USS Nassau Expeditionary Strike Group
Composite Training Unit Exercise 08-01
(ESG COMPTUEX 08-01)

After Action Report (AAR) for the
Exercise Occurring
28 November to 14 December 2007

Abstract

This report analyzes and discusses the environmental conditions, marine species sightings, and potential effects, if any, on species observed during the Expeditionary Strike Group (ESG) Composite Training Unit Exercise (COMPTUEX) 08-01. The exercise is covered under the National Defense Exemption (NDE), which exempts the Navy from compliance with the requirements of the Marine Mammal Protection Act (MMPA) for mid-frequency active (MFA) sonar or Improved Extended Echo Ranging (IEER) sonobuoys.

INTRODUCTION

This report fulfills the Navy's and the Atlantic Fleet's written reporting requirements under the 23 January 2007 NDE (NDE II). The NDE II exempts certain DoD Military Readiness Activities that employ MFA sonar or IEER sonobuoys from the compliance requirements of the MMPA.

REPORT ORGANIZATION

This report, which contains only unclassified material, provides the information and analyses for ESG COMPTUEX 08-01 and is submitted in fulfillment of the NDE II written requirements.

The sections of this report are organized in the following order:

Background: Provides a brief overview of an ESG COMPTUEX.

Section 1 - Exercise Summary: Provides information concerning the specific exercise, including the starting and ending dates, the number of participating ships and aircraft, and the number of hours of MFA sonar used.

Section 2 – Observations: Presents the observations of marine species sighted and the environmental conditions during the exercise, if any.

Section 3 - Mitigation Effectiveness: Assesses the effectiveness of the NDE mitigation and monitoring measures, required during exercises, with regard to minimizing the effects of MFA sonar on marine mammals in the vicinity of the exercise.

Conclusion: Provides a summary of key points contained in the AAR.

Appendix A: Contains tables and figures relating to marine species and oceanographic information for the exercise area.

Appendix B: Includes the MFA sonar mitigation measures from the NDE II.

Appendix C: Contains the protective measures message for the exercise.

BACKGROUND

The ESG COMPTUEX is an intermediate-training exercise that focuses on ensuring interoperability and integration of participating units. It provides the opportunity for training with complex weapons tactics and the employment of these tactics against multiple threats in a demanding target-identification environment.

An ESG COMPTUEX consists of a U.S. Navy ESG and U.S. Marine Corps units conducting integrated maritime and amphibious operations. ESG COMPTUEXs include the insertion of amphibious forces onto a beach, the movement of vehicles and troops over land, the delivery of troops and equipment from ship to shore via helicopters and fixed-wing aircraft, the use of live-fire and blank munitions from ground-based troops and aircraft, and ship operations. In addition, Navy ships provide indirect Naval Surface Fire Support in support of the landing amphibious forces utilizing non-explosive ordnance. The ESG COMPTUEX focuses on training and qualification of Navy units and typically lasts for 21 days, which includes the anti-submarine warfare (ASW) sonar training components delineated in the following sections. The ESG COMPTUEX is a critical step to pre-deployment and a prerequisite for certifying that the ESG is ready to conduct a Joint Task Force exercise.

Total number of ASW capable aviation assets participating in a given exercise varies based on maintenance ready aircraft and ship configuration. For instance, early versions of the DDG destroyers, the newest Navy surface combatant, do not have onboard hangers for helicopters. Later versions have hangars and can house up to two SH-60B/F/Rs. MFA sonar (AN/BQQ-5) on Los Angeles-class (SSN) submarines is seldom used in tactical training scenarios, where passive sonar use is the preferred system in order to maximize the stealth aspects of undersea operations. More relevant than the number of participating aircraft, actual hours of MFA sonar employed by aviation assets have been captured in the total sonar hours reported in this document.

ESG COMPTUEX 08-01 was planned and documented by the U.S. Navy in "Final Supplement to the Final Comprehensive Overseas Environmental Assessment (OEA) for Major Atlantic Fleet Training Exercises, 2007 Exercises," (DON 2007). In addition to Navy staff coordinating the mitigation with the logistical arrangements for the event, marine species awareness training (MSAT) was provided to exercise participants, as needed, and a protective measures message (Appendix C) was distributed which reiterated the applicable NDE mitigation measures and explained procedures for reporting marine mammal sightings (Section 2).

The ASW training conducted during the ESG COMPTUEX involved ships, submarines, aircraft, non-explosive exercise weapons, and other training related devices and occurred within portions of the Cherry Point and Charleston/Jacksonville Operating Areas (OPAREAS; see Figure A-1, Appendix A). MFA sonar equipped ships that participated in ESG COMPTUEX 08-01 included Ticonderoga-class guided missile cruisers (CG), Arleigh Burke-class guided missile destroyers (DDG), and Oliver Hazard Perry-class guided missile frigates (FFG). The surface combatants employed ANSQS-53C/ANSQS-

56 sonar, and the associated aviation assets employed SH-60B/F/R with AN/AQS-13F or AQS-22 dipping sonar and AN/SSQ-62B1C/D/E Directional Command Activated Sonobuoy System (DICASS). The MFA sonar equipped submarines that participated were SSNs with AN/BQQ-5 sonar.

SECTION 1 EXERCISE SUMMARY

EXERCISE SPECIFICS

ESG COMPTUEX 08-01 was conducted from 28 November - 14 December 2007. Ships assigned to this ESG included three non-MFA sonar equipped ships, three MFA sonar equipped ships, and one submarine. Other participating units, representing support and opposition forces, included five MFA sonar equipped ships; however, these supporting platforms did not use MFA sonar. Based on the configuration of the DDG ships participating in ESG COMPTUEX 08-01, there were six to eight ASW SH-60s helicopters available.

MITIGATION MEASURES PERFORMED

All mitigation measures, as stated in the 23 January 2007 NDE II (Appendix B), were adhered to, as appropriate, during ESG COMPTUEX 08-01. These 29 NDE II measures include identifying specific details for personnel training, establishing lookout and watchstander responsibilities, mandating specific operating procedures, and describing coordination and reporting requirements. Observation data from Navy lookout sighting data, for this exercise, is described in Section 2.

SECTION 2 OBSERVATIONS

MARINE MAMMALS OBSERVED

Navy lookouts did not report any sightings of marine mammals during ESG COMPTUEX 08-01. All standard Navy surface ship lookout reporting procedures were detailed in a U.S. Fleet Forces protective measures message issued prior to participation in ESG COMPTUEX 08-01 (Appendix C).

OCEANOGRAPHIC CONDITIONS

Ocean Sea Surface Temperatures (SST), as shown in Figures A-2 through A-5 (Appendix A),ranged from 21 - 25°C. The figures show SSTS for 28 November, 05 December, 10 December, and the final day of the exercise. General ocean currents (Figure A-6, Appendix A), in the vicinity of the exercise, were normal for the season, location, and timeframe of the exercise.

The National Data Buoy Center maintains several oceanographic monitoring buoys (http://www.ndbc.noaa.gov/maps/Southeast.shtml) in close proximity to the location of the ESG COMPTUEX. During the exercise, 28 November - 14 December, wind speeds, based on daily average of the data reported from these buoys, were between 2.2 and 14.7 meters/sec (4-28 knots). Figures A-7 and A-8 (Appendix A) show the buoy locations in the vicinity of the exercise, and figures A-9 and A-10 (Appendix A) show the averaged daily wind speed data from these buoys.

SECTION 3 MITIGATION EFFECTIVENESS
MITIGATION AND MONITORING ASSESSMENT
OVERVIEW

The NDE calls for the U.S. Navy to submit a report to the National Marine Fisheries Service (NMFS) that includes a discussion of the nature of the effects, if observed, based on modeling results and marine mammal sightings. Therefore, this section, of the report, provides an assessment of the effectiveness of the mitigation and monitoring measures in the NDE.

ASW proceeds slowly and requires careful development of a tactical frame of reference over time as data is integrated from a number of sources and sensors. Once MFA sonar is turned off for a period of time, turning it back on later does not usually allow a Commander to simply continue from the last frame of reference. Thus, lost MFA sonar time does not only equate to lost exercise time but should be considered in the fuller context of its overall impact on the tempo and development of a "tactical picture," which is shared among exercise participants training towards the goal of improving ASW skills in general.

ACTIVE AND PASSIVE SONAR

Typically, there are no measurements (calibrated or otherwise) of actual sound levels made during an exercise, and none were made during ESG COMPTUEX 08-01. Source levels, numbers of sources, and frequencies are classified, since that information would provide potential adversaries with important tactical data.

An explanation of sonar hours as presented in this report is also warranted. Total MFA sonar hours represent a sum of the total time from a number of individual training events during an ESG COMPTUEX. This value does not represent actual total sonar ping hours. In other words, the ship logs when the sonar was turned on at the beginning of a training event and reports time until the event is finished. During this period, the MFA sonar only puts active sound into the water at discrete intervals. Sonar signals are not a continuous source of acoustic energy. Though not applicable to this exercise, a reasonable description, provided in NMFS 2007, is a surface ship sonar signal consists of a pulse (i.e., ping) less than 2 seconds long with approximately a minimum of 30 seconds between successive pings. MFA sonar is only used during carefully reviewed scenarios and for only a small subset of any given exercise time frame.

- During ESG COMPTUEX 08-01, 141-161 hours of MFAS and 38-46 DICASS sonobuoy usage was reported.

Passive sonar involves acoustic listening to underwater sounds and does not involve transmitting active sound into the water column. Passive sonar use is driven by the tactical nature of an ASW or training event and should be assumed to be employed, whenever possible. Given the nature of passive sonar technology and underwater sound propagation, localizing or determining the absolute position of an object is more difficult

than with active sonar. Typically, participants do not record the number of hours spent using passive sonar, and, as such, there is more ambiguity in the usage reported.

- During ESG COMPTUEX 08-01, 1446 - 1680 hours of passive sonar were reported.

MODELING ESTIMATES APPLICABLE TO ESG COMPTUEX 08-01

Table A-1 (Appendix A) lists the possible marine species that can occur in the Cherry Point and Charleston/Jacksonville OPAREAS and highlights which species are potentially Endangered Species Act (ESA) listed species. Table A-2 (Appendix A) shows the estimated marine mammal acoustic exposures from model derived calculations based on regional marine mammal densities, ESG COMPTUEX operational parameters, sound transmission loss, and potential energy accumulated (DoN 2007). Species order in the table is sequenced, with the ESA listed species listed first, followed by the remaining species in the same sequence as Table A-1. In total, acoustic impact modeling predicts an estimated 4,616 Level B sub-temporary threshold shift (TTS) (190 dB > EL ≥ 173 dB), 52 Level B sub-TTS (195 dB > EL ≥ 190 dB), and 16 Level B TTS (215 dB > EL ≥ 195 dB) exposures. However, these numbers of animals were not observed within the Cherry Point or Charleston OPAREAS by the exercise participants. In addition, there were no reports of ship strikes on marine mammals, and no reports of a vessel maneuvering to avoid the path of a marine mammal. There were no reports of stranded marine mammal during or immediately after the exercise.

NDE ASSESSMENT

All 23 January 2007 NDE II measures (Appendix B) were promulgated in the Navy message "Environmental Protective Measures for Expeditionary Strike Group Composite Training Unit Exercise (ESG COMPTUEX) (Nov-Dec 2007)" (Appendix C) and were implemented, as appropriate, for ESG COMPTUEX 08-01.

Since, there were no marine mammal observations during the exercise, even when MFA sonar was not in use, it would be accurate to state that no observed marine mammal or ESA listed species were exposed to received energy levels greater than 173 dB re 1 μPa^2s. The Navy acknowledges that this discussion does not account for potential exposures to marine mammal species not observed, which is difficult to determine, even for the marine mammal scientific community. The Navy is seeking means to address this issue, which are discussed in the next section.

Although, there were no reported effects on the training from the mitigation measures; there is an effort underway within the Navy's operational community to try and articulate the relative effects MFA sonar mitigation measures have on ASW training.

In regards to impacts not associated with MFA sonar, such as ship strikes, the Navy has a robust ship strike reporting program. Reports of no ship strikes during the ESG COMPTUEX 08-01 provide strong evidence that no ship strikes occurred during the exercise.

DATA LIMITATIONS AND IMPROVEMENTS

The Navy is committed to development of robust exercise and range complex monitoring plans that will integrate multiple tools to provide better assessment of marine mammal occurrence and possible MFA sonar effects.

There is no information currently available to assess how many, if any, animals not observed by Navy lookouts may or may not have been exposed to MFA sonar at received levels greater than 173 dB re 1 μPa^2s. Data collection needs to address this question, as it remains a problematic science issue, for even non-Navy marine mammal surveys.

Although not conducted specifically for this ESG COMPTUEX exercise, ship-based and aerial monitoring, designed in support of future exercise and range complex monitoring, are being considered by the Navy. The Navy is looking to integrate additional monitoring tools and techniques in future exercises as the exercise and range complex monitoring plans are designed and implemented.

CONCLUSIONS AND SUMMARY

- Marine mammals were not sighted during the 17 day exercise.
- No exposures to marine mammals are known to have occurred based upon the lack of visual sightings.
- There were no ship strikes on marine mammals during the exercise.
- Since MFA sonar was not secured in ESG COMPTUEX 08-01, ASW training opportunities were not lost.
- The U.S. Navy is committed to development of robust exercise and range complex monitoring plans that will integrate multiple tools in order to provide better assessment of marine mammal occurrence and possible MFA sonar effects. Fiscal year 2008 plans may include various mixes of ship-based and aerial survey, independent of exercise participants, validation of lookout effectiveness by biologists experienced in observing marine mammals, and use of new research and development technologies to advance the state of marine mammal monitoring.

REFERENCES

DoN. 2007. Final Supplement to the Final Comprehensive Overseas Environmental Assessment for Major Atlantic Fleet Training Exercises, 2007 Exercises. Prepared for US Fleet Forces Command by SAIC, Shalimar, FL.

NMFS, 2007. Biological Opinion (BO) on the U.S. Navy's Proposed Undersea Warfare Training Exercises (USWEX) In The Hawai'i Range Complex From January 2007 to January 2009- 23 January 2007. Office of Protected Resources, National Marine Fisheries Service, Silver Springs, MD.

APPENDIX A- MARINE SPECIES BACKGROUND AND OCEANOGRAPHIC INFORMATION

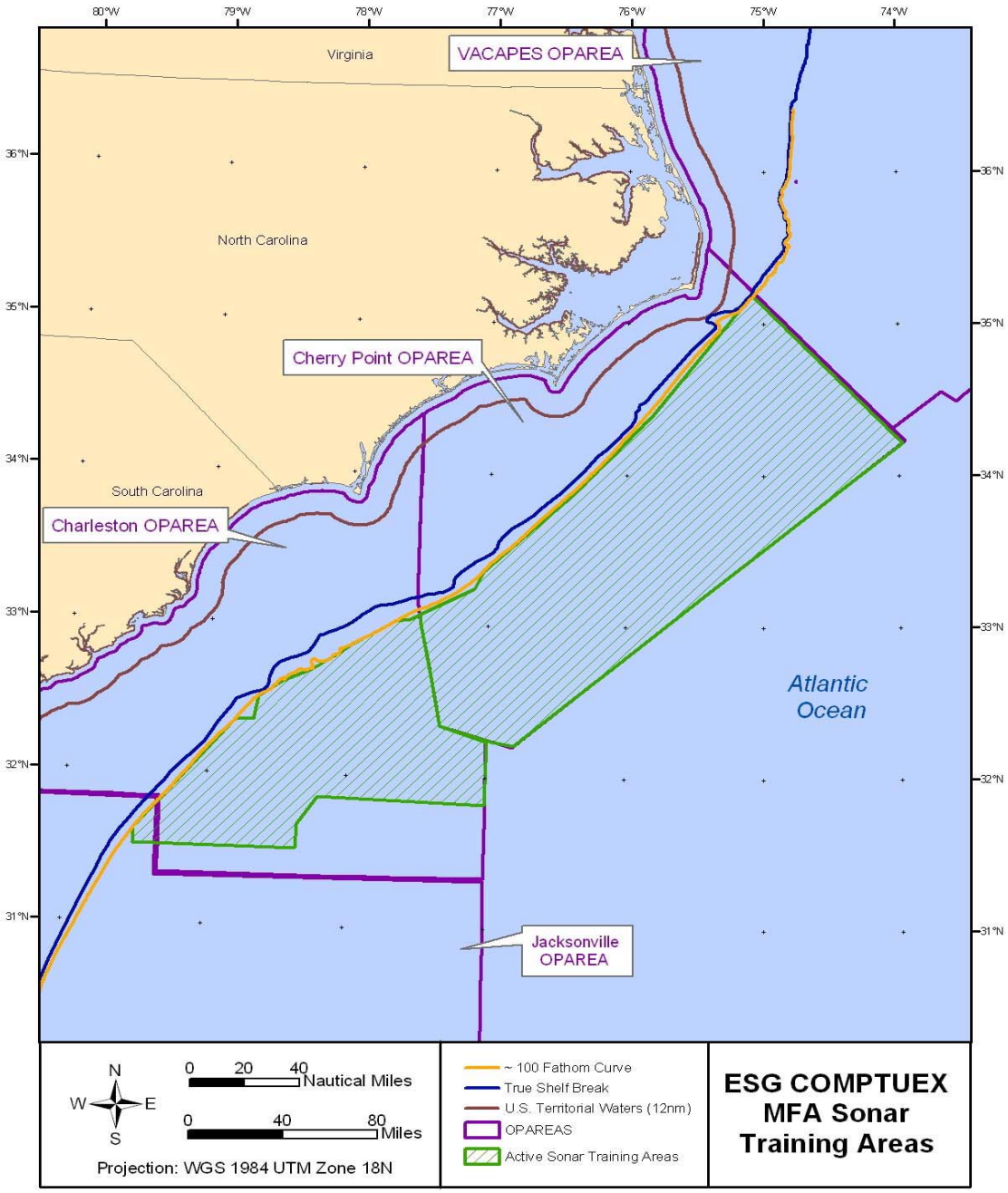


Figure A-1: Sonar training areas for ESG COMPTUEX.

Table A-1: Marine Mammals with Possible or Confirmed Occurrence in the Cherry Point and Jacksonville/Charleston OPAREAs (DON 2007)

Common Name	Scientific Name	Status	CHPT	JAX/CHASN
North Atlantic right whale	*Eubalaena glacialis*	ESA/MMPA	√	√
Humpback whale	*Megaptera novaeangliae*	ESA/MMPA	√	√
Minke whale	*Balaenoptera acutorostrata*	MMPA	√	√
Bryde's whale	*Balaenoptera edeni*	MMPA	√	√
Sei whale	*Balaenoptera borealis*	ESA/MMPA	√	
Fin whale	*Balaenoptera physalus*	ESA/MMPA	√	√
Blue whale	*Balaenoptera musculus*	ESA/MMPA	√	√
Sperm whale	*Physeter macrocephalus*	ESA/MMPA	√	√
Pygmy sperm whale	*Kogia breviceps*	MMPA	√	√
Dwarf sperm whale	*Kogia sima*	MMPA	√	√
Cuvier's beaked whale	*Ziphius cavirostris*	MMPA	√	√
True's beaked whale	*Mesoplodon mirus*	MMPA	√	√
Gervais' beaked whale	*Mesoplodon europaeus*	MMPA	√	√
Blainville's beaked whale	*Mesoplodon densirostris*	MMPA	√	√
Sowerby's beaked whale	*Mesoplodon bidens*	MMPA	√	√
Northern bottlenose whale	*Hyperoodon ampullatus*	MMPA	√	
Rough-toothed dolphin	*Steno bredanensis*	MMPA	√	√
Bottlenose dolphin	*Tursiops truncates*	MMPA	√	√
Pantropical spotted dolphin	*Stenella attenuate*	MMPA	√	√
Atlantic spotted dolphin	*Stenella frontalis*	MMPA	√	√
Spinner dolphin	*Stenella longirostris*	MMPA	√	√
Clymene dolphin	*Stenella clymene*	MMPA	√	√
Striped dolphin	*Stenella coeruleoalba*	MMPA	√	√
Common dolphin	*Delphinus spp.*	MMPA	√	√
Fraser's dolphin	*Lagenodelphis hosei*	MMPA	√	√
Risso's dolphin	*Grampus griseus*	MMPA	√	√
Melon-headed whale	*Peponocephala electra*	MMPA	√	√
Pygmy killer whale	*Feresa attenuate*	MMPA	√	√
False killer whale	*Pseudorca crassidens*	MMPA	√	√
Killer whale	*Orcinus orca*	MMPA	√	√
Long-finned pilot whale	*Globicephala melas*	MMPA	√	√
Short-finned pilot whale	*Globicephala macrorhynchus*	MMPA	√	√
Harbor porpoise	*Phocoena phocoena*	MMPA	√	
Hooded seal	*Cystophora cristata*	MMPA	√	√
Harbor seal	*Phoca vitulina*	MMPA	√	√
West Indian manatee	*Trichechus manatus*	ESA/MMPA	√	√

Table A-2: Estimated Marine Mammal Acoustic Exposures from ESG COMPTUEX MFA Sonar Training, no mitigation. (DON 2007)

Species	**Level A / ESA Harm (EL ≥ 215dB)**		**Level B / ESA Harassment *with TTS* (215dB > EL ≥195dB)**		**Level B / ESA Harassment *without TTS* (195dB >EL ≥ 190dB)**		**Level B / ESA Harassment *without TTS* (190dB >EL ≥ 173dB)**	
	JAX/CHASN	CHPT	JAX/CHASN	CHPT	JAX/CHASN	CHPT	JAX/CHASN	CHPT
Marine Mammals								
North Atlantic Right Whale	0	0	0	0	0	0	0	0
Humpback Whale	0	0	0	0	0	0	0	0
Sei Whale	0	0	0	0	0	0	0	0
Fin Whale	0	0	0	0	0	0	0	0
Sperm Whale	0	0	0	0	0	0	0	0
Minke Whale	0	0	0	0	0	0	0	0
Dwarf/Pygmy Sperm Whale	0	0	0	0	**0***	0	**14**	0
Beaked Whales	0	0	**2**	2	**6**	6	1,044	**1,105**
Rough-toothed Dolphin	0	0	0	0	0	0	0	0
Bottlenose Dolphin	0	0	**2**	2	**7**	7	1,174	**1,243**
Pantropical/Atlantic Spotted	0	0	1	**5**	3	**17**	447	**3,034**
Spinner Dolphin	0	0	0	0	0	0	0	0
Clymene Dolphin	0	0	0	0	0	0	0	0
Striped Dolphin	0	0	0	0	0	0	0	0
Common Dolphin	0	0	0	**0***	0	**1**	0	**252**
Risso's Dolphin	0	0	1	**1**	2	**2**	389	**442**
Atlantic White-sided	0	0	0	0	0	0	0	0
False Killer Whale	0	0	0	0	0	0	0	0
Pilot Whale	0	0	0*	**0***	0*	**1**	36	**229**

* Acoustic modeling indicates that the likelihood of exposing a species to received acoustic levels that may result in harassment is so low as to be discountable.
BOLD—represents the highest number of exposures between the two OPAREAs for each acoustic criterion, which was used to provide the most conservative estimate of acoustic effects regardless of the training area utilized

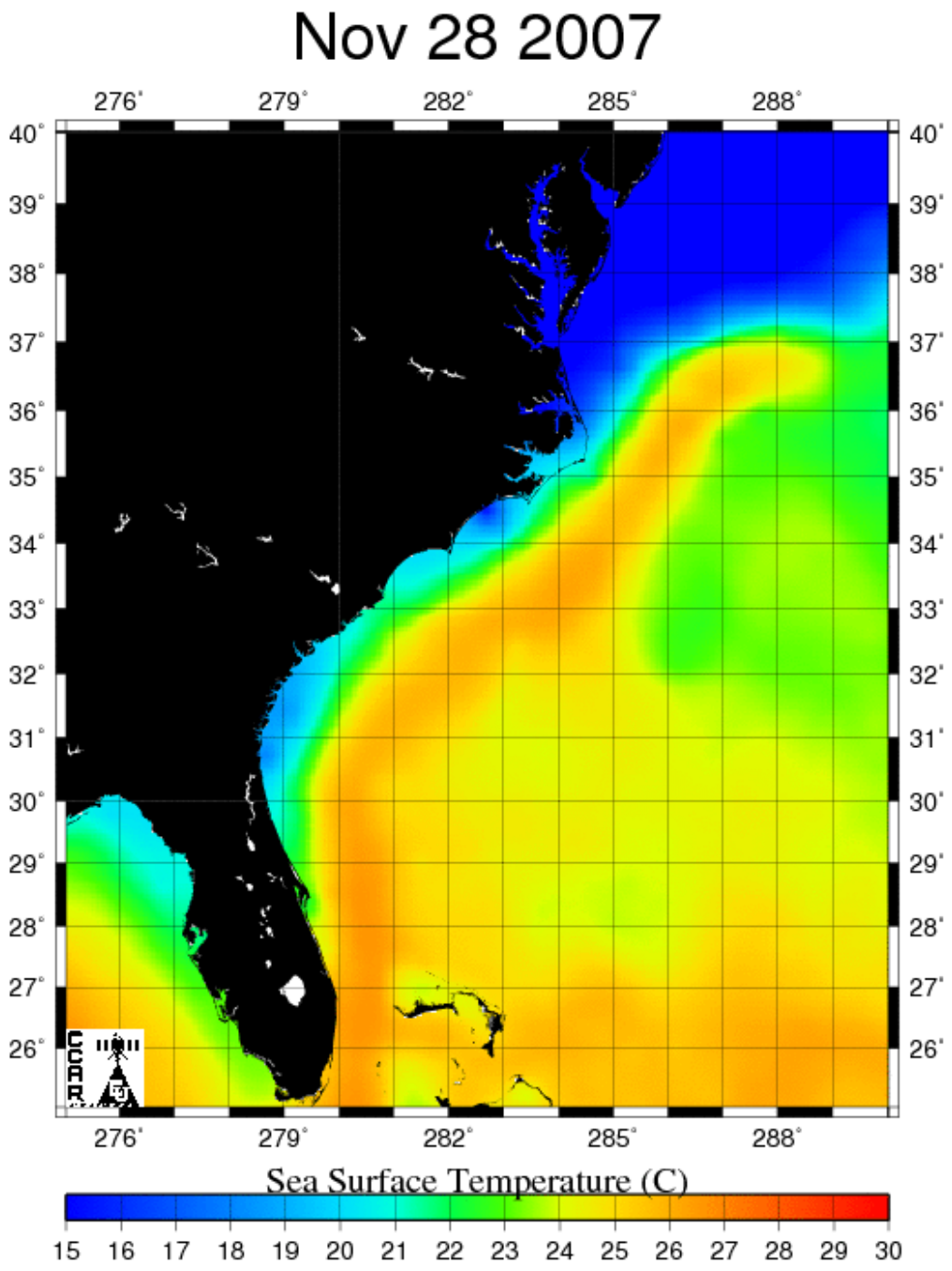


Figure A-2: Snapshot of sea surface temperature for 28 November.

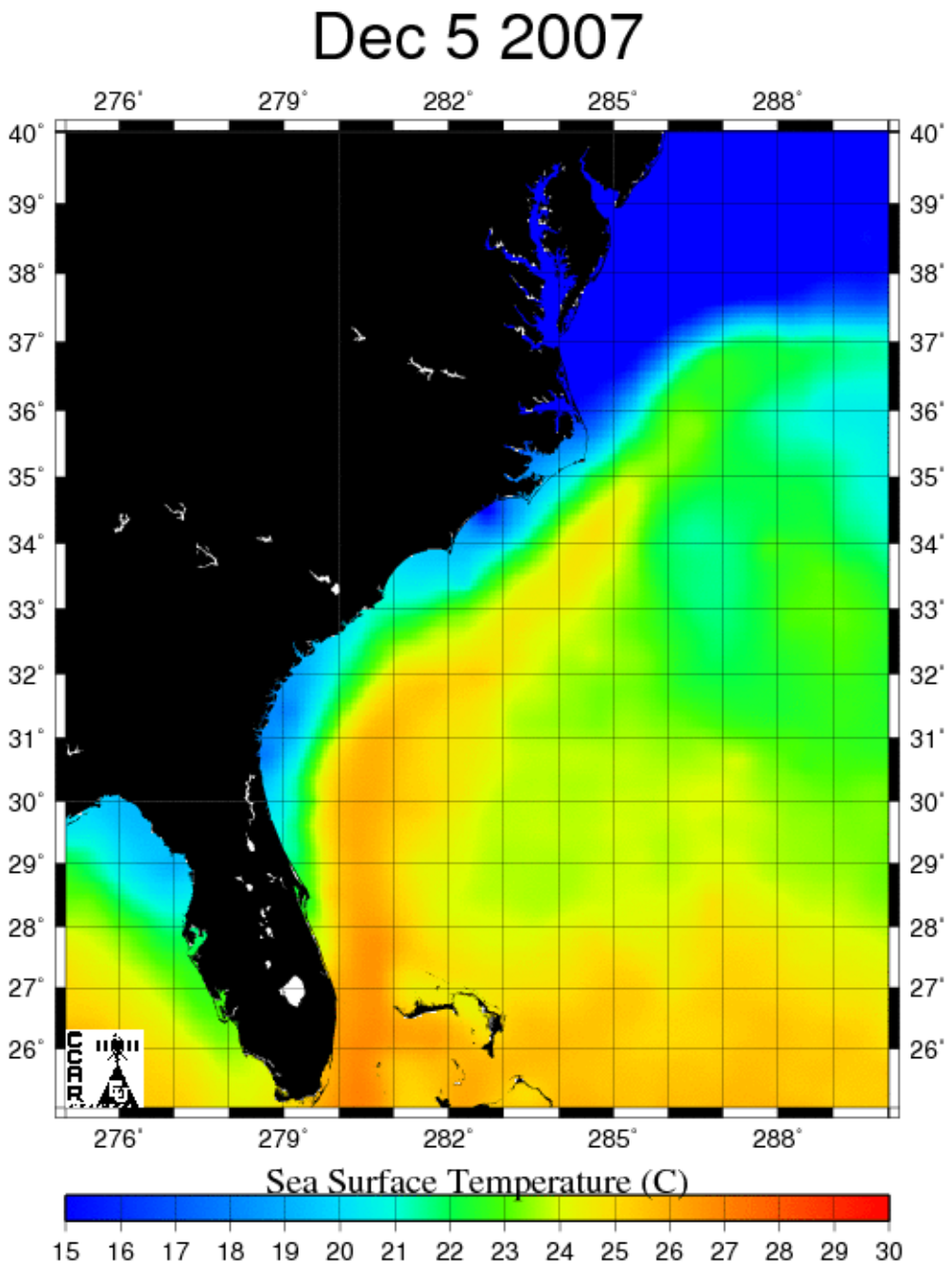


Figure A-3: Snapshot of sea surface temperature for 05 December.

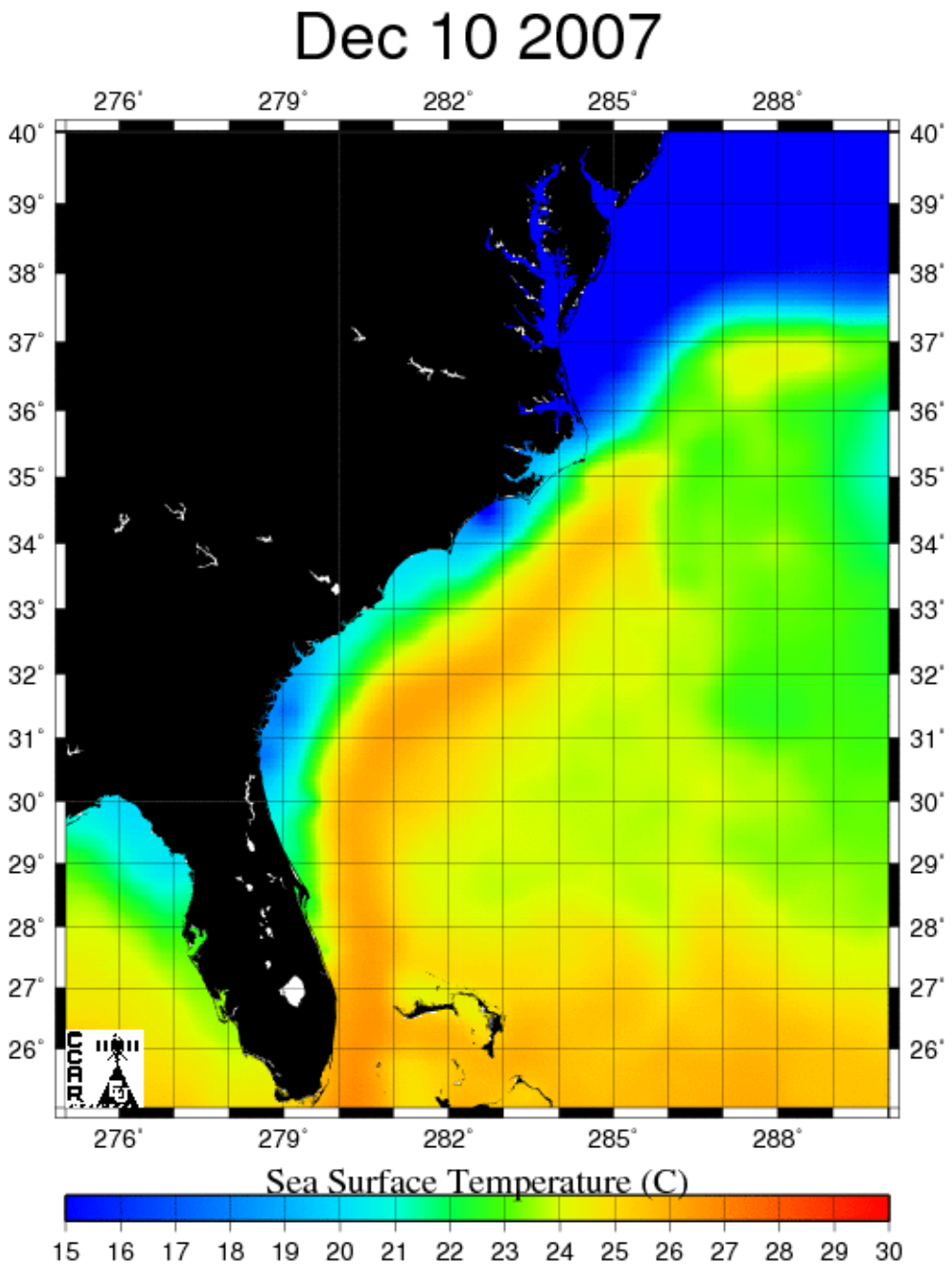


Figure A-4: Snapshot of sea surface temperature for 10 December.

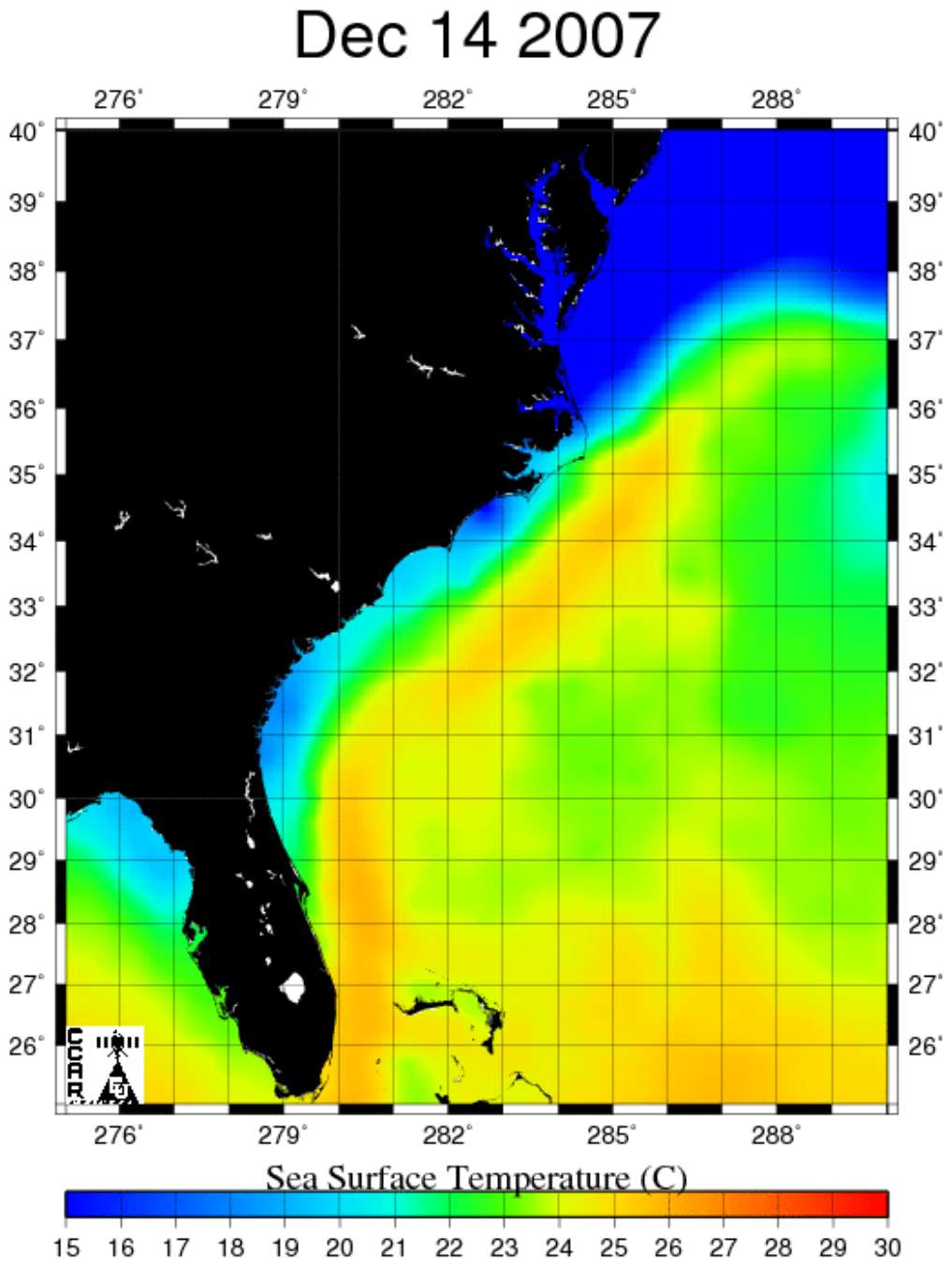


Figure A-5: Snapshot of sea surface temperature for 14 December.

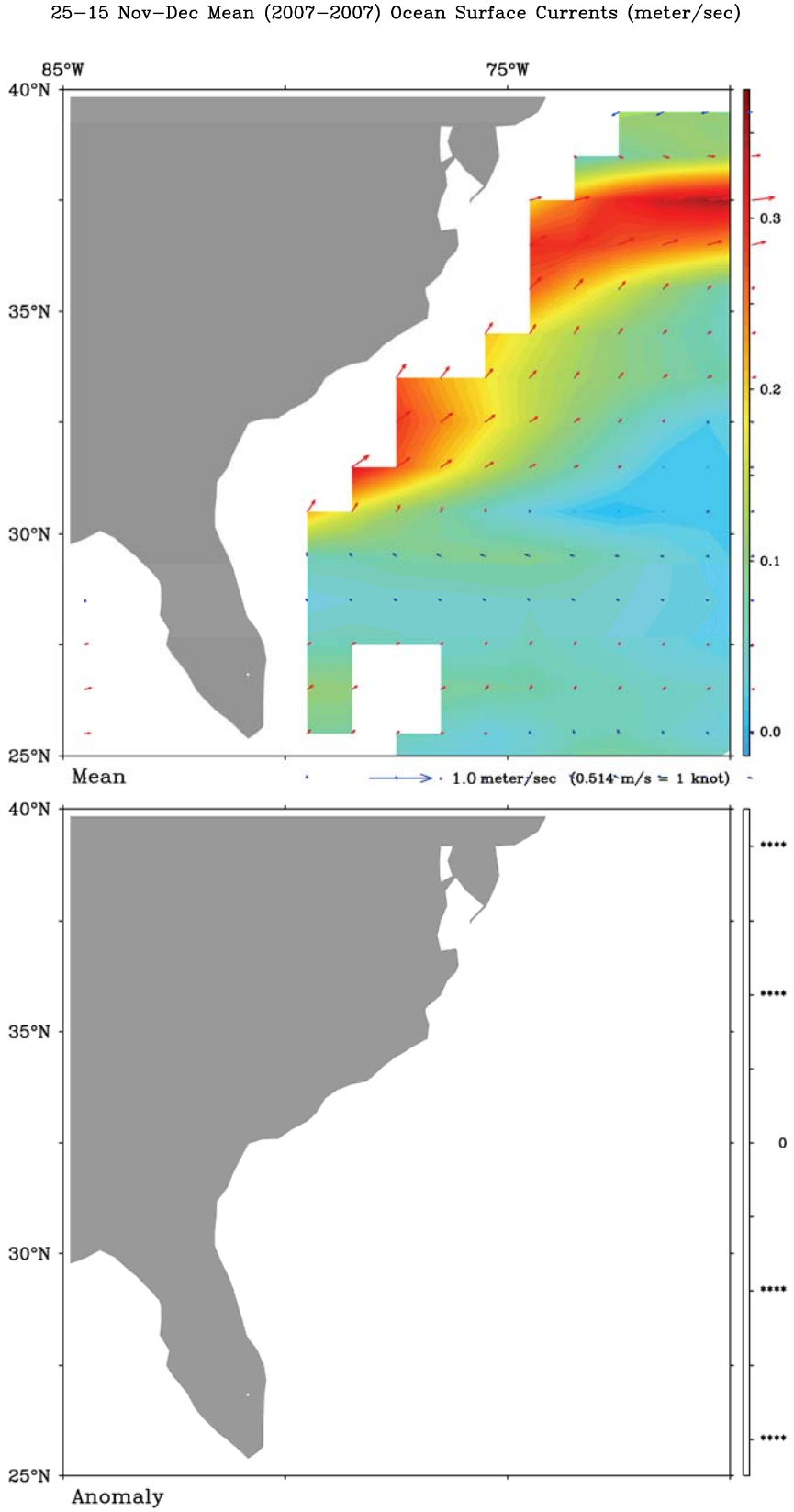


Figure A-6: Ocean surface currents in the vicinity of ESG COMPTUEX 08-01.

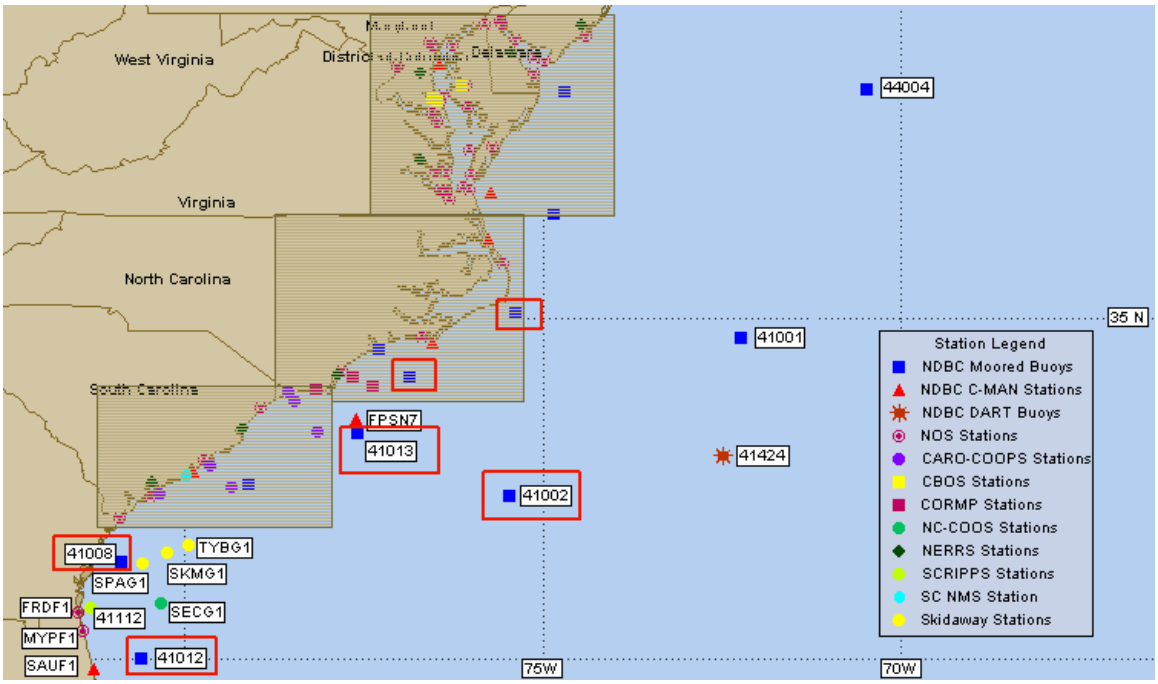


Figure A-7: National Data Buoy locations, used in the estimation of potential wind speeds and sea state, are marked with a red box drawn around the buoys.

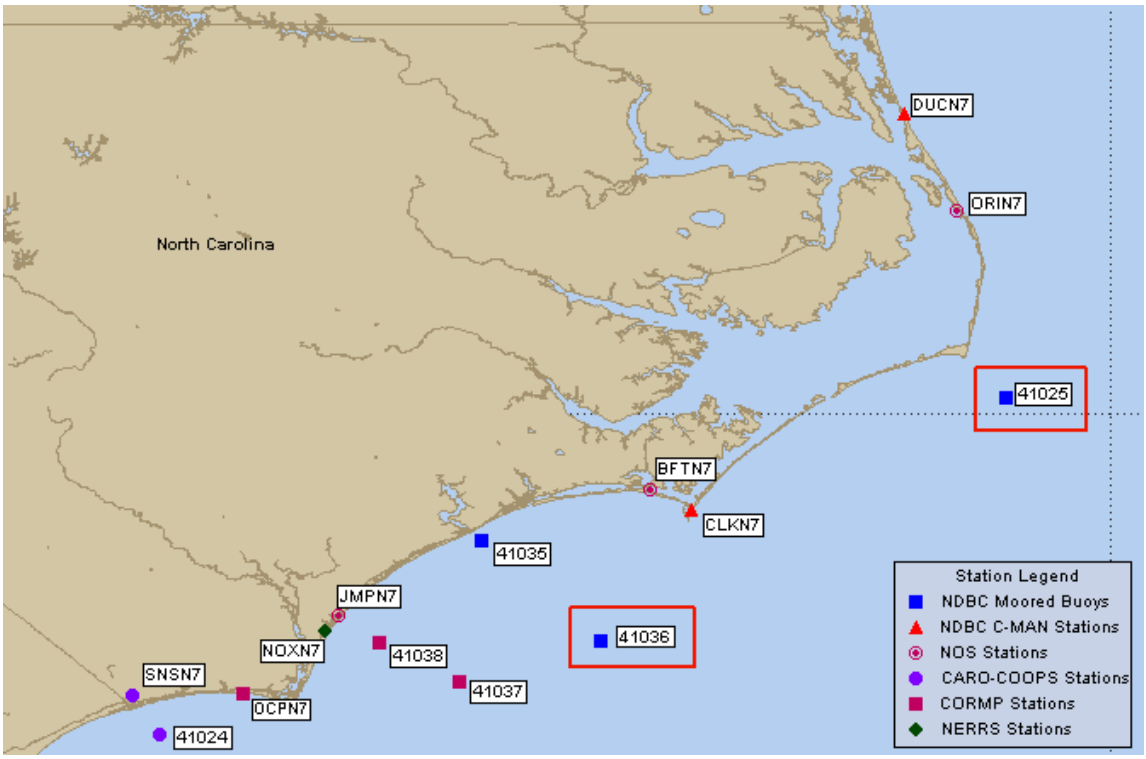


Figure A-8: The shaded area from Figure A-7, showing the National Data Buoy near shore locations used in the estimation of potential wind speeds and sea state.

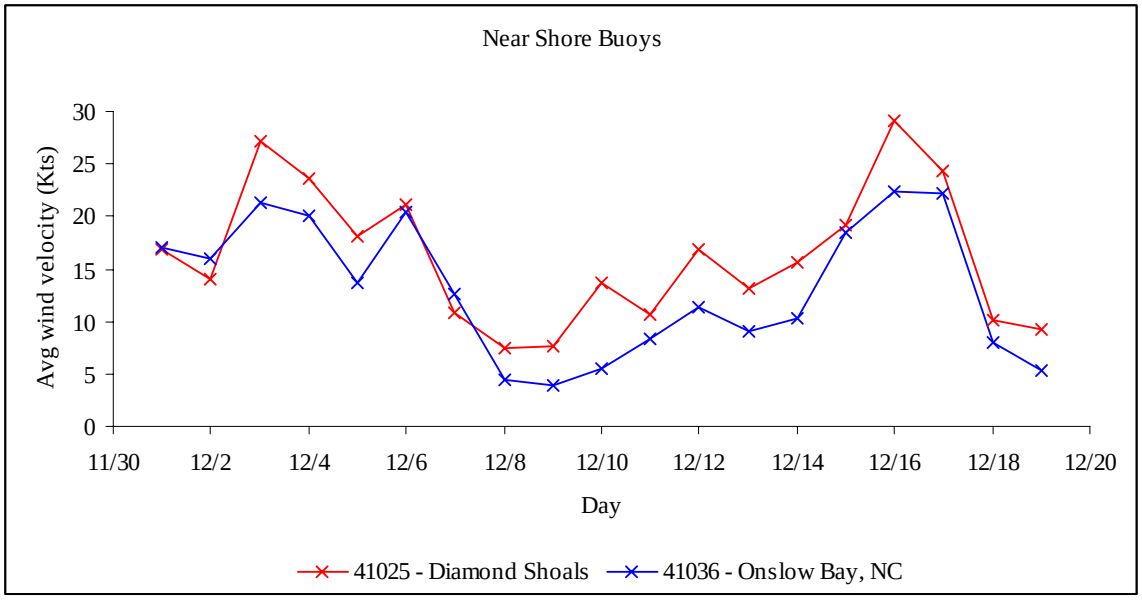


Figure A-9: Daily wind speed averages from the near shore data buoys - Diamond Shoals (41025) and Onslow Bay (41036).

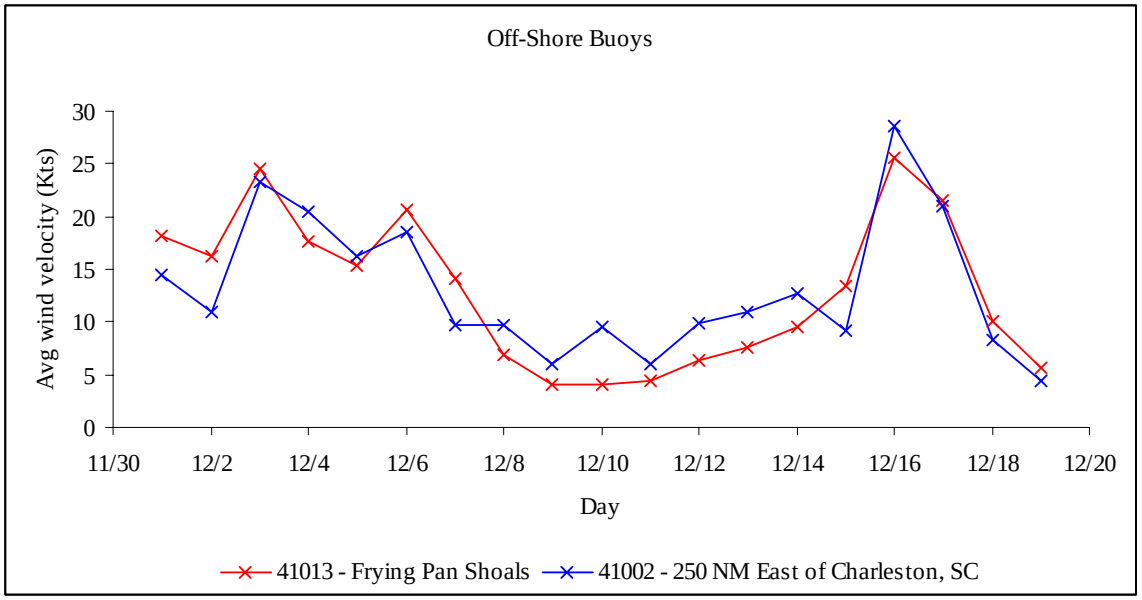


Figure A-10: Daily wind speed averages from the off shore data buoys - Frying Pan Shoals (41013) and 250 Nm E of Charleston (41002).

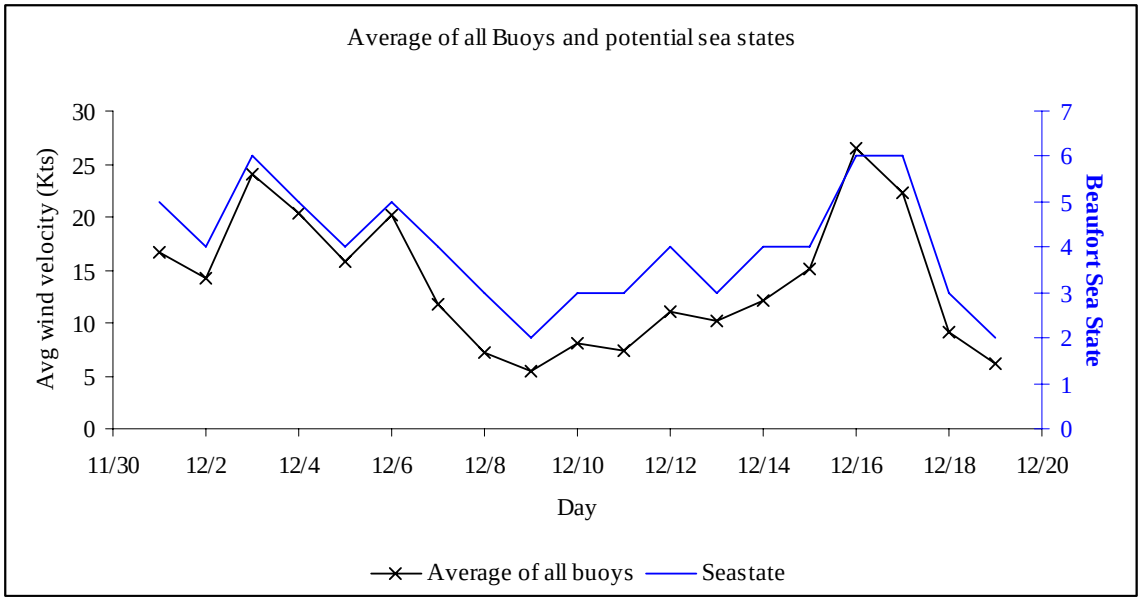
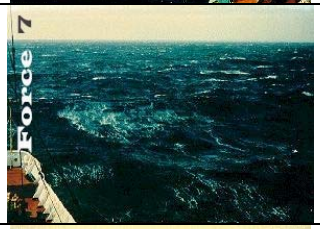


Figure A-11: Daily wind speed averages from all four data buoys and the estimated sea state that could have been experienced during the exercise based upon the averaged data.

Table A-3: Navy Beaufort Sea State codes.

Sea State	Beaufort Number	Wind Speed (kts)	Wind description	Beaufort Number Picture
0	0	< 1	Calm	
0	1	1-3	Light air	
1	2	4-6	Light breeze	
2	3	7-10	Gentle breeze	
3	4	11-16	Moderate breeze	
4	5	17-21	Fresh breeze	

Sea State	Beaufort Number	Wind Speed (kts)	Wind description	Beaufort Number Picture
5	6	22-27	Strong breeze	
6	7	28-33	Near gale	
7	8	34-40	Gale	
8	9	41-47	Strong gale	
9	10	48-55	Storm	
9	11	56-63	Violent storm	
9	12	>64	Hurricane	

* Photographs from National Weather Service Observing Handbook No. 1, US National Weather Service.

APPENDIX B – NDE II CONDITIONS

NDE II mitigation measures include:

I. General Maritime Protective Measures: Personnel Training:

1. All lookouts onboard platforms involved in ASW training events will review the NMFS approved MSAT material prior to use of MFA sonar.
2. All Commanding Officers, Executive Officers, and officers standing watch on the bridge will have reviewed the MSAT material prior to a training event employing the use of MFA sonar.
3. Navy lookouts will undertake extensive training in order to qualify as a watchstander in accordance with the Lookout Training Handbook (NAVEDTRA 12968-B).
4. Lookout training will include on-the-job instruction under the supervision of a qualified, experienced watchstander. Following successful completion of this supervised training period, Lookouts will complete the Personal Qualification Standard program, certifying that they have demonstrated the necessary skills (such as detection and reporting of partially submerged objects). This does not preclude personnel being trained as lookouts counted as those listed in previous measures so long as supervisors monitor their progress and performance.
5. Lookouts will be trained in the most effective means to ensure quick and effective communication within the command structure in order to facilitate implementation of protective measures if marine species are spotted.

II. General Maritime Protective Measures: Lookout and Watchstander Responsibilities:

6. On the bridge of surface ships, there will always be at least three people on watch whose duties include observing the water surface around the vessel.
7. In addition to the three personnel on watch noted previously, all surface ships participating in ASW exercises will have at all times during the exercise at least two additional personnel on watch as lookouts.
8. Personnel on lookout and officers on watch on the bridge will have at least one set of binoculars available for each person to aid in the detection of marine mammals.
9. On surface vessels equipped with MFA sonar, pedestal mounted “Big Eye” (20x 110) binoculars will be present and in good working order to assist in the detection of marine mammals in the vicinity of the vessel.
10. Personnel on lookout will employ visual search procedures employing a scanning methodology in accordance with the Lookout Training Handbook (NAVEDTRA 12968-B).
11. After sunset and prior to sunrise, lookouts will employ Night Lookouts Techniques in accordance with the Lookout Training Handbook.
12. Personnel on lookout will be responsible for reporting all objects or anomalies sighted in the water (regardless of the distance from the vessel) to the Officer of the Deck, since any object or disturbance (e.g., trash, periscope, surface disturbance, discoloration) in the water may be indicative of a threat to the vessel

and its crew or indicative of a marine species that may need to be avoided as warranted.

III. Operating Procedures

13. A Letter of Instruction, Mitigation Measures Message or Environmental Annex to the Operational Order will be issued prior to the exercise to further disseminate the personnel training requirement and general marine mammal protective measures.
14. Commanding Officers will make use of marine species detection cues and information to limit interaction with marine species to the maximum extent possible consistent with safety of the ship.
15. All personnel engaged in passive acoustic sonar operation (including aircraft, surface ships, or submarines) will monitor for marine mammal vocalizations and report the detection of any marine mammal to the appropriate watch station for dissemination and appropriate action.
16. During MFA sonar operations, personnel will utilize all available sensor and optical systems (such as Night Vision Goggles to aid in the detection of marine mammals.
17. Navy aircraft participating in exercises at sea will conduct and maintain, when operationally feasible and safe, surveillance for marine species of concern as long as it does not violate safety constraints or interfere with the accomplishment of primary operational duties.
18. Aircraft with deployed sonobuoys will use only the passive capability of sonobuoys when marine mammals are detected within 200 yards of the sonobuoy.
19. Marine mammal detections will be immediately reported to assigned Aircraft Control Unit for further dissemination to ships in the vicinity of the marine species as appropriate where it is reasonable to conclude that the course of the ship will likely result in a closing of the distance to the detected marine mammal.
20. Safety Zones - When marine mammals are detected by any means (aircraft, shipboard lookout, or acoustically) within 1,000 yards of the sonar dome (the bow), the ship or submarine will limit active transmission levels to at least 6 dB below normal operating levels.

    (i) Ships and submarines will continue to limit maximum transmission levels by this 6 dB factor until the animal has been seen to leave the area, has not been detected for 30 minutes, or the vessel has transited more than 2,000 yards beyond the location of the last detection.

    (ii) Should a marine mammal be detected within or closing to inside 500 yards of the sonar dome, active sonar transmissions will be limited to at least 10 dB below the equipment's normal operating level. Ships and submarines will continue to limit maximum ping levels by this 10 dB factor until the animal has been seen to leave the area, has not been detected for 30 minutes, or the vessel has transited more than 2,000 yards beyond the location of the last detection.

    (iii) Should the marine mammal be detected within or closing to inside 200 yards of the sonar dome, active sonar transmissions will cease. Sonar will not resume until the animal has been seen to leave the area, has not

been detected for 30 minutes, or the vessel has transited more than 2,000 yards beyond the location of the last detection.

(iv) Special conditions applicable for dolphins and porpoises only: If, after conducting an initial maneuver to avoid close quarters with dolphins or porpoises, the Officer of the Deck concludes that dolphins or porpoises are deliberately closing to ride the vessel's bow wave, no further mitigation actions are necessary while the dolphins or porpoises continue to exhibit bow wave riding behavior.

(v) If the need for power-down should arise as detailed in "Safety Zones" above, Navy shall follow the requirements as though they were operating at 235 dB - the normal operating level (i.e., the first power-down will be to 229 dB, regardless of at what level above 235 sonar was being operated).

21. Prior to start up or restart of active sonar, operators will check that the Safety Zone radius around the sound source is clear of marine mammals.
22. Sonar levels (generally) — The ship or submarine will operate sonar at the lowest practicable level, not to exceed 235 dB, except as required to meet tactical training objectives.
23. Helicopters shall observe/survey the vicinity of an ASW exercise for 10 minutes before the first deployment of active (dipping) sonar in the water.
24. Helicopters shall not dip their sonar within 200 yards of a marine mammal and shall cease pinging if a marine mammal closes within 200 yards after pinging has begun.
25. Submarine sonar operators will review detection indicators of close-aboard marine mammals prior to the commencement of ASW operations involving active mid-frequency sonar.
26. Increased vigilance during major ASW training exercises with tactical active sonar when critical conditions are present.

Based on lessons learned from strandings in Bahamas 2000, Madeiras 2000, Canaries 2002, and Spain 2006, beaked whales are of particular concern since they have been associated with MFA sonar operations. Navy should avoid planning major ASW training exercises with MFA sonar in areas where they will encounter conditions which, in their aggregate, may contribute to a marine mammal stranding event.

The conditions to be considered during exercise planning include:

(1) Areas of at least 1000 m depth near a shoreline where there is a rapid change in bathymetry on the order of 1000-6000 meters occurring across a relatively short horizontal distance (e.g., 5 nm).

(2) Cases for which multiple ships or submarines ($\geq$ 3) operating MFA sonar in the same area over extended periods of time ($\geq$ 6 hours) in close proximity (10 nm apart).

(3) An area surrounded by land masses, separated by less than 35 nm and at least 10 nm in length, or an embayment, wherein operations involving multiple ships/subs (3) employing MFA sonar near land may produce

sound directed toward the channel or embayment that may cut off the lines of egress for marine mammals.
(4) Although not as dominant a condition as bathymetric features, the historical presence of a significant surface duct (i.e., a mixed layer of constant water temperature extending from the sea surface to 100 or more feet).

If the major exercise must occur in an area where the above conditions exist in their aggregate, these conditions must be fully analyzed in environmental planning documentation. Navy will increase vigilance by undertaking the following additional protective measure:

A dedicated aircraft (Navy asset or contracted aircraft) will undertake reconnaissance of the embayment or channel ahead of the exercise participants to detect marine mammals that may be in the area exposed to active sonar. Where practical, advance survey should occur within about two hours prior to MFA sonar use, and periodic surveillance should continue for the duration of the exercise. Any unusual conditions (e.g., presence of sensitive species, groups of species milling out of habitat, any stranded animals) shall be reported to the Officer in Tactical Command (OTC), who should give consideration to delaying, suspending or altering the exercise.

All safety zone requirements described in Measure 20 apply.

The post-exercise report must include specific reference to any event conducted in areas where the above conditions exist, with exact location and time/duration of the event, and noting results of surveys conducted.

IV. Coordination and Reporting

27. Navy will coordinate with the local 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.
28. Navy will submit a report to the Office of Protected Resources, NMFS, within 120 days of the completion of a Major Exercise. This report must contain a discussion of the nature of the effects, if observed, based on both modeled results of real-time events and sightings of marine mammals.
29. If a stranding occurs during an ASW exercise, NMFS and Navy will coordinate to determine if MFA sonar should be temporarily discontinued while the facts surrounding the stranding are collected.

APPENDIX C - PROTECTIVE MEASURES MESSAGE

ESG COMPTUEX 08-01 PROTECTIVE MEASURES MESSAGE

SUBJ/ENVIRONMENTAL PROTECTIVE MEASURES FOR EXPEDITIONARY STRIKE /GROUP COMPOSITE TRAINING UNIT EXERCISE (ESG COMPTUEX) (NOV-DEC 2007) //
REF/A/MSGID:AT-SEA POLICY/SECNAV/YMD:20001228//
REF/B/MSGID:DOC/USD MMPA NDE/YMD:20070123//
REF/C/MSGID:GENADMIN/COMUSFLTFORCOM NORFOLK VA/281436ZMAR2007//
REF/D/MSGID:DVD-US NAVY MARINE/SPECIES AWARENESS TRAINING/-/VER 1.1 //
REF/E/MSGID:DOC/50 CFR 224.103/YMD:19990323//
REF/F/MSGID:GENADMIN/COMUSFLTFORCOM NORFOLK VA/172152ZDEC2004//
REF/G/MSGID:DOC/NMFS/YMD:19970515//
REF/H/MSGID:GENADMIN/SECNAV WASHINGTON DC/181634ZNOV2005//
REF/I/MSGID:GENADMIN/COMUSFLTFORCOM NORFOLK VA/231614ZMAY2006//
REF/J/MSGID:DOC/OPNAVINST 3100.6H/YMD:20060201//
REF/K/MSGID:ENV HANDBOOK TRAINER/MCB CAMP LEJEUNE/YMD:20031001//
NARR/REF A IS UNSECNAV MEMO FOR CNO AND COMMARCOR REGARDING ENVIRONMENTAL COMPLIANCE DURING TRAINING ACTIVITIES. REF B IS DUSD MEMO ESTABLISHING A NATIONAL DEFENSE EXEMPTION (NDE) FROM REQUIREMENTS OF THE MARINE MAMMAL PROTECTION ACT (MMPA) FOR CERTAIN DOD TRAINING USING MID-FREQUENCY ACTIVE (MFA) (1-10 KZ) SONAR. REF C IS ALLANTFLT MESSAGE PROMULGATING PROTECTIVE MEASURES FOR CERTAIN DOD TRAINING USING MFA SONAR AS REQUIRED BY REF B. REF D IS DVD OF U.S. NAVY MARINE SPECIES AWARENESS TRAINING (MSAT), VERSION 1.1 (PIN #806824). REF E IS CODE OF FEDERAL REGULATIONS SECTION ESTABLISHING NORTHERN RIGHT WHALE STANDOFF DISTANCES FOR ALL PERSONS AND VESSELS SUBJECT TO U.S. JURISDICTION. REF F IS ALLANTFLT MESSAGE IMPLEMENTING PROTECTIVE MEASURES FOR MID-ATLANTIC VESSEL TRANSITS. REF G IS NATIONAL MARINE FISHERIES SERVICE (NMFS) BIOLOGICAL OPINION REGARDING NAVY ACTIVITIES IN THE CHARLESTON/JACKSONVILLE (CHAS/JAX) OPERATING AREA (OPAREA). REF H IS ALNAV MESSAGE REQUIRING RETENTION OF ALL RECORDS RELATED TO MFA SONAR POSITIONAL REPORTING SYSTEM (SPORTS). REF J IS OPNAV SPECIAL INCIDENT REPORTING PROCEDURES, MARINE MAMMAL INCIDENT REPORTS. REF K IS ENVIRONMENTAL HANDBOOK FOR TRAINING ACTIVITIES AT MARINE CORPS BASE (MCB) CAMP LEJEUNE.//

POC/COMUSFLTFORCOM/NORFOLK VA/UNIT:N774A /NAME:XXXXX/TEL:757-XXX-XXXX DSN XXX//
GENTEXT/REMARKS/1. IN ACCORDANCE WITH REFS A THROUGH K, THE FOLLOWING ENVIRONMENTAL PROTECTIVE MEASURES ARE IN EFFECT FOR THE USS NASSAU ESG COMPTUEX 08-1. ADHERENCE TO THESE PROTECTIVE MEASURES BY COMSTRKFORTRALANT (OFFICER CONDUCTING THE EXERCISE (OCE)) AND ALL PARTICIPATING UNITS IS MANDATORY THROUGHOUT THE EXERCISE. THESE MEASURES ARE DESIGNED TO REDUCE THE RISK TO ENDANGERED SPECIES AND MARINE MAMMALS THAT NAVAL FORCES MAY ENCOUNTER DURING AT-SEA OPERATIONS IN CHERRY POINT, CHAS, AND VACAPES OPAREAS, AND TO COMPLY WITH LAND-BASED ENVIRONMENTAL REQUIREMENTS FOR OPERATIONS AT MCB CAMP LEJEUNE AND PINECASTLE BOMBING RANGE.
2. ALL PARTICIPATING UNITS SHALL APPOINT AN ENVIRONMENTAL COORDINATOR WHO WILL ATTEND ANY NECESSARY ENVIRONMENTAL BRIEFINGS AS DIRECTED BY THE OCE, BE RESPONSIBLE FOR OBTAINING ALL RELEVANT ENVIRONMENTAL INSTRUCTIONS, DIRECTIVES AND ORDERS, AND ENSURE THAT ALL RELEVANT ENVIRONMENTAL RESTRICTIONS AND GUIDANCE ARE FOLLOWED, INCLUDING THOSE OUTLINED IN THIS MESSAGE.
3. REF B ESTABLISHED NEW MARINE SPECIES PROTECTIVE MEASURES FOR NAVY TRAINING EVENTS THAT INVOLVE THE USE OF MFA SONAR. THESE MEASURES, PROMULGATED BY REF C, ARE IN EFFECT UNTIL 23 JAN 09 AND ARE INCLUDED IN THIS MESSAGE.
4. PROTECTIVE MEASURES IN THIS MESSAGE ARE ORGANIZED AS FOLLOWS:
GENERAL MARITIME MEASURES (PARA 5); NORTH ATLANTIC RIGHT WHALE MEASURES (PARA 6); PASSIVE SONAR (PARA 7); MFA SONAR (PARA 8); SONAR USE REPORTING (PARA 9); AIR OPERATIONS, INCLUDING GENERAL AIR OPS AND CONTINGENCY BOMB JETTISON (PARA 10); SURFACE-TO-SURFACE GUNNERY USING SLED/SEPTAR (PARA 11); MARINE SPECIES INCIDENT REPORTING (PARA 12); WASTE (PARA 13); AND MEASURES FOR MCB CAMP LEJEUNE (PARA 14).
5. GENERAL MARITIME MEASURES. THE FOLLOWING MEASURES ARE APPLICABLE TO ALL SHIP AND SUBMARINE OPERATIONS THROUGHOUT THE EXERCISE PERIOD IN ALL WATERS:
5.A. PERSONNEL TRAINING.
5.A.1. ALL COMMANDING OFFICERS, EXECUTIVE OFFICERS, LOOKOUTS, OODS, JOODS, MARITME PATROL AIRCRAFT AIRCREWS, AND ASW/MIW HELICOPTER CREWS WILL COMPLETE MSAT BY VIEWING THE U.S. NAVY MSAT DVD (REF D). MSAT MAY ALSO BE VIEWED ON-LINE AT: "HTTPS:FORWARD SLASH FORWARD SLASH MRC.TECQUEST.NET".
5.A.2. NAVY LOOKOUTS WILL UNDERTAKE EXTENSIVE TRAINING IN ORDER TO QUALIFY AS A WATCHSTANDER IN ACCORDANCE WITH THE LOOKOUT TRAINING HANDBOOK (NAVEDTRA 12968-B).

5.A.3. LOOKOUT TRAINING WILL INCLUDE ON-THE-JOB INSTRUCTIONS UNDER THE SUPERVISION OF A QUALIFIED, EXPERIENCED WATCHSTANDER. FOLLOWING SUCCESSFUL COMPLETION OF THIS SUPERVISED TRAINING PERIOD, LOOKOUTS WILL COMPLETE THE PERSONNEL QUALIFICATION STANDARDS PROGRAM, CERTIFYING THAT THEY HAVE DEMONSTRATED THE NECESSARY SKILLS (SUCH AS DETECTION AND REPORTING OF PARTIALLY SUBMERGED OBJECTS). THIS DOES NOT FORBID COUNTING PERSONNEL BEING TRAINED AS LOOKOUTS AMONG THOSE LISTED IN PARA'S 5.B.1. AND 5.B.4., SO LONG AS SUPERVISORS MONITOR THEIR PROGRESS AND PERFORMANCE.
5.A.4. LOOKOUTS WILL BE TRAINED IN THE MOST EFFECTIVE MEANS TO ENSURE QUICK AND EFFECTIVE COMMUNICATION WITHIN THE COMMAND STRUCTURE IN ORDER TO FACILITATE IMPLEMENTATION OF PROTECTIVE MEASURES IF MARINE SPECIES ARE SPOTTED.
5.B. LOOKOUT AND WATCHSTANDER RESPONSIBILITIES.
5.B.1. ON THE BRIDGE OF SURFACE SHIPS, THERE WILL ALWAYS BE AT LEAST THREE PEOPLE ON WATCH WHOSE DUTIES INCLUDE OBSERVING THE WATER SURFACE AROUND THE VESSEL.
5.B.2. SURFACE VESSELS WILL HAVE AT LEAST TWO POSTED LOOKOUTS; SURFACED SUBMARINES WILL HAVE AT LEAST ONE POSTED LOOKOUT. LOOKOUTS ALREADY POSTED FOR SAFETY OF NAVIGATION AND MAN-OVERBOARD PRECAUTIONS MAY BE USED TO FILL THIS REQUIREMENT. AS PART OF THEIR REGULAR DUTIES, LOOKOUTS WILL WATCH FOR AND REPORT TO THE OFFICER OF THE DECK (OOD) THE PRESENCE OF MARINE MAMMALS AND SEA TURTLES.
5.B.3. LOOKOUTS SHALL NOT PERFORM ADDITIONAL DUTIES THAT WOULD REQUIRE ABANDONING THEIR LOOKOUT POSTS. ALL BRIDGE WATCHSTANDERS/LOOKOUTS SHOULD MAINTAIN A VIGILANT WATCH FOR MARINE MAMMALS AND SEA TURTLES.
5.B.4. ALL SURFACE SHIPS PARTICIPATING IN ASW EXERCISES WILL, IN ADDITION TO THE THREE PERSONNEL ON WATCH NOTED IN PARA 5.B.1., HAVE AT ALL TIMES DURING THE EXERCISE AT LEAST TWO ADDITIONAL PERSONNEL ON WATCH AS LOOKOUTS.
5.B.5. PERSONNEL ON LOOKOUT AND OFFICERS ON WATCH ON THE BRIDGE WILL HAVE AT LEAST ONE SET OF BINOCULARS AVAILABLE FOR EACH PERSON TO AID IN THE DETECTION OF MARINE MAMMALS AND SEA TURTLES.
5.B.6. ON SURFACE VESSELS EQUIPPED WITH MFA SONAR, PEDESTAL MOUNTED (BIG EYE (20 X 110)) BINOCULARS WILL BE PROPERLY INSTALLED AND IN GOOD WORKING ORDER TO ASSIST IN THE DETECTION OF MARINE MAMMALS AND SEA TURTLES IN THE VICINITY OF THE VESSEL.
5.B.7. PERSONNEL ON LOOKOUT WILL USE VISUAL SEARCH PROCEDURES EMPLOYING A SCANNING METHODOLOGY IN ACCORDANCE WITH THE LOOKOUT TRAINING HANDBOOK.

5.B.8. AFTER SUNSET AND PRIOR TO SUNRISE, LOOKOUTS WILL EMPLOY NIGHT LOOKOUT TECHNIQUES IN ACCORDANCE WITH THE LOOKOUT TRAINING HANDBOOK.
5.B.9. PERSONNEL ON LOOKOUT WILL BE RESPONSIBLE FOR REPORTING ALL OBJECTS OR ANOMALIES SIGHTED IN THE WATER (REGARDLESS OF THE DISTANCE FROM THE VESSEL) TO THE OOD, SINCE ANY OBJECT OR DISTURBANCE (E.G., TRASH, PERISCOPE, SURFACE DISTURBANCE, DISCOLORATION) IN THE WATER MAY BE INDICATIVE OF A THREAT TO THE VESSEL AND ITS CREW OR INDICATIVE OF MARINE MAMMALS OR SEA TURTLES THAT MAY NEED TO BE AVOIDED AS WARRANTED.
5.C. MARINE MAMMAL AND SEA TURTLE AVOIDANCE.
5.C.1. WHILE IN TRANSIT, NAVAL VESSELS SHALL BE ALERT AT ALL TIMES, USE EXTREME CAUTION, AND PROCEED AT A "SAFE SPEED" SO THAT THE VESSEL CAN TAKE PROPER AND EFFECTIVE ACTION TO AVOID A COLLISION WITH ANY MARINE MAMMAL OR SEA TURTLE AND CAN BE STOPPED WITHIN A DISTANCE APPROPRIATE TO THE PREVAILING CIRCUMSTANCES AND CONDITIONS.
5.C.2. FLOATING WEEDS, ALGAL MATS AND SARGASSUM RAFTS ARE BIOLOGICAL FEATURES KNOWN TO BE GOOD INDICATORS OF SEA TURTLE PRESENCE. JUVENILE SEA TURTLES OFTEN INHABIT FLOATING WEEDS, ALGAL MATS AND SARGASSUM RAFTS. THUS, SEA TURTLE PRESENCE SHOULD BE ASSUMED IF THESE BIOLOGICAL FEATURES ARE DETECTED.
5.C.3. CLUSTERS OF SEA BIRDS AND JELLYFISH INDICATE THE PRESENCE OF PREY SPECIES AND, THUS, ARE GOOD INDICATORS OF SEA TURTLES AND MARINE MAMMALS. THEREFORE, INCREASED VIGILANCE IN WATCHING FOR SEA TURTLES AND MARINE MAMMALS SHOULD BE TAKEN IN AREAS WHERE SEA BIRDS AND JELLYFISH ARE PRESENT.
5.C.4. WHALE AVOIDANCE. UPON SIGHTING A WHALE, ADJUST COURSE AND SPEED AS NECESSARY TO MAINTAIN A SAFE DISTANCE, AT LEAST 500 YARDS, WHEN POSSIBLE. AVOID APPROACHING WHALES HEAD-ON CONSISTENT WITH PRUDENT SEAMANSHIP. THIS REQUIREMENT DOES NOT APPLY IF A VESSEL'S SAFETY IS THREATENED, SUCH AS WHEN CHANGE OF COURSE WOULD CREATE AN IMMINENT AND SERIOUS THREAT TO A PERSON, VESSEL OR AIRCRAFT, AND TO THE EXTENT VESSELS ARE RESTRICTED IN THEIR ABILITY TO MANEUVER. RESTRICTED MANEUVERABILITY INCLUDES, BUT IS NOT LIMITED TO, SITUATIONS WHEN VESSELS ARE ENGAGED IN DREDGING, SUBMERGED OPERATIONS, LAUNCHING AND RECOVERING AIRCRAFT OR LANDING CRAFT, MINESWEEPING OPERATIONS, REPLENISHMENT WHILE UNDERWAY, AND TOWING OPERATIONS THAT SEVERELY RESTRICT A VESSEL'S ABILITY TO DEVIATE COURSE. TAKE REASONABLE STEPS TO ALERT OTHER VESSELS IN THE VICINITY OF THE WHALE.
6. NORTH ATLANTIC RIGHT WHALE MEASURES.
6.A. STANDOFF DISTANCES. REF E PROHIBITS APPROACH WITHIN 500 YARDS OF A RIGHT WHALE BY VESSEL, AIRCRAFT, OR ANY OTHER MEANS, AND REQUIRES VESSELS STEER A COURSE AWAY AND IMMEDIATELY

LEAVE THE AREA AT A SLOW SAFE SPEED IF APPROACHING OR INITIALLY DETECTING A RIGHT WHALE WITHIN 500 YARDS. SUCH MEASURES DO NOT APPLY WHERE THERE IS IMMINENT AND SERIOUS THREAT TO A PERSON, VESSEL OR AIRCRAFT, OR WHERE A VESSEL IS RESTRICTED IN ABILITY TO MANEUVER.

6.B. VESSEL TRANSITS. SPECIFIC MID-ATLANTIC PORTS HAVE BEEN IDENTIFIED WHERE VESSEL TRANSIT DURING RIGHT WHALE MIGRATION IS OF HIGHEST CONCERN. DURING NOV-DEC, CHESAPEAKE BAY AND NORTH AND SOUTH CAROLINA PORTS ARE AMONG THE PORTS OF HIGHEST CONCERN. PER REF F, NAVY VESSELS TRANSITING THIS AREA DURING ESG COMPTUEX 08-1 SHALL USE EXTREME CAUTION, OPERATE AT A SLOW SAFE SPEED, AND INCREASE VIGILANCE WITH RESPECT TO AVOIDANCE OF VESSEL-WHALE INTERACTIONS.

6.C. RIGHT WHALE SIGHTINGS. IN ACCORDANCE WITH REF G, NAVY SHIPS AND AIRCRAFT OPERATING IN THE JAX OPAREA WILL REPORT ANY SIGHTINGS OF NORTH ATLANTIC WHALES TO FACSFAC JAX. FACSFAC JAX WILL ALERT ALL NAVY UNITS OPERATING IN THE JAX OPAREA OF THE SIGHTING.

7. PASSIVE SONAR.

7.A. ALL PERSONNEL ENGAGED IN PASSIVE ACOUSTIC SONAR OPERATION (INCLUDING AIRCRAFT, SURFACE SHIPS OR SUBMARINES), WILL MONITOR FOR MARINE MAMMAL VOCALIZATIONS DURING ASW EXERCISES AND REPORT THE DETECTION OF ANY MARINE MAMMAL TO THE APPROPRIATE WATCH STATION FOR DISSEMINATION AND APPROPRIATE ACTION.

7.B. SUBMARINE SONAR OPERATORS WILL REVIEW DETECTION INDICATORS OF CLOSE-ABOARD MARINE MAMMALS PRIOR TO THE COMMENCEMENT OF ASW OPERATIONS INVOLVING MFA SONAR.

8. MID-FREQUENCY ACTIVE SONAR.

8.A. ALL MFA SONAR OPERATIONS SHALL BE LIMITED TO EAST OF THE 100-FATHOM CURVE.

8.B. NAVY AIRCRAFT PARTICIPATING IN ASW EXERCISES AT SEA WILL CONDUCT AND MAINTAIN, WHEN OPERATIONALLY FEASIBLE AND SAFE, SURVEILLANCE FOR MARINE MAMMALS AND SEA TURTLES AS LONG AS IT DOES NOT VIOLATE SAFETY CONSTRAINTS OR INTERFERE WITH THE ACCOMPLISHMENT OF PRIMARY OPERATIONAL DUTIES.

8.C. COMMANDING OFFICERS WILL MAKE USE OF MARINE MAMMAL AND SEA TURTLE DETECTION CUES (PROVIDED IN MSAT) AND INFORMATION TO LIMIT INTERACTION WITH THESE MARINE SPECIES TO THE MAXIMUM EXTENT POSSIBLE CONSISTENT WITH SAFETY OF THE SHIP.

8.D. DURING MFA SONAR OPERATIONS, PERSONNEL WILL UTILIZE ALL AVAILABLE SENSOR AND OPTICAL SYSTEMS (SUCH AS NIGHT VISION GOGGLES) TO AID IN THE DETECTION OF MARINE MAMMALS AND SEA TURTLES.

8.E. AIRCRAFT WITH DEPLOYED SONOBUOYS WILL USE ONLY THE PASSIVE CAPABILITY OF SONOBUOYS WHEN MARINE MAMMALS ARE DETECTED WITHIN 200 YARDS OF THE SONOBUOY.

8.F. MARINE MAMMAL AND SEA TURTLE DETECTIONS WILL BE IMMEDIATELY REPORTED TO ASSIGNED AIRCRAFT CONTROL UNIT FOR FURTHER DISSEMINATION TO SHIPS IN THE VICINITY OF THE MARINE SPECIES, AS APPROPRIATE, WHERE IT IS REASONABLE TO CONCLUDE THAT THE COURSE OF THE SHIP WILL LIKELY RESULT IN A CLOSING OF THE DISTANCE OF THE DETECTED ANIMAL(S).
8.G. SAFETY ZONES. WHEN MARINE MAMMALS ARE DETECTED BY ANY MEANS (AIRCRAFT, SHIPBOARD LOOKOUT, OR ACOUSTICALLY) WITHIN 1,000 YARDS OF THE SONAR DOME (THE BOW), THE SHIP OR SUBMARINE WILL LIMIT ACTIVE TRANSMISSION LEVELS TO AT LEAST 6 DB BELOW NORMAL OPERATION LEVELS.
8.G.1. SHIPS AND SUBMARINES WILL CONTINUE TO LIMIT MAXIMUM TRANSMISSION LEVELS BY THIS 6 DB FACTOR UNTIL THE ANIMAL HAS BEEN SEEN TO LEAVE THE AREA, HAS NOT BEEN DETECTED FOR 30 MINUTES, OR THE VESSEL HAS TRANSITED MORE THAN 2,000 YARDS BEYOND THE LOCATION OF THE LAST DETECTION.
8.G.2. SHOULD A MARINE MAMMAL BE DETECTED WITHIN CLOSING TO INSIDE 500 YARDS OF THE SONAR DOME, ACTIVE SONAR TRANSMISSIONS WILL BE LIMITED TO AT LEAST 10 DB BELOW THE EQUIPMENT'S NORMAL OPERATING LEVEL. SHIPS AND SUBMARINES WILL CONTINUE TO LIMIT MAXIMUM PING LEVELS BY THIS 10 DB FACTOR UNTIL THE ANIMAL HAS BEEN SEEN TO LEAVE THE AREA, HAS NOT BEEN DETECTED FOR 30 MINUTES, OR THE VESSEL HAS TRANSITED MORE THAN 2,000 YARDS BEYOND THE LOCATION OF THE LAST DETECTION.
8.G.3. SHOULD THE MARINE MAMMAL BE DETECTED WITHIN OR CLOSING TO INSIDE 200 YARDS OF THE SONAR DOME, ACTIVE SONAR TRANSMISSIONS WILL CEASE. SONAR WILL NOT RESUME UNTIL THE ANIMAL HAS BEEN SEEN TO LEAVE THE AREA, HAS NOT BEEN DETECTED FOR 30 MINUTES, OR THE VESSEL HAS TRANSITED MORE THAN 2,000 YARDS BEYOND THE LOCATION OF THE LAST DETECTION.
8.G.4. SPECIAL CONDITIONS APPLICABLE FOR DOLPHINS AND PORPOISES ONLY: IF, AFTER CONDUCTING AN INITIAL MANEUVER TO AVOID CLOSE QUARTERS WITH DOLPHINS AND PORPOISES THE OOD CONCLUDES THAT DOLPHINS OR PORPOISES ARE DELIBERATELY CLOSING TO RIDE THE VESSELS BOW WAVE, NO FURTHER MITIGATION ACTIONS ARE NECESSARY WHILE THE DOLPHINS OR PORPOISES CONTINUE TO EXHIBIT BOW WAVE RIDING BEHAVIOR.
8.G.5. IF THE NEED FOR POWER-DOWN SHOULD ARISE AS DETAILED IN "SAFETY ZONES" ABOVE, NAVY SHALL FOLLOW THE REQUIREMENTS AS THOUGH THEY WERE OPERATING AT 235 DB, THE NORMAL OPERATING LEVEL (I.E., THE FIRST POWER-DOWN WILL BE AT 229 DB, REGARDLESS OF AT WHAT LEVEL ABOVE 235 SONAR WAS BEING OPERATED).
8.H. PRIOR TO START-UP OR RESTART OF ACTIVE SONAR, OPERATORS WILL CHECK THAT THE SAFETY ZONE RADIUS AROUND THE SOUND SOURCE IS CLEAR OF MARINE MAMMALS.

8.I. SONAR LEVELS (GENERALLY). NAVY WILL OPERATE SONAR AT THE LOWEST PRACTICABLE LEVEL, NOT TO EXCEED 235 DB, EXCEPT AS REQUIRED TO MEET TACTICAL TRAINING OBJECTIVES.
8.J. HELICOPTERS SHALL OBSERVE AND SURVEY THE VICINITY OF AN ASW EXERCISE FOR 10 MINUTES BEFORE THE FIRST DEPLOYMENT OF ACTIVE
(DIPPING) SONAR IN THE WATER.
8.K. HELICOPTERS SHALL NOT DIP THEIR SONAR WITHIN 200 YARDS OF A MARINE MAMMAL AND SHALL CEASE PINGING IF A MARINE MAMMAL CLOSES WITHIN 200 YARDS AFTER PINGING HAS BEGUN.
8.L. UNITS WILL ATTEMPT TO COLLECT PHOTOGRAPHS OR VIDEO OF MARINE\MAMMAL SIGHTINGS FOR FORWARDING TO USFF.
9. SONAR USE REPORTING. PER REF H, ALL COMMANDS AND PERSONNEL MUST RETAIN ALL RECORDS RELATED TO MFA SONAR TESTING AND TRAINING UNTIL FURTHER NOTICE. FOR PURPOSES OF REF H ONLY, MFA SONAR IS DEFINED AS ANY SYSTEM OPERATING WITHIN THE FREQUENCY RANGE OF 1 KHZ AND 210 KHZ. PERSONNEL ARE ALSO REQUIRED TO IMPLEMENT REASONABLE SAFEGUARDS TO ENSURE THAT ALL RELEVANT DOCUMENTS ARE NOT DESTROYED, ALTERED OR DELETED. DOCUMENTS ARE TO BE PRESERVED IN THEIR NATIVE FORMAT (E.G., DOCUMENTS PRODUCED IN MS WORD MUST BE PRESERVED AS MS WORD DOCUMENTS).
9.A. ALL UNITS WILL REPORT SONAR USE IN ACCORDANCE WITH REF I.
9.B. MITIGATION AFTER ACTION REPORT (AAR). ALL UNITS ARE REQUIRED TO SUBMIT AN AAR. AAR'S WILL BE COLLECTED BY THE RESPECTIVE STRIKE GROUP COMMANDER AND FORWARDED TO USFF N77 VIA SIPERNET NLT 18 JAN 08. POC IS XXXX, (757) XXX-XXXX (DSN XXX), NIPR E-MAIL: "XXXXX@NAVY.MIL" AND SIPR E-MAIL: "XXXXXX@NAVY.XXXX". THE AAR WILL INCLUDE ALL INFORMATION LISTED IN PARA'S 9.B.1. THROUGH 9.B.3.
9.B.1. UNITS WILL PROVIDE TO STRIKE GROUP COMMANDER THE NUMBER OF HOURS PASSIVE AND ACTIVE SONAR USED (IF APPLICABLE), THE NUMBER OF HOURS SPENT SEARCHING FOR MARINE SPECIES FOR EACH WATCHSTANDER, THE NUMBER OF WATCHSTANDERS ON DUTY PER SHIP, AND UNIT POC'S. THE STRIKE GROUP COMMANDER WILL PROVIDE TO USFF AN EXERCISE SUMMARY THAT INCLUDES EXERCISE START AND END DATE, NUMBER OF SHIPS AND AIRCRAFT PARTICIPATING, NUMBER OF HOURS SPENT ON WATCH FOR MARINE MAMMALS FOR EACH UNIT, TOTAL NUMBER OF HOURS PASSIVE AND ACTIVE SONAR USED, AND UNIT POC'S. GOAL IS TO OBTAIN DATA THAT REPRESENTS TOTAL HOURS OF LOOKOUT EFFORT VERSUS TOTAL SIGHTINGS DURING THE EXERCISE (NOT JUST DURING ACTIVE SONAR TIMEFRAMES) AND DETAILED SPECIES INFORMATION TO ASCERTAIN MITIGATION EFFECTIVENESS.
9.B.2. UNITS WILL PROVIDE THE FOLLOWING INFORMATION FOR ALL MARINE MAMMALS SIGHTED DURING THE EXERCISE: ANIMAL DESCRIPTION (LARGE WHALE, SMALL WHALE OR PORPOISE/DOLPHIN, AT A MINIMUM); ESTIMATED QUANTITY OF ANIMALS; BEHAVIOR OBSERVED;

DATE AND TIME; TRUE BEARING RANGE FROM SHIP; LOCATION; VISUAL CONDITIONS AND NIGHT SEARCH TECHNIQUE EMPLOYED, IF APPLICABLE; LENGTH OF TIME VISUAL CONTACT WAS MAINTAINED; MITIGATION MEASURES IMPLEMENTED TO RESPOND TO SIGHTING; WHETHER SONAR WAS ACTIVE AND, IF SO, POWER LEVEL AT WHICH SONAR WAS OPERATING WHEN ANIMAL WAS SIGHTED; IF POWER WAS REDUCED OR SECURED, TIME PERIOD POWER WAS REDUCED OR SECURED. IF OBSERVATION WAS MADE FROM AN AIRCRAFT, UNITS WILL REPORT THE SEA STATE; LIGHTING CONDITIONS; AIRCRAFT SPEED, VECTOR AND ALTITUDE; AND APPROXIMATE DISTANCE BETWEEN ANIMAL AND SONOBUOY, IF APPLICABLE.

9.B.3. UNITS WILL REPORT ON THE EFFECTIVENESS OF MFA SONAR MITIGATION MEASURES AND GENERAL MARINE SPECIES AVOIDANCE MEASURES IMPLEMENTED (PROVIDING AS MUCH SPECIFICITY/DETAIL AS POSSIBLE), MAKE RECOMMENDATIONS TO IMPROVE THESE MEASURES, AND REPORT ANY IMPACT TO TRAINING FIDELITY CAUSED BY THESE MEASURES (E.G., SONAR POWER REDUCTION CAUSED BY MARINE MAMMAL ENTERING THE BUFFER ZONE, HOURS OF SEARCH OR PROSECUTION TIME LOST, MODIFICATION TO SEARCH OR PROSECUTION TACTICS, ETC.).

9.C. NAVY WILL COORDINATE WITH THE LOCAL 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 MFA SONAR USE ASSOCIATED WITH ASW TRAINING ACTIVITIES.

9.D. IF A STRANDING OCCURS DURING AN ASW EXERCISE, NMFS AND NAVY WILL COORDINATE TO DETERMINE IF MFA SONAR SHOULD BE TEMPORARILY DISCONTINUED WHILE THE FACTS SURROUNDING THE STRANDING ARE COLLECTED.

10. AIR OPERATIONS.

10.A. GENERAL AIR OPERATIONS IN ALL AIRSPACE. AIR OPERATIONS OVER LAND RANGES SHALL BE CONDUCTED IN ACCORDANCE WITH EXISTING INDIVIDUAL RANGE POLICIES AND GUIDANCE.

10.B. CONTINGENCY JETTISON OF AIR-TO-GROUND ORDNANCE AT SEA.

10.B.1. BOMB JETTISON AREA. FOR SAFETY OF FLIGHT, A BOMB JETTISON AREA EXISTS IN THE JAX OPAREA FOR AIRCREWS RETURNING FROM LAND RANGES WITH UNDELIVERED ORDNANCE. THIS AREA MAY BE USED TO DROP BOTH INERT AND LIVE BOMBS VICE HAVING TO CARRY THEM BACK TO THE SHIP. THE BOMB JETTISON AREA IN THE JAX OPAREA FOR BOMBING EVENTS AT PINECASTLE RANGE IS DEFINED BY THE FOLLOWING COORDINATES WITHIN GRID 31J:

29-20N 079-50W
29-20N 079-40W
29-10N 079-40W
29-10N 079-50W

10.B.2. BEFORE RELEASING ORDNANCE, AIRCRAFT SHALL FIRST ENSURE THAT THE AREA IS CLEAR OF MARINE MAMMALS AND SEA TURTLES USING RADAR AND/OR VISUAL SURVEYS.
10.B.3. IF A MARINE MAMMAL OR SEA TURTLE IS KILLED OR INJURED AS A RESULT OF ORDNANCE JETTISON, BOMBING IN THE AREA MUST STOP AND NOTIFICATION SHALL BE MADE AS DESCRIBED IN PARA 12 BELOW.
11. SURFACE-TO-SURFACE GUNNERY USING SLED/SEPTAR. THE FOLLOWING MITIGATIONS APPLY TO GUNNERY USING SURFACE TOWED TARGETS:
11.A. ONLY NON-EXPLOSIVE MUNITIONS WILL BE USED.
11.B. TARGET TOWING VESSEL/AIRCRAFT SHALL MAINTAIN A LOOKOUT. IF A MARINE MAMMAL OR SEA TURTLE IS SIGHTED IN THE VICINITY OF THE EXERCISE, THE TOW VESSEL/AIRCRAFT WILL IMMEDIATELY NOTIFY THE FIRING VESSEL IN ORDER TO SECURE GUNNERY FIRING UNTIL THE AREA IS CLEAR.
11.C. USE LOOKOUTS TO VISUALLY SURVEY FOR FLOATING WEEDS, ALGAL MATS AND SARGASSUM RAFTS WHICH MAY BE INHABITED BY IMMATURE SEA TURTLES IN THE TARGET AREA. INTENDED IMPACT SHALL NOT BE WITHIN 200 YARDS OF KNOWN OR OBSERVED FLOATING WEEDS, ALGAL MATS, SARGASSUM RAFTS OR CORAL REEFS.
11.D. ESTABLISH A 200 YARD RADIUS BUFFER ZONE AROUND THE INTENDED TARGET.
11.E. FROM THE INTENDED FIRING POSITION, USE TRAINED LOOKOUTS TO SURVEY THE BUFFER ZONE FOR MARINE MAMMALS AND SEA TURTLES PRIOR TO COMMENCEMENT AND DURING THE EXERCISE AS LONG AS PRACTICABLE. DUE TO THE DISTANCE BETWEEN THE FIRING POSITION AND THE BUFFER ZONE, LOOKOUTS ARE ONLY EXPECTED TO VISUALLY DETECT BREACHING WHALES, WHALE BLOWS AND LARGE PODS OF DOLPHINS AND PORPOISES.
11.F. CONDUCT EXERCISE ONLY WHEN THE BUFFER ZONE IS VISIBLE AND MARINE MAMMALS AND SEA TURTLES ARE NOT DETECTED WITHIN THE TARGET AREA AND BUFFER ZONE.
12. MARINE SPECIES INCIDENT REPORTING. IF ANY MARINE MAMMALS OR SEA TURTLES ARE STRANDED, INJURED OR KILLED, MILITARY ACTIVITIES IN THE VICINITY OF THE INCIDENT WILL BE IMMEDIATELY SUSPENDED AND THE SITUATION IMMEDIATELY REPORTED BY THE PARTICIPATING UNIT TO THE OCE.
THE DEFINITION OF STRANDING INCLUDES WHALES DISCOVERED ALIVE OR DEAD ON THE BEACH AND THOSE FOUND DEAD FLOATING IN OPEN OCEAN. ALL INCIDENTS SHALL BE REPORTED VIA OPREP 3 NAVY BLUE IN ACCORDANCE WITH APPENDIX C OF REF J.
13. WASTE. VESSELS WILL NOT DISCARD REFUSE OVERBOARD OR PUMP BILGES WHILE IN THE WATERS OF ONSLOW BAY.
14. MEASURES FOR MCB CAMP LEJEUNE.
14.A. EXERCISE PLAY WILL INCORPORATE AND ABIDE BY THE RESTRICTIONS PRESENTED IN BASE ORDER P-3570.1A, STANDARD

OPERATING PROCEDURES (SOP) FOR RANGE CONTROL, AND REF K. PARTICULAR ATTENTION SHOULD BE PAID TO CHAPTER 6, ENVIRONMENTAL PROCEDURES WITHIN THE RANGE CONTROL SOP. ALL PARTICIPATING UNITS WILL APPOINT AN ENVIRONMENTAL COORDINATOR WHO WILL ATTEND A MANDATORY ENVIRONMENTAL BRIEFING CONDUCTED BY THE HOST STATION. THE ENVIRONMENTAL COORDINATOR WILL BE RESPONSIBLE FOR OBTAINING A COPY OF BASE ORDER P-3570.1A AND ALL RELEVANT ENVIRONMENTAL INSTRUCTIONS, DIRECTIVES, AND ORDERS/HANDBOOK; ENSURE THAT ALL RELEVANT ENVIRONMENTAL INFORMATION IS DISSEMINATED TO PARTICIPATING TROOPS; AND ENSURE THAT ALL RELEVANT ENVIRONMENTAL RESTRICTIONS AND/OR GUIDANCE IS FOLLOWED.

14.B. THE USE OF LIVE AMMUNITION IS PROHIBITED EXCEPT AT AUTHORIZED TARGET COMMPLEXES. BLANK SMALL ARMS AMMUNITION WILL BE ISSUED AND USED. THE USE OF CHEMICAL AND RIOT AGENTS IS PROHIBITED.

14.C. THE DISPOSAL OF UNUSED ORDNANCE, AMMUNITION AND PYROTECHNICS WILL BE CLOSELY MONITORED AND CONTROLLED. UNUSED ORDNANCE AND AMMUNITION RESIDUES (CARTRIDGE CASINGS, ETC.), WITH THE EXCEPTION OF EXPENDED SMALL ARMS CARTRIDGES, WILL BE RETURNED TO AMMUNITION SUPPLY POINTS (DEFENSE REUTILIZATION AND MARKETING) FOR PROPER DISPOSAL VICE BEING DISCARDED IN TRAINING AREAS. NO DEBRIS, OTHER THAN SPENT SMALL ARMS BLANKS, WILL BE ABANDONED IN THE FIELD.

14.D. ALL SOLID WASTES WILL BE DISPOSED OF IN AUTHORIZED SANITARY LANDFILLS IN AN APPROVED MANNER AS DIRECTED BY INSTALLATION PROCEDURES. SANITARY LANDFILLS WILL BE THE ONLY APPROVED MEANS OF SOLID WASTE DISPOSAL FOR ALL TROUPS. ALL WET GARBAGE (FIELD RATIONS TRASH) WILL BE TRIPLE BAGGED AND PLACED IN DESIGNATED CONTAINERS OR TRANSPORTED DIRECTLY TO A DESIGNATED LANDFILL SITE. ALL "GRAYWATER" (FROM MESS FACILITIES, PERSONAL HYGIENE, ETC.) WILL BE DISPOSED OF BY TAPPING ON TO EXISTING SEWER LINES, IF APPLICABLE, OR BY USING SOAKAGE PITS APPROVED BY THE INSTALLATION'S ENVIRONMENTAL BRANCH/DIVISION AND DESIGNED IN ACCORDANCE WITH THE APPLICABLE COMPONENT SERVICE FIELD MANUAL. TELEPHONE THE ENVIRONMENTAL CONSERVATION BRANCH AT (910) 451-5063 AND THE PREVENTATIVE MEDICINE UNIT AT (910) 451-1930 TO ASSURE SITE WILL ABSORB GRAYWATER AND FOR DESIGN OF THE SYSTEM.

14.E. HUMAN WASTE WILL BE COLLECTED AND DISPOSED OF BY DESIGNATED SEWAGE DISPOSAL SERVICES. SLIT TRENCHES, "CAT HOLES," ETC., WILL BE USED ONLY IF APPROVED BY THE INSTALLATION. WHEN CAT HOLES ARE USED, THEY WILL NOT BE SITED CLOSER THAN 200 FEET FROM AN ESTABLISHED WATERCOURSE OR WET AREAS AND 500 FEET FROM DRINKING WATER WELLS.

14.F. MEDICAL WASTE WILL BE SEPARATED INTO INFECTIOUS AND NON-INFECTIOUS MEDICAL WASTE AND LABELED AS SUCH. THE USE OF BIOHAZARD BAGS/CONTAINERS FOR INFECTIOUS MEDICAL WASTE AND SHARPS WILL BE REQUIRED. THE DISPOSAL OF MEDICAL WASTES WILL BE IN ACCORDANCE WITH OPNAV INSTRUCTION 5090.1A, EPA GUIDE FOR INFECTIOUS WASTE MANAGEMENT, LANTFLT 029/88 (271624ZAUG1988), AND/OR APPLICABLE SERVICE DIRECTIVES.
14.G. WHILE CONDUCTING SHORE BOMBARDMENT, IF MARINE MAMMALS ARE OBSERVED WITHIN A 100 FOOT RADIUS OF THE SHIP, OPERATIONS WILL BE ABORTED UNTIL THE AREA HAS BEEN CLEARED OF MARINE MAMMALS.
14.H. FLORA AND FAUNA WILL NOT BE NEEDLESSLY DAMAGED OR DESTROYED.
14.I. IF ANY SITE OF POTENTIAL HISTORICAL OR ARCHAEOLOGICAL SIGNIFICANCE (I.E., EVIDENCE OF HUMAN ACTIVITY DURING WORLD WAR II ERA, OR BEFORE) IS ENCOUNTERED DURING THE EXERCISE, THE INSTALLATION COMMANDER WILL BE NOTIFIED. THE UNIT COMMANDER WILL ORDER ACTIONS IN THE VICINITY HALTED AND THE AREA MARKED. THE UNIT COMMANDER WILL IMMEDIATELY NOTIFY THE BASE ARCHAEOLOGIST AT (910) 451-7230.
14.J. FIRE DANGER RISK FOR THE DAY WOULD BE OBTAINED FROM BASE RANGE CONTROL DUTY OFFICER (BLACKBURN) AND ASSOCIATED RESTRICTIONS OBSERVED. SHOULD A WILDFIRE OCCUR, THE UNIT OBSERVING THE WILDFIRE WILL IMMEDIATELY CONTACT THE BASE RANGE CONTROL DUTY OFFICER
14.K. UNIT COMMANDERS WILL INFORM EXERCISE PERSONNEL PARTICIPATING IN MANEUVERS IN OR NEAR ALLIGATOR HABITAT THAT IT IS UNLAWFUL TO HARASS, HARM OR CAPTURE THE AMERICAN ALLIGATOR.
14.L. ALL LANDINGS ON ONSLOW BEACH MUST BE DONE WITHIN THE EB TRAINING AREA (BETWEEN ONSLOW SOUTH TOWER AND RISLEY PIER). THE PROSPECTIVE CHARACTER OF THE PRIMARY/FRONTAL DUNES WILL BE PRESERVED. NO VEHICLES OR PERSONNEL ARE ALLOWED ON ANY VEGETATED PORTIONS OF ANY DUNE STRUCTURE AT ANY TIME. THE DUNES WILL BE AVOIDED AND EXERCISE PARTICIPANTS WILL ONLY CROSS THE DUNE LINE AT EXISTING CROSSING POINTS THAT ARE MARKED WITH BLACK AND YELLOW-BANDED POSTS. CROSSING DUNES AT OTHER THAN DESIGNATED CROSSOVERS IS NOT AUTHORIZED. ALL DISPLACED SAND AND/OR SOIL WILL BE RESTORED TO ITS ORIGINAL CONDITION UPON COMPLETION OF THE EXERCISE. AT NO TIME IS DIGGING AUTHORIZED ON THE BEACH. SAND GRID AND MOMAT ROADWAYS WILL BE PLACED ON SHORE TO FACILITATE MOVEMENT OF VEHICLES FROM OFF-LOADING POINTS TO THE NEAREST ESTABLISHED ROADS.
BIVOUAC SITES WILL BE ESTABLISHED AT DESIGNATED BIVOUAC LOCATIONS BEHIND THE PRIMARY DUNES. BIVOUACKING ON ONSLOW

BEACH IN THE AREAS FROM THE OCEAN'S EDGE TO THE DUNES IS NOT AUTHORIZED.

14.M. VEHICLES ENTERING AND EXITING THE AIWW AND NEW RIVER MUST DO SO ONLY AT AUTHORIZED SPLACH POINTS. THE LIST OF AUTHORIZED SPLASH POINTS IS PUBLISHED IN THE TRAINERS ENVIRONMENTAL HANDBOOK AVAILABLE AT THE RANGE CONTROL OFFICE. ALL VEGETATED SALTWATER MARSHES IN THE VICINITY OF THE TRAINING BEACH AND THE AIWW ARE OFF LIMITS TO ALL VEHICLES, INCLUDING TACTICAL AMPHIBIOUS VEHICLES AND LCACS.

14.N. HOVERCRAFT ARE REQUIRED TO FOLLOW PRESCRIBED ROUTES TO AND FROM THE OCEAN AND MAINLAND.

14.O. THE AIWW MAY NEED TO BE CLOSED FOR A MAXIMUM OF THREE HOURS TO FACILITATE MOVING EXERCISE EQUIPMENT FROM ONSLOW BEACH TO DESIGNATED TRAINING AREAS. AN EXISTING CROSSING SITE NORMALLY USED FOR SUCH OPERATIONS WILL BE USED. THE CROSSING WILL BE COORDINATED WITH, AND APPROVED BY, THE CORPS OF ENGINEERS, AND A NOTICE TO MARINERS PUBLISHED TO INFORM MARINERS OF THE CLOSING TIMES AND DATES. LIGHTERING SUPPORT EQUIPMENT ACROSS THE WATERWAY WILL ALLOW THE WATERWAY TO REMAIN OPEN WITH MINIMAL DELAYS TO CIVILIAN AND COMMERCIAL BOAT TRAFFIC.

14.P. PRIOR TO ESTABLISHING FUEL DISPENSING POINTS (TACTICAL FUEL FARMS, BLADDER SYSTEMS AND TANKER SITES), WRITTEN APPROVAL FROM THE ASSISTANT CHIEF OF STAFF, TRAINING AND OPERATIONS, WILL BE OBTAINED.

WHEN PRACTICAL, MOST FUEL DISPENSING POINTS WILL BE LOCATED AT LEAST 200 FEET FROM ANY ESTABLISHED WATERCOURSE. IN ALL INSTANCES OF FUEL STORAGE AND VEHICLE REFUELING, THE COMPONENT FIELD MANUAL FOR THE HANDLING OF FUEL PRODUCTS WILL BE OBSERVED. THIS WILL INCLUDE THE CONSTRUCTION OF AN IMPERVIOUS BERM/LINER AROUND ALL FUEL BLADDERS, TANKS OR TRUCKS. THE MINIMUM REQUIREMENT FOR BERM/LINER CONTAINMENT WILL BE 110 PERCENT OF THE LARGEST FUEL CONTAINER. ALL VALVES AND DISPENSING POINTS WILL HAVE DRIP PANS OR OTHER SUITABLE CONTAINMENT TO CAPTURE ANY SPILLS.

14.Q. ALL FUEL HANDLERS WILL HAVE ON HAND ABSORBENT FOAM MATTING, OPEN HEAD DRUMS, WICKING MATERIAL AND BOOMS (WHERE NECESSARY) FOR IMMEDIATE CONTAINMENT OF FUEL IN THE EVENT OF A SPILL. ALL USING UNITS MUST HAVE A WRITTEN SPILL PLAN ON SITE APPROVED BY THE COMMAND.

14.R. IN ACCORDANCE WITH MCB CAMP LEJEUNE SOP, ANY FUEL SPILL ON LAND OR ANY SPILL WHICH PRODUCES A VISABLE SHEEN ON THE WATER SURFACE WILL BE REPORTED TO THE UNIT COMMANDER TO ENSURE IMPLEMENTATION OF THE DESIGNATED SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN/SPILL CONTINGENCY PLAN. THE SPILLING UNIT WILL IMMEDIATELY REPORT THE SPILL TO THE MCB CAMP LEJEUNE

FIRE DEPARTMENT AT EXTENSION 911 AND TO BLACKBURN ON 38.60 FM, OR TELEPHONE (910) 451-3064. THE UNIT WILL FOLLOW CLEAN-UP AND DISPOSAL INSTRUCTIONS PROVIDED BY THE FIRE DEPARTMENT OR THE ENVIRONMENTAL COMPLIANCE BRANCH.

14.S. WASHDOWN OF EQUIPMENT, TO INCLUDE SURFACE CRAFT, WILL ONLY BE COMPLETED AFTER RECEIPT OF A WRITTEN LETTER OF INSTRUCTION AND COPIES OF THE APPLICABLE MATERIAL SAFETY DATA SHEET(S) FOR ANY DETERGENTS OR SIMILAR MATERIAL PROPOSED FOR USE, HAVE BEEN REVIEWED.

LETTER IS TO BE ADDRESSED TO: COMMANDING OFFICER, MCB CAMP LEJEUNE, ASSISTANT CHIEF OF STAFF, INSTALLATIONS AND ENVIRONMENT, ENVIRONMENTAL MANAGEMENT DIVISION, ENVIRONMENTAL COMPLIANCE BRANCH.

WASHDOWN WILL ONLY BE ACCOMPLISHED WITHIN APPROVED WASHRACK FACILITIES OR WITHIN SPECIFIC AREAS EQUIPPED FOR THE CONTAINMENT AND COLLECTION OF ANY RESIDUAL OILS, GREASE, FUELS, LUBRICANTS, ETC.

14.T. FOR MCB CAMP LEJEUNE, NORTH CAROLINA, THE BASE PUBLIC AFFAIRS OFFICE (PAO) WILL BE DESIGNATED TO RECEIVE INQUIRIES AND/OR COMMENTS FROM THE PUBLIC DURING THE EXERCISE PERIOD.

14.U. SEABEACH AMARANTH LOCATIONS ARE MARKED WITH SIGNS READING QUOTE RESTRICTED AREA, ENDANGERED SPECIES SITE, NO VEHICLES ALLOWED END QUOTE; BUFFERING THE PLANT LOCATIONS BY 10 TO 15 FEET. NO EXERCISE ACTIVITY IS ALLOWED IN THESE LOCATIONS.

14.V. MCB CAMP LEJEUNE CONTAINS 65 MARKED RED-COCKADED WOODPECKER CAVITY TREECLUSTERS. THESE AREAS ARE PROTECTED BY A 200 FOOT BUFFER ZONE CLEARLY MARKED WITH SINGLE BANDS OF WHITE PAINT AND SIGNS READING QUOTE RESTRICTED AREA, ENDANGERED SPECIES SITE, NO VEHICLES ALLOWED, AND ENDANGERED SPECIES COLONY SITE END QUOTE. TRACKED AND WHEELED VEHICLES ARE RESTRICTED TO EXISTING, WELL DEFINED MAIN ROADS AND TRAILS IN THESE AREAS. TRAINING IN THESE AREAS IS RESTRICTED TO TRANSIENT FOOT TRAFFIC AND SMALL ARMS BLANK FIRE.

14.W. ROUGH-LEAVED LOOSESTRIFE AREAS ARE PROTECTED BY A 100 FOOT BUFFER ZONE CLEARLY MARKED WITH SINGLE BANDS OF WHITE PAINT AND SIGNS READING QUOTE RESTRICTED AREA, ENDANGERED SPECIES SITE, NO VEHICLES ALLOWED END QUOTE. TRACKED AND WHEELED VEHICLES ARE RESTRICTED FROM ENTERING THESE AREAS.

14.X. IF TACTICAL OR ADMINISTRATIVE VEHICLES ENCOUNTER A SEA TURTLE IN THE PROCESS OF NESTING, OR A HATCHLING SEA TURTLE(S) EMERGING FROMA NEST AND/OR CRAWLING TO THE SEA, ALL VEHICLES (EXCEPT EMERGENCY RELATED) SHALL STOP, SHUT OFF VEHICLE ENGINES, SWITCH FROM HEADLIGHTS TO PARKING LIGHTS (NIGHT TIME ONLY), AND ALL PERSONS SHALL REMAIN IN THEIR VEHICLES UNTIL THE SEA TURTLE(S) RETURNS OR CRAWLS TO THE SEA. ALL ENCOUNTERS WITH SEA TURTLES SHALL BE REPORTED IMMEDIATELY TO MCB CAMP

LEJEUNE'S ENVIRONMENTAL CONSERVATION BRANCH (910) 451-5063 OR RANGE CONTROL, AFTER HOURS.
DURING THE SEA TURTLE NESTING SEASON AND HATCHING SEASON (1 MAY THROUGH 31 OCT), ALL BEACHMASTER CAMPS SET UP IN ASSOCIATION WITH AMPHIBIOUS LANDING SHALL BE LOCATED OFF THE BEACH. ALL LIGHTING ASSOCIATED WITH THE BEACHMASTER CAMPS SHALL BE LIMITED TO THE IMMEDIATE AREA OF THE CAMP ONLY AND SHALL BE THE MINIMAL LIGHTING NECESSARY TO COMPLY WITH SAFETY REQUIREMENTS AND TRAINING NEEDS.
LIGHTING SHALL BE MINIMIZED THROUGH REDUCTION, SHIELDING, LOWERING, AND APPROPRIATE PLACEMENT OF LIGHTS TO PREVENT THE GLOWING PORTION OF ANY LUMINARIES FROM BEING DIRECTLY VISIBLE FROM ANYWHERE ON THE BEACH.
15. COMSTRKFORTRALANT SHALL ENSURE THAT INFORMATION IN THIS MESSAGE IS PROMULGATED TO ALL PARTICIPATING UNITS AND ALL AIRCREW AND BRIDGE WATCHSTANDERS ARE FAMILIAR WITH ITS CONTENTS.// BT

USS Truman 07-01 Combined Carrier Strike Group Composite Training Unit Exercise/Joint Task Force Exercise (Combined CSG COMPTUEX/JTFEX 07-01)

After Action Report for Exercise Occurring 02 July to 01 August 2007

Abstract

This report presents an analysis and discussion of the environmental conditions, effects, if observed, and sightings of marine species under the 14 June 2007 Biological Opinion for the USS Truman 07-1 Combined Carrier Strike Group Composite Training Unit/Joint Task Force Exercise and the National Defense Exemption from the requirements of the Marine Mammal Protection Act (MMPA) for mid-frequency active sonar.

INTRODUCTION

This report is presented to fulfill Navy and Atlantic Fleet written reporting requirements conditional to the 23 January 2007 National Defense Exemption (NDE) from the Requirements of the Marine Mammal Protection Act (MMPA) for Certain DoD Military Readiness Activities that employ Mid-Frequency Active Sonar (MFAS) or Improved Extended Echo Ranging (IEER) sonobuoys. In addition, these NDE mitigation measures are also included in the 14 June 2007 Biological Opinion (BO) for the USS Truman 07-1 Combined Carrier Strike Group Composite Training Unit/Joint Task Force Exercise (USS Truman 07-1 CSG COMPTUEX/JTFEX) (NMFS, 2007b), and as such the reporting under the BO also fulfills the reporting requirements of the NDE.

REPORT ORGANIZATION

This report, which contains only unclassified material, provides the information and analyses for USS Truman 07-1 Combined Carrier Strike Group Composite Training Unit/Joint Task Force Exercise, and is submitted in fulfillment of NDE and BO written requirements.

The report is organized by section in the following order:

Section 1- Exercise Summaries, provides exercise specific summary including the starting and ending dates, the number of ships and aircraft participating, and the number of hours of active sonar used.

Section 2- Observations and Mitigation Effectiveness, provides an estimated number of marine mammals observed during USS Truman 07-1 CSG COMPTUEX/JTFEX potentially affected or not affected by Anti-submarine Warfare (ASW) operations, noting the nature of any observed effects where possible. In addition, Section 2 assesses the effectiveness of the NDE and BO mitigation and monitoring measures required during exercises with regard to minimizing the use of MFAS in the vicinity of marine mammals.

Appendices contain tables and figures (Appendix A), and other supplementary information (Appendix B).

BACKGROUND

The CSG COMPTUEX is a major at-sea training event that represents the first time before deployment that an aircraft carrier and its carrier air wing integrate operations with surface and submarine units in an at-sea environment. A CSG COMPTUEX is an intermediate-training exercise that focuses on ensuring interoperability and integration of participating units. This exercise provides the opportunity for training with complex weapons tactics and employment against multiple threats in a demanding target-identification environment. A CSG COMPTUEX is typically 21 days long, during which time the CSG is presented with event driven mini-battle problems (two one-day exercises) and an event-driven Final Battle Problem (one three-day exercise). A CSG COMPTUEX is a critical step in pre-deployment training and a prerequisite for certifying that the CSG is ready to conduct a JTFEX.

A JTFEX would be scheduled after a CSG COMPTUEX and is a non-scripted scenario-driven exercise that requires adaptive mission planning by participating naval forces and operational staff. A JTFEX is an advanced-training exercise that typically includes other DoD services and/or Allied forces. The CSG is presented with a threat-driven scenario involving multiple threats that require advanced target-identification and rules of engagement. The focus of a JTFEX is on mission planning and strategy and on the orchestration of integrated maneuvers, communication, and coordination. A JTFEX typically lasts 10 days. Often a CSG COMPTUEX and a JTFEX take place sequentially, in which case the exercise is called a Combined CSG COMPTUEX/JTFEX. Combining these exercises saves time and resources, as the same Navy units participate in both exercises. When combined, these exercises are considered a single exercise event, which typically lasts 31 days.

The ASW training conducted during USS Truman 07-1 CSG COMPTUEX/JTFEX involved the use of ships, submarines, aircraft, non-explosive exercise weapons, and other training related devices within portions of the Cherry Point and Charleston/Jacksonville Operating Areas (OPAREAS, see Figure A-1, Appendix A).

USS Truman 07-1 CSG COMPTUEX/JTFEX was planned and documented by the U.S. Navy in "Final Supplement to the Final Comprehensive Overseas Environmental Assessment for Major Atlantic Fleet Training Exercises, 2007 Exercises" (DON, 2007). From that analysis it was determined that an Endangered Species Act section 7 consultation was required, and the resulting Biological Opinion (NMFS, 2007b) was received on 14 June 2007. The protective measures message (Appendix B, section B-3) was distributed, reiterating the applicable NDE and BO mitigation measures and explaining procedures for reporting marine mammal sightings discussed in Section 2. In addition, the marine species awareness training (MSAT) was provided to all exercise participants.

MFAS-equipped ships participating in USS Truman 07-1 CSG COMPTUEX/JTFEX include Ticonderoga-class guided missile cruisers (CG), Arleigh Burke-class guided missile destroyers (DDG) and Oliver Hazard Perry-class guided missile frigates (FFG) surface combatants with ANSQS-53C/ANSQS-56 sonar and associated aviation assets (SH-60B/F/R with AN/AQS-13F or AQS-22 dipping sonar, and AN/SSQ-62B1C/D/E Directional Command Activated Sonobuoy System -DICASS). MFAS-equipped submarines participating were Los Angeles-class fast attack (SSN) submarines, with AN/BQQ-5 sonar.

The total numbers of ASW-capable aviation assets participating in a given exercise varies based on maintenance ready aircraft and ship configuration. For instance, early versions of the DDG destroyers, the newest Navy surface combatant, do not have onboard hangers for helicopters. Later versions have hangars and up to two SH-60B/F/Rs. Of more importance than actual aircraft numbers however, is that active sonar use by aviation assets is captured and added to the total sonar use reported in this document. MFAS on Los Angeles-class (SSN) submarines (AN/BQQ-5) is seldom used in tactical training scenarios, where passive sonar use is the preferred system in order to maximize the stealth aspects of undersea operations.

SECTION 1 EXERCISE SUMMARY

EXERCISE SPECIFICS

USS Truman 07-1 CSG COMPTUEX/JTFEX was conducted from 02 July – 01 August 2007 and involved a Carrier Strike Group. Ships assigned to this CSG included: two non-MFAS-equipped ship, five MFAS-equipped ships and one submarine. Other participating U.S. Navy units representing support and opposition forces included one submarine, four MFAS-equipped ships, and France participated with three MFAS-equipped ships. Allied nations participating in the exercise were also provided the mitigation measures in Appendix B and the MSAT. There were two ASW SH-60 helicopters and two ASW P-3 Maritime Patrol Aircraft also participating.

MITIGATION MEASURES PERFORMED

All mitigations measures as stated in the 23 January 2007 NDE were adhered to during USS Truman 07-1 CSG COMPTUEX/JTFEX. (Appendix B, section B-1) These 29 NDE measures include specific details for personnel training, establish lookout and watchstander responsibilities, mandate specific operating procedures, and describe coordination and reporting requirements. Observation data from Navy lookout sightings for each exercise is described in Section 2.

The specific operating requirements in the terms and conditions of the BO (NMFS, 2007b, Appendix B, section B-2) that were in addition to the NDE were also adhered to. The specific components are:

1. All US and Foreign Navy participant lookouts and bridge personnel viewed both portions of the MSAT.
2. Lookouts searched for sea turtles in addition to marine mammals. (see Table A-1)
3. Sargassum rafts as well as sea bird and jellyfish aggregations were avoided.
4. Navy oceanographic sea surface temperature and height maps were utilized prior to the exercise.
5. Sightings did not temporally or spatially coincide with buoy deployments, so avoidance distance was not required.

SECTION 2 OBSERVATIONS AND MITIGATION EFFECTIVENESS

MARINE MAMMALS

There were 49 total sighting events and three passive detections. An estimated 374-416 marine mammals and four sea turtles were observed during USS Truman 07-1 CSG COMPTUEX/JTFEX. (See Table A-1 and Figure A-2, Appendix A). There were two sighting events occurring during active sonar use. The first occurred with the observing ship observing five dolphins while using MFAS and a second ship was active within the vicinity of this sighting. The second occurred with the observing ship sighting two pilot whales while not active, but a second ship was active at a distance which could have an influence on the sighted marine mammals. (See Table A-1, Appendix A) Table A-2 lists the possible marine species present in the Cherry Point and Charleston/Jacksonville OPAREAS, highlighting the Endangered Species Act (ESA) protected species. Table A-3 shows results for acoustic exposure estimates for USS Truman 07-1 CSG COMPTUEX/JTFEX from DoN 2007.

OCEANOGRAPHIC CONDITIONS

Ocean Sea Surface Temperatures (SST) ranged from 25-29°C, as shown in Figures A-2 through A-6, (covering the beginning day of the exercise, a weekly representation during the exercise, and the final day of the exercise). Sea surface heights showed a typical pattern for areas adjacent to a western boundary current, with multiple long lived eddies, as shown in Figures A-7 through A-11, (covering the first day of the exercise, a weekly representation during the exercise, and the final day of the exercise). General ocean currents in the vicinity of the exercise for the season, Figure A-12, were normal for the location and timeframe of the exercise.

The National Data Buoy Center maintains several oceanographic monitoring buoys in close proximity to the location of the USS Truman 07-1 CSG COMPTUEX/JTFEX (http://www.ndbc.noaa.gov/maps/Southeast.shtml). Based on daily average of the data reported from these buoys, wind speeds during the exercise from 02 July to 01 August 2007 were between 1.5 and 10.4 meters/sec (m/s) (3-20 knots) (Figures A-13 and A-14 show the buoy locations, figures A-15 to A-17 show the averaged daily wind speed data). Given these values, approximate Beaufort sea states were likely between 2 to 3 for the majority of the exercise, and a sea state of 4 on 11 July (Figure A-18). Table A-4 shows the relationships between wind speeds and ocean conditions.

MITIGATION AND MONITORING ASSESSMENT

OVERVIEW

The NDE calls for the U.S. Navy to submit a report to NMFS that includes a discussion of the nature of the effects, if observed, based on modeling results and marine mammal sightings. This section of the report, therefore, provides an assessment of the effectiveness of the mitigation and monitoring measures

Passive Sonar

Passive sonar involves acoustic listening to underwater sounds and does not involve transmitting active sound into the water column. Passive sonar use is driven by the tactical nature of an ASW or training event and should be assumed to be employed whenever possible. Given the nature of passive sonar technology and underwater sound propagation, localizing or determining absolute position of an object is more difficult than active sonar.

The U.S. Navy does not have a reporting system to capture the amount of passive sonar employed within a given geographic region. As required in the BO for USS Truman 07-1 CSG COMPTUEX/JTFEX, participants were directed to log and track passive sonar use. In total 3,437 hours of passive sonar were employed during the exercise, and there were two instances of passive acoustic detection of marine mammals (see Table A-1).

Active Sonar

Typically, there are no measurements (calibrated or otherwise) of actual sonar sound levels made during an exercise. Source levels, numbers of sources, and frequencies are classified since that information would provide potential adversaries with important tactical data.

An explanation of sonar hours as presented in this report is also warranted. Total active sonar hours represent a sum of the total time from a number of individual training events during a CSG COMPTUEX/JTFEX. This value does not represent actual total sonar ping hours. In other words, the ship logs when the sonar was turned on at the beginning of a training event and

reports time until the event is finished. During this period, the MFAS only puts active sound into the water at discrete intervals. Sonar signals are not a continuous source of acoustic energy. A reasonable description would be the surface ship sonar signal consists of a pulse (i.e. ping) less than two seconds long with approximately a minimum of 30 seconds between successive pings. (NMFS 2007a)

Given that exercise planning for this exercise was intended to minimize interactions between Navy assets and marine mammals, the observations of marine mammals by Navy assets only occurred as infrequent and very brief encounters, the majority of which occurred when there was no MFAS in use.

During USS Truman 07-1 CSG COMPTUEX/JTFEX MFAS was only used during carefully planned exercise events and for only a small subset of any given exercise time frame. During this exercise, 340-355 hours of hull-mounted MFAS, 50-65 hours of dipping sonar, and use of 170 DICASS sonobuoys were reported. There were no reports of ship strikes on marine mammals. On four instances, vessels maneuvered to avoid the path of a marine mammal or increase the distance between the ship and animal.

There were four stranded animals that occurred in North Carolina during the timeframe of the exercise (three separate events), with the local stranding coordinator, University of North Carolina Wilmington, responding. At the time these events occurred, they were unknown to Navy staff, and were discovered during research for this after action report.

The first stranding, WAM 633, in the Intracoastal Waterway off of Snead's Ferry was a single Bottlenose dolphin on 07 July 2007, with the animal dying during transport. Bloodwork showed signs of anemia and potential liver pathologies. The results of the full necropsy are not reported, however there is no indication that there could be any association to the exercise. Additionally, there was no sonar in use within 100 nm of the stranding prior to or during the day of this stranding.

The next two events, animals WAM 634, WAM 635 and WAM 636, were deemed a mass stranding event for Pygmy sperm whales. On 28 July 2007 at the southern end of Holden Beach, a live adult female and calf pygmy sperm whale stranded. The live animal was euthanized, and both animals transported for necropsy. The adult female whale was extremely emaciated, with wet and congested lungs, the peritoneal cavity was filled with a brown/red muddy fluid, and few gut contents. The calf was frozen whole for necropsy at a later date.

On 29 July 2007 a moderately decomposed adult male pygmy sperm whale stranded on Holden Beach, and was estimated to have been deceased for at least one day prior to stranding. Internal investigation during the necropsy showed that the organs were edematous, the heart was extremely flaccid, and the stomach had a number of squid beaks. Cause of death could not be determined, but additional results from histology are pending.

The 28-29 July events coincided with a component of the exercise. Using 28 July as the temporal reference point, the closest use of sonar (2 hours) was approximately 68 nautical miles from the stranding location on 26 July. The sonar use for the exercise was generally to the NE of the stranding events at ranges in excess of 100 nautical miles, with one unit moving southward during the training evolution to the closest point of approach (68 nm, 26 July) and returning

northward afterwards. Not knowing the exact locations of the animals prior to stranding there is no method to estimate the potential acoustic exposure. However, given the state of health in the adult animals, it seems unlikely that acoustic exposure was a factor in these events. The emaciated state and physical examination of the female would indicate that there were significant physiological or pathological issues in existence that caused the stranding. Though the cause of death for the male is undetermined, the described conditions of the organs would seem to be more indicative of a systemic illness, which is increasingly common in stranding events. (Gulland and Hall, 2007) For example, dwarf sperm whales have recently been identified as having anti-*Brucella* antibodies, (Ohishi et al. 2007), which is one of the pathogens than can cause significant edema. As such, it is highly unlikely there was a causal correlation to the stranding with use of MFAS.

Modeling Estimates Applicable to USS Truman 07-1 CSG COMPTUEX/JTFEX
Table A-2 in Appendix A shows estimated marine mammal acoustic exposures from model derived calculations based on regional marine mammal densities, CSG COMPTUEX/JTFEX operational parameters, sound transmission loss, and potential energy accumulated (DoN, 2007). From that analysis, ESA listed species (sperm whale) acoustic impact modeling predicted an estimated 629 Level B (195 dB > EL ≥ 173 dB) and 1 Level B TTS (215 dB > EL ≥ 195 dB) exposures. In total, acoustic impact modeling predicted an estimated 30,335 Level B sub-TTS (195 dB > EL ≥ 173 dB) and 539 Level B TTS (215 dB > EL ≥ 195 dB) exposures. However, these numbers of animals were not observed within the Cherry Point or Charleston operating areas by the exercise participants.

NDE and BO Assessment
All 23 Jan 2007 NDE measures promulgated in the Mid-Frequency Active Sonar Mitigation Measures during Major Training Exercises or within Established DoD Maritime Ranges and Established Operating Areas (NDE) section and requirements specific to the BO were implemented for USS Truman 07-1 CSG COMPTUEX/JTFEX.

There were two instances where observations coincided with sonar use. There was one instance where 5 dolphins were sighted and the observing ship's sonar was in use (see table A-1), the ship secured sonar after observation; however, the ship did not record behavioral data or estimate the range. Therefore there is no quantitative way to estimate the exposure that could have occurred from this ship's sonar. Concurrent with this sighting, a separate ship was active within a range which could influence these observed marine mammals. Qualitatively, it is possible that these animals may have received exposure levels greater than 173 dB re 1 μPa^2s for some unknown period of time prior to shut down. However, because the range was not reported, we are unable to make a determination as to whether or not these animals were exposed to energy in excess of 173 dB re 1 μPa^2s. The contribution to the received level from the distant ship would have been minimal, with only the coarsest estimation (not accounting for frequency attenuation or other factors) showing a received sound pressure level of 104 dB re 1 µPa. In another instance an observing ship was not active but sighted two pilot whales at a distance of approximately 1,000 yards. While this ship was not active, it temporally coincided with another ship sonar which was active. However, the other ship was at a distance such that the observed mammals were not within a 173 dB re 1 μPa^2s zone of influence from the active ship. Using a coarse estimation, the observing ship was likely within a received sound pressure level of approximately 110 dB re 1 µPa. All other sightings occurred in timeframes when MFAS was not in use.

With respect to the BO specific requirements for sperm whales (Appendix B, section B-2), there were no sightings that were identified as sperm whales. There were several sightings simply classified as "whale" and one submerged object that was never observed at the surface, which were the only observations that could have been possible sperm whales. Given the ambiguity in these observations, there is no manner in which to estimate the number of sperm whales that could have been exposed to 173 dB re 1 μPa^2s.

The U.S. Navy acknowledges that this discussion does not account for potential exposures to marine mammal species not observed, which is a difficult determination even for the marine mammal scientific community, and is seeking to address this issue as discussed in the data limitations and improvements section.

Operational Impact Assessment

The lost training time due to MFAS shutdown is estimated to be a maximum of two hours, since in the one reported instance of securing sonar the ship did not resume sonar use for the remainder of the exercise. This shutdown was not identified as having an effect.

It must be recognized that ASW proceeds slowly and requires careful development of a tactical frame of reference over time as data is integrated from a number of sources and sensors. Once MFAS is turned off for a period of time, turning it back on later does not usually allow a Commander to simply continue from the last frame of reference. Thus, lost MFAS time not only equates to lost exercise time but should be considered in the fuller context of its overall impact on the tempo and development of a "tactical picture" shared among exercise participants as they train toward the goal of improving ASW skills in general.

In regards to impacts not associated with MFAS such as ship strikes, the U.S. Navy has a robust ship strike reporting program and reports from USS Truman 07-1 CSG COMPTUEX/JTFEX. No ship strikes were reported during the timeframe of this exercise.

Data Limitations and Improvements

The U.S. Navy is committed to development of robust exercise and long-term range complex monitoring plans that will integrate multiple tools in order to provide better assessment of marine mammal occurrence and possible MFAS effects, or lack of effects.

To support the BO requirement to provide an estimate of the monitoring efforts ability to detect marine mammals, the exercise participants were asked to provide data on the man hours spent during monitoring. Hours were chosen in lieu of distance due to classification concerns with positional data. In addition to gathering these data to assist in ascertaining the statistical power of the monitoring method, this was also a test collection effort to gather the quality data needed to utilize ship based sightings in the context of a larger monitoring program. Data from this request totaled over 16,500 man hours expended on monitoring over the course of the exercise, however, as with the sighting reports (see Table A-1 data quality footnote), there are obvious and unexplained variances in these data, largely due to an unforeseen ambiguity in the request. (Effort reporting was interpreted differently by participant ships)

Not one sighting report contained all the required data, though there was an obvious attempt to comply with the requirements by the participants, as evidenced by reports such as the submerged object, the sea turtle observations, and even the completely irrelevant report of observing a shark,

and the inconsistent pattern of data provided (see Table A-1). The most likely correction of these data variances is training, so that in the context of a high tempo exercise, all relevant data will be collected.

The data collection for this exercise illustrated a higher level of variance in the data than would be needed for even the crudest power calculations or any other detection estimate of the monitoring performed. The ability to detect a trend is critically dependent upon the precision with which the animals can be observed and detection probabilities. (Gerrodette, 1987; Taylor and Gerrodette, 1993; Laake et al, 1997; Kissling and Garton, 2006; Taylor et al., 2007) Given the large variances between ships and, with one exception, within ship variances in data collection, precision estimates would likely not be reflective of the observers' abilities to precisely detect animals. Seavy and Reynolds (2007) discuss some of the problems associated with statistical power calculations as an assessment tool for a monitoring program in cases where there is not a standardized collection effort and suggest a supplemental approach focusing on sampling design and precision. Though the Navy data collection would be an extreme case, it is likely that the most fruitful effort in future data collections would be to focus on data quality and standardization. Once the variance of these data is better controlled, a power analysis calculation may be possible.

There is no information from which to assess how many, if any, animals not observed by Navy lookouts may or may not have been exposed to MFAS received levels greater than 173 dB re 1 μPa^2s. Data collection needs to address this question. It remains a problematic science issue for even non-Navy marine mammal surveys.

CONCLUSIONS AND SUMMARY

- Five dolphin exposures of unknown intensity level were likely to have occurred during the exercise. Two pilot whales were sighted when sonar was active, but beyond the zone of influence for the 173 dB re 1 μPa^2s criterion.
- 367-409 mammals and four sea turtles were sighted during the exercise, when MFAS was not active.
- Sightings did not temporally or spatially coincide with sonobuoy deployments and there were no known animal entanglements.
- No known sperm whale exposures occurred during the exercise.
- The three stranding events (four animals) that occurred during the exercise appear to have been caused by factors unrelated to MFAS use.
- There were no ship strikes on marine mammals during the exercise.
- MFAS was secured by one ship in USS Truman 07-1 CSG COMPTUEX/JTFEX, with an estimated two hours of lost training time, and impacts to ASW training were not reported.
- The U.S. Navy is committed to development of robust exercise and long-term range complex monitoring plans that will integrate multiple tools in order to provide better assessment of marine mammal occurrence and possible MFAS effects, or lack of effects. FY08 plans may include various mixes of ship and aerial surveys independent of exercise participants, validation of lookout effectiveness by biologists experienced in observing marine mammals, and use of new research and development technologies to advance the state of marine mammal monitoring.

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APPENDIX A- MARINE SPECIES SIGHTINGS, BACKGROUND AND OCEANOGRAPHIC INFORMATION

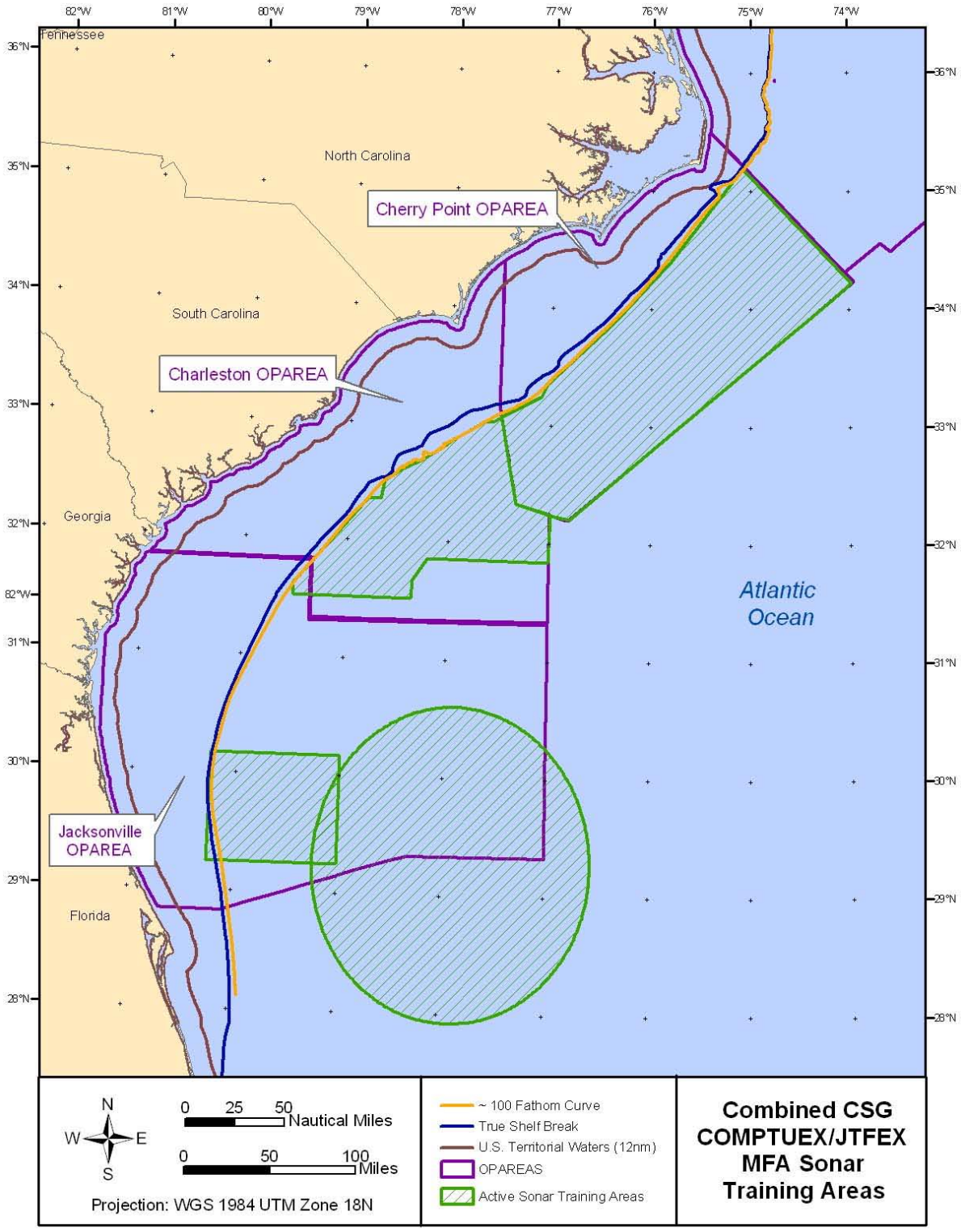

Figure A-1: Sonar training areas for ESG COMPTUEX.

Table A-1 Marine species sighting and actions taken by exercise participants during the Combined CSG COMPTUEX/JTFEX. Observations during active sonar are in **bold red** font if the observing ship was active and in **bold green** font if different ships were active during the time of sighting.

*Data Quality	Date-Time (Local)	Range (Yds) & Length of observation (Minutes)	Description of event	# of animals	MFAS Status
0	7/02-8/01	-- --	12 of sightings were of dolphins and porpoises which generally closed the ship to ride the bow wave. The size of each pod varied between 3 and 30. (Estimate of animal # is extremely tenuous)	140-160	Not Active
3	7/03 1600	-- 58 min	Clear day, 10 dolphins detected	10	Not Active
3	7/04 1225	-- 2 min	Clear Day, sea turtle passes alongside ship	1	Not Active
3	7/05 0827	-- 90 min	Clear Day, dolphins detected swimming and jumping	5	Not Active
3	7/05 1237	-- 150 min	Clear Day, 15 dolphins detected swimming and jumping	15	Not Active
3	7/06 1315	-- 10 min	Clear Day, sea turtle passes alongside ship	1	Not Active
3	7/07 0937	-- 210 min	Clear Day, 35 dolphins swimming and jumping	35	Not Active
3	7/07 1546	-- 30 min	Clear Day, 10 dolphins swimming, jumping and spyhopping	10	Not Active
3	7/08 0845	-- 45 min	Clear Day, 8 dolphins swimming	8	Not Active
2	7/09 1650	-- 20 min	Clear Day, 1 Shark (Unnecessary observation included for discussion purposes only)	1	Not Active
2	7/10 1245	-- 30 min	Clear Day, killer whale sighted	1	Not Active
2	7/14 1430	-- 10 min	Clear Day, 14 dolphins sighted	15	Not Active
3	7/15 1634	-- 15 min	Clear Day, 10 dolphins swimming, jumping and spyhopping	10	Not Active
3	7/18 1435	-- 20 min	Clear Day, 7 dolphins swimming and jumping	7	Not Active
2	7/20 0735	-- 3 min	Clear Day, sea turtle passes alongside ship	1	Not Active
0	7/23 0330	-- 38 min	Biologics heard on WQC-2, Under Water Telephone (UWT), no correlating visual	--	Not Active
1	7/23 1807	100 Yd --	Dolphins sighted within 100yds, ship maneuvered to open distance	--	Not Active
1	7/24 0912	200+Yd --	50+ dolphins over 200 yds, maintained course	50+	Not Active
1	7/24 1412	-- --	2 dolphins sighted	2	Not Active
1	7/25 0919	-- --	Possible submerged whale, only dark shades were visible on surface	1	Not Active
2	7/25 1237	100 Yd --	Dolphins 100yds off the bow, altered course to open distance	15+	Not Active
2	**7/26 1538**	**-- 15 min**	**Clear Day, 5 dolphins sighted, Sonar active, secured upon sighting. Additional ship concurrently active.**	**5**	**ACTIVE**

*Data Quality	Date-Time (Local)	Range (Yds) & Length of observation (Minutes)	Description of event	# of animals	MFAS Status
2	**7/26 1700**	**1000 Yd --**	**2 pilot whales, ID through big eyes, approx 1,000yds. Additional ship concurrently active. Estimated received SPL, 110 dB re 1µPa.**	**2**	**ACTIVE**
1	7/26 1918	-- --	Whale sighted	1	Not Active
1	7/26 1921	-- --	Whale sighted	1	Not Active
2	7/26 1935	500+Yd --	2 medium size whales approx 500+ yds from ship, maneuvered to avoid	2	Not Active
1	7/27 1400 & 1434	-- --	Twice on July 27th three Humpback Whales were sighted, each time they surfaced and showed flukes. (Likely the same animals on both sightings due to extremely close spatial and temporal proximity)	3	Not Active
2	7/28 0948	200+ Yd --	2-3 Pilot whales off port bow, 200yds+ and opening	2-3	Not Active
0	7/28 2221	-- 4 min	Biologics heard on WQC-2, UWT, no correlating visual	--	Not Active
2	7/29 0625	33 Yd --	Dolphins riding ship's bow wave, maintained course/speed	20+	Not Active
0	7/29 0632	-- 4 min	Biologics heard on WQC-2, UWT, no correlating visual	--	Not Active
3	7/29 1455	-- 10 min	Clear Day, 15 dolphins swimming, jumping and spyhopping	15	Not Active
2	7/30 0925	-- 3 min	Clear Day, sea turtle passes alongside ship	1	Not Active
1	7/30 1938	-- --	Whale sighted	1	Not Active
1	7/31 0732	-- --	Whale sighted	1	Not Active
2	7/31 0750	750+ Yd --	Pilot whale off port beam	1	Not Active
3	7/31 1735	-- 25 min	Clear Day, 5 dolphins swimming, jumping and spyhopping	5	Not Active
1	8/02 --	4000 Yd --	Ten Pilot whales surfaced about two miles from the ship and then dove deep. (Report is after the official end of the exercise)	10	Not Active
SUMMARY: 49 Total Sighting Events, 3 passive detections, 374-416 Mammals sighted, 4 sea turtles sighted					

**Data quality* is a relative assessment of the data provided by the participants, categorized as follows: 0 – Nominal level data, 1 – Data missing at least three critical components, 2 – Data missing two critical components, 3 – Data missing one critical component, 4 – Data has all needed components.*

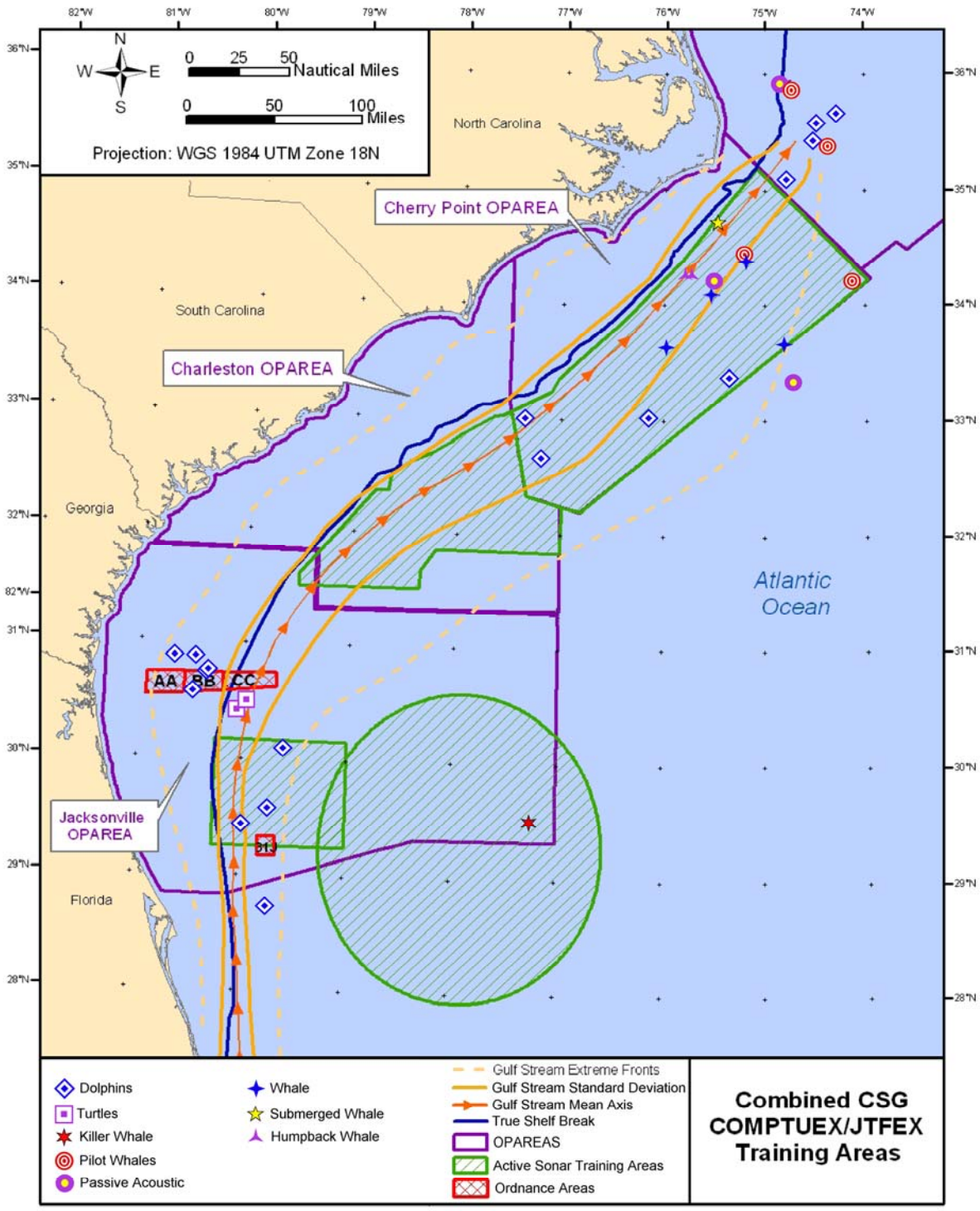

Figure A-2: Observations with accurately reported positions are presented. Excluded were the twelve dolphin sightings with minimal data and two sea turtle sightings which had errors in the location data.

Table A-2: Marine Mammals with Possible or Confirmed Occurrence in the Cherry Point and Jacksonville/Charleston OPAREAs (from DON, 2007)

Common Name	Scientific Name	Status	CHPT	JAX/CHASN
North Atlantic right whale	*Eubalaena glacialis*	ESA/MMPA	√	√
Humpback whale	*Megaptera novaeangliae*	ESA/MMPA	√	√
Minke whale	*Balaenoptera acutorostrata*	MMPA	√	√
Bryde's whale	*Balaenoptera edeni*	MMPA	√	√
Sei whale	*Balaenoptera borealis*	ESA/MMPA	√	
Fin whale	*Balaenoptera physalus*	ESA/MMPA	√	√
Blue whale	*Balaenoptera musculus*	ESA/MMPA	√	√
Sperm whale	*Physeter macrocephalus*	ESA/MMPA	√	√
Pygmy sperm whale	*Kogia breviceps*	MMPA	√	√
Dwarf sperm whale	*Kogia sima*	MMPA	√	√
Cuvier's beaked whale	*Ziphius cavirostris*	MMPA	√	√
True's beaked whale	*Mesoplodon mirus*	MMPA	√	√
Gervais' beaked whale	*Mesoplodon europaeus*	MMPA	√	√
Blainville's beaked whale	*Mesoplodon densirostris*	MMPA	√	√
Sowerby's beaked whale	*Mesoplodon bidens*	MMPA	√	√
Northern bottlenose whale	*Hyperoodon ampullatus*	MMPA	√	
Rough-toothed dolphin	*Steno bredanensis*	MMPA	√	√
Bottlenose dolphin	*Tursiops truncates*	MMPA	√	√
Pantropical spotted dolphin	*Stenella attenuate*	MMPA	√	√
Atlantic spotted dolphin	*Stenella frontalis*	MMPA	√	√
Spinner dolphin	*Stenella longirostris*	MMPA	√	√
Clymene dolphin	*Stenella clymene*	MMPA	√	√
Striped dolphin	*Stenella coeruleoalba*	MMPA	√	√
Common dolphin	*Delphinus spp.*	MMPA	√	√
Fraser's dolphin	*Lagenodelphis hosei*	MMPA	√	√
Risso's dolphin	*Grampus griseus*	MMPA	√	√
Melon-headed whale	*Peponocephala electra*	MMPA	√	√
Pygmy killer whale	*Feresa attenuate*	MMPA	√	√
False killer whale	*Pseudorca crassidens*	MMPA	√	√
Killer whale	*Orcinus orca*	MMPA	√	√
Long-finned pilot whale	*Globicephala melas*	MMPA	√	√
Short-finned pilot whale	*Globicephala macrorhynchus*	MMPA	√	√
Harbor porpoise	*Phocoena phocoena*	MMPA	√	
Hooded seal	*Cystophora cristata*	MMPA	√	√
Harbor seal	*Phoca vitulina*	MMPA	√	√
West Indian manatee	*Trichechus manatus*	ESA/MMPA	√	√

Table A-3 Estimated Marine Mammal Acoustic Exposures from Combined CSG COMPTUEX/JTFEX MFA Sonar Training – (No Mitigation, from DON, 2007)

Species	**Level A / ESA Harm (EL ≥ 215dB)**		**Level B / ESA Harassment *with TTS* (215dB > EL ≥195dB)**		**Level B / ESA Harassment *without TTS* (195dB >EL ≥ 190dB)**		**Level B / ESA Harassment *without TTS* (190dB >EL ≥ 173dB)**	
	JAX/CHASN	CHPT	JAX/CHASN	CHPT	JAX/CHASN	CHPT	JAX/CHASN	CHPT
Marine Mammals								
North Atlantic Right Whale	0	0	0	0	0	0	0	0
Humpback Whale	0	0	0	0	0	0	0	0
Sei Whale	0	0	0	0	0	0	0	0
Fin Whale	0	0	0	0	0	0	0	0
Sperm Whale	0	0	0	**1**	0	**6**	0	**623**
Minke Whale	0	0	0	0	0	0	0	0
Dwarf/Pygmy Sperm Whale	0	0	**0***	0*	**0***	0*	**58**	50
Beaked Whales	0	0	1	**1**	3	**3**	346	**351**
Rough-toothed Dolphin	0	0	0	**0***	0*	**1**	29	**100**
Bottlenose Dolphin	0	0	**4**	4	**21**	17	**2,745**	1,956
Pantropical/Atlantic Spotted	0	0	3	**14**	14	**71**	1,792	**7,950**
Spinner Dolphin	0	0	**1**	0	**3**	0	**405**	0
Clymene Dolphin	0	0	0	**1**	0	**4**	0	**426**
Striped Dolphin	0	0	0	0	0	0	0	0
Common Dolphin	0	0	0	**17**	0	**85**	0	**9,505**
Risso's Dolphin	0	0	2	**3**	12	**13**	**1,560**	1,455
Atlantic White-sided	0	0	0	0	0	0	0	0
False Killer Whale	0	0	0	0	**0***	0	**29**	0
Pilot Whale	0	0	0*	**1**	1	**5**	144	**552**

* Acoustic modeling indicates that the likelihood of exposing a species to received acoustic levels that may result in harassment is so low as to be discountable.

BOLD—represents the highest number of exposures between the two OPAREAs for each acoustic criterion, which was used to provide the most conservative estimate of acoustic effects regardless of the training area utilized

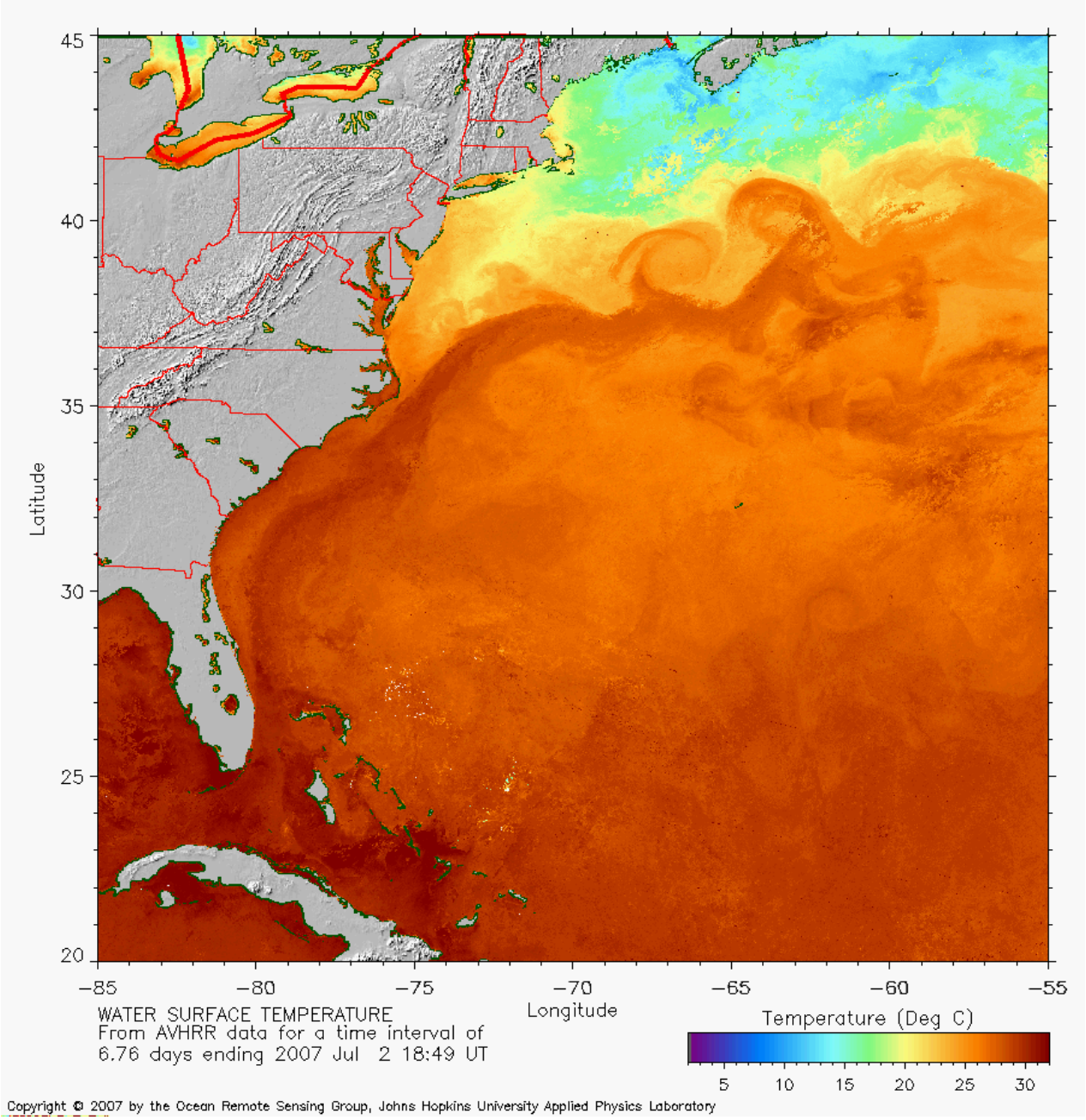

Figure A-2, seven day average sea surface temperature for July 02.
Source: http://fermi.jhuapl.edu/avhrr/sst.html

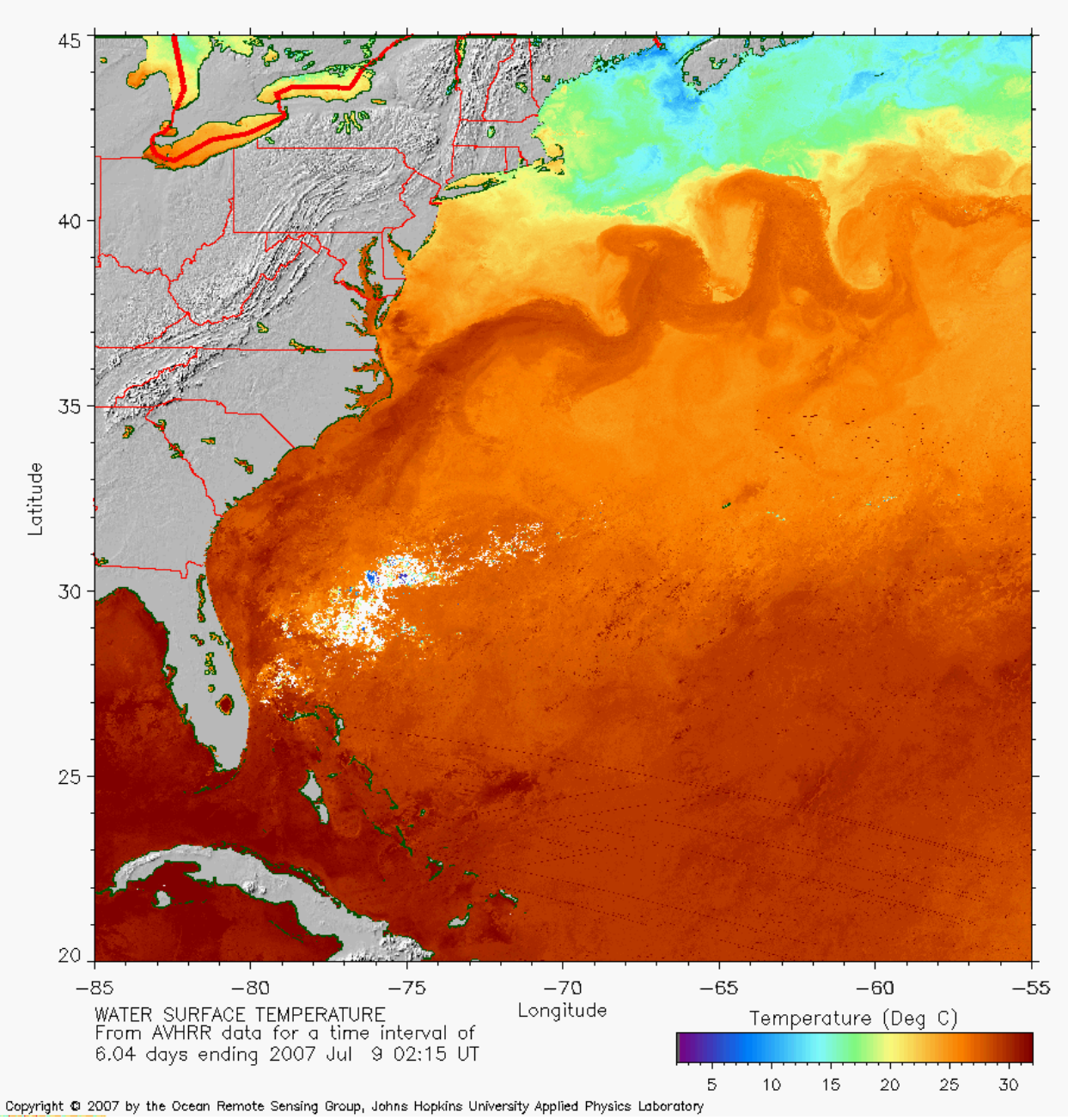

Figure A-3, seven day average sea surface temperature for July 09.
Source: http://fermi.jhuapl.edu/avhrr/sst.html

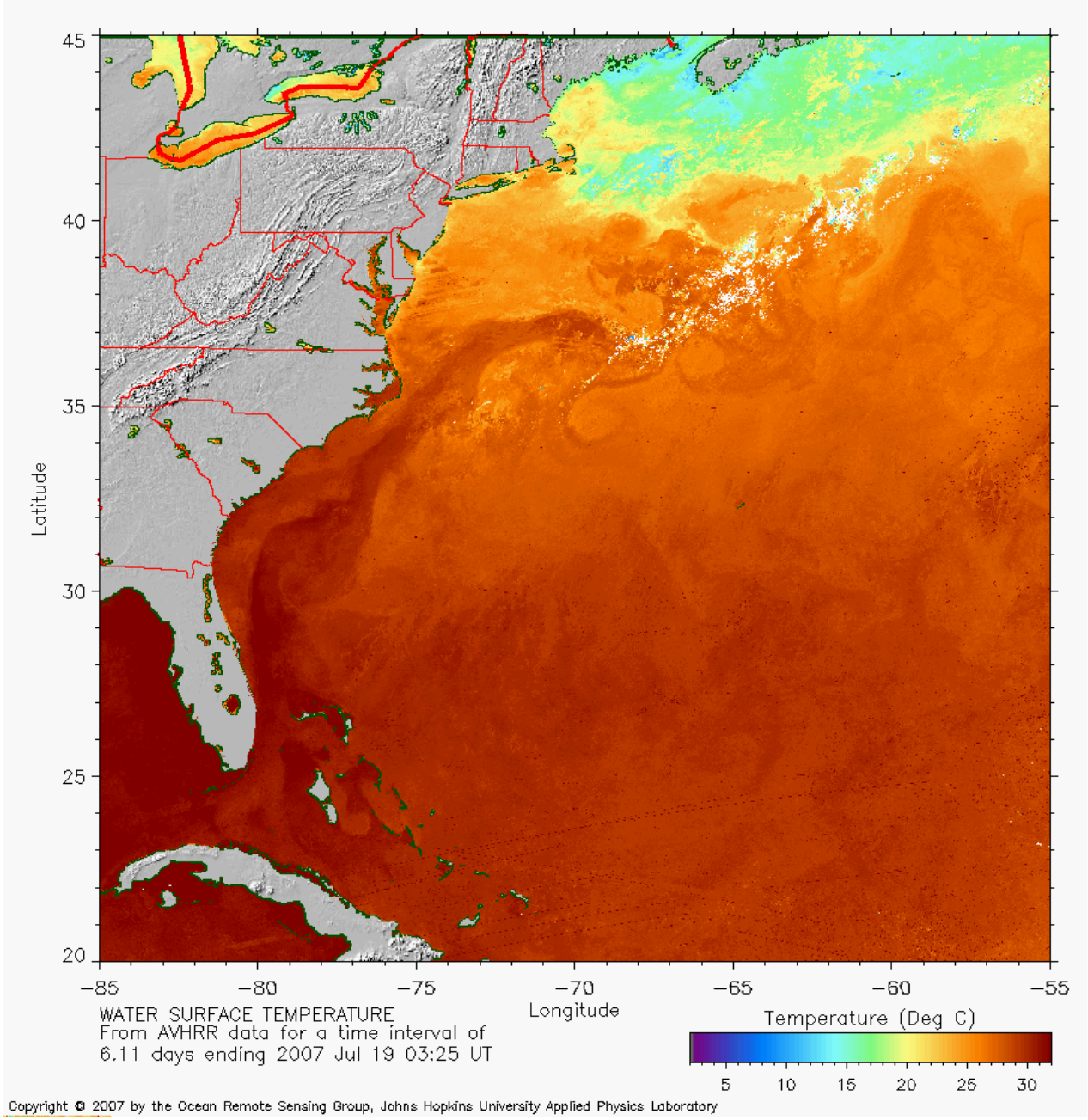

Figure A-4, seven day average sea surface temperature for July 19.
Source: http://fermi.jhuapl.edu/avhrr/sst.html

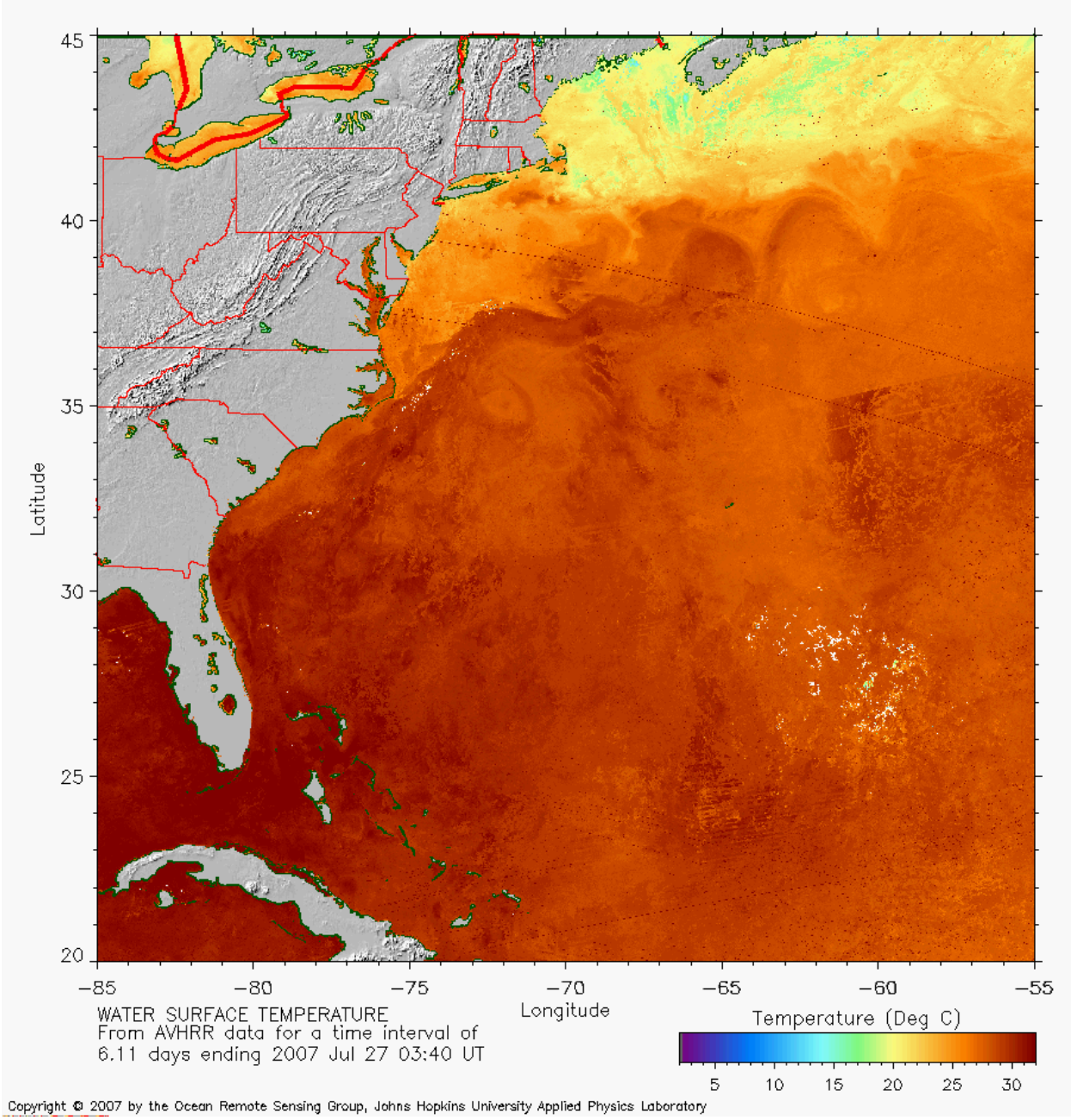

Figure A-5, seven day average sea surface temperature for July 27.
Source: http://fermi.jhuapl.edu/avhrr/sst.html

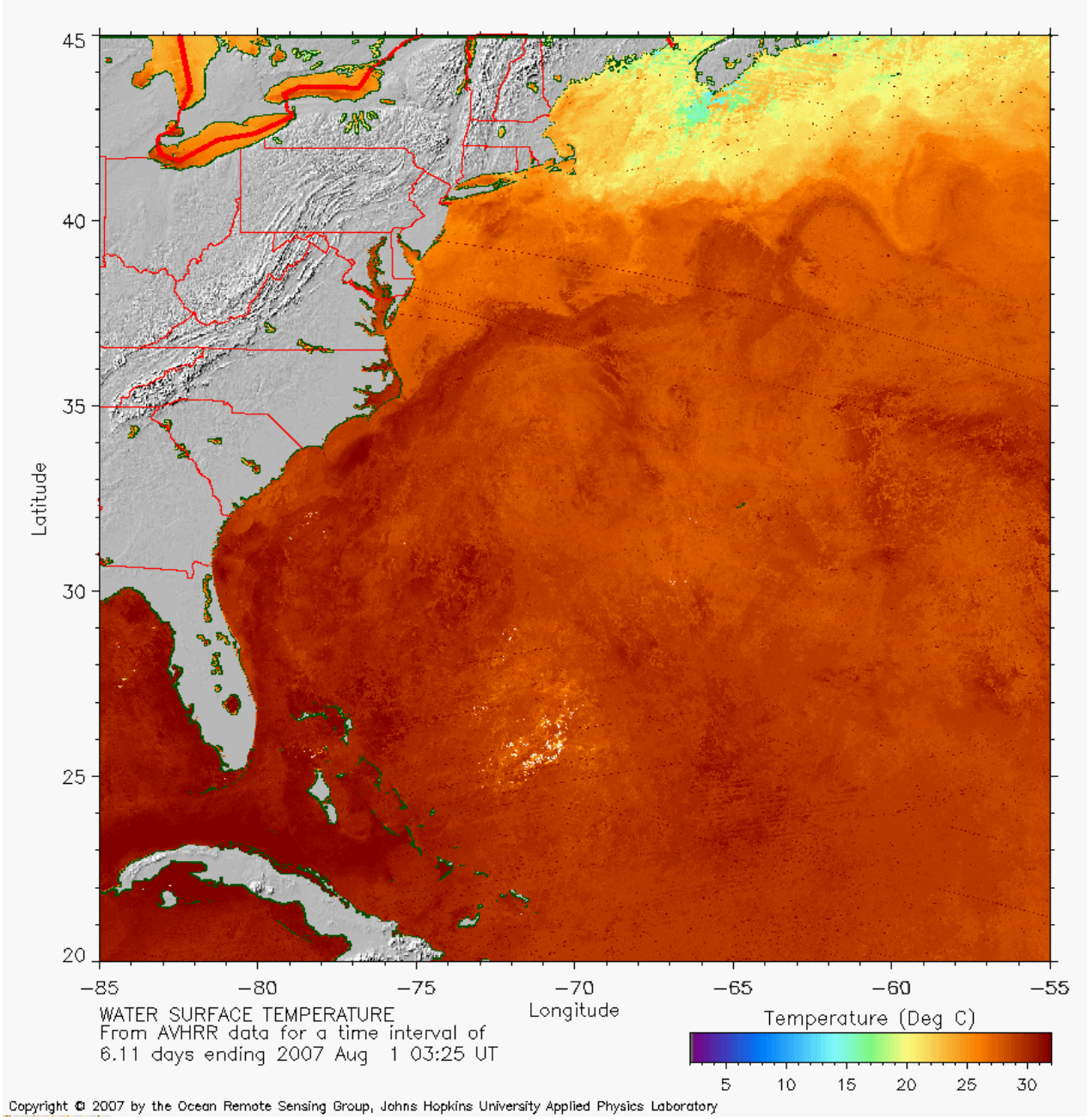

Figure A-6, seven day average sea surface temperature for August 01.
Source: http://fermi.jhuapl.edu/avhrr/sst.html

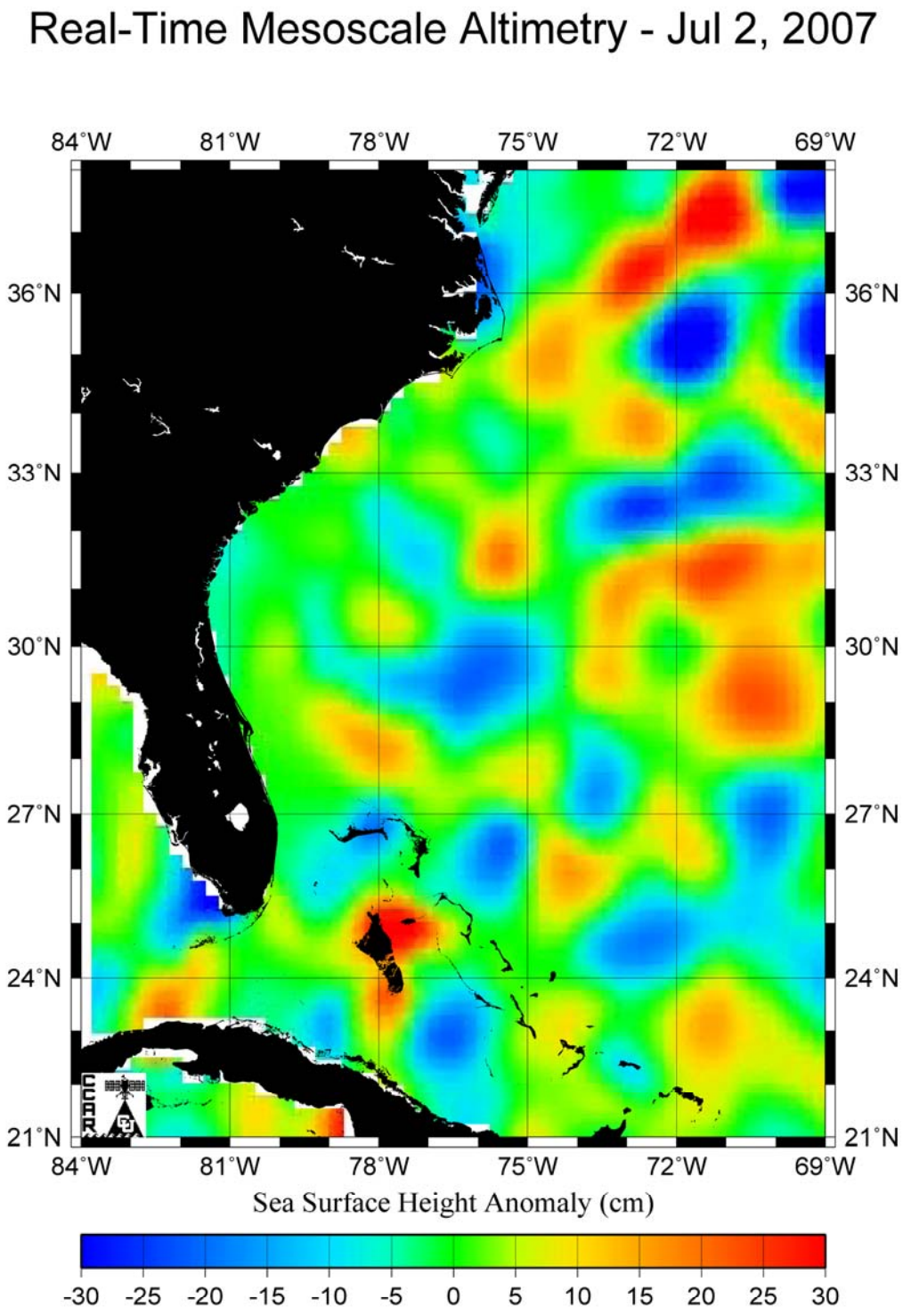

Figure A-7, Sea surface height from satellite altimetry for July 02.
Source: http://argo.colorado.edu/~realtime/gsfc_global-real-time_ssh/

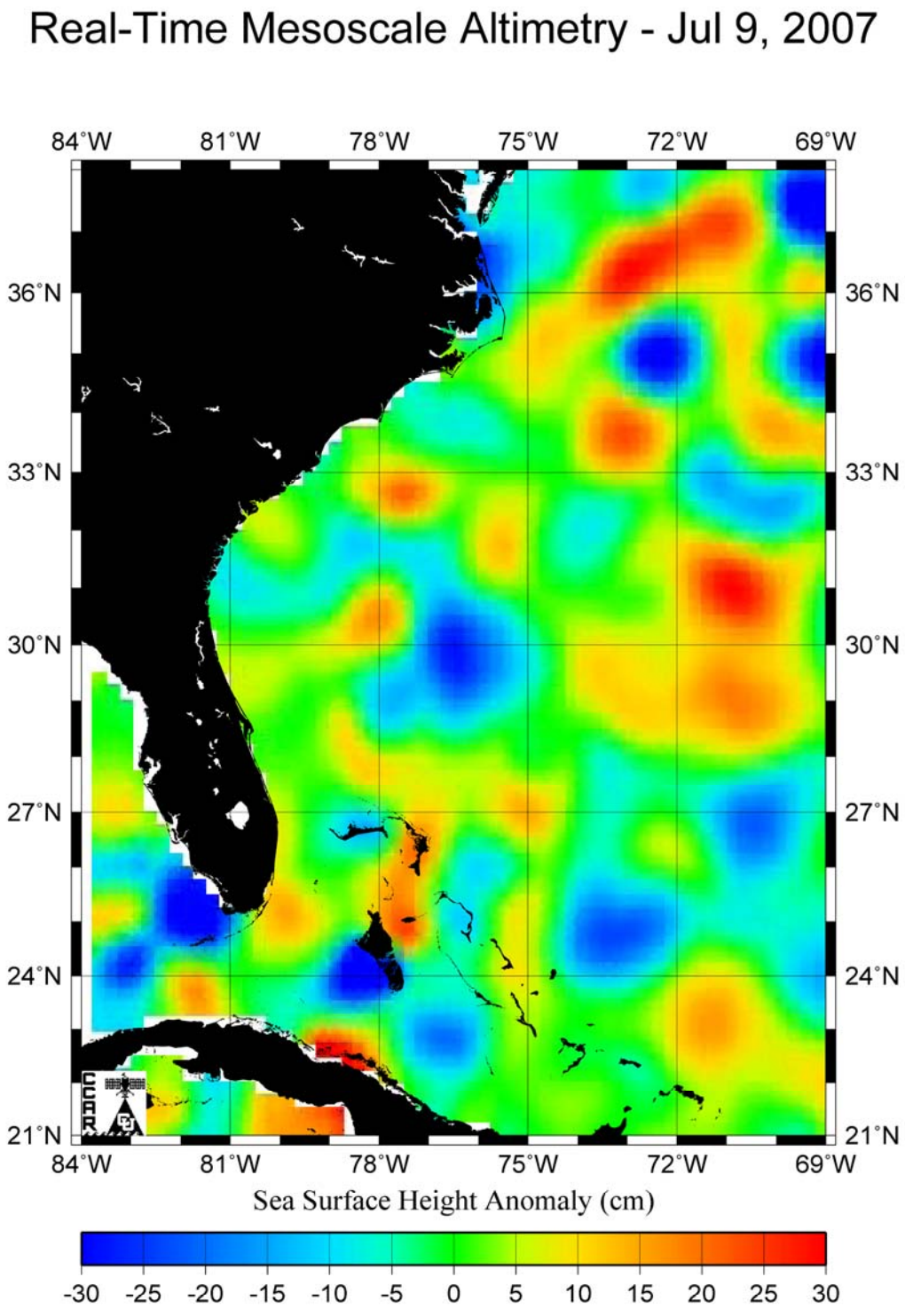

Figure A-8, Sea surface height from satellite altimetry for July 09.
Source: http://argo.colorado.edu/~realtime/gsfc_global-real-time_ssh/

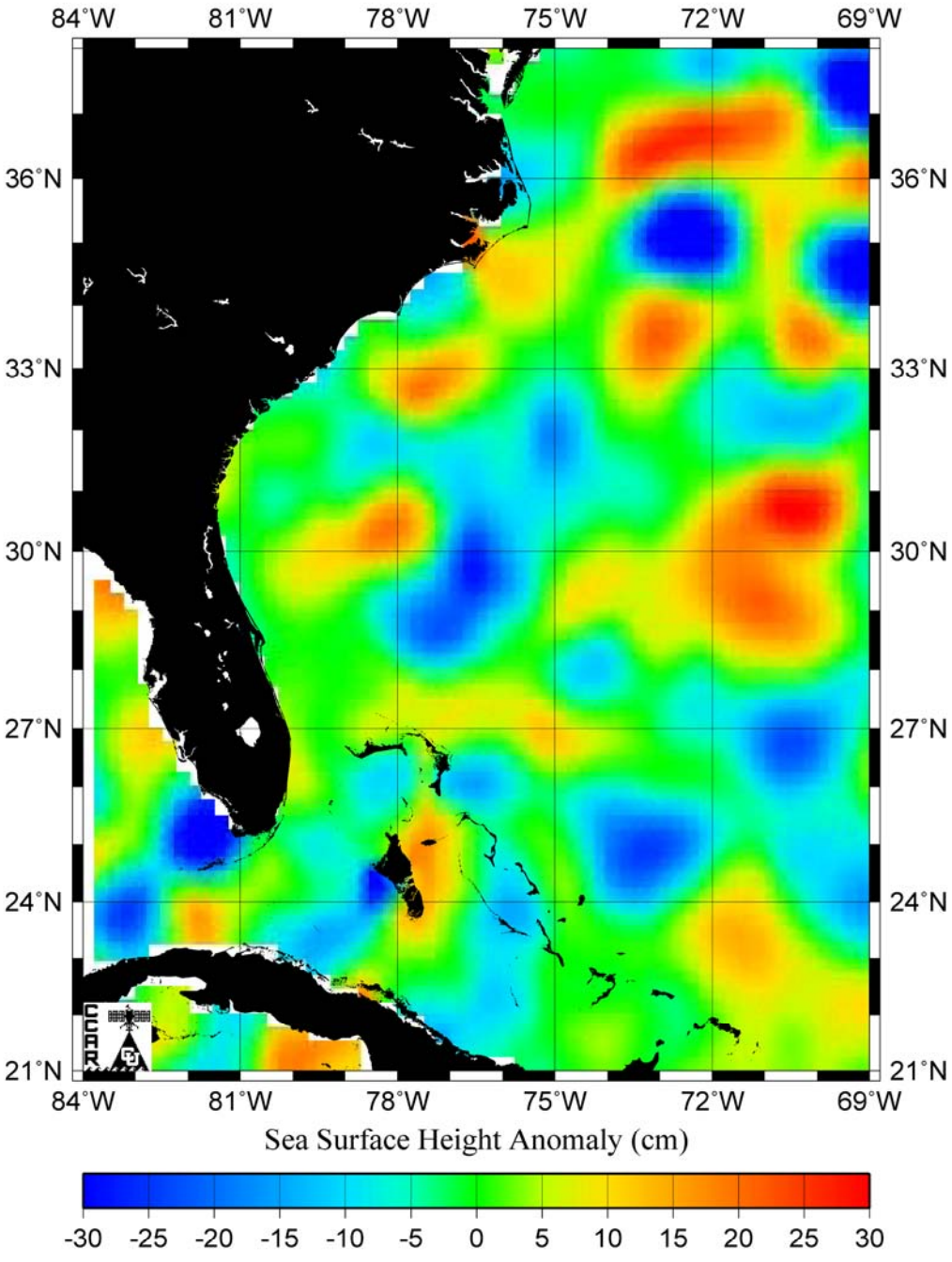

Figure A-9, Sea surface height from satellite altimetry for July 16.
Source: http://argo.colorado.edu/~realtime/gsfc_global-real-time_ssh/

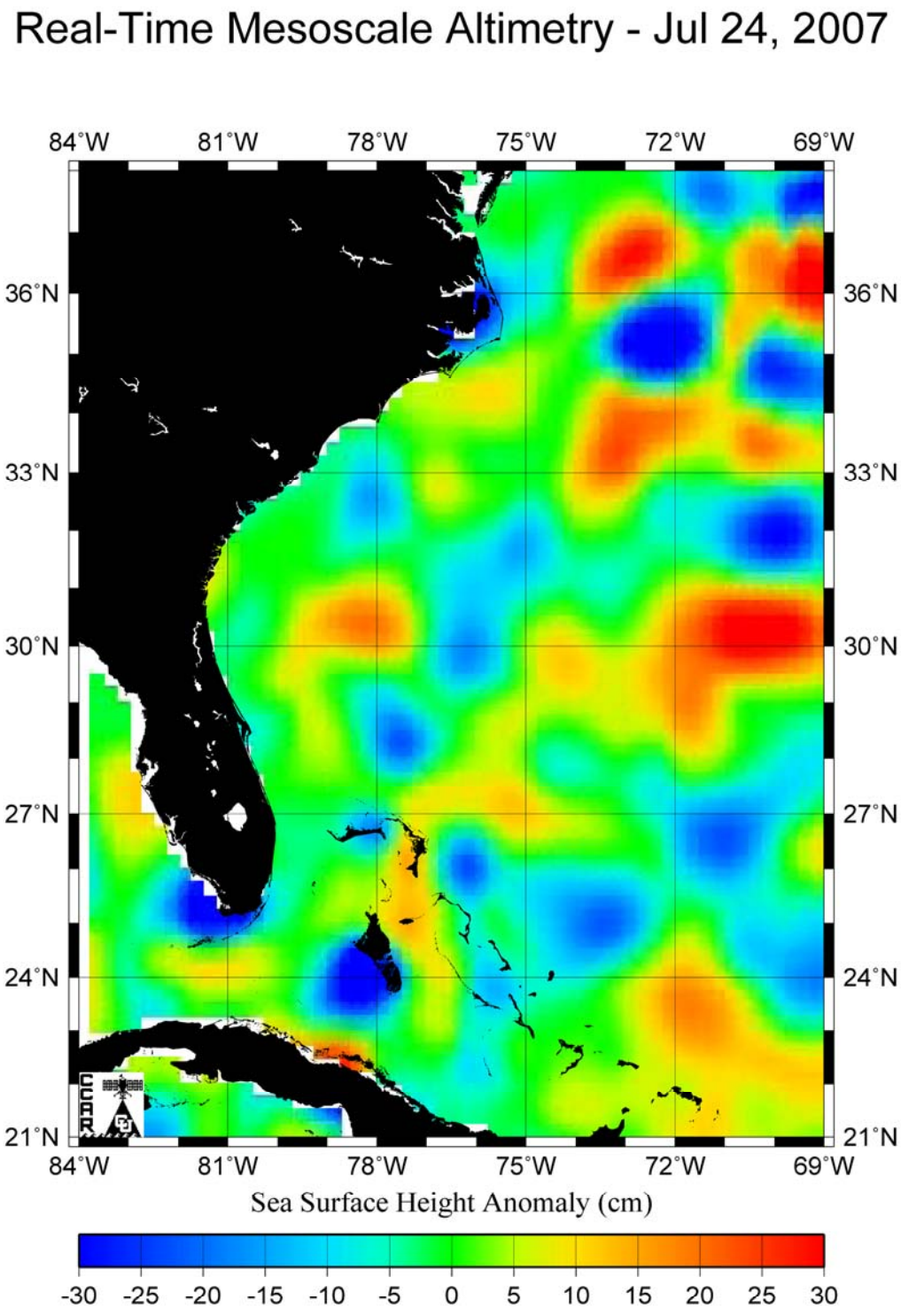

Figure A-10, Sea surface height from satellite altimetry for July 24.
Source: http://argo.colorado.edu/~realtime/gsfc_global-real-time_ssh/

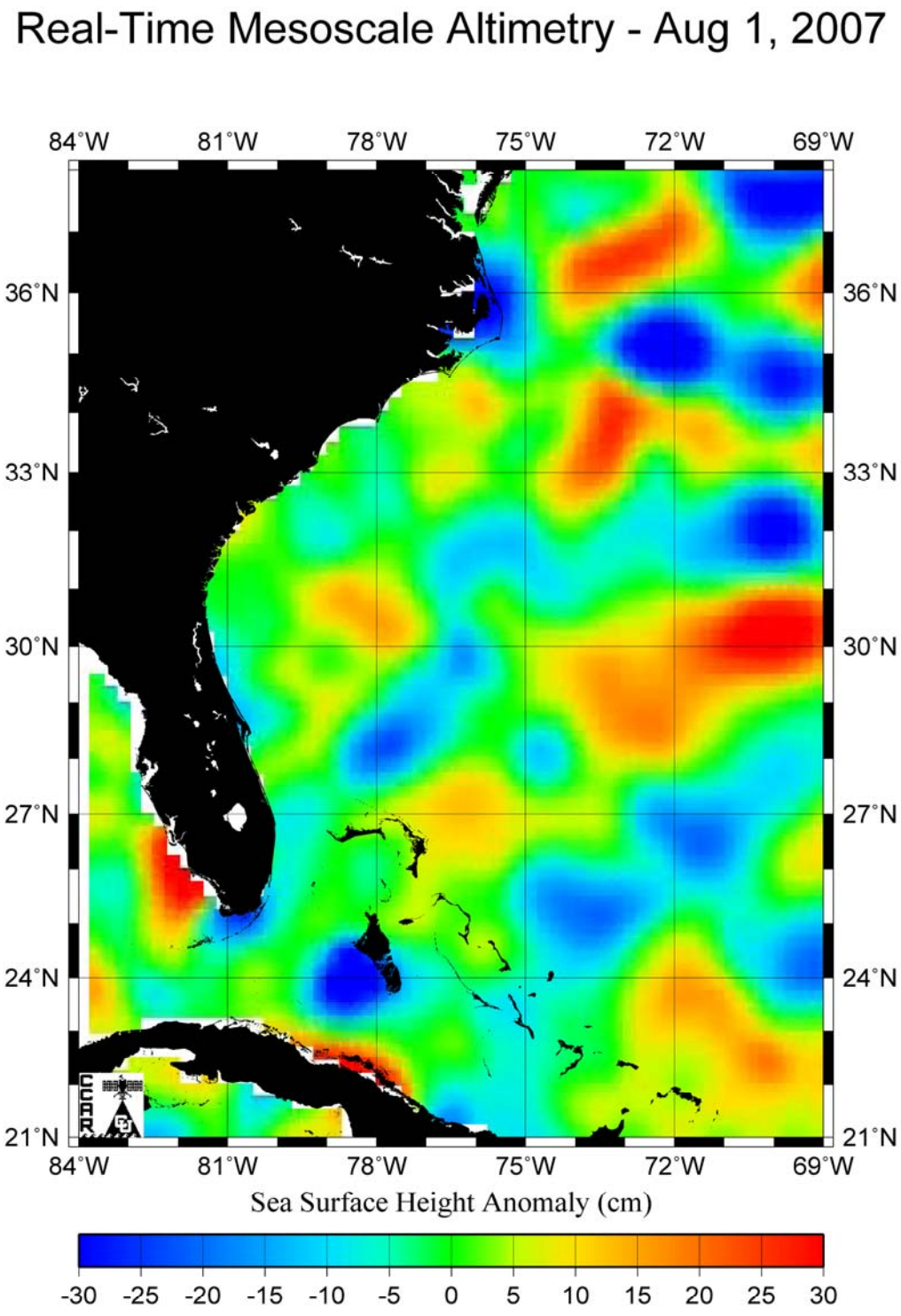

Figure A-11, Sea surface height from satellite altimetry for August 01.
Source: http://argo.colorado.edu/~realtime/gsfc_global-real-time_ssh/

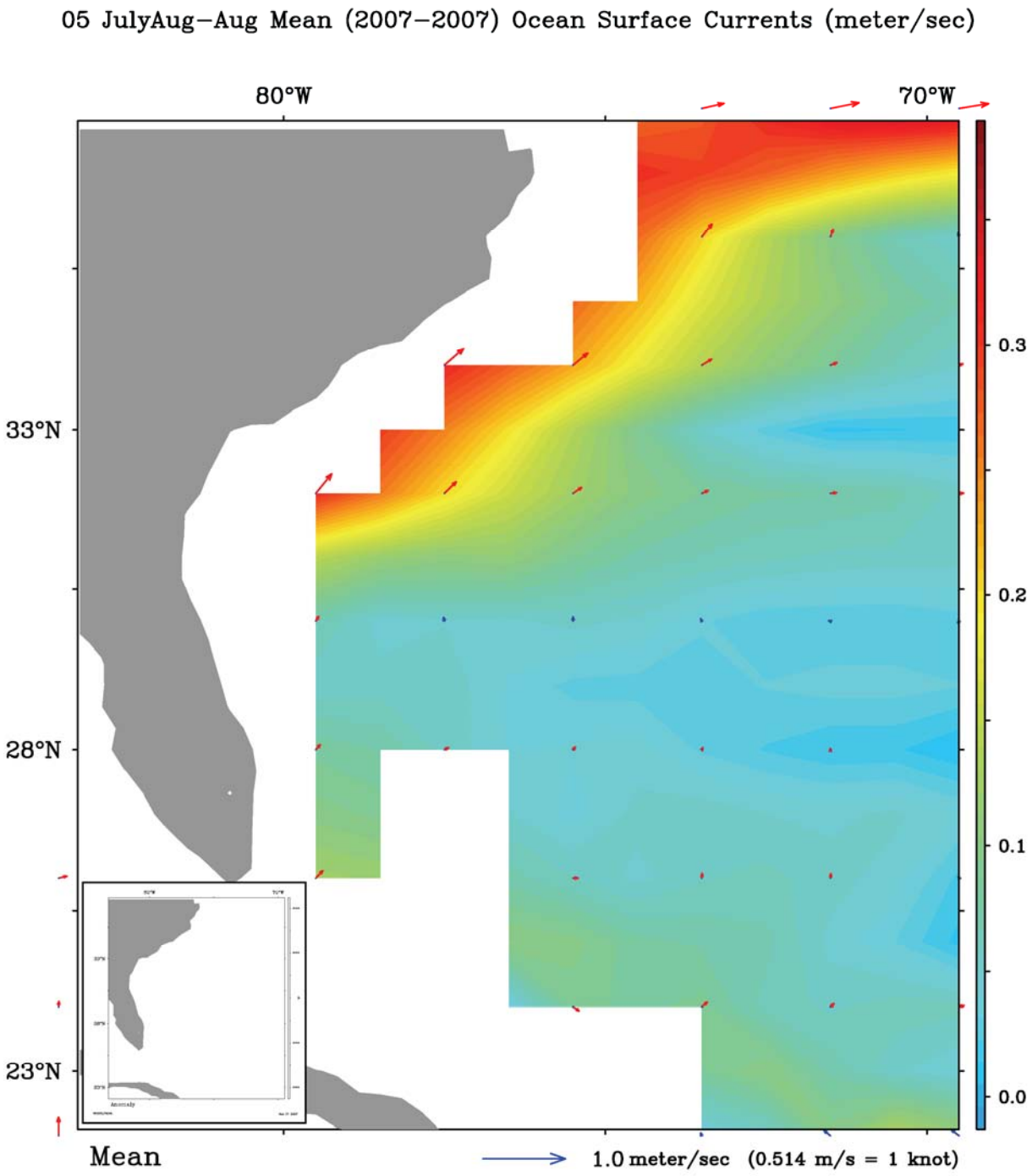

Figure A-12, ocean surface currents in the vicinity of COMBINED CSG COMPTUEX/JTFEX 07-01. Inset map displays the anomaly chart corresponding to the larger map.
Source: http://www.oscar.noaa.gov/datadisplay/index.html

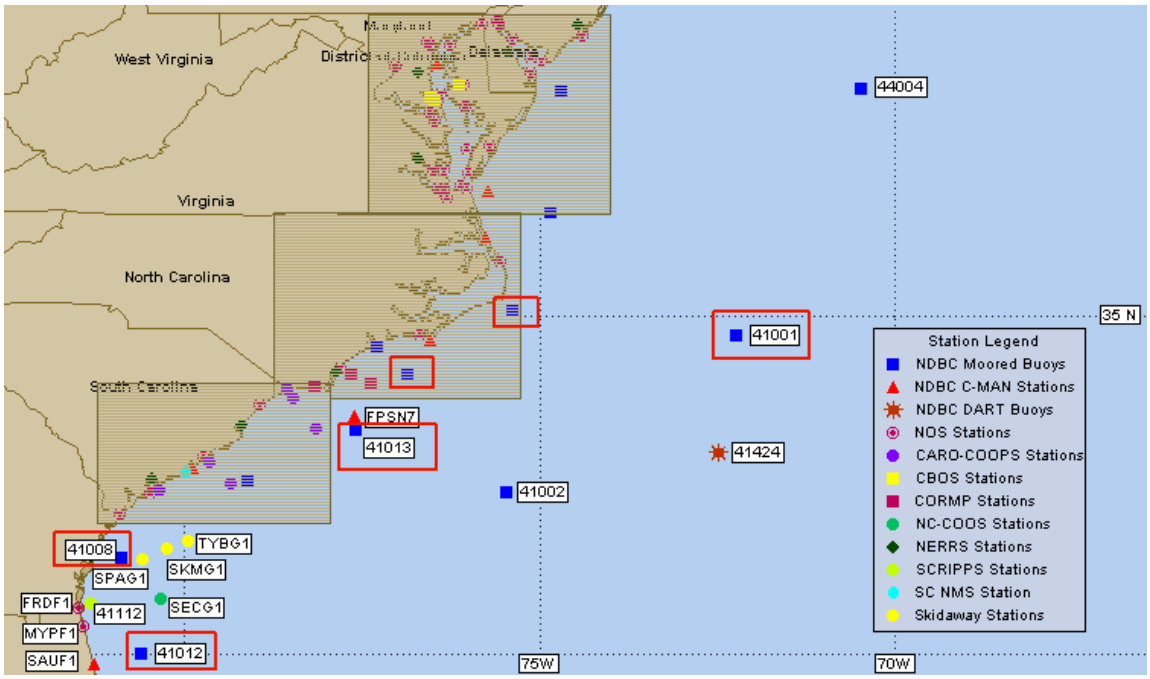

Figure A-13, National Data Buoy locations used in the estimation of potential wind speeds and sea state, marked with a red box drawn around the markers.

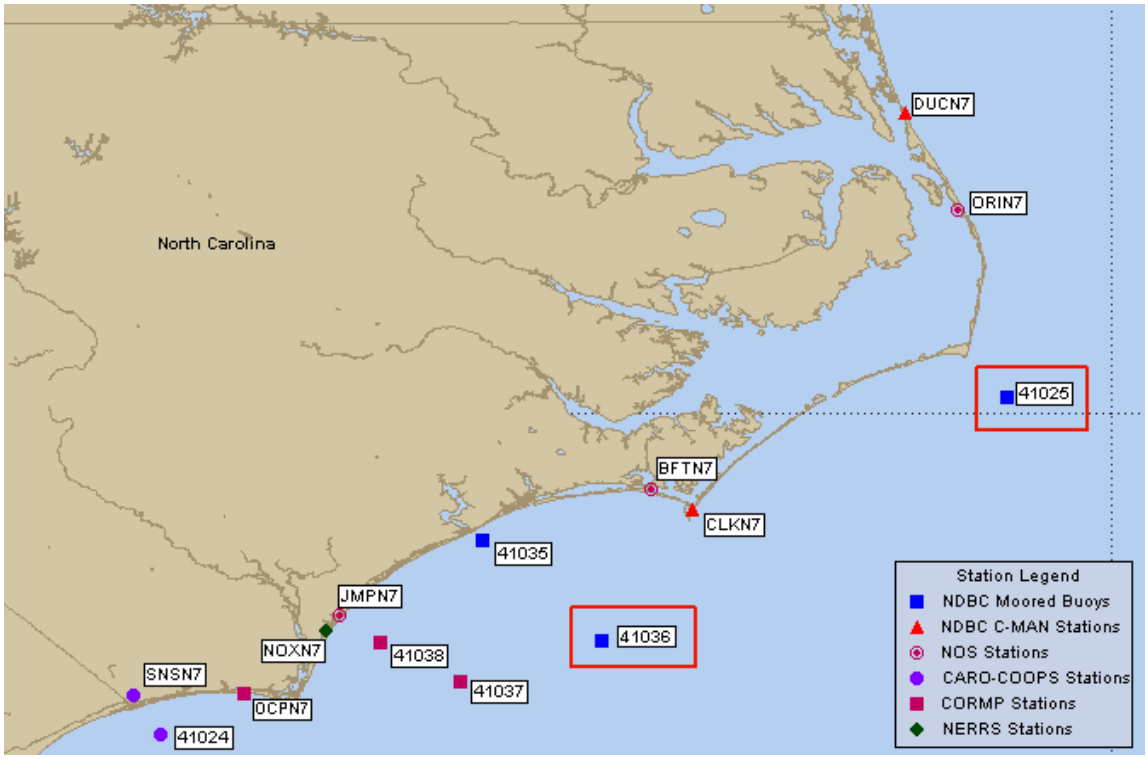

Figure A-14, the shaded area from Figure A-13, showing the National Data Buoy near shore locations used in the estimation of potential wind speeds and sea state.

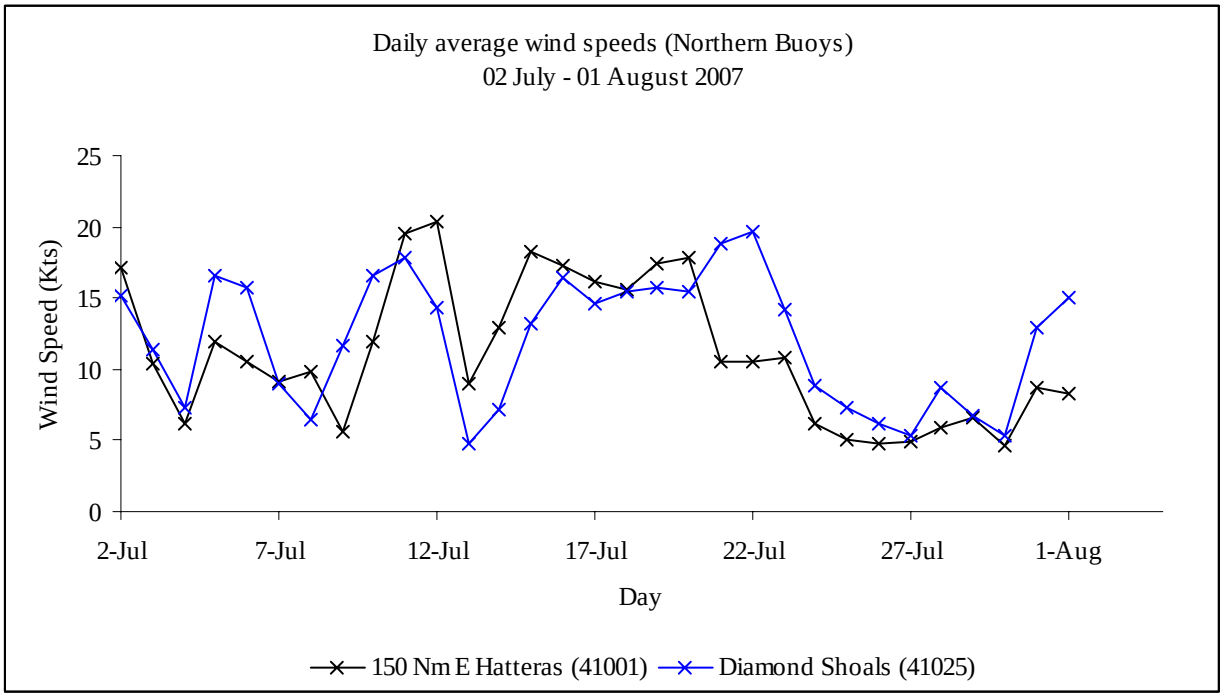

Figure A-15, daily wind speed averages from the Northern (relative to exercise area) data buoys, 150 Nm E of Cape Hatteras (41001) and Diamond Shoals (41025).

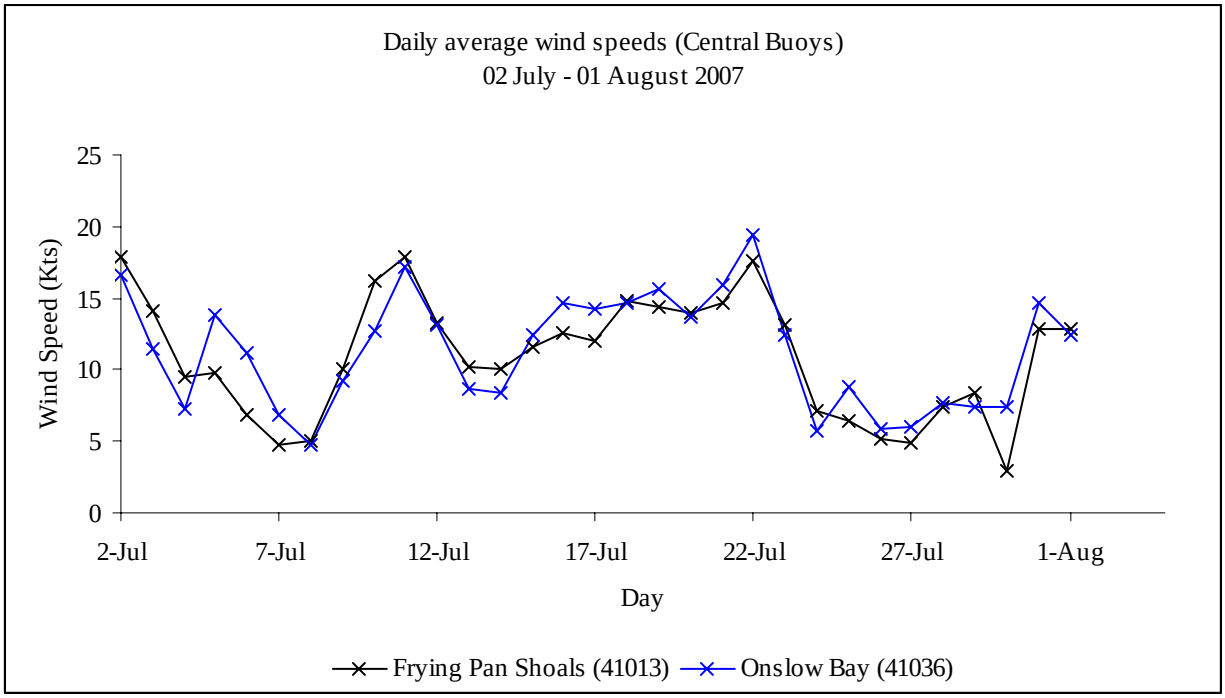

Figure A-16, daily wind speed averages from the central (relative to exercise area) data buoys, Frying Pan Shoals (41013) and Onslow Bay (41036).

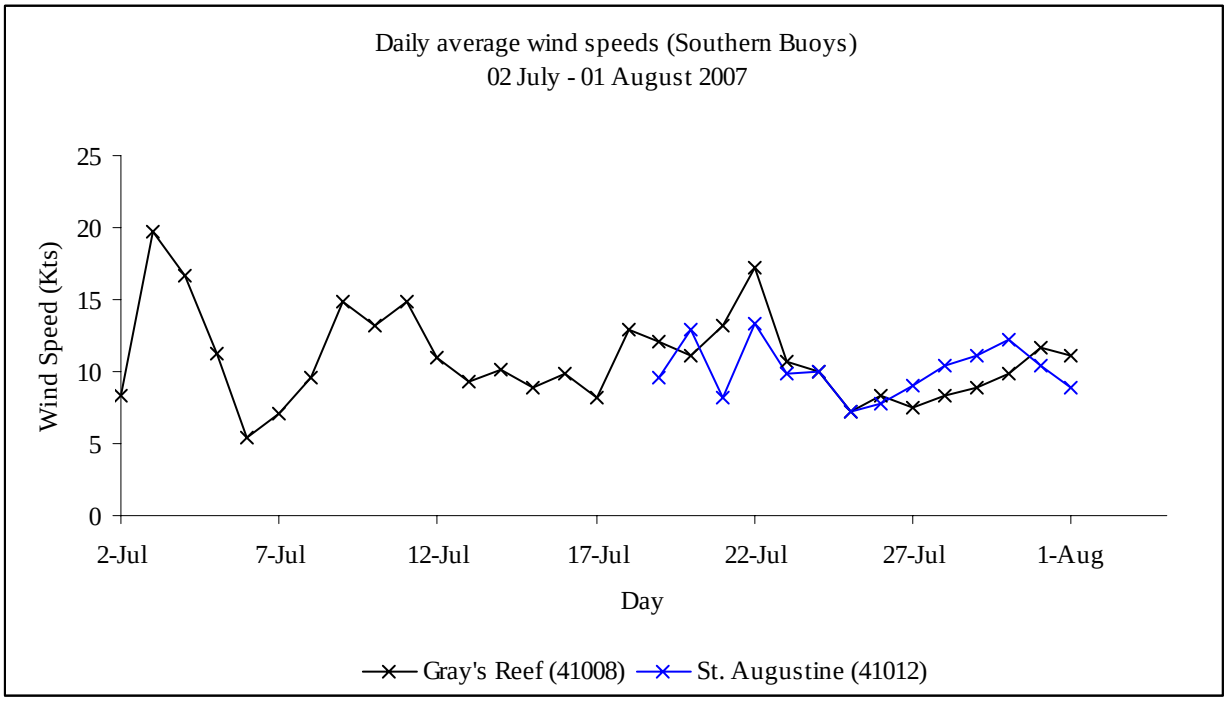

Figure A-17, daily wind speed averages from the Southern (relative to exercise area) data buoys, Frying Pan Shoals (41013) and Onslow Bay (41036).

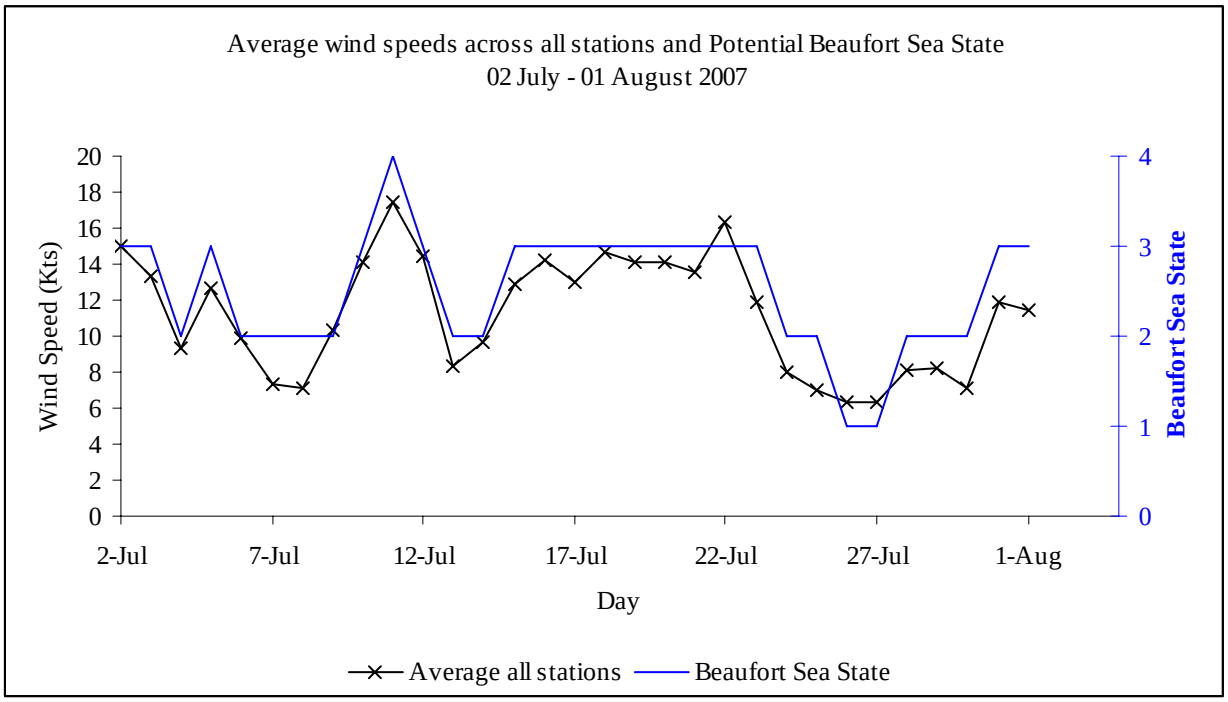

Figure A-18, daily wind speed averages from all six data buoys and the approximate sea state that could have been experienced during the exercise.

Table A-4. US Navy and Beaufort Sea State codes.

Sea State	Beaufort Number	Wind Speed (kts)	Wind description	Beaufort Number Picture
0	0	< 1	Calm	
0	1	1-3	Light air	
1	2	4-6	Light breeze	
2	3	7-10	Gentle breeze	
3	4	11-16	Moderate breeze	
4	5	17-21	Fresh breeze	
5	6	22-27	Strong breeze	

Sea State	Beaufort Number	Wind Speed (kts)	Wind description	Beaufort Number Picture
6	7	28-33	Near gale	
7	8	34-40	Gale	
8	9	41-47	Strong gale	
9	10	48-55	Storm	
9	11	56-63	Violent storm	
9	12	>64	Hurricane	

* Photographs from National Weather Service Observing Handbook No. 1, US National Weather Service.

APPENDIX B- NDE CONDITIONS AND PROTECTIVE MEASURES MESSAGE

B-1: NDE

NDE mitigation measures include:

I. General Maritime Protective Measures: Personnel Training:

1. All lookouts onboard platforms involved in ASW training events will review the NMFS approved Marine Species Awareness Training (MSAT) material prior to use of mid- frequency active sonar.
2. All Commanding Officers, Executive Officers, and officers standing watch on the bridge will have reviewed the MSAT material prior to a training event employing the use of MFAS.
3. Navy lookouts will undertake extensive training in order to qualify as a watchstander in accordance with the Lookout Training Handbook (NAVEDTRA 12968-B).
4. Lookout training will include on-the-job instruction under the supervision of a qualified, experienced watchstander. Following successful completion of this supervised training period, Lookouts will complete the Personal Qualification Standard program, certifying that they have demonstrated the necessary skills (such as detection and reporting of partially submerged objects). This does not preclude personnel being trained as lookouts counted as those listed in previous measures so long as supervisors monitor their progress and performance.
5. Lookouts will be trained in the most effective means to ensure quick and effective communication within the command structure in order to facilitate implementation of protective measures if marine species are spotted.

II. General Maritime Protective Measures: Lookout and Watchstander Responsibilities:

6. On the bridge of surface ships, there will always be at least three people on watch whose duties include observing the water surface around the vessel.
7. In addition to the three personnel on watch noted previously, all surface ships participating in ASW exercises will have at all times during the exercise at least two additional personnel on watch as lookouts.
8. Personnel on lookout and officers on watch on the bridge will have at least one set of binoculars available for each person to aid in the detection of marine mammals.
9. On surface vessels equipped with MFAS, pedestal mounted “Big Eye” (20x 110) binoculars will be present and in good working order to assist in the detection of marine mammals in the vicinity of the vessel.
10. Personnel on lookout will employ visual search procedures employing a scanning methodology in accordance with the Lookout Training Handbook (NAVEDTRA 12968-B).
11. After sunset and prior to sunrise, lookouts will employ Night Lookouts Techniques in accordance with the Lookout Training Handbook.
12. Personnel on lookout will be responsible for reporting all objects or anomalies sighted in the water (regardless of the distance from the vessel) to the Officer of the Deck, since any object or disturbance (e.g., trash, periscope, surface

disturbance, discoloration) in the water may be indicative of a threat to the vessel and its crew or indicative of a marine species that may need to be avoided as warranted.

III. Operating Procedures

13. A Letter of Instruction, Mitigation Measures Message or Environmental Annex to the Operational Order will be issued prior to the exercise to further disseminate the personnel training requirement and general marine mammal protective measures.
14. Commanding Officers will make use of marine species detection cues and information to limit interaction with marine species to the maximum extent possible consistent with safety of the ship.
15. All personnel engaged in passive acoustic sonar operation (including aircraft, surface ships, or submarines) will monitor for marine mammal vocalizations and report the detection of any marine mammal to the appropriate watch station for dissemination and appropriate action.
16. During MFAS operations, personnel will utilize all available sensor and optical systems (such as Night Vision Goggles to aid in the detection of marine mammals.
17. Navy aircraft participating in exercises at sea will conduct and maintain, when operationally feasible and safe, surveillance for marine species of concern as long as it does not violate safety constraints or interfere with the accomplishment of primary operational duties.
18. Aircraft with deployed sonobuoys will use only the passive capability of sonobuoys when marine mammals are detected within 200 yards of the sonobuoy.
19. Marine mammal detections will be immediately reported to assigned Aircraft Control Unit for further dissemination to ships in the vicinity of the marine species as appropriate where it is reasonable to conclude that the course of the ship will likely result in a closing of the distance to the detected marine mammal.
20. Safety Zones - When marine mammals are detected by any means (aircraft, shipboard lookout, or acoustically) within 1,000 yards of the sonar dome (the bow), the ship or submarine will limit active transmission levels to at least 6 dB below normal operating levels.

    (i) Ships and submarines will continue to limit maximum transmission levels by this 6 dB factor until the animal has been seen to leave the area, has not been detected for 30 minutes, or the vessel has transited more than 2,000 yards beyond the location of the last detection.

    (ii) Should a marine mammal be detected within or closing to inside 500 yards of the sonar dome, active sonar transmissions will be limited to at least 10 dB below the equipment's normal operating level. Ships and submarines will continue to limit maximum ping levels by this 10 dB factor until the animal has been seen to leave the area, has not been detected for 30 minutes, or the vessel has transited more than 2,000 yards beyond the location of the last detection.

    (iii) Should the marine mammal be detected within or closing to inside 200 yards of the sonar dome, active sonar transmissions will cease. Sonar

will not resume until the animal has been seen to leave the area, has not been detected for 30 minutes, or the vessel has transited more than 2,000 yards beyond the location of the last detection.

(iv) Special conditions applicable for dolphins and porpoises only: If, after conducting an initial maneuver to avoid close quarters with dolphins or porpoises, the Officer of the Deck concludes that dolphins or porpoises are deliberately closing to ride the vessel's bow wave, no further mitigation actions are necessary while the dolphins or porpoises continue to exhibit bow wave riding behavior.

(v) If the need for power-down should arise as detailed in "Safety Zones"'above, Navy shall follow the requirements as though they were operating at 235 dB - the normal operating level (i.e., the first power-down will be to 229 dB, regardless of at what level above 235 sonar was being operated).

21. Prior to start up or restart of active sonar, operators will check that the Safety Zone radius around the sound source is clear of marine mammals.
22. Sonar levels (generally) — The ship or submarine will operate sonar at the lowest practicable level, not to exceed 235 dB, except as required to meet tactical training objectives.
23. Helicopters shall observe/survey the vicinity of an ASW exercise for 10 minutes before the first deployment of active (dipping) sonar in the water.
24. Helicopters shall not dip their sonar within 200 yards of a marine mammal and shall cease pinging if a marine mammal closes within 200 yards after pinging has begun.
25. Submarine sonar operators will review detection indicators of close-aboard marine mammals prior to the commencement of ASW operations involving active mid-frequency sonar.
26. Increased vigilance during major ASW training exercises with tactical active sonar when critical conditions are present.

    Based on lessons learned from strandings in Bahamas 2000, Madeiras 2000, Canaries 2002, and Spain 2006, beaked whales are of particular concern since they have been associated with MFAS operations. Navy should avoid planning major ASW training exercises with MFAS in areas where they will encounter conditions which, in their aggregate, may contribute to a marine mammal stranding event.

    The conditions to be considered during exercise planning include:

    (1) Areas of at least 1000 m depth near a shoreline where there is a rapid change in bathymetry on the order of 1000-6000 meters occurring across a relatively short horizontal distance (e.g., 5 nm).

    (2) Cases for which multiple ships or submarines (3) operating MFAS in the same area over extended periods of time (6 hours) in close proximity (1ONM apart).

    (3) An area surrounded by land masses, separated by less than 35 nm and at least 10 nm in length, or an embayment, wherein operations involving

multiple ships/subs (3) employing MFAS near land may produce sound directed toward the channel or embayment that may cut off the lines of egress for marine mammals.
(4) Although not as dominant a condition as bathymetric features, the historical presence of a significant surface duct (i.e. a mixed layer of constant water temperature extending from the sea surface to 100 or more feet).

If the major exercise must occur in an area where the above conditions exist in their aggregate, these conditions must be fully analyzed in environmental planning documentation. Navy will increase vigilance by undertaking the following additional protective measure:

A dedicated aircraft (Navy asset or contracted aircraft) will undertake reconnaissance of the embayment or channel ahead of the exercise participants to detect marine mammals that may be in the area exposed to active sonar. Where practical, advance survey should occur within about two hours prior to MFA sonar use, and periodic surveillance should continue for the duration of the exercise. Any unusual conditions (e.g., presence of sensitive species, groups of species milling out of habitat, any stranded animals) shall be reported to the Officer in Tactical Command (OTC), who should give consideration to delaying, suspending or altering the exercise.

All safety zone requirements described in Measure 20 apply.

The post-exercise report must include specific reference to any event conducted in areas where the above conditions exist, with exact location and time/duration of the event, and noting results of surveys conducted.

IV. Coordination and Reporting

27. Navy will coordinate with the local 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.
28. Navy will submit a report to the OPR, NMFS, within 120 days of the completion of a Major Exercise. This report must contain a discussion of the nature of the effects, if observed, based on both modeled results of real-time events and sightings of marine mammals.
29. If a stranding occurs during an ASW exercise, NMFS and Navy will coordinate to determine if MFAS should be temporarily discontinued while the facts surrounding the stranding are collected.

B-2 NMFS' Biologial Opinion terms and conditions

Reasonable and Prudent Measures
The National Marine Fisheries Service (NMFS) believes the following reasonable and prudent measures are necessary and appropriate to minimize the impacts of incidental take on threatened and endangered species:

- In addition to the mitigation measures described in the Description of the Proposed Action, the Navy shall implement the terms and conditions below to sight and avoid sea turtles during the USS Truman 07-1 Combined CSG COMPTUEX/JTFEX and during transits to and from the exercise location.
- The U.S. Navy shall submit a report describing the results of implementation of the mitigation measures during the USS Truman 07-1 Combined CSG COMPTUEX/JTFEX.

Terms and Conditions

Operating Requirements

1. Parts 1 and 2 of the Marine Species Awareness Training (MSAT) shall be reviewed by all lookouts. Other Navy personnel who would be observing areas around vessels or below aircraft should be encouraged to view the MSAT. The Navy shall provide MSAT to other countries participating in the exercise.

2. The lookouts and watchstanders shall observe the water surface for sea turtles, as well as for marine mammals. As intended for marine mammals in the "Operating Procedures," any sea turtle detections shall be immediately reported to assigned Aircraft Control Unit for further dissemination to ships in the vicinity of the marine species as appropriate. Where it is feasible and consistent with mission and safety, ships will avoid closing to within 200 yards of the sighted marine species.

3. To the extent feasible and consistent with mission and safety, the Navy vessels shall avoid areas with Sargassum mats, particularly areas with higher concentrations of Sargassum mats, and clusters of sea birds and jellyfish. These ocean features indicate the presence of listed species' prey and may indicate the presence of listed species.

4. The Navy shall review prior to and during the exercise sea surface temperature and sea surface height maps to find areas of strong discontinuities that indicate ocean fronts, which serve to concentrate listed species. The Navy lookouts will use this information as an awareness cue to the higher chance of sighting marine species.

5. To the extent feasible, sonobuoys deployed with parachutes shall be released over areas that are surveyed and determined to be free of sea turtles and sperm whales.

If sea turtle(s) or sperm whales are observed, sonobuoys shall be deployed a minimum of 200 yards away from the animal(s).

Reporting Requirements

1. Within 120 calendar days of completing an exercise the U.S. Navy shall provide the Chief, Endangered Species Division, Office of Protected Resources (with a copy provided to the Assistant Regional Administrator for Protected Resources in NMFS' Southeast Regional Office) with a written report that shall include the following information:
    a. a summary of the exercise (the starting and ending date of the exercise, the number of ships and aircraft involved in the exercise, and the number of hours passive and active sonar was used during the exercise);
    b. the specific mitigation measures the Navy implemented during the exercise;
    c. the number of sperm whales (i) had been detected within 200 yards of a sonobuoy and 500 and 1,000 yards of a sonar dome or during an active transmission and (ii) the estimate of the number of sperm whales that had been exposed to mid-frequency sonar at received levels equal to or greater than 173 dB re 1 ìPa2·s;
    d. the reports of the activity or activities that sperm whales had been observed to exhibit while they were within 200 yards of a sonobuoy and 500 and 1,000 yards of a sonar dome that was actively transmitting during the exercise (for example, the report should not identify "playing;" it should identify the behavior that allowed the observer to conclude that the animal(s) was "playing").
    Reports of observations shall identify the date, time, and visual conditions associated (if the observation is produced from a helicopter, the report should identify the speed, vector, and altitude of the airship; the sea state, and lighting conditions) with the observation; and how long an observer or set of observers maintained visual contact with a marine mammal;
    e. an evaluation of the effectiveness of those mitigation measures at avoiding exposing sperm whales and sea turtles to ship traffic and parachutes and sperm whales to midfrequency sonar. This evaluation shall identify the specific observations that support any conclusion the U.S. Navy reaches about the effectiveness of the mitigation measures;
    f. an evaluation of the monitoring program's ability to detect marine mammals that occur within 200 yards of a sonobuoy and 500 and 1,000 yards of a sonar dome, during an active transmission (or close enough to an exercise to be exposed to mid-frequency sonar at received levels equal to or greater than 173 dB re 1 ìPa2.s) with the specific evidence that supports any conclusions the U.S. Navy reaches.
2. The Navy shall continue to coordinate with NMFS on any stranded marine mammal during the exercise with NMFS' Southeast Regional Office. The Navy will report to the NMFS Stranding Coordinator any observed unusual marine mammal behavior, including stranded, live or dead marine mammal strandings,

and dead floating marine mammals, that may occur at any time during or shortly after exercise activities.

3. The Navy shall continue to use standard reporting procedures for any collisions with marine mammals to the NMFS Stranding Coordinator including: species identification (photos), location, vessel speed, vessel direction, post-collision marine mammal behavior, when feasible.

B-3: **Combined CSG COMPTUEX/JTFEX 07-01 Protective measures message**
EXER/COMBINED CSG COMPTUEX-JTFEX (JUL-AUG 2007)//
MSGID/GENADMIN/COMUSFLTFORCOM NORFOLK VA/N77//
SUBJ/ENVIRONMENTAL PROTECTIVE MEASURES FOR CSG COMPOSITE TRAINING /UNIT EXERCISE-JOINT TASK FORCE EXERCISE (JUL-AUG 2007)//
REF/A/DOC/NMFS BIOLOGICAL OPINION/14JUN2007// REF/B/AT-SEA POLICY/SECNAV/28DEC2000// REF/C/DOC/USD MMPA NDE/23JAN2007//
REF/D/GENADMIN/COMSUFLTFORCOM NORFOLK VA/281436ZMAR2007//
REF/E/DVD-U.S. NAVY MARINE/SPECIES AWARENESS TRAINING/-/VER 1.1//
REF/F/GENADMIN/SECNAV WASHINGTON DC/181634ZNOV2005//
REF/G/GENADMIN/COMUSFLTFORCOM NORFOLK VA/231614ZMAY2006//
REF/H/DOC/OPNAVINST 3100.6H/01FEB2006// NARR/REF A IS NATIONAL MARINE FISHERIES SERVICE (NMFS) BIOLOGICAL OPINION CONTAINING SPECIFIC MITIGATION MEASURES FOR COMBINED CSG COMPTUEX-JTFEX (JUL-AUG 2007). REF B IS UNSECNAV MEMO FOR CNO AND COMMARCOR REGARDING ENVIRONMENTAL COMPLIANCE DURING TRAINING ACTIVITIES. REF C IS DUSD MEMO ESTABLISHING A NATIONAL DEFENSE EXEMPTION (NDE) FROM REQUIREMENTS OF THE MARINE MAMMAL PROTECTION ACT (MMPA) FOR CERTAIN DOD TRAINING USING MID-FREQUENCY ACTIVE (MFA) (1-10 KZ) SONAR. REF D IS ALLANTFLT MESSAGE PROMULGATING MEASURES FOR CERTAIN DOD TRAINING USING MFA SONAR AS REQUIRED BY REF C. REF E IS DVD OF U.S. NAVY MARINE SPECIES AWARENESS TRAINING (MSAT), VERSION 1.1 (PIN #806824). REF F IS ALNAV MESSAGE REQUIRING RETENTION OF ALL RECORDS RELATED TO MFA SONAR TESTING AND TRAINING.
REF G IS ALLANTFLT MESSAGE IMPLEMENTING THE SONAR POSITIONAL REPORTING SYSTEM (SPORTS). REF H IS OPNAV SPECIAL INCIDENT REPORTING PROCEDURES, MARINE MAMMAL INCIDENT REPORTS.//
POC/……./CIVILIAN/N774A COMUSFLTFORCOM/LOC:NORFOLK, VA/TEL:757-836-…. DSN 836//
POC/……./CIVILIAN/N774B COMUSFLTFORCOM/LOC:NORFOLK, VA /TEL:757-836-…. DSN 836//
RMKS/1. THIS MESSAGE CONTAINS SIGNIFICANT ADDITIONS TO PROTECTIVE MEASURES WRT MFA SONAR IN ACCORDANCE WITH REF A. ALL EXERCISE PARTICIPANTS SHOULD READ THIS MESSAGE IN ITS ENTIRETY.
2. IN ACCORDANCE WITH REFS A THROUGH H, THE FOLLOWING ENVIRONMENTAL PROTECTIVE MEASURES ARE IN EFFECT FOR THE COMBINED CSG COMPTUEX-JTFEX (JUL-AUG 2007). ADHERENCE TO THESE PROTECTIVE MEASURES BY COMSTRKFORTRALANT (OFFICER CONDUCTING THE EXERCISE
(OCE)) AND ALL PARTICIPATING UNITS IS MANDATORY THROUGHOUT THE EXERCISE. IT IS STRONGLY URGED THAT COALITION FORCES PARTICIPATING IN THE EXERCISE COMPLY WITH THESE PROTECTIVE MEASURES TO THE MAXIMUM EXTENT POSSIBLE. THESE MEASURES ARE DESIGNED TO REDUCE THE RISK TO ENDANGERED SPECIES AND MARINE

MAMMALS THAT NAVAL FORCES MAY ENCOUNTER DURING AT-SEA OPERATIONS IN CHERRY POINT AND CHARLESTON/JACKSONVILLE OPAREAS, AND TO COMPLY WITH LAND-BASED ENVIRONMENTAL REQUIREMENTS FOR OPERATIONS AT BT-9, BT-11, DARE COUNTY, AVON PARK, AND PINECASTLE BOMBING RANGES.
3. ALL PARTICIPATING UNITS SHALL APPOINT AN ENVIRONMENTAL COORDINATOR WHO WILL ATTEND ANY NECESSARY ENVIRONMENTAL BRIEFINGS AS DIRECTED BY THE OCE, BE RESPONSIBLE FOR OBTAINING ALL RELEVANT ENVIRONMENTAL INSTRUCTIONS, DIRECTIVES AND ORDERS, AND ENSURE THAT ALL RELEVANT ENVIRONMENTAL RESTRICTIONS AND GUIDANCE ARE FOLLOWED, INCLUDING THOSE OUTLINED IN THIS MESSAGE.
4. REF C ESTABLISHED NEW MARINE SPECIES PROTECTIVE MEASURES FOR NAVY TRAINING EVENTS THAT INVOLVE THE USE OF MFA SONAR. THESE MEASURES, PROMULGATED BY REF D, ARE IN EFFECT UNTIL 23 JAN 09 AND ARE INCORPORATED IN THIS MESSAGE. REF A PROMULGATED ADDITIONAL MARINE SPECIES PROTECTIVE MEASURES FOR MFA SONAR THAT APPLY ONLY TO COMBINED CSG COMPTUEX-JTFEX (JUL-AUG 2007).
5. PROTECTIVE MEASURES IN THIS MESSAGE ARE ORGANIZED AS FOLLOWS:
GENERAL MARITIME MEASURES (PARA 6); AVIATION UNITS (PARA 7); PASSIVE SONAR (PARA 8); MFA SONAR (PARA 9); SONAR USE REPORTING (PARA 10); SURFACE TO SURFACE GUNNERY USING SLED/SEPTAR (PARA 11); SURFACE TO AIR GUNNERY USING AERIAL TOWED TARGETS (PARA 12); GENERAL AIR OPERATIONS IN ALL AIRSPACE (PARA 13); MEASURES FOR BT-9 AND BT-11 (PARA 14); CONTINGENCY JETTISON OF AIR TO GROUND ORDNANCE (PARA 15); AND MARINE SPECIES INCIDENT REPORTING (PARA 16).
6. GENERAL MARITIME MEASURES. THE FOLLOWING MEASURES ARE APPLICABLE TO ALL SHIP AND SUBMARINE OPERATIONS THROUGHOUT THE EXERCISE PERIOD IN ALL WATERS:
6.A. WATCHSTANDERS AND QUALIFICATIONS.
6.A.1. WHILE UNDERWAY, SURFACE VESSELS WILL HAVE AT LEAST TWO LOOKOUTS WITH BINOCULARS; SURFACED SUBMARINES WILL HAVE AT LEAST ONE LOOKOUT WITH BINOCULARS. LOOKOUTS ALREADY POSTED FOR SAFETY OF NAVIGATION AND MAN-OVERBOARD PRECAUTIONS MAY BE USED TO FILL THIS REQUIREMENT. AS PART OF THEIR REGULAR DUTIES, LOOKOUTS WILL WATCH FOR AND REPORT TO THE OFFICE OF THE DECK (OOD) THE PRESENCE OF MARINE MAMMALS AND SEA TURTLES.
6.A.2. PERSONNEL TRAINING. ALL COMMANDING OFFICERS, EXECUTIVE OFFICERS, LOOKOUTS, OODS, JOODS, MARITIME PATROL AIRCRAFT AIRCREWS, AND ASW/MIW HELICOPTER CREWS WILL COMPLETE MSAT BY VIEWING THE U.S.
NAVY MSAT DVD (REF E). MSAT MAY ALSO BE VIEWED ON-LINE AT: "HTTPS:/MMRC.TECQUEST.NET". ALL BRIDGE WATCHSTANDERS/LOOKOUTS WILL COMPLETE BOTH PARTS ONE AND

TWO OF THE MSAT; PART TWO IS OPTIONAL FOR OTHER PERSONNEL. FOREIGN PARTICIPANT LOOKOUTS ARE ENCOURAGED TO VIEW MSAT PARTS ONE AND TWO. MSAT WAS PROVIDED TO EXERCISE PARTICIPANTS, INCLUDING FOREIGN PARTICIPANTS, DURING THE EXERCISE FINAL PLANNING CONFERENCE.

6.A.3. TRAINED SHIP AND SUBMARINE MARINE SPECIES LOOKOUTS SHALL NOT PERFORM ADDITIONAL DUTIES THAT WOULD REQUIRE ABANDONING THEIR LOOKOUT POSTS. IN ADDITION TO NORMAL DUTIES, ALL BRIDGE WATCHSTANDERS/LOOKOUTS SHOULD MAINTAIN A VIGILANT WATCH FOR MARINE MAMMALS AND SEA TURTLES.

6.A.4. NAVY LOOKOUTS WILL UNDERTAKE EXTENSIVE TRAINING IN ORDER TO QUALIFY AS A WATCHSTANDER IN ACCORDANCE WITH THE LOOKOUT TRAINING HANDBOOK (NAVEDTRA 12968-B).

6.A.5. LOOKOUT TRAINING WILL INCLUDE ON-THE-JOB INSTRUCTION UNDER THE SUPERVISION OF A QUALIFIED, EXPERIENCED WATCHSTANDER. FOLLOWING SUCCESSFUL COMPLETION OF THIS SUPERVISED TRAINING PERIOD, LOOKOUTS WILL COMPLETE THE PERSONAL QUALIFICATION STANDARD PROGRAM, CERTIFYING THAT THEY HAVE DEMONSTRATED THE NECESSARY SKILLS (SUCH AS DETECTION AND REPORTING OF PARTIALLY SUBMERGED OBJECTS). THIS DOES NOT FORBID COUNTING PERSONNEL BEING TRAINED AS LOOKOUTS AMONG THOSE LISTED IN PARA'S 6.B.1. AND 6.B.2., SO LONG AS SUPERVISORS MONITOR THEIR PROGRESS AND PERFORMANCE.

6.A.5.A. LOOKOUTS WILL BE TRAINED IN THE MOST EFFECTIVE MEANS TO ENSURE QUICK AND EFFECTIVE COMMUNICATION WITHIN THE COMMAND STRUCTURE IN ORDER TO FACILITATE IMPLEMENTATION OF PROTECTIVE MEASURES IF MARINE SPECIES ARE SPOTTED.

6.B. LOOKOUT AND WATCHSTANDER RESPONSIBILITIES.

6.B.1. ON THE BRIDGE OF SURFACE SHIPS, THERE WILL ALWAYS BE AT LEAST THREE PEOPLE ON WATCH WHOSE DUTIES INCLUDE OBSERVING THE WATER SURFACE AROUND THE VESSEL.

6.B.2. ALL SURFACE SHIPS PARTICIPATING IN ASW EXERCISES WILL, IN ADDITION TO THE THREE PERSONNEL ON WATCH NOTED IN PARA 6.B.1., HAVE AT ALL TIMES DURING THE EXERCISE AT LEAST TWO ADDITIONAL PERSONNEL ON WATCH AS LOOKOUTS.

6.B.3. PERSONNEL ON LOOKOUT AND OFFICERS ON WATCH ON THE BRIDGE WILL HAVE AT LEAST ONE SET OF BINOCULARS AVAILABLE FOR EACH PERSON TO AID IN THE DETECTION OF MARINE MAMMALS AND SEA TURTLES.

6.B.4. ON SURFACE VESSELS EQUIPPED WITH MFA SONAR, PEDESTAL MOUNTED (BIG EYE (20 X 110)) BINOCULARS WILL BE PROPERLY INSTALLED AND IN GOOD WORKING ORDER TO ASSIST IN THE DETECTION OF MARINE MAMMALS AND SEA TURTLES IN THE VICINITY OF THE VESSEL.

6.B.5. PERSONNEL ON LOOKOUT WILL EMPLOY VISUAL SEARCH PROCEDURES EMPLOYING A SCANNING METHODOLOGY IN ACCORDANCE WITH THE LOOKOUT TRAINING HANDBOOK.
6.B.6. AFTER SUNSET AND PRIOR TO SUNRISE, LOOKOUTS WILL EMPLOY NIGHT LOOKOUT TECHNIQUES IN ACCORDANCE WITH THE LOOKOUT TRAINING HANDBOOK.
6.B.7. PERSONNEL ON LOOKOUT WILL BE RESPONSIBLE FOR REPORTING ALL OBJECTS OR ANOMALIES SIGHTED IN THE WATER (REGARDLESS OF THE DISTANCE FROM THE VESSEL) TO THE OOD, SINCE ANY OBJECT OR DISTURBANCE (E.G., TRASH, PERISCOPE, SURFACE DISTURBANCE, DISCOLORATION) IN THE WATER MAY BE INDICATIVE OF A THREAT TO THE VESSEL AND ITS CREW OR INDICATIVE OF MARINE MAMMALS AND SEA TURTLES THAT MAY NEED TO BE AVOIDED AS WARRANTED.
6.C. MARINE MAMMAL AND SEA TURTLE AVOIDANCE.
6.C.1. PRIOR TO AND DURING THE EXERCISE, SEA SURFACE TEMPERATURE AND SEA SURFACE HEIGHT MAPS WILL BE REVIEWED TO IDENTIFY AREAS OF STRONG DISCONTINUITIES THAT INDICATE OCEAN FRONTS, WHICH CONCENTRATE MARINE MAMMALS AND SEA TURTLES. LOOKOUTS WILL USE THIS INFORMATION AS AN AWARENESS CUE TO AID IN THE SIGHTING OF MARINE MAMMALS AND SEA TURTLES.
6.C.2. WHILE IN TRANSIT, NAVAL VESSELS SHALL BE ALERT AT ALL TIMES, USE EXTREME CAUTION, AND PROCEED AT A "SAFE SPEED" SO THAT THE VESSEL CAN TAKE PROPER AND EFFECTIVE ACTION TO AVOID A COLLISION WITH ANY MARINE MAMMAL OR SEA TURTLE AND CAN BE STOPPED WITHIN A DISTANCE APPROPRIATE TO THE PREVAILING CIRCUMSTANCES AND CONDITIONS.
6.C.3. FLOATING WEEDS, ALGAL MATS, SARGASSUM RAFTS, AND CLUSTERS OF SEA BIRDS AND JELLYFISH ARE BIOLOGICAL FEATURES KNOWN TO BE GOOD INDICATORS OF SEA TURTLE AND MARINE MAMMAL PRESENCE. THEREFORE, VESSELS WILL AVOID AREAS WITH THESE FEATURES TO THE EXTENT FEASIBLE AND CONSISTENT WITH MISSION AND SAFETY, AND WILL INCREASE VIGILANCE IN WATCHING FOR SEA TURTLES AND MARINE MAMMALS IN AREAS WHERE THESE FEATURES ARE PRESENT.
6.C.4. WHALE AVOIDANCE. UPON SIGHTING A WHALE, ADJUST COURSE AND SPEED AS NECESSARY TO MAINTAIN A SAFE DISTANCE, AT LEAST 500 YARDS, WHEN POSSIBLE. AVOID APPROACHING WHALES HEAD-ON CONSISTENT WITH PRUDENT SEAMANSHIP. THIS REQUIREMENT DOES NOT APPLY IF A VESSEL'S SAFETY IS THREATENED, SUCH AS WHEN CHANGE OF COURSE WOULD CREATE AN IMMINENT AND SERIOUS THREAT TO A PERSON, VESSEL OR AIRCRAFT, AND TO THE EXTENT VESSELS ARE RESTRICTED IN THEIR ABILITY TO MANEUVER. RESTRICTED MANEUVERABILITY INCLUDES, BUT IS NOT LIMITED TO, SITUATIONS WHEN VESSELS ARE ENGAGED IN DREDGING, SUBMERGED OPERATIONS, LAUNCHING AND RECOVERING AIRCRAFT OR LANDING CRAFT, MINESWEEPING OPERATIONS, REPLENISHMENT WHILE

UNDERWAY AND TOWING OPERATIONS THAT SEVERELY RESTRICT A VESSEL'S ABILITY TO DEVIATE COURSE. TAKE REASONABLE STEPS TO ALERT OTHER VESSELS IN THE VICINITY OF THE WHALE.
6.C.5. OTHER MARINE SPECIES AVOIDANCE. WHERE FEASIBLE AND CONSISTENT WITH MISSION AND SAFETY, VESSELS WILL AVOID CLOSING TO WITHIN 200 YARDS OF SEA TURTLES AND MARINE MAMMALS OTHER THAN WHALES (WHALES ADDRESSED IN PARA 6.C.4.).
7. AVIATION UNITS.
7.A. NAVY AIRCRAFT PARTICIPATING IN ASW EXERCISES AT SEA WILL CONDUCT AND MAINTAIN, WHEN OPERATIONALLY FEASIBLE AND SAFE, SURVEILLANCE FOR MARINE MAMMALS AND SEA TURTLES AS LONG AS IT DOES NOT VIOLATE SAFETY CONSTRAINTS OR INTERFERE WITH THE ACCOMPLISHMENT OF PRIMARY OPERATIONAL DUTIES.
7.B. TO THE EXTENT FEASIBLE, SONOBUOYS DEPLOYED WITH PARACHUTES SHALL BE RELEASED OVER AREAS THAT ARE SURVEYED AND DETERMINED TO BE FREE OF SEA TURTLES AND MARINE MAMMALS. IF A SEA TURTLE OR MARINE\MAMMAL IS OBSERVED, SONOBUOYS SHALL BE DEPLOYED A MINIMUM OF 200 YARDS AWAY FROM THE ANIMAL(S).
8. PASSIVE SONAR.
8.A. ALL PERSONNEL ENGAGED IN PASSIVE ACOUSTIC SONAR OPERATIONS (INCLUDING AIRCRAFT, SURFACE SHIPS, OR SUBMARINES) WILL MONITOR FOR MARINE MAMMAL VOCALIZATIONS DURING ASW EXERCISES AND REPORT THE DETECTION OF ANY MARINE MAMMAL TO THE APPROPRIATE WATCH STATION FOR DISSEMINATION AND APPROPRIATE ACTION.
8.B. SUBMARINE SONAR OPERATORS WILL REVIEW DETECTION INDICATORS OF CLOSE-ABOARD MARINE MAMMALS PRIOR TO THE COMMENCEMENT OF ASW OPERATIONS INVOLVING MFA SONAR.
9. MID-FREQUENCY ACTIVE SONAR.
9.A. ALL MFA SONAR OPERATIONS SHALL BE LIMITED TO EAST OF THE 100-FATHOM CURVE.
9.B. COMMANDING OFFICERS WILL MAKE USE OF MARINE MAMMAL AND SEA TURTLE DETECTION CUES (PROVIDED IN MSAT) AND INFORMATION TO LIMIT INTERACTION WITH MARINE MAMMALS TO THE MAXIMUM EXTENT POSSIBLE CONSISTENT WITH SAFETY OF THE SHIP.
9.C. DURING MFA SONAR OPERATIONS, PERSONNEL WILL UTILIZE ALL AVAILABLE SENSOR AND OPTICAL SYSTEMS (SUCH AS NIGHT VISION GOGGLES) TO AID IN THE DETECTION OF MARINE MAMMALS AND SEA TURTLES.
9.D. AIRCRAFT WITH DEPLOYED SONOBUOYS WILL USE ONLY THE PASSIVE CAPABILITY OF SONOBUOYS WHEN MARINE MAMMALS ARE DETECTED WITHIN 200 YARDS OF THE SONOBUOY.
9.E. MARINE MAMMAL AND SEA TURTLE DETECTIONS WILL BE IMMEDIATELY REPORTED TO ASSIGNED AIRCRAFT CONTROL UNIT FOR FURTHER DISSEMINATION TO SHIPS IN THE VICINITY OF THE MARINE SPECIES, AS APPROPRIATE, WHERE IT IS REASONABLE TO CONCLUDE

THAT THE COURSE OF THE SHIP WILL LIKELY RESULT IN A CLOSING OF THE DISTANCE TO THE DETECTED ANIMAL(S).
9.F. SAFETY ZONES. WHEN MARINE MAMMALS ARE DETECTED BY ANY MEANS (AIRCRAFT, SHIPBOARD LOOKOUT, OR ACOUSTICALLY) WITHIN 1,000 YARDS OF THE SONAR DOME (THE BOW), THE SHIP OR SUBMARINE WILL LIMIT ACTIVE TRANSMISSION LEVELS TO AT LEAST 6 DB BELOW NORMAL OPERATION LEVELS.
9.F.1. SHIPS AND SUBMARINES WILL CONTINUE TO LIMIT MAXIMUM TRANSMISSION LEVELS BY THIS 6 DB FACTOR UNTIL THE ANIMAL HAS BEEN SEEN TO LEAVE THE AREA, HAS NOT BEEN DETECTED FOR 30 MINUTES, OR THE VESSEL HAS TRANSITED MORE THAN 2,000 YARDS BEYOND THE LOCATION OF THE LAST DETECTION.
9.F.2. SHOULD A MARINE MAMMAL BE DETECTED WITHIN OR CLOSING TO INSIDE 500 YARDS OF THE SONAR DOME, ACTIVE SONAR TRANSMISSIONS WILL BE LIMITED TO AT LEAST 10 DB BELOW THE EQUIPMENT'S NORMAL OPERATING LEVEL. SHIPS AND SUBMARINES WILL CONTINUE TO LIMIT MAXIMUM PING LEVELS BY THIS 10 DB FACTOR UNTIL THE ANIMAL HAS BEEN SEEN TO LEAVE THE AREA, HAS NOT BEEN DETECTED FOR 30 MINUTES, OR THE VESSEL HAS TRANSITED MORE THAN 2,000 YARDS BEYOND THE LOCATION OF THE LAST DETECTION.
9.F.3. SHOULD THE MARINE MAMMAL BE DETECTED WITHIN OR CLOSING TO INSIDE 200 YARDS OF THE SONAR DOME, ACTIVE SONAR TRANSMISSIONS WILL CEASE. SONAR WILL NOT RESUME UNTIL THE ANIMAL HAS BEEN SEEN TO LEAVE THE AREA, HAS NOT BEEN DETECTED FOR 30 MINUTES, OR THE VESSEL HAS TRANSITED MORE THAN 2,000 YARDS BEYOND THE LOCATION OF THE LAST DETECTION.
9.F.4. SPECIAL CONDITIONS APPLICABLE FOR DOLPHINS AND PORPOISES ONLY: IF, AFTER CONDUCTING AN INITIAL MANEUVER TO AVOID CLOSE QUARTERS WITH DOLPHINS OR PORPOISES, THE OOD CONCLUDES THAT DOLPHINS OR PORPOISES ARE DELIBERATELY CLOSING TO RIDE THE VESSELS BOW WAVE, NO FURTHER MITIGATION ACTIONS ARE NECESSARY WHILE THE DOLPHINS OR PORPOISES CONTINUE TO EXHIBIT BOW WAVE RIDING BEHAVIOR.
9.F.5. IF THE NEED FOR POWER-DOWN SHOULD ARISE AS DETAILED IN (SAFETY ZONES) ABOVE, NAVY SHALL FOLLOW THE REQUIREMENTS AS THOUGH THEY WERE OPERATING AT 235 DB, THE NORMAL OPERATING LEVEL (I.E., THE FIRST POWER-DOWN WILL BE TO 229 DB, REGARDLESS OF AT WHAT LEVEL ABOVE 235 SONAR WAS BEING OPERATED).
9.G. PRIOR TO START-UP OR RESTART OF ACTIVE SONAR, OPERATORS WILL CHECK THAT THE SAFETY ZONE RADIUS AROUND THE SOUND SOURCE IS CLEAR OF MARINE MAMMALS.
9.H. SONAR LEVELS (GENERALLY). NAVY WILL OPERATE SONAR AT THE LOWEST PRACTICABLE LEVEL, NOT TO EXCEED 235 DB, EXCEPT AS REQUIRED TO MEET TACTICAL TRAINING OBJECTIVES.
9.I. HELICOPTERS SHALL OBSERVE/SURVEY THE VICINITY OF AN ASW EXERCISE FOR TEN MINUTES BEFORE THE FIRST DEPLOYMENT OF ACTIVE

(DIPPING) SONAR IN THE WATER.
9.J. HELICOPTERS SHALL NOT DIP THEIR SONAR WITHIN 200 YARDS OF A MARINE MAMMAL AND SHALL CEASE PINGING IF A MARINE MAMMAL CLOSES WITHIN 200 YARDS AFTER PINGING HAS BEGUN.
9.K. INCREASE VIGILANCE UNDER THE FOLLOWING CIRCUMSTANCES:
9.K.1. MULTIPLE SHIPS OR SUBMARINES (3 OR MORE) ARE OPERATING MFA SONAR IN THE SAME AREA OVER EXTENDED PERIODS OF TIME (6 HOURS OR
LONGER) IN CLOSE PROXIMITY (LESS THAN OR EQUAL TO 10 NM APART); AND 9.K.2. MFA SONAR IS OPERATED IN AREAS WITH A HISTORY OF STRONG SURFACE DUCT CONDITIONS (I.E., A MIXED LAYER OF CONSTANT WATER TEMPERATURE EXTENDING FROM THE SEA SURFACE TO 100 OR MORE FEET).
10. SONAR USE REPORTING. PER REF F, ALL COMMANDS AND PERSONNEL MUST RETAIN ALL RECORDS RELATED TO MFA SONAR TESTING AND TRAINING UNTIL FURTHER NOTICE. FOR PURPOSES OF REF F ONLY, MFA SONAR IS DEFINED AS ANY SYSTEM OPERATING WITHIN THE FREQUENCY OF 1 KHZ AND 210 KHZ. PERSONNEL ARE ALSO REQUIRED TO IMPLEMENT REASONABLE SAFEGUARDS TO ENSURE THAT ALL RELEVANT DOCUMENTS ARE NOT DESTROYED, ALTERED OR DELETED. DOCUMENTS ARE TO BE PRESERVED IN THEIR NATIVE FORMAT (E.G., DOCUMENTS PRODUCED IN MS WORD MUST BE PRESERVED AS MS WORD DOCUMENTS).
10.A. ALL UNITS WILL REPORT SONAR USE IN ACCORDANCE WITH REF G.
10.B. MITIGATION AFTER ACTION REPORT (AAR). ALL UNITS THAT EMPLOY MFA OR PASSIVE SONAR ARE REQUIRED TO SUBMIT AN AAR. THE AARS WILL BE COLLECTED BY THE RESPECTIVE STRIKE GROUP COMMANDER AND FORWARDED TO USFF N77 VIA SIPERNET NLT 01 SEP 07. POC IS ……., 757-836- , DSN 836- , E-MAIL: "……@NAVY.MIL". THE AAR WILL INCLUDE ALL INFORMATION LISTED IN PARA'S 10.B.1. THROUGH 10.B.3.
10.B.1. UNITS WILL PROVIDE TO STRIKE GROUP COMMANDER THE NUMBER OF HOURS PASSIVE AND ACTIVE SONAR USED, THE NUMBER OF HOURS SPENT SEARCHING FOR MARINE SPECIES FOR EACH WATCHSTANDER, THE NUMBER OF WATCHSTANDERS ON DUTY PER SHIFT, AND UNIT POCS. THE STRIKE GROUP COMMANDER WILL PROVIDE TO USFF AN EXERCISE SUMMARY THAT INCLUDES EXERCISE START AND END DATE, NUMBER OF SHIPS AND AIRCRAFT PARTICIPATING, NUMBER OF HOURS SPENT ON WATCH FOR MARINE MAMMALS FOR EACH UNIT, TOTAL NUMBER OF HOURS PASSIVE AND ACTIVE SONAR USED, AND UNIT POCS. GOAL IS TO OBTAIN DATA THAT REPRESENTS TOTAL HOURS OF LOOKOUT EFFORT VERSUS TOTAL SIGHTINGS AND DETAILED SPECIES INFORMATION TO ASCERTAIN MITIGATION EFFECTIVENESS.
10.B.2. UNITS WILL PROVIDE THE FOLLOWING INFORMATION FOR ALL MARINE MAMMALS SIGHTED DURING THE EXERCISE: ANIMAL DESCRIPTION (LARGE WHALE, SMALL WHALE OR PORPOISE/DOLPHIN, AT A MINIMUM); ESTIMATED QUANTITY OF ANIMALS; BEHAVIOR OBSERVED;

DATE AND TIME; TRUE BEARING RANGE FROM SHIP; LOCATION, VISUAL CONDITIONS AND NIGHT SEARCH TECHNIQUE EMPLOYED, IF APPLICABLE; LENGTH OF TIME VISUAL CONTACT WAS MAINTAINED; MITIGATION MEASURES IMPLEMENTED TO RESPOND TO SIGHTING; WHETHER SONAR WAS ACTIVE AND, IF SO, POWER LEVEL AT WHICH SONAR WAS OPERATING WHEN ANIMAL WAS SIGHTED. IF OBSERVATION WAS MADE FROM AN AIRCRAFT, UNITS WILL REPORT THE SEA STATE; LIGHTING CONDITIONS; AIRCRAFT SPEED, VECTOR, AND ALTITUDE; AND APPROXIMATE DISTANCE BETWEEN ANIMAL AND SONOBUOY, IF APPLICABLE.

10.B.3. UNITS WILL REPORT ON THE EFFECTIVENESS OF MFA SONAR MITIGATION MEASURES AND GENERAL MARINE SPECIES AVOIDANCE MEASURES IMPLEMENTED (PROVIDING AS MUCH SPECIFICITY/DETAIL AS POSSIBLE), MAKE RECOMMENDATIONS TO IMPROVE THESE MEASURES, AND REPORT ANY IMPACT TO TRAINING FIDELITY CAUSED BY THESE MEASURES (E.G., SONAR POWER REDUCTION CAUSED BY MARINE MAMMAL ENTERING THE BUFFER ZONE, HOURS OF SEARCH OR PROSECUTION TIME LOST, MODIFICATION TO SEARCH OR PROSECUTION TACTICS, ETC.).

11. SURFACE-TO-SURFACE GUNNERY USING SLED/SEPTAR. THE FOLLOWING MITIGATIONS APPLY TO GUNNERY USING SURFACE TOWED TARGETS:

11.A. ONLY NON-EXPLOSIVE MUNITIONS WILL BE USED.

11.B. USE LOOKOUTS TO VISUALLY SURVEY FOR FLOATING WEEDS, ALGAL MATS AND SARGASSUM RAFTS WHICH MAY BE INHABITED BY IMMATURE SEA TURTLES IN THE TARGET AREA. INTENDED IMPACT SHALL NOT BE WITHIN 200 YARDS OF KNOWN OR OBSERVED FLOATING WEEDS, ALGAL MATS, SARGASSUM RAFTS OR CORAL REEFS.

11.C. ESTABLISH A 200 YARD RADIUS BUFFER ZONE AROUND THE INTENDED TARGET.

11.D. FROM THE INTENDED FIRING POSITION, USE TRAINED LOOKOUTS TO SURVEY THE BUFFER ZONE FOR MARINE MAMMALS AND SEA TURTLES PRIOR TO COMMENCEMENT AND DURING THE EXERCISE AS LONG AS PRACTICABLE. DUE TO THE DISTANCE BETWEEN THE FIRING POSITION AND THE BUFFER ZONE, LOOKOUTS ARE ONLY EXPECTED TO VISUALLY DETECT BREACHING WHALES, WHALE BLOWS AND LARGE PODS OF DOLPHINS AND PORPOISES.

11.E. CONDUCT EXERCISE ONLY WHEN THE BUFFER ZONE IS VISIBLE AND MARINE MAMMALS AND SEA TURTLES ARE NOT DETECTED WITHIN THE TARGET AREA AND BUFFER ZONE.

12. SURFACE-TO-AIR GUNNERY USING AERIAL TOWED TARGETS.

12.A. VESSELS WILL ORIENT THE GEOMETRY OF GUNNERY EXERCISE IN ORDER TO PREVENT DEBRIS FROM FALLING IN THE AREA OF SIGHTED MARINE MAMMALS, SEA TURTLES, ALGAL MATS AND SARGASSUM RAFTS.

12.B. VESSELS WILL EXPEDITE THE RECOVERY OF ANY PARACHUTE DEPLOYING AERIAL TARGETS TO REDUCE THE POTENTIAL FOR ENTANGLEMENT OF MARINE MAMMALS AND SEA TURTLES.
12.C. TARGET TOWING AIRCRAFT SHALL MAINTAIN A LOOKOUT. IF A MARINE\MAMMAL OR SEA TURTLE IS SIGHTED IN THE VICINITY OF THE EXERCISE, THE TOW AIRCRAFT WILL IMMEDIATELY NOTIFY THE FIRING VESSEL IN ORDER TO SECURE GUNNERY FIRING UNTIL THE AREA IS CLEAR.
13. GENERAL AIR OPERATIONS IN ALL AIRSPACE. AIR OPERATIONS OVER LAND RANGES SHALL BE CONDUCTED IN ACCORDANCE WITH EXISTING INDIVIDUAL RANGE POLICIES AND GUIDANCE.
14. MEASURES FOR BT-9 AND BT-11.
14.A. ONLY INERT ORDNANCE IS APPROVED FOR USE AT BT-9 AND BT-11. THE TERM "INERT ORDNANCE" REFERS TO ORDNANCE THAT CARRIES NO EXPLOSIVE CHARGE; ORDNANCE THAT CARRIES ONLY A SMOKE OR MARKING CHARGE; AND ORDNANCE THAT CARRIES AN EXPLOSIVE CHARGE, BUT WHICH HAS NOT BEEN ARMED OR FUSED TO DETONATE.
14.B. A VISUAL CHECK SHALL BE MADE BY PILOTS PRIOR TO ORDNANCE DELIVERY TO ENSURE THE TARGET IS CLEAR OF UNAUTHORIZED CIVILIAN BOATS AND PERSONNEL AND PROTECTED SPECIES SUCH AS SEA TURTLES AND MARINE MAMMALS. PILOTS REQUESTING ENTRY ONTO THE TARGETS WILL DO A LOW, COLD FIRST PASS (A PASS WITHOUT ANY RELEASE OF ORDNANCE).
14.C. IN THE EVENT THAT A PROTECTED SPECIES IS SIGHTED WITHIN 1000 YARDS OF THE BT-9 TARGET, OR ANYWHERE WITHIN RATTAN BAY (BT-11 IN-WATER TARGETS), THE TARGET IS DECLARED FOULED. OPERATIONS MAY COMMENCE IN THE FOULED AREA AFTER THE ANIMAL(S) HAS MOVED 1000 YARDS FROM THE BT-9 TARGET AND/OR OUT OF RATTAN BAY.
15. CONTINGENCY JETTISON OF AIR-TO-GROUND ORDNANCE. FOR SAFETY OF FLIGHT, BOMB CONTINGENCY JETTISON AREAS HAVE BEEN ESTABLISHED IN THE CHERRY POINT AND JACKSONVILLE OPAREAS FOR AIRCREWS RETURNING FROM LAND RANGES WITH UNDELIVERED ORDNANCE.
15.A. ONLY INERT ORDNANCE MAY BE RELEASED IN THESE AREAS. THE TERM "INERT ORDNANCE" REFERS TO ORDNANCE THAT CARRIES NO EXPLOSIVE CHARGES; ORDNANCE THAT CARRIES ONLY A SMOKE OR MARKING CHARGE; AND ORDNANCE THAT CARRIES AN EXPLOSIVE CHARGE, BUT WHICH HAS NOT BEEN ARMED OR FUSED TO DETONATE.
15.B. JACKSONVILLE OPAREA. ESTABLISHED AREA DEFINED BY THE FOLLOWING COORDINATES WITHIN GRID 31J:

29-20N 079-50W
29-20N 079-40W
29-10N 079-40W
29-10N 079-50W

15.C. CHERRY POINT OPAREA. NEW AREA DEFINED BY THE FOLLOWING COORDINATES WITHIN W-122:

34-14N 076-51W
34-17N 076-45W
34-12N 076-42W
34-10N 076-47W

15.D. TO THE EXTENT PRACTICABLE GIVEN SAFETY OF FLIGHT, AIRCRAFT SHALL CLEAR THE AREA OF MARINE MAMMALS AND SEA TURTLES USING RADAR AND/OR VISUAL SURVEYS BEFORE RELEASING ORDNANCE.

15.E. IF A MARINE MAMMAL OR SEA TURTLE IS KILLED OR INJURED AS A RESULT OF ORDNANCE JETTISON, BOMBING IN THE AREA MUST STOP AND NOTIFICATION SHALL BE MADE AS DESCRIBED IN PARA 16 BELOW.

16. MARINE SPECIES INCIDENT REPORTING. IF ANY MARINE MAMMALS OR SEA TURTLES ARE STRANDED, INJURED OR KILLED, MILITARY ACTIVITIES IN THE VICINITY OF THE INCIDENT WILL BE IMMEDIATELY SUSPENDED AND THE SITUATION IMMEDIATELY REPORTED BY THE PARTICIPATING UNIT TO THE OCE.

THE DEFINITION OF STRANDING INCLUDES WHALES DISCOVERED ALIVE OR DEAD ON THE BEACH AND THOSE FOUND DEAD FLOATING IN OPEN OCEAN. ALL INCIDENTS SHALL BE REPORTED VIA OPREP 3 NAVY BLUE IN ACCORDANCE WITH APPENDIX C OF REF H.

17. COMSTRKFORTRALANT SHALL ENSURE THAT INFORMATION IN THIS MESSAGE IS PROMULGATED TO ALL PARTICIPATING UNITS AND ALL AIRCREW AND BRIDGE WATCHSTANDERS ARE FAMILIAR WITH ITS CONTENTS.// BT

Prepared for
National Marine Fisheries Service
Office of Protected Resources

Prepared by
Department of the Navy

In accordance with
National Defense Exemption 30 June 2006

USS BATAAN EXPEDITIONARY STRIKE GROUP COMPOSITE TRAINING UNIT EXERCISE 07-1 (ESG COMPTUEX07-1)

After Action Report

October 2006

Analysis of the Effectiveness of
Mitigation and Monitoring Measures
as required under the
National Defense Exemption from Requirements of the Marine Mammal Protection Act for Certain DoD Mid-Frequency Active Sonar Activities

INTRODUCTION

This report is presented to fulfill the requirements conditional to the 30 June 2006 "National Defense Exemption (NDE) from Requirements of the Marine Mammal Protection Act for Certain DoD Mid-Frequency Active Sonar Activities." The Navy is submitting this report to National Marine Fisheries Service's (NMFS) Office of Protected Resources, based on the requirement set forth in the MMPA NDE. The following information is provided:

> (1) An estimate of the number of marine mammals affected by the ASW exercises and a discussion of the nature of the effects, if observed, based on both the modeled results of real-time exercises and sightings of marine mammals;
> (2) An assessment of the effectiveness of the mitigation and monitoring measures with recommendations on how to improve them;
> (3) Results of the marine species monitoring (real-time monitoring from all platforms) before, during, and after the exercise; and
> (4) As much information (unclassified)as the Navy can provide including, but not limited to, where and when sonar was used (including sources not considered in take estimates, where applicable) in relation to any measured received levels (such as sonobuoys), source levels, numbers of sources, and frequencies so it can be coordinated with observed cetacean behaviors.

This report, which contains only unclassified material, provides the necessary information and analyses, and thus fulfills these requirements. The report is organized by the following sections.

Section 1 provides an estimated number of marine mammals affected by the ESG COMPTUEX07-1 ASW events based on analysis of actual events and sightings of marine mammals, noting the nature of any observed effects where possible.

Section 2 of this report assesses the effectiveness of the NDE mitigation and monitoring measures required during exercises with regard to minimizing the use of Mid-Frequency Active Sonar (MFAS) in the vicinity of marine mammals, following the order of the NDE mitigations. This section also includes an assessment of the practicality of implementation of the mitigation measures, the impact some of the measures had on safety, and the impact of the measures on the military readiness activities.

Section 3 of this report provides data on the location and hours of active MFAS used during ESG COMPTUEX07-1 placed in context with observations of cetacean behaviors resulting from the aerial reconnaissance and exercise participants.

SECTION 1: Marine Mammals Potentially Affected

Section 1 provides an estimated number of marine mammals affected by the ESG COMPTUEX antisubmarine warfare events based on analysis of actual events and sighting or mairne mammals, noting the nature of any observed effects.

The COMPTUEX is one of the major exercises analyzed in the February 2006 Overseas Environmental Assessment (OEA), Major Atlantic Fleet Training Exercises. , ESG COMPTUEX 07-1 was analyzed for consistency with the February 2006 OEA, and was determined to be within the parameters analyzed, finding that conduct of the COMPTUEX would not significantly harm the environment, impact listed endangered species, or adversely affect essential fish habitat..

Subsequent to the completion of the Major Atlantic Fleet Training Exercises OEA, a supplemental acoustic exposure estimate, incorporating the 173 dB re 1µPa^2·s metric for behavioral effects, was calculated. The calculation showed there were no acoustic exposures for ESA listed species. The average exposure estimates for non listed species are presented in Table 1, below.

Table 1. Acoustic exposure estimates for non-listed species for ESG COMPTUEX07-1

ASW Event	173≤EL<195	195≤EL<215	EL≥215
Integrated ASW Course (IAC) (1 or 2 events)	3949 - 7892	20-39	0
ASW Proficiency Training (1 event)	3702	25	0
Battle Problem (1 to 4 events)	4349 - 17399	30 – 123	0
Total estimates	12000 - 28993	75 – 187	0

The types of ASW training conducted during ESG COMPTUEX07-1 involved the use of ships, submarines, aircraft, non-explosive exercise weapons, and other training related devices. ASW events occurred in the purple shaded areas of the ESG COMPTUEX07-1 locations, displayed in Figure 1. Exercise planning estimated use of 114 hours of MFA sonar and 118 DICASS sonobuoys. Actual use was 101.4 hours of MFA sonar and 35 DICASS sonobuoys.

Post-exercise analysis shows that the upper and lower bounds used for planning accurately estimated potential exposures. The adjusted acoustic exposure estimates, reflecting the actual number of events that occurred, 2 IAC and 3 events in the battle problem, are presented below in Table 2.

Table 2. Adjusted total acoustic exposure estimates.

	173≤EL<195	195≤EL<215	EL≥215
Adjusted Total estimate	24642	156	0

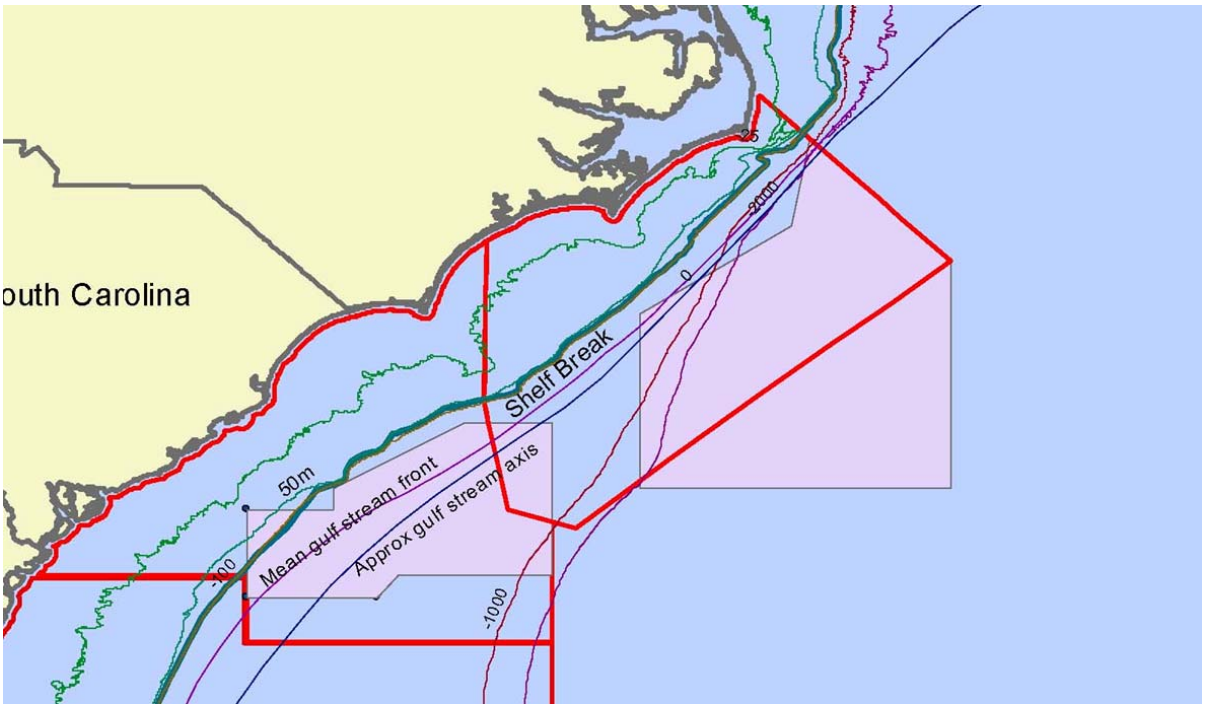

Figure 1. ESG COMPTUEX07-1 Exercise Operating Area depicting the areas used for the analysis of effects on marine mammals; shaded light purple.

During the exercise, all surface and air participants (engaged in ASW) were involved in visual surveillance for marine mammals. There was one instance when marine mammals were detected by surface exercise participants. This detection was made by standard marine mammal detection and reporting procedures, which were adopted into the NDE mitigation measures. MFAS was shut down by all participants in a surface action group, affecting training for 3 exercise participants, as detailed in Table 3.

Table 3. Details of the marine mammal detection and actions by exercise participants during ESG COMPTUEX 07-1.

	October Date-Time (Z)	Lost Hours	Description of Actions Taken
1	10/28-1100	2	Surface ship sighted approximately 12 “dolphins” “playing” within 1000 yds. The group was engaged in the combined battle problem, with ships intermittently active and passive. All units shut down MFAS for approximately 2 hours.
	Participant Hours Lost	2	

This single marine mammal detection by exercise participants totaled 12 marine mammals and sonar was active during the time of the sighting. In this instance, the animals were present within a range requiring power reduction in accordance with the NDE at the time of sighting. These 12 animals were potentially and briefly within a distance where a behavioral effect would be predicted using modeling. No effects were

observed on these particular animals. MFAS was shut down instead of reducing power when the mammals were sighted.

The participants implemented shut down of all active sonar for a period of two hours. Although this overly conservative implementation of mitigation is understandable in the current climate, it confirms the need identified in the JTFEX06-2 after action report for Fleet Forces Command (FFC) to continue working with the operational commands to improve use of the specific NDE power down and shut down requirements during future exercises to protect training fidelity. The implemented mitigation measures are described as overly conservative due to the ranges when shut down occurred, which were beyond those described in the NDE. Specifically, for surface vessel MFAS, the NDE requires reduction of power levels by 6 dB at a range of 1,000 m, 10 dB at a range of 500 m, and shut down at 200 m.

The reports from exercise participants contained nothing that could be construed as an "observed effect," and therefore nothing that would be considered a disruption of natural behavioral patterns. Since there were no observed effects associated with MFAS use, discussion of the nature of the effects is not relevant.

In summary, the analysis prior to the exercise in the Major Exercises OEA and supplemental acoustic exposure estimates accounted for the mitigation measures and therefore estimated no effects to marine mammals. Using the standard procedures to detect animals, 12 dolphins were observed, and were briefly within a range where a behavioral effect would be estimated using modeling. No effects to these twelve dolphins were observed, and sonar was secured immediately. Based on the immediate implementation of overly conservative shut down mitigation measures, 12 animals present during one period of MFAS use were precluded from exposure above the acoustic effects criterion, at the discretion of the exercise participants. Assuming that each animal comprised a single exposure, if those 12 animals are subtracted from the behavioral acoustic exposure estimate; then there would be 24630 potential acoustic exposures remaining.

SECTION 2: Mitigation and Monitoring

As required under the NDE, this report must contain "An assessment of the effectiveness of the mitigation and monitoring measures with recommendations on how to improve them." This section of the report, therefore, provides an assessment of the effectiveness of the mitigation and monitoring measures, and recommendations on how to improve them with regard to practicality of implementation, their impact on exercise safety, and their impact on the effectiveness of the military readiness training activity. The recommended changes to the NDE have been incorporated into the NDE signed 23 January 2007.

During ESG COMPTUEX07-1, there were 101.4 total hours of mid-frequency active sonar (MFAS) and 35 DICASS sonobuoys used. There were no reported stranding events or observations of behavioral disturbance of marine mammals linked to sonar use during the exercise. The detection of marine mammal presence was from procedures that the Navy utilizes and are also described in the NDE mitigation measures. The mitigation measure taken by all participants when marine mammals were detected and sonar was active was to shut down, regardless of the range specific mitigations in the NDE. The result of this mitigation was that exercise participants lost approximately two hours of active sonar use, in the combined battle problem, due to a mitigation measure that was not described in the NDE.

The two hours of shut down time was not mandated by the NDE procedures, however, the exercise can only be evaluated against the mitigation as implemented. In the instances where marine mammals were detected, the use of MFAS as tactically indicated was precluded by the implementation of overly conservative mitigation measures and thus impacted the effectiveness of exercise event since commanders were operating without the option of their full sensor suite. Because the two hours of lost time were the result of the mitigation as implemented, rather than the NDE as required, the impact of the required safety zone mitigation measures on training effectiveness is not examined in this evaluation.

Although two hours appears to be a relatively short amount of lost sonar time, it is important to recognize that ASW proceeds slowly and requires careful development of a tactical frame of reference over time as data is integrated from a number of sources and sensors. Once MFAS is turned off for a period of time, simply turning it back on minutes later does not usually allow a Commander to simply continue from the last frame of reference. Thus, two hours of lost MFAS time does not equate to only two hours of lost exercise time but should be considered in the fuller context of its overall impact on the tempo and tactical development of a Common Operational Picture shared among exercise participants as they trained with the goal of interoperability and improvement of ASW skills in general.

Certain NDE mitigation measures were not applicable within the context of ESG COMPTUEX07-1 due to the absence of the conditions described. This subset of mitigation measures is as follows:

- Requirements regarding “strong surface ducting conditions” (None observed)
- Requirements regarding “low visibility conditions” (≥1,000 yards, day or night)
- Restrictions from operating MFAS in choke-points, constricted channels or canyon-like areas. (Not present)

The following mitigation measures were already Navy Standard Operating Procedures (SOPs), documented in the Protective Measures Assessment Protocol (PMAP). and incorporated as mitigation measures for the NDE. These measures will continue to be used in future exercises:

1. Personnel are trained on marine mammal awareness and mitigation measures.
2. There are personnel on lookout with binoculars at all times when the vessel is moving through the water.
3. Lookouts report the sighting of any marine species, disturbance to the water's surface, or object in the water to the Officer of the Deck, who is the Commanding Officer’s direct representative on watch.
4. A safety zone is established around an active sonar source and sonar power is reduced when marine mammals enter this zone.
5. Submarine sonar operators review passive detection indicators of close-aboard marine mammals prior to the commencement of ASW operations involving MFAS.
6. Aerial surveillance for marine species occurs whenever possible and detections are reported to ships in the vicinity.
7. Helicopters using active (dipping) sonar search for marine mammals prior to utilizing active sonar and employ a safety zone.
8. Sonar is always operated at the lowest practicable level to meet tactical training objectives.

Based on the following observations, Navy SOPs already in place and adopted into the NDE, were effective in detecting marine mammals. In addition, the shut down of sonar to avoid effects to marine mammals was highly effective. However, that step was more conservative than required under the NDE. Due to this, specific measures prescribed under the NDE could not be assessed for applicability and effectiveness.

- Watchstanders were looking for marine species throughout the exercise, and marine mammals were detected one time by exercise participants. The marine mammals were detected by Navy watchstanders operating in accordance with Navy SOPs and as reiterated by NDE mitigation measures.
- In the single instance where marine mammals were detected, MFAS was shut down by all units for two hours, instead of implementing the decibel reductions at the appropriate ranges described in the NDE (see Table 3). This action interrupted ASW events.
- There were no indications of any effects to any marine species throughout the exercise.

The increased attention to mitigation resulted in the participants' single reaction to marine mammal presence and may have impacted ASW training. In the instance where marine mammals were detected they were within 1000 yards, (See Table 3); the response was to shut down active sonar for all participants regardless of range (1000 yards was the range to the closest ship at the time of sighting). As with the JTFEX 06-2 after action report, securing MFAS at ranges greater than 200 yard range is not required under Navy SOP and NDE, and represents an overall conservative interpretation of the mitigation procedure. However, the increased awareness of a public perception of liability seems to indicate a potential for overly-conservative reactions and identifies the need to establish procedures that remain constant and founded on best available science.

To organize the assessment of each mitigation measure, they are presented below in the order and organization as presented in the NDE.

ASSESSMENT OF MITIGATION AND MONITORING MEASURES

The three categories of mitigation and monitoring measures required by the June 30, 2006 NDE are assessed in this section. For ease of reference, the text of the measures is provided in italics, followed by an assessment, an analysis of operational impact, and a recommendation on any improvements to each measure.

Measures 1-2

Mitigation measures 1 and 2 detail training requirements and operating procedures for units participating in MFAS ASW exercises. The training requirements within these two measures reflect the Marine Species Awareness Training (MSAT) that Navy lookouts and bridge personnel routinely receive as Navy SOP. This MSAT was developed in coordination with marine biology experts within the Navy and incorporates effective marine species detection cues and information necessary to protect marine species. This material is part of the Navy Lookout watchstander qualification system, will soon be available as online interactive training, and can also be provided in a video format for large audience presentations. NMFS regional staff reviewed the MSAT training for purposes of RIMPAC 06 and this training continued to be used by Navy to meet the full intent of these first two NDE mitigation measures.

Measure 1. Personnel Training:

- *Navy shipboard lookouts shall be qualified watchstanders who have completed marine species awareness training.*
  - *Navy watchstanders will participate in marine mammal observer training approved by NMFS.*

Measure 2. Operating Procedures

- *Bridge personnel on ships and submarines - Ships and surfaced submarines shall have personnel on lookout with binoculars at all times when the vessel is moving through the water. Standard operating procedure requires these lookouts maintain surveillance of the area visible around their vessel and to report the sighting of any marine species, disturbance to the water's surface, or object (unknown or otherwise) to the Officer in Command.*
  - *Bridge lookout personnel shall have completed marine species awareness training as updated in 2005.*
  - *At least one individual who has received this training will be present, and on watch, at all times during operation of tactical mid-frequency sonar, on each vessel operating mid-frequency sonar.*

Assessment: Measures 1 and 2 require marine species awareness training. Marine mammal lookout training for all units has been standard procedure for several years, and was updated with a new Marine Species Awareness Training prior to the 2006 Rim of the Pacific Exercise. Training has been established and continues to be effective as a mitigation measure.

Operational Impact of this mitigation measure: None.

Recommendation
None, this is effectively incorporated into SOPs prior to ESG COMPTUEX07-1

- *Aviation units - Aircraft participating in ASW events will conduct and maintain, whenever possible, surveillance for marine species prior to and during the event. The ability to effectively perform visual searches by participating aircraft crew will be heavily dependent upon the primary duties assigned as well as weather, visibility, and sea conditions. Sightings would be immediately reported to ships in the vicinity of the event as appropriate.*

Assessment: This measure documents what occurs in general, but has not been specifically described in a SOP.

Operational Impact of this mitigation measure:
None – this occurs routinely.

Recommendation
This mitigation measure should be retained and described in a SOP.

- *Sonar personnel on ships, submarines, and ASW aircraft -*
  - *Ship and submarine sonar operators will check for passive indications of close-aboard marine mammals prior to their commencement of ASW operations involving active mid-frequency sonar.*

Assessment: This measure documents what occurs for submarines as part of PMAP, and is used in general for surface ships, but has not been specifically described in a SOP.

Operational Impact of this mitigation measure:
None – this occurs routinely or is part of SOPs (for submarines).

Recommendation
This mitigation measure should be retained given that it details what occurs routinely. The measure has not been officially described in a SOP for surface ships. The measure is part of PMAP for submarines. This measure should be added for surface units in the next version of PMAP.

- *Sonar levels (generally) - The Navy will operate sonar at the lowest practicable level, not to exceed 235 dB, except for occasional short periods of time to meet tactical training objectives. Use of MFA sonar at source levels above 235 dB will be logged and reported in accordance with section 3.*

Assessment: This measure had no observable benefit to conservation, due to operator shut down if mammals were observed, regardless of range, which will be discussed in further detail in following sections.

Operational Impact of this mitigation measure:
The impact of this measure is undeterminable at this time.

Recommendation
This measure may not be particularly applicable to conduct of training. Sonar usage is tailored to the environmental conditions of the day, which may preclude practicable levels below the maximum.

- ***Sonar controls (generally) -*** *With the exception of choke-point exercises (special measures outlined below), the Navy will not*
    i. *Operate mid-frequency active sonar within 25 km of the 200-m isobath during RIMPAC 2006,*

    (This measure applies solely to RIMPAC 2006)

    ii. *In major fleet exercises, operate mid-frequency active sonar within 12 nm of a coast, except for RIMPAC 2006 (which is covered above) and military readiness activities at the established ranges at San Clemente Island and PMRF.*

Assessment: This measure was adhered to for ESG COMPTUEX07-1, there were no planned active sonar operations scheduled within 12 nm of a coast.

Operational Impact of this mitigation measure:
None.

Recommendation
Not applicable.

iii. *Conduct sonar activities in constricted channels.*

Assessment: There are no constricted channels within the area of ESG COMPTUEX07-1.

Operational Impact of this mitigation measure:
None.

Recommendation
Not applicable.

- ***Safety zones*** *- When marine mammals are detected close aboard, all ships, submarines, and aircraft engaged in ASW would reduce mid-frequency active sonar power levels in accordance with the following specific actions:*
  - ***Helicopters*** *- Helicopters shall observe/survey the vicinity of an event location for 10 minutes before deploying active (dipping) sonar in the water. Helicopters shall not dip their sonar within 200 yards of a marine mammal and shall secure pinging if a marine mammal closes within 200 yards after pinging has begun.*

Assessment: There were no dipping sonar helicopter operations within the plan for ESG COMPTUEX07-1, however, this measure is essentially the same as the measure detailed in PMAP, with the addition of a specified 10 minute survey in advance of active sonar. PMAP prohibits active sonar use if there are animals within 200 yards of the sonar transducer, and details the securing of sonar if an animal is detected within 200 yards or is closing on the source when active.

Operational Impact of this mitigation measure:
None.

Recommendation
The 10 minute survey prior to active sonar use is bounding the time in which surveying would be conducted. . As written in PMAP, the helicopter pilots must ensure there are no marine mammals in the 200 yd exclusion zone around the sonar transducer, regardless of time interval spent in searching. Since the searching of an area is dependent upon the environmental conditions of the day, bounding the survey timeframe would most likely be unwarranted.

- ***Ships and submarines***

  i. ***≠1,000 m*** *- When marine mammals are detected by any means (aircraft, lookout, or aurally) within 1000 m of the sonar dome (the bow), the ship or submarine will limit active transmission levels to at least 6 dB below*

the equipment's normal operating level for sector search modes. Ships and submarines would continue to limit maximum ping levels by this 6-dB factor until the animal has been seen to leave the area, has not been seen for 30 minutes, or the vessel has transited more than 2000 m beyond the location of the sighting.

ii. ***≠500 m -*** *Should the marine mammal be detected within or closing to inside 500 m of the sonar dome, active sonar transmissions will be limited to at least 10 dB below the equipment's normal operating level for sector search modes. Ships and submarines would continue to limit maximum ping levels by this 10-dB factor until the animal has been seen to leave the area, has not been seen for 30 minutes, or the vessel has transited more than 1500 m beyond the location of the sighting.*

iii. ***≠200 m -*** *Should the marine mammal be detected within or closing to inside 200 m of the sonar dome, active sonar transmissions will cease. When a marine mammal or sea turtle is detected closing to inside approximately 200 m of the sonar dome, the principal risk becomes potential physical injury from collision. Accordingly, ships and submarines shall maneuver to avoid collision if the marine species closes within 200 m to the extent possible, with safety of the vessel being paramount. Sonar will not resume until the animal has been seen to leave the area, has not been seen for 30 minutes, or the vessel has transited more than 1200 m beyond the location of the sighting.*

Assessment: It is likely that this mitigation measure is effective, but as drafted above it requires improvement. Similar mitigation measures were already standard Navy operating procedure for all units conducting MFAS training. The intent of this requirement is not met in the reactions of the participating units. Upon sighting of animals, regardless of range, sonar was secured.

Operational Impact of this mitigation measure:
Not determinable in the reactions of the participating units. In the unit after action report, one scenario exists, when animals were observed, sonar was secured.

This loss of MFAS training hours is more than a simple metric involving a loss of training time as a small percentage of the overall exercise hours since, in the instance of this shut down, there was a submarine in the vicinity which meant there was a potential submarine detection opportunity missed by the exercise participants.

Recommendation
A “safety zone” mitigation measure was already SOP and this mitigation measure should be retained. A safety zone of 1000 m is based on the attenuation of sonar power level from a source of 235 dB to a received level of 173 dB under ideal conditions assuming direct path propagation with no reduction from other possible environmental factors. As discussed in Section 1, the exercise participants utilized a more conservative response to the presence of marine mammals. To align the NDE mitigation with Navy procedures, it

is recommended that the measures be rewritten in yards. During planning conferences prior to exercises, Navy environmental planners should also stress application of NDE mitigation measures as issued with the operators to allow for a better assessment of their effectiveness and impact on training.

iv. ***Significant surface ducting conditions*** *- In significant surface ducting conditions, the Navy will enlarge the safety zones such that a 6-dB power-down will occur if a marine mammal enters the zone within a 2000 m radius around the source, a 10-dB power-down will occur if an animal enters the 1000 m zone, and shut down will occur when an animal closes within 500 m of the sound source.*

Assessment: There were no significant surface ducting conditions; however, as stated earlier, the intent of this requirement is not met in the reactions of the participating units. Upon sighting of animals, regardless of range, sonar was secured.

Operational Impact of this mitigation measure:
Not determinable in the reactions of the participating units. Additionally, water conditions vary significantly over relatively short distances while operating in the littoral environment, which increases the logistical difficulties in effectively implementing this measure.

Recommendation
This measure can not be effectively implemented, thus providing no additional protection and should be deleted.

v. ***Low visibility conditions (i.e., whenever the entire safety zone cannot be effectively monitored due to nighttime, high sea state, or other factors)*** *- The Navy will use additional detection measures, such as infrared (IR) or enhanced passive acoustic detection. If detection of marine mammals is not possible out to the prescribed safety zone, the Navy will power down sonar as if marine mammals were present in the zones they cannot see (for example, at night, if night goggles allow detection out to 1000 m, power-down would not be necessary under normal conditions; however, in significant surface ducting conditions, the Navy would need to power down 6 dB, as they could not effectively detect mammals out to 2000 m, the prescribed safety zone).*

Assessment: This measure was not applicable; there were no days of poor visibility during the exercise or times where nighttime detection was not effective out to 1000 m. Night infrared goggles were utilized.

Operational Impact of this mitigation measure:

Power reduction was not applicable, and the use of night goggles has no operational impact.

Recommendation
None, the power reduction component of this measure was not effectively tested.

Measure 3. Stranding Response and Reporting

- *The Navy will coordinate with the NMFS Stranding Coordinator for any unusual marine mammal behavior, including stranding, beached live or dead cetacean(s), floating marine mammals, or out-of-habitat/milling live cetaceans that may occur at any time during or shortly after major exercises.*

Assessment: There were no occurrences of unusual marine mammal behavior during or subsequent to ESG COMPTUEX07-1.

Operational Impact of this mitigation measure:
Not applicable.

Recommendation
None, this measure was not applicable.

- *The Navy will provide a report to NMFS after the completion of a major exercise that includes:*
  - *An assessment of the effectiveness of these mitigation and monitoring measures with recommendations of how to improve them.*

Assessment: The details of the effectiveness assessment are contained within this report. In the circumstance that occurred during ESG COMPTUEX07-1, sonar was secured if an animal was sighted. The overly-conservative response precluded an assessment of the safety zone mitigation measures as written.

Operational Impact of this mitigation measure:
Approximately 65 man hours were expended between data collection and report writing.

Recommendation
None at this time. Dialogue on reporting is ongoing with NMFS.

  - *Results of the marine species monitoring during the major exercise. As much unclassified information as the Navy can provide including, but not limited to, where and when sonar was used (including sources not considered in take estimates, such as submarine and aircraft sonars) in relation to any measured received levels, source levels, numbers of sources, and frequencies, so it can be coordinated with observed cetacean behaviors. If necessary, classified information may be provided to NMFS personnel with an appropriate security clearance and need to know.*

Assessment: The details of the marine species monitoring are contained within Table 1 and Section 3 of this report. The information on sonar frequencies and source levels would provide no additional information since animals observed were behaving within the confines of apparent normal behavior. The sightings are illustrated in Section 3 of this report.

Operational Impact of this mitigation measure:
None
Recommendation
Typically, there are no measurements (calibrated or otherwise) of actual sound levels made during an exercise. Given the logistical difficulties in providing this information quickly, we recommend that this be utilized only in extreme cases where there is a demonstrated effect.

SECTION 2 SUMMARY

During ESG COMPTUEX07-1, there were 101.4 total hours of mid-frequency active sonar (MFAS) use and 35 DICASS sonobuoys expended. There were no reported observations of behavioral disturbance of marine mammals during the exercise. The only mitigation measures that demonstrated effectiveness were procedures developed by Navy for marine species awareness training and lookout watchstander responsibilities, which were also adopted into the NDE. The implementation of safety zones beyond those described in the NDE was effective at avoiding effects to marine mammals, but was more conservative than required.

SECTION 3: Monitoring Results

The NDE equirement to provide "Results of the marine species monitoring during the major exercise." is provided in this section. As much unclassified information as the Navy can provide including, but not limited to, where and when sonar was used (including sources not considered in take estimates, such as submarine and aircraft sonars) in relation to any measured received levels, source levels, numbers of sources, and frequencies, so it can be coordinated with observed cetacean behaviors." is summarized in this section of the report. Figure 2, below, depicts the approximate location of marine mammals that were sighted by exercise participants. This is a skewed sample since there were no attempts made to detect marine mammals by other means in areas not being used by exercise participants. The only sighting occurred in the western ESG COMPTUEX shaded location, as illustrated in Figure 2.

Typically, there are no measurements (calibrated or otherwise) of actual sound levels made during an exercise and none were made during ESG COMPTUEX07-1. Source levels, numbers of sources, and frequencies are classified since that information would provide potential adversaries with important tactical data. Given that location, planning and mitigation measures are designed to minimize interactions between Navy assets and marine mammals, the observations of marine mammals by Navy assets only occurred as a single, very brief encounter.

Observations of marine species and their behaviors, as previously detailed, showed no unusual behaviors for coordination with MFAS use. There were no indications from the observations that the presence of exercise participants had any affect on any marine mammals.

The requirement to report where and when sonar was used so it can be coordinated with observed cetacean behaviors would provide no additional information since animals observed were behaving within the confines of apparent normal behavior. Information presented previously in Table 3 lists the instance when marine mammals were detected and sonar was being used.

Watchstanders were looking for marine species throughout the exercise; mammals were observed once. As stated earlier, this is a skewed sample with no observations of marine mammals by other means in areas not being used by exercise participants.

In summary, there was one sighting of marine mammals from a surface vessel. During ESG COMPTUEX07-1, there were 101.4 total hours of MFAS used and 35 DICASS sonobuoys expended. This was less than the anticipated number of hours (114) and DICASS sonobuoy use (118) used to calculate the estimated acoustic exposures. All behaviors described in the after action report were within the range of apparent normal behaviors. The results of these monitoring efforts provided no evidence indicating there were any effects on the detected marine mammals as a result of the ASW exercises taking place.

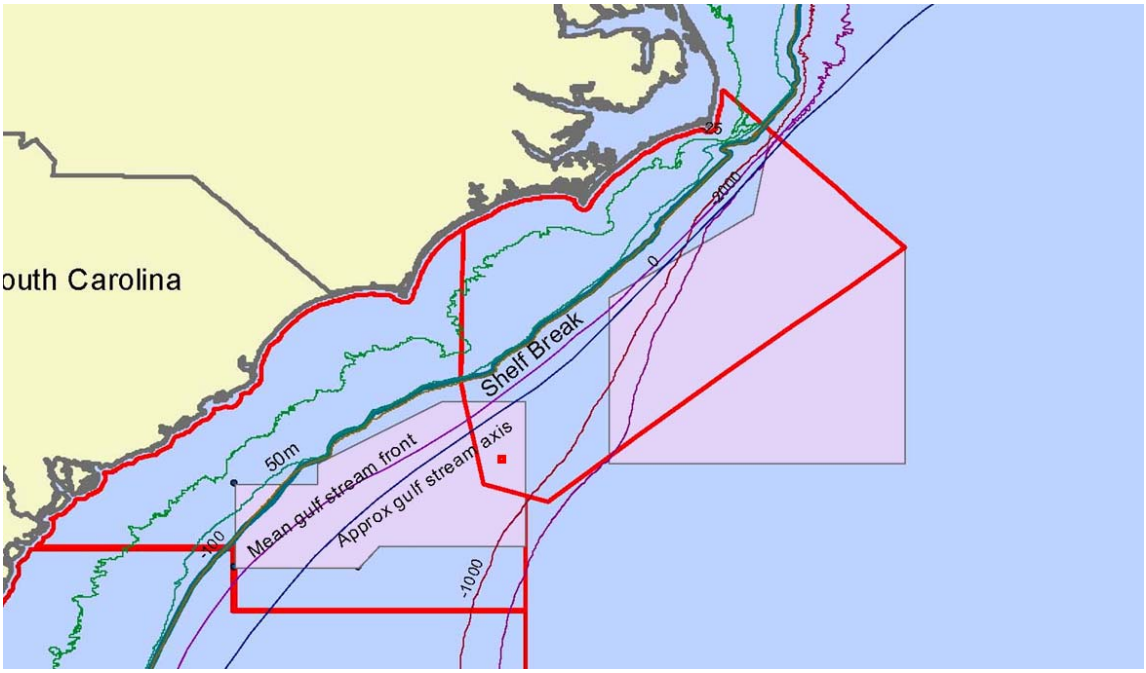

Figure 2. The location of marine mammals sighted by exercise participants is depicted by the square.

Prepared for
National Marine Fisheries Service
Office of Protected Resources

Prepared by
Department of the Navy

In accordance with
National Defense Exemption 30 June 2006

USS EISENHOWER JOINT TASK FORCE EXERCISE 06-2 (JTFEX06-2) After Action Report

July 21 – July 29, 2006
(corrected version October 2007)

Analysis of the Effectiveness of
Mitigation and Monitoring Measures
as required under the
National Defense Exemption from Requirements of the Marine Mammal Protection Act for Certain DoD Mid-Frequency Active Sonar Activities

INTRODUCTION

This report is presented to fulfill the requirements conditional to the 30 June 2006 National Defense Exemption (NDE) from the Requirements of the MMPA for Certain DoD Mid-Frequency Active Sonar Activities. The Navy is submitting this report to National Marine Fisheries Service's (NMFS) Office of Protected Resources, consistent with the RIMPAC IHA, based on the requirement set forth in the MMPA NDE. The following information is provided:

> (1) An estimate of the number of marine mammals affected by the ASW exercises and a discussion of the nature of the effects, if observed, based on both the modeled results of real-time exercises and sightings of marine mammals;
> (2) An assessment of the effectiveness of the mitigation and monitoring measures with recommendations on how to improve them;
> (3) Results of the marine species monitoring (real-time monitoring from all platforms) before, during, and after the exercise; and
> (4) As much information (unclassified) as the Navy can provide including, but not limited to, where and when sonar was used (including sources not considered in take estimates, where applicable) in relation to any measured received levels (such as sonobuoys), source levels, numbers of sources, and frequencies so it can be coordinated with observed cetacean behaviors.

This report, which contains only unclassified material, provides the necessary information and analyses, and thus fulfills these requirements. The report is organized by the following sections:

Section 1 provides an estimated number of marine mammals affected by the JTFEX06-2 ASW events based on analysis of actual events and sightings of marine mammals, noting the nature of any observed effects where possible.

Section 2 of this report assesses the effectiveness of the NDE mitigation and monitoring measures required during exercises with regard to minimizing the use of Mid-Frequency Active Sonar (MFAS) in the vicinity of marine mammals, following the order of the NDE mitigations. This section also includes an assessment of the practicality of implementation of the mitigation measures, the impact some of the measures had on safety, and the impact of the measures on the military readiness activities.

Section 3 of this report provides data on the location and hours of active MFAS used during JTFEX06-2 placed in context with observations of cetacean behaviors provided by the exercise participants.

SECTION 1: Marine Mammals Potentially Affected

Section 1 provides an estimated number of marine mammals affected by the JTFEX06-2 ASW events based on analysis of actual events and sightings of marine mammals noting the nature of any observed effects.

The JTFEX is one of the major exercises analyzed in the February 2006 Overseas Environmental Assessment (OEA), Major Atlantic Fleet Training Exercises. JTFEX06-2 was analyzed for consistency with the February 2006 OEA, and was determined to be within the parameters analyzed, finding that conducting JTFEX06-2 would not significantly harm the environment, impact listed endangered species, or adversely affect essential fish habitat.

Subsequent to the completion of the Major Exercises OEA, the Chief of Naval Operations issued an Interim Sonar Policy in March 2006. In accordance with that policy, an additional analysis of active mid-frequency sonar use during JTFEX06-2 was prepared to assess the potential effects of the proposed action on species listed under the Endangered Species Act (ESA) under the jurisdiction of the National Marine Fisheries Service (NMFS). The assessment of the potential effects to ESA-listed species was based on the spatial and temporal distributions of listed species in the proposed action area and a review of the JTFEX06-2 MFA sonar use to determine the likelihood of any effects on ESA-listed species. Based on this analysis and the implementation of mitigation measures that reduce the potential for sound exposure, the proposed action was determined to not affect listed species under NMFS jurisdiction.

The types of ASW training conducted during JTFEX 06-2 involved the use of ships, submarines, aircraft, non-explosive exercise weapons, and other training related devices. ASW events occurred in the JTFEX06-2 location, displayed in Figure 1 below. In addition to the JTFEX major exercise, a precursor event three days prior to the exercise was included in the analysis due to the temporal proximity of the exercise. The precursor event estimated sonar use was 22.5 hours of surface vessel MFA and 36 DICASS sonobuoys. The planned exercise, exclusive of the precursor events, was estimated at 200-225 hours of SQS-53C MFA sonar, 100-125 hours of surface vessel SQS-56 MFA sonar and 50 DICASS sonobuoys used. In reality, 108 hours of MFA sonar and less than 50 sonobuoys were used for both the precursor events and the JTFEX 06-2 exercise.

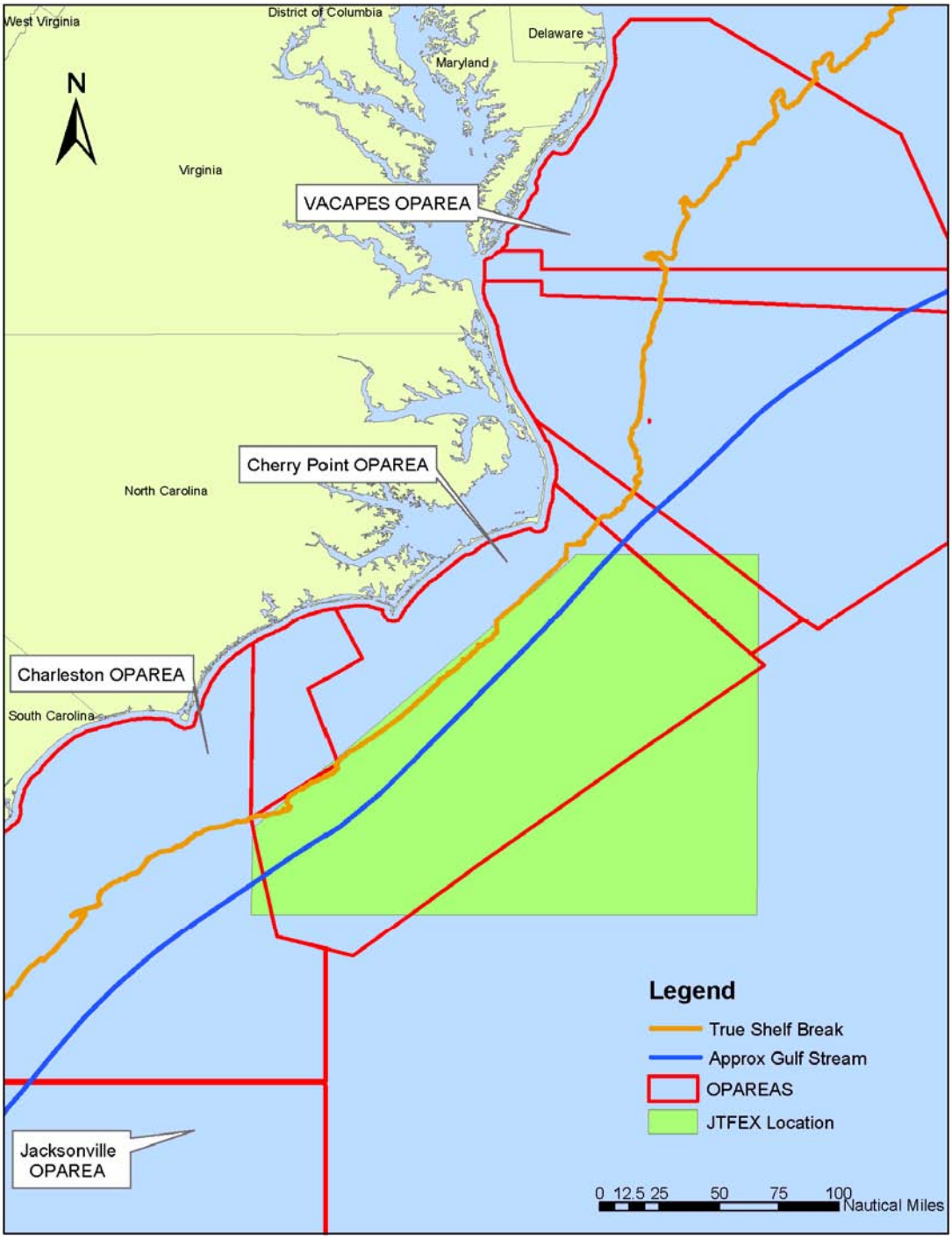

Figure 1. JTFEX06-2 Exercise Operating Area depicting the area used for the analysis of effects on marine mammals.

During the exercise, all surface vessel and aircraft participating in ASW events were involved in the visual surveillance for marine mammals. There were 29 instances when marine mammals (individuals or pods) were detected, all by surface vessel exercise participants. All detections were made by standard marine mammal detection and reporting procedures, which were adopted into the NDE mitigation measures. MFAS was shut down seven times by exercise participants due to the detected marine mammals as detailed in Table 1.

Table 1. Details of the 29 marine mammal detections and actions by exercise participants during JTFEX06-2.

	July Date-Time (Z)	Lost Hours	Description of Actions Taken
1	7/21-1445		Surface ship sighted 1 “unidentified gray whale” transiting the area at 600 yds. MFAS not active.
2	7/22-1812		Surface ship sighted 3 “dolphins playing” at 550 yds. MFAS not active.
3	7/23-2057		Surface ship sighted 6 “dolphins” transiting the area at 550 yds. MFAS not active.
4	7/23-2237		Surface ship sighted 3 “dolphins” at 20 yds, closing on ship to engage in “bow riding”. MFAS not active.
5	7/23-2240		Surface ship sighted 22 “dolphins” engaged in “bow riding” at 25-100 yds. MFAS not active.
6	7/24-1245		Surface ship sighted an undetermined number of “dolphins playing” at 500 – 800 yds. MFAS not active.
7	7/24-1338		Surface ship sighted 3 “unknown gray whales with rounded spout pattern” at 200 yds. MFAS not active.
8	7/24-1425		Surface ship sighted an undetermined number of “dolphins playing” at an unspecified range. MFAS not active.
9	7/24-1646		Surface ship sighted an undetermined number of “dolphins playing” at an unspecified range. MFAS not active.
10	7/24-2136		Surface ship sighted 3 “pilot whales” at 500 yds. MFAS not active.
11	7/24-2324		Surface ship sighted 3 “dolphins” engaged in what was described as “swimming” at 40 yds. MFAS not active.
12	7/25-0200		Surface ship sighted an undetermined number of “dolphins playing” at an unspecified range. MFAS not active.
13	7/25-0245	1.0	Surface ship sighted undetermined number of “dolphins” engaged in what was described as “feeding”. Range was not estimated. MFAS active at the time of sighting. SONAR was secured and continued to monitor.
14	7/25-0325	0.5	Surface ship sighted undetermined number of “dolphins” engaged in what was described as “playing”. Range was not estimated. MFAS active at the time of sighting. SONAR was secured and continued to monitor.
15	7/25-1352		Surface ship sighted an undetermined number of “dolphins playing” at 200 yds. MFAS not active.
16	7/25-2200		Surface ship sighted 6 “dolphins playing”, at 200 yds. MFAS not active.
17	7/26-1600		Surface ship sighted 20 “dolphins” playing and bow wave riding. MFAS not active.
18	7/26-1724		Surface ship sighted 15 “dolphins” at 700 yds. MFAS not active.
19	7/26-1817		Surface ship sighted 1 “dolphin” at 500 yds, transiting. MFAS not active.
20	7/26-1930		Surface ship sighted 1 “whale” at 1,500 yds, transiting in the opposite direction as the ship. MFAS not active.
21	7/26-2059		Surface ship sighted 7 “unknown whales” at 550 yds. MFAS not active.

22	7/26-2216	0.5	Surface ship sighted undetermined number of “dolphins” engaged in what was described as “playing”. Range was not estimated. MFAS active at the time of sighting, SONAR was secured and continued to monitor.
23	7/27-0052		Surface ship sighted 6 “dolphins” bow riding at 40-60 yds. MFAS not active.
24	7/27-0325		Surface ship sighted 2 “dolphins playing” at an unspecified range. MFAS not active.
25	7/27-1043		Surface ship sighted undetermined number of “dolphins” engaged in what was described as “feeding” at 200 yds. MFAS not active.
26	7/27-1133	0.25	Surface ship sighted 8 “unidentified whales” engaged in what was described as “transiting or feeding”. Range was estimated at 1,000 yds. MFAS active at the time of sighting. SONAR was secured until mammals clear of ship.
27	7/27-1402	0.3	Surface ship sighted 8 “dolphins” closing on ship to engage in “bow riding”. Range was estimated at 3,000 yds. MFAS active at the time of sighting, SONAR was secured until mammals clear of ship. Also sighted was 1 “unidentified whale” engaged in what was described as “transiting”. Range was estimated at 10,000 yds.
28	7/27-1425	0.25	Surface ship sighted 1 “unidentified whale” engaged in what was described as “transiting”. Range was estimated at 4,000 yds. MFAS active at the time of sighting. SONAR was secured until mammals clear of ship.
29	7/27-1731	0.5	Surface ship sighted undetermined number of “dolphins” closing on ship to engage in “bow riding”. Range was estimated at 3,000 yds. MFAS active at the time of sighting. SONAR was secured until mammals clear of ship.
	Participant Hours Lost	3.3	

These 29 marine mammal detections by exercise participants totaled 120 quantified marine mammals, and 10 unquantified sightings of multiple animals, or “pods.” Assuming each pod consisted of at least four animals; the estimated total number of marine mammals detected was 160 animals. Of those detections when sonar was active (7 of the 29 in Table 1), 18 animals were quantified, and 4 reports were unquantified. Using the described estimating procedure, approximately 34 marine mammals were in the vicinity of surface ships during MFAS use periods.

In only one instance (see sighting 26 in Table 1) were the animals present within a range requiring power reduction in accordance with the NDE at the time of sighting; therefore, only eight “unidentified whales” were potentially and briefly within a distance where a behavioral effect would be estimated using modeling. No effects were observed on these particular animals, and the MFAS was shut down (vs. power reduction) when the mammals were sighted.

In two instances described in Table 1, 12 dolphins (sighting 27 (8 animals) and sighting 29 (estimated 4 animals)) were sighted closing on the ship and later engaged in bow riding. In these instances, sonar was secured at a range of 3,000 yards, again with no effects observed on these particular animals. Based on the historical tendency of dolphins to engage in bow riding regardless of sonar use, it would be reasonable to assume that the behavior would have been unchanged if the NDE reduced power mitigation had been utilized. Based on this assumption, these are the only two instances where shut down would have most likely been the inevitable mitigation as the animals continued to approach and engage in bow riding.

In fact, in all circumstances of mammal sightings during MFAS use, the surface vessel sonars were shut down. Although this overly-conservative implementation of mitigation is understandable in the current climate, Fleet Forces Command (FFC) is working with the operational commands to improve use of the specific NDE power down and shut down requirements during future exercises to protect training fidelity. The implemented mitigation measures are described as overly conservative due to the ranges when shut down occurred, which were beyond those described in the NDE. Specifically, for surface vessel MFAS, the NDE requires reduction of power levels by 6 dB at a range of 1,000 m, 10 dB at a range of 500 m, and shut down at 200 m.

The reports from exercise participants contained nothing that could be construed as an "observed effect," and therefore nothing that would be considered a disruption of natural behavioral patterns. Since there were no observed effects associated with MFAS use, discussion of the nature of the effects is not relevant.

In summary, the analysis prior to the exercise in the Major Exercises OEA and Supplemental ESA analysis both accounted for the mitigation measures and estimated no impacts to marine mammals. Using the standard procedures to detect animals, 160 marine mammals were observed, 34 animals were observed during periods when MFAS was in use and eight animals were observed within a range where a behavioral effect would be estimated using modeling at the time of sighting. No effects to these eight animals were observed. As described previously, MFAS is not in use during the majority of a major naval exercise; therefore, as expected, a majority of these mammals were sighted during periods when no MFAS was in use. Based on the immediate implementation of overly conservative shut down mitigation measures, utilized at the discretion of the exercise participants, eight animals present during one period of MFAS use were precluded from exposure above the acoustic effects criterion. Note that the above numbers are based on mammals detected, rather than adjusting the numbers to account for sightability assumptions.

SECTION 2: Mitigation and Monitoring

As required under the RIMPAC IHA and incorporated here for reporting under the NDE, this report must contain "An assessment of the effectiveness of the mitigation and monitoring measures with recommendations on how to improve them." This section of the report, therefore, provides an assessment of the effectiveness of the mitigation and monitoring measures, and recommendations on how to improve them with regard to practicality of implementation, their impact on exercise safety, and their impact on the effectiveness of the military readiness training activity.

During JTFEX06-2, there were 108 total hours of mid-frequency active sonar (MFAS) and less than 50 DICASS sonobuoys used. There were no reported stranding events or observations of behavioral disturbance of marine mammals linked to sonar use during the exercise. The detection of marine mammal presence was from procedures that the Navy already had in place. The mitigation measure taken by all participants when marine mammals were detected and sonar was active was to shut down, regardless of the range specific mitigations in the NDE. The result of this mitigation was that exercise participants lost approximately 3.3 hours of active sonar use, in seven events, due to a mitigation measure that was not described in the NDE.

The 3.3 hours of shut down time was not mandated by the NDE procedures, however, the exercise can only be evaluated against the mitigation as implemented. In the instances where marine mammals were detected, the use of MFAS as tactically indicated was precluded by the implementation of overly conservative mitigation measures and thus the effectiveness of exercise event was impacted since commanders were operating without the option of their full sensor suite.

Since the 3.3 hours of lost time were the result of the mitigation as implemented, rather than the NDE as required, the impact of the required safety zone mitigation measures on training effectiveness can not be examined in this evaluation.

Although 3.3 hours appears to be a relatively short amount of lost sonar time, it is important to recognize that ASW proceeds slowly and requires careful development of a tactical frame of reference over time as data is integrated from a number of sources and sensors. Once MFAS is turned off for a period of time, simply turning it back on minutes later does not usually allow a Commander to simply continue from the last frame of reference. Thus, 3.3 hours of lost MFAS time does not equate to only 3.3 hours of lost exercise time but should be considered in the fuller context of its overall impact on the tempo and tactical development of a Common Operational Picture shared among exercise participants as they trained with the goal of interoperability and improvement of ASW skills in general.

Certain NDE mitigation measures were not applicable within the context of JTFEX06-2 due to the absence of the conditions described. This subset of mitigation measures is as follows:

- Requirements regarding “strong surface ducting conditions” (none observed)

- Requirements regarding “low visibility conditions” (detection to 1000 m was maintained during MFAS use)
- Restrictions from operating MFAS in choke-points, constricted channels or canyon-like areas. (none present)

The following mitigation measures were already Navy standard operating procedures (SOPs) as documented in the Protective Measures Assessment Protocol (PMAP) and incorporated as mitigation measures for the NDE. These measures will continue to be used in future exercises:

1. Personnel are trained on marine mammal awareness and mitigation measures.
2. There are personnel on lookout with binoculars at all times when the vessel is moving through the water.
3. Lookouts report the sighting of any marine species, disturbance to the water's surface, or object in the water to the Officer of the Deck, who is the Commanding Officer’s direct representative on watch.
4. A safety zone is established around an active sonar source and sonar power is reduced when marine mammals enter this zone.

5. Submarine sonar operators review passive detection indicators of close-aboard marine mammals prior to the commencement of ASW operations involving MFAS.
6. Aerial surveillance for marine species occurs whenever possible and detections are reported to ships in the vicinity.
7. Helicopters using active (dipping) sonar search for marine mammals prior to utilizing active sonar and employ a safety zone.
8. Sonar is always operated at the lowest practicable level to meet tactical training objectives.

Based on the following observations, Navy SOPs already in place and adopted into the NDE, were effective in detecting marine mammals. In addition, the steps taken by individual ship commanding officers to avoid impacts to marine mammals were highly effective. . However, those steps were

more conservative than required under the NDE. Due to this, specific measures prescribed under the NDE could not be assessed for applicability and effectiveness.

- Marine mammals were detected 29 times by exercise participants. In each of these cases, the marine mammals were detected by Navy watchstanders operating in accordance with Navy standard operational procedures and as reiterated by NDE mitigation measures.
- Of the 29 instances where marine mammals were detected, MFAS was shut down by 2 units on 7 occasions instead of implementing the decibel reductions at the appropriate ranges described in the NDE (see Table 1). These actions interrupted ASW events
- There were no indications of any effects to any marine species throughout the exercise.

The increased attention to mitigation resulted in the participants' single reaction to marine mammal presence and may have impacted ASW training. In instances where the marine mammals were detected outside of the mitigation ranges, i.e. 4000 yds (see Table 1, event 28); the response was to shut down active sonar. Securing MFAS at ranges greater than 200 yard range is not required under Navy SOP and NDE, and represents an overall conservative interpretation of the mitigation procedure. However, the increased awareness of a public perception of liability seems to indicate a potential for overly-conservative reactions and identifies the need to establish procedures that remain constant, and founded on best available science.

To organize the assessment of each mitigation measure, they are presented below in the order and organization as presented in the NDE.

ASSESSMENT OF MITIGATION AND MONITORING MEASURES

The three categories of mitigation and monitoring measures required by the June 30, 2006 NDE are assessed in this section. For ease of reference, the text of the measures is provided in italics, followed by an assessment, an analysis of operational impact, and a recommendation on any improvements to each measure.

Measures 1-2

Mitigation measures 1 and 2 detail training requirements and operating procedures for units participating in MFAS ASW exercises. All of the training requirements within these two measures reflect the Marine Species Awareness Training (MSAT) that Navy lookouts and bridge personnel routinely receive as Navy SOP. This MSAT was developed in coordination with marine biology experts within the Navy and incorporates effective marine species detection cues and information necessary to protect marine species. This material is part of the Navy lookout watchstander qualification system, will soon be available as online interactive training, and can also be provided in a video format for large audience presentations. NMFS regional staff reviewed the MSAT training for purposes of RIMPAC 06 and this training continued to be used by Navy to meet the full intent of these first two NDE mitigation measures.

<u>Measure 1. Personnel Training:</u>

- *Navy shipboard lookouts shall be qualified watchstanders who have completed marine species awareness training.*
  - *Navy watchstanders will participate in marine mammal observer training approved by*

NMFS.

Measure 2. Operating Procedures

• Bridge personnel on ships and submarines - Ships and surfaced submarines shall have personnel on lookout with binoculars at all times when the vessel is moving through the water. Standard operating procedure requires these lookouts maintain surveillance of the area visible around their vessel and to report the sighting of any marine species, disturbance to the water's surface, or object (unknown or otherwise) to the Officer in Command.

- Bridge lookout personnel shall have completed marine species awareness training as updated in 2005.

- At least one individual who has received this training will be present, and on watch, at all times during operation of tactical mid-frequency sonar, on each vessel operating mid-frequency sonar.

Assessment: Measures 1 and 2 require marine species awareness training. Marine mammal lookout training for all units has been standard procedure for several years, and was updated with a new Marine Species Awareness Training prior to the 2006 Rim of the Pacific Exercise. . Training has been established as effective and will continue to be integral to mitigation.

Operational Impact of this mitigation measure: None.

Recommendation: None, this is effectively incorporated into SOPs prior to JTFEX06-2.

• Aviation units - Aircraft participating in ASW events will conduct and maintain, whenever possible, surveillance for marine species prior to and during the event. The ability to effectively perform visual searches by participating aircraft crew will be heavily dependent upon the primary duties assigned as well as weather, visibility, and sea conditions. Sightings would be immediately reported to ships in the vicinity of the event as appropriate.

Assessment: This measure documents what occurs in general, but has not been specifically described in a SOP.

Operational Impact of this mitigation measure: None – this occurs routinely.

Recommendation: This mitigation measure should be retained and described in a SOP.

• Sonar personnel on ships, submarines, and ASW aircraft -

- Ship and submarine sonar operators will check for passive indications of close-aboard marine mammals prior to their commencement of ASW operations involving active mid-frequency sonar.

Assessment: This measure documents what occurs for submarines as part of PMAP, and is used in general for surface ships, but has not been specifically described in a SOP.

Operational Impact of this mitigation measure: None – this occurs routinely or is part of PMAP

(for submarines).

Recommendation: This mitigation measure should be retained given that it details what occurs routinely. The measure has not been officially described in a SOP for surface ships. The measure is part of PMAP for submarines. This measure should be added for surface units in the next version of PMAP.

> *- Sonar levels (generally) - The Navy will operate sonar at the lowest practicable level, not to exceed 235 dB, except for occasional short periods of time to meet tactical training objectives. Use of MFA sonar at source levels above 235 dB will be logged and reported in accordance with section 3.*

Assessment: This measure had no observable benefit to conservation, due to operator shut down if mammals were observed, regardless of range or source level, which will be discussed in further detail in following sections.

Operational Impact of this mitigation measure: The impact of this measure is undeterminable at this time.

Recommendation: This measure may not be particularly applicable to conduct of training. Sonar usage is tailored to the environmental conditions of the day, which may preclude practicable levels below the maximum.

> *- **Sonar controls (generally) -** With the exception of choke-point exercises (special measures outlined below), the Navy will not*
>
> i. *Operate mid-frequency active sonar within 25 km of the 200-m isobath during RIMPAC 2006,*
>
> (This measure applies solely to RIMPAC 2006)
>
> ii. *In major fleer exercises, operate mid-frequency active sonar within 12 nm of a coast, except for RIMPAC 2006 (which is covered above) and military readiness activities at the established ranges at San Clemente Island and PMRF.*

Assessment: This measure was adhered to for JTFEX06-2; there were no planned active sonar operations scheduled within 12 nm of a coast.

Operational Impact of this mitigation measure: None.

Recommendation: None.

> iii. *Conduct sonar activities in constricted channels.*

Assessment: There are no constricted channels within the area of JTFEX06-2.

Operational Impact of this mitigation measure: None.

Recommendation:
Not applicable.

- ***Safety zones -*** *When marine mammals are detected close aboard, all ships, submarines, and aircraft engaged in ASW would reduce mid-frequency active sonar power levels in accordance with the following specific actions:*

  Helicopters - *Helicopters shall observe/survey the vicinity of an event location for 10 minutes before deploying active (dipping) sonar in the water. Helicopters shall not dip their sonar within 200 yards of a marine mammal and shall secure pinging if a marine mammal closes within 200 yards after pinging has begun.*

Assessment: There were no dipping sonar helicopter operations within the plan for JTFEX06-2; however, this measure is essentially the same as the measure detailed in PMAP, with the addition of a specified 10 minute survey in advance of active sonar. PMAP prohibits active sonar use if there are animals within 200 yards of the sonar transducer, and details the securing of sonar if an animal is detected within 200 yards or is closing on the source when active.

Operational Impact of this mitigation measure: None.

Recommendation: The 10 minute survey prior to active sonar use is bounding the time in which survey would be done. As written in PMAP, the helicopter pilots must ensure there are no marine mammals in the 200 yd exclusion zone around the sonar transducer, regardless of time interval spent in searching. Since the searching of an area is dependent upon the environmental conditions of the day, bounding the survey timeframe may be unwarranted.

Ships and submarines

i. # ***1,000 m -*** *When marine mammals are detected by any means (aircraft, lookout, or aurally) within 1000 m of the sonar dome (the bow), the ship or submarine will limit active transmission levels to at least 6 dB below the equipment's normal operating level for sector search modes. Ships and submarines would continue to limit maximum ping levels by this 6-dB factor until the animal has been seen to leave the area, has not been seen for 30 minutes, or the vessel has transited more than 2000 m beyond the location of the sighting.*

ii. # ***500 m -*** *Should the marine mammal be detected within or closing to inside 500 m of the sonar dome, active sonar transmissions will be limited to at least 10 dB below the equipment's normal operating level for sector search modes. Ships and submarines would continue to limit maximum ping levels by this 10-dB factor until the animal has been seen to leave the area, has not been seen for 30 minutes, or the vessel has transited more than 1500 m beyond the location of the sighting.*

iii. # ***200 m -*** *Should the marine mammal be detected within or closing to inside 200 m of the sonar dome, active sonar transmissions will cease. When a marine mammal or sea turtle is detected closing to inside approximately 200 m of the sonar dome, the principal risk becomes potential physical injury from collision. Accordingly, ships and submarines shall maneuver to avoid collision if the marine species closes within 200 m to the extent possible, with safety of the vessel being paramount. Sonar will not resume until the animal has been seen to leave the area, has not been seen for 30*

minutes, or the vessel has transited more than 1200 m beyond the location of the sighting.

Assessment: It is likely that this mitigation measure is effective. Similar mitigation measures were already standard Navy operating procedure for all units conducting MFAS training. The intent of this requirement is not met in the reactions of the participating units. Upon sighting of animals, regardless of range, but often at 1000 yards or more, sonar was secured.

Operational Impact of this mitigation measure: Not determinable in the reactions of the participating units. In the unit after action reports, two scenarios exist. Either the unit observed mammals and was not active, or if the ship was active, sonar was secured.

This loss of MFAS training hours is more than a simple metric involving a loss of training time as a small percentage of the overall exercise hours since, in at least three cases, the proximity of a submarine in the vicinity meant there was a potential submarine detection opportunity missed by the exercise participants.

Recommendation: A "safety zone" mitigation measure was already SOP and this mitigation measure should be retained. A safety zone of 1000 m is based on the attenuation of sonar power level from a source of 235 dB to a received level of 173 dB under ideal conditions assuming direct path propagation with no reduction from other possible environmental factors. As discussed in Section 1, the exercise participants utilized a more conservative response to the presence of marine mammals. To align the NDE mitigation with Navy procedures, it is recommended that the measures be rewritten in yards. During planning conferences prior to exercises, Navy environmental planners should also stress application of NDE mitigation measures as issued with the operators to allow for a better assessment of their effectiveness and impact on training.

iv. ***Significant surface ducting conditions -*** *In significant surface ducting conditions, the Navy will enlarge the safety zones such that a 6-dB power-down will occur if a marine mammal enters the zone within a 2000 m radius around the source, a 10-dB power-down will occur if an animal enters the 1000 m zone, and shut down will occur when an animal closes within 500 m of the sound source.*

Assessment: There were no significant surface ducting conditions; however, as stated earlier, the intent of this requirement is not met in the reactions of the participating units. Upon sighting of animals, regardless of range, sonar was secured.

Operational Impact of this mitigation measure: Not determinable in the reactions of the participating units. Additionally, water conditions vary significantly over relatively short distances while operating in the littoral environment, which increases the logistical difficulties in effectively implementing this measure.

Recommendation:
This measure can not be effectively implemented, thus providing no additional protection and should be deleted.

v. ***Low visibility conditions (i.e., whenever the entire safety zone cannot be effectively monitored due to nighttime, high sea state, or other factors)*** *- The Navy will use additional detection measures, such as infrared (IR) or enhanced passive acoustic detection. If detection of marine mammals is not possible out to the prescribed safety zone, the Navy will power down sonar as if marine mammals were present in the zones they cannot see (for example, at night, if night goggles allow detection out to 1000 m, power-down would not be necessary under normal conditions; however, in significant surface ducting conditions, the Navy would need to power down 6 dB, as they could not effectively detect mammals out to 2000 m, the prescribed safety zone).*

Assessment: This measure was not applicable; there were no days of poor visibility during the exercise or times where nighttime detection was not effective out to 1000 m. Night infrared goggles were utilized.

Operational Impact of this mitigation measure: Power reduction was not applicable, and the use of night goggles has no operational impact.

Recommendation: None, the power reduction component of this measure was not effectively tested.

Measure 3. Stranding Response and Reporting

• *The Navy will coordinate with the NMFS Stranding Coordinator for any unusual marine mammal behavior, including stranding, beached live or dead cetacean(s), floating marine mammals, or out-of-habitat/milling live cetaceans that may occur at any time during or shortly after major exercises.*

Assessment: There were no occurrences of unusual marine mammal behavior during or subsequent to JTFEX06-2.

Operational Impact of this mitigation measure: Not applicable.

Recommendation: None, this measure was not applicable.

• *The Navy will provide a report to NMFS after the completion of a major exercise that includes:*

An assessment of the effectiveness of these mitigation and monitoring measures with recommendations of how to improve them.

Assessment: The details of the effectiveness assessment are contained within this report. In the circumstance that occurred during JTFEX06-2, sonar was secured if an animal was sighted. , The overly-conservative response precluded an assessment of the safety zone mitigation measures as

written.

Operational Impact of this mitigation measure*:* Approximately 50 man hours were expended between data collection and report writing.

Recommendation: None at this time. Dialogue on reporting is ongoing with NMFS.

> *Results of the marine species monitoring during the major exercise. As much unclassified information as the Navy can provide including, but not limited to, where and when sonar was used (including sources not considered in take estimates, such as submarine and aircraft sonars) in relation to any measured received levels, source levels, numbers of sources, and frequencies, so it can be coordinated with observed cetacean behaviors. If necessary, classified information may be provided to NMFS personnel with an appropriate security clearance and need to know.*

Assessment: The details of the marine species monitoring are contained within Table 1 and Section 3 of this report. The information on sonar frequencies and source levels would provide no additional information since animals observed were behaving within the confines of apparent normal behavior. The sightings are illustrated in Section 3 of this report.

Operational Impact of this mitigation measure: None.

Recommendation: None.

Section 2 Summary

During JTFEX06-2, there were 108 total hours of mid-frequency active sonar (MFAS) use and less than 50 DICASS sonobuoys expended. There were no reported observations of behavioral disturbance of marine mammals during the exercise. The mitigation measures that demonstrated effectiveness were procedures developed by Navy for marine species awareness training and lookout watchstander responsibilities, which were also adopted into the NDE. The implementation of safety zones beyond those described in the NDE was effective at avoiding effects to marine mammals, but was more conservative than required. .

SECTION 3: Monitoring Results

The requirement from the NDE: “Results of the marine species monitoring during the major exercise. As much unclassified information as the Navy can provide including, but not limited to, where and when sonar was used (including sources not considered in take estimates, such as submarine and aircraft sonars) in relation to any measured received levels, source levels, numbers of sources, and frequencies, so it can be coordinated with observed cetacean behaviors.” is summarized in this section of the report. Figure 2, below, depicts the approximate location of marine mammals that were sighted by exercise participants. This is a skewed sample since there were no attempts made to detect marine mammals by other means in areas not being used by exercise participants. Points outside of the JTFEX location were primarily from the precursor operations immediately prior

to the JTFEX, and did not involve the use of sonar. All positions in Table 1 where sonar was in use at the time of sighting occurred inside the JTFEX location,. Sighting locations are illustrated in Figure 2.

Typically, there are no measurements (calibrated or otherwise) of actual sound levels made during an exercise and none were made during JTFEX06-2. Source levels, numbers of sources, and frequencies are classified since that information would provide potential adversaries with important tactical data. Given that location planning and mitigation measures are designed to minimize interactions between Navy assets and marine mammals, the observations of marine mammals by Navy assets only occurred as infrequent and very brief encounters, the majority of which occurred when there was no MFAS in use.

Observations of marine species and their behaviors, as previously detailed, showed no unusual behaviors for coordination with MFAS use. There were no indications from the observations that the presence of exercise participants had any affect on any marine mammals.

The requirement to report where and when sonar was used so it can be coordinated with observed cetacean behaviors would provide no additional information since animals observed were behaving within the confines of apparent normal behavior. Information presented previously in Table 1 provides a list of instances when marine mammals were detected and sonar was being used.

In summary, there were 29 sightings of marine mammals from surface vessels. During JTFEX06-2, there were 108 total hours of MFAS used and less than 50 DICASS sonobuoys expended. This was less than the anticipated number of hours and DICASS sonobuoy use planned for during the exercise. All behaviors described in the after action report were within the range of apparent normal behaviors. The results of these monitoring efforts provided no evidence indicating there were any effects on the detected marine mammals as a result of the ASW exercises taking place.

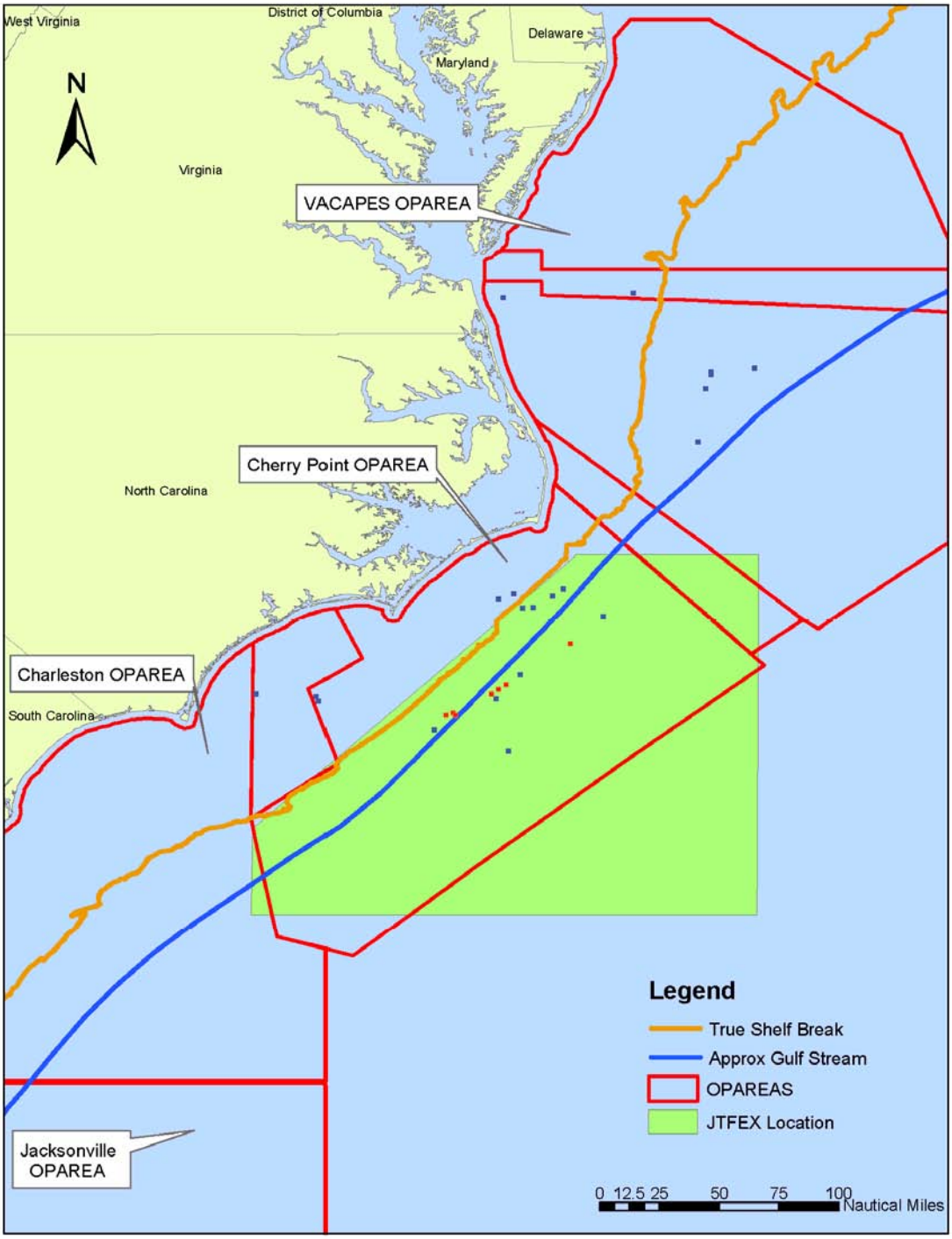

Figure 2. Locations of marine mammals sighted by exercise participants are depicted by the colored squares (blue and red) (note that two sightings occurred in the same location at two different times, depicted by a single dark blue square).