicable	an after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
163	I-042	Not applicable	Ship positions and sonar use should be made available to the public.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
394	I-045	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
21	I-054	Not applicable	I served aboard the USS Sarda (SS 488) from 1957-1960. I still respect the U.S. Navy but I also care about the creatures on land and sea. The current administration has dragged the U.S.A. into the mud. I no longer trust anyone in the White House. Hopefully, the U.S. Navy can rise above the behavior we see in Washington and do their best to avoid raping and killing the large and small creatures in the world.	Please refer to the analysis of potential effects contained within Chapter 4 and proposed mitigation measures within Chapter 5.

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693	I-069	Not Applicable	4.) Why isn't the entire training program examined in the DEIS?	Courts have rejected similar NEPA segmentation challenges, upholding federal agencies' decisions to organize and plan their actions in a reasonable or rational manner. Segmentation allows an agency to avoid the NEPA requirement that an EIS be prepared for all major federal actions with significant environmental impacts by dividing an overall plan into component parts, each involving action with less significant environmental effects. Here, the AFAST DEIS/OEIS document is not seeking to avoid the greater scrutiny and procedural requirements of an EIS, where a DEIS/OEIS is being prepared and provides an in-depth analysis of the environmental consequences which may result from the Navy's use of active sonar along the east coast and in the Gulf of Mexico. The Tactical Training Theater Assessment and Planning (TAP) documents concerning the Virginia Capes, Charleston/ Jacksonville, and Navy Cherry Point Range Complexes and the Undersea Warfare Training Range (USWTR) document are all also EISs/OEISs. While the AFAST DEIS/OEIS addresses the Navy's use of active sonar as described in the AFAST proposed action, other activities not similar to the Navy's use of sonar as described by the proposed action are addressed in separate documents (e.g., NAVSEA new ship construction sea-trials Overseas Environmental Assessment [OEA]). Agencies are permitted to address projects separately if they may logically be viewed in isolation; the question is whether the projects have independent

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				utility or logical termini. Under the regulatory guidelines, a project that bears some relationship to a larger undertaking can nevertheless be segregated as long as the project: (1) is of sufficient length to address environmental matters of a broad scope; (2) has independent utility or independent significance; and (3) will not restrict consideration of alternatives for other reasonably foreseeable actions. Courts have found that even a modest showing of independent utility is sufficient to rebut a claim of segmentation. The USWTR is addressed in a separate document because it has independent utility; USWTR concerns the construction and installation of an underwater range for MFAS ASW training, unlike the ASW training discussed in AFAST and the other types of naval training that takes place in the TAP documents. Furthermore, the chapters on cumulative effects in the USWTR EIS/OEIS and AFAST EIS/OEIS will capture the cumulative impacts of all past, present, and reasonably foreseeable direct and indirect effects from MFAS to the marine environment. With regard to the TAP documents concerning the Virginia Capes, Charleston/ Jacksonville, and Navy Cherry Point Range Complexes, the naval training events described in each document are geographically driven where not all training events can occur in each range due to unique training requirements (e.g., use of live ordnance by Navy tactical jets operating off a carrier vice inert at a nearby land range can only be accomplished in the JAX

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				OPAREA). In contrast, a primary factor for AFAST as a stand alone document is the fact that ASW for major exercises takes place over several OPAREAs. Also, ASW training is not dependent on the other types of naval training events. Moreover, the Navy is considering the cumulative impacts of all past, present, and reasonably foreseeable direct and indirect effects of the AFAST and TAP actions in the cumulative effects chapters in each of the documents.
706	I-069	Not applicable	11.) Will you date your research data regarding results of sonar usage on marine life and be specific and truthful with all results?	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
709	I-069	Not applicable	13.) Isn't it Yes that the Navy lost its appeal for sonar use in a federal court (9th Circuit Court of Appeals) the 1st of March 2008 in California and earlier in Hawaii? Please explain.	This case is ongoing and does not effect the AFAST EIS/OEIS.

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624	I-070	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
510	I-075	Not Applicable	And to provide documentation as to ship positions and types and levels of sonar use to public and private agencies in order to monitor and correlate with any evidence of lethal consequences so that, with better knowledge and science, such consequences can be averted in the future.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
342	I-076	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
411	I-081	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
670	I-082	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.

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401	I-088	Not applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
609	I-089	Not applicable	Anyway, we can do things right. And, of course, the things that I have read have all been negative about this and with the whales in the Bahamas that died not too long after the first time that this was done. So we need to be careful and do it right. And I know we can do that, but we might have to do it seasonally. We might have to do it when they are not here, but I know that we can do it the right way. I would really love to look more at this Environmental Impact Statement. Thank you.	The Bahamas stranding event had unique contributory factors, such as unusual underwater bathymetry, intensive use of multiple sonar units, limited egress, and the presence of beaked whales. Refer to Appendix E for additional details.
293	I-093	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
726	I-094	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
1381	I-098	Not Applicable	Two diagrams were received. One diagram showed how to detect whales and dolphins and how to develop passive acoustic array technology for fixed ranges and marine ships. The second diagram depicted a BACI design, or a before after control impact study.	These diagrams will be considered as input for the development of the monitoring program.

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239	I-109	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
299	I-112	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
182	I-121	Not applicable	Prepare a no charge report after ea exercise re: ship position and sonar use. PLS--HELP ANIMALS! (Humans destroy)	The Navy provides a report to the National Marine Fisheries Service following every major exercise.
221	I-130	Not applicable	Records available to the public should be kept detailing ships' locations when active sonar is used, after its use is completed.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
791	I-135	Not Applicable	The Navy's operational requirements should not supersede its marine stewardship obligations.	Please refer to Chapter 4 for the results of the environmental analysis and Chapter 5 for mitigation and conservation measures.
226	I-137	Not applicable	An action report for each exercise documenting ship positions and sonar use should be prepared and made available to the public at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.

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324	I-144	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
738	I-146	Not Applicable	Apparently, low frequency sonar noise has been detected over the whole breadth of the Pacific Ocean. It has been determined that LF sonic waves retain an intensity of 140 decibels 300 miles from their source, which is 100 times more intense than the noise aversion threshold of whales. If LFAS is that loud 300 miles from its source, mid and high frequency active sonar would be that much louder and even more destructive.	Mid and high frequency sonar have shorter wave lengths and therefore attenuate more rapidly than LFA. Refer to Appendix G for additional information.
215	I-147	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made available to the public at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
349	I-149	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge.	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.
379	I-154	Not Applicable	An after action report for each exercise documenting ship positions and sonar use should be prepared and made publicly available at no charge;	The Navy provides a report to the National Marine Fisheries Service following every major exercise. The Navy will upload this report to their ocean stewardship website (http://www.navy.mil/oceans/) following delivery to NMFS.