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National Marine Fisheries Service  
Office of Protected Resources

Prepared by  
Department of the Navy

In accordance with  
Biological Opinion 09 February 2007  
National Defense Exemption 23 January 2007

**U.S. Navy  
SOUTHERN CALIFORNIA  
COMPOSITE TRAINING UNIT EXERCISE 08-3  
USS PELELIU ESG  
After Action Report  
20 to 27 March 2008**

SUBMITTED TO  
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Abstract

This report presents an analysis of the effectiveness of the mitigation and monitoring measures as required under the Biological Opinion on the U.S. Navy's Proposed Composite Training Unit Exercises and Joint Task Force Exercises off Southern California from February 2007 to January 2009

AND

Discussion of the nature of effects on marine mammals, if observed, under the National Defense Exemption from the Requirements of the Marine Mammal Protection Act (MMPA) for Mid-Frequency Active Sonar

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## EXECUTIVE SUMMARY

- As required by the 23 January 2007 National Defense Exemption (NDE) from the Requirements of the MMPA for Certain DoD Military Readiness Activities That Employ Mid-Frequency Active Sonar (MFAS) or Improved Extended Echo Ranging Sonobuoys and the 30 July 2007 *Biological Opinion (BO) on the U.S. Navy's Composite Training Unit Exercises (COMPTUEX) and Joint Task Force Exercises (JTFEX) Off Southern California From February 2007 to January 2009*, this reports summarizes marine mammal sightings and provides an assessment of mitigation effectiveness for the U.S. Navy's Composite Training Unit Exercise (COMPTUEX) 08-3 conducted by the USS PELELIU Expeditionary Strike Group (ESG) from 20 to 27 March 2008 within the offshore waters of Southern California.
- Over 504 hours of visual sighting effort was conducted by U.S. Navy lookouts assigned to three MFAS-equipped surface ships over the entire course of the exercise (7 days x 24 hrs/day = 168 hrs x 3 MFAS ships = 504 hours), including MFAS and non-MFAS events. This total does not include additional visual sighting results from non-MFAS ships (3 amphibious assault ships). During these 504 hours, 65 hours of MFAS was reported from all sources. The 65 hours of MFAS use represent the total time conducting MFAS training or events and do not reflect continuous and consecutive MFAS activity.
- There were a total of 71 marine mammal sightings of an estimated 192 animals during COMPTUEX 08-3. The majority of animals sighted were "unspecified whale" and "large whale" which, combined, totaled 46 sightings accounting for 63 animals or approximately 65% of the total estimated number of sightings. There were 10 dolphin sightings of 90 animals total or approximately 47% of the total estimated number of animals.
- Of note, three of the six ships assigned to the ESG participating in COMPTUEX 08-3 were amphibious assault ships which do not have MFAS capability. These three vessels accounted for approximately 24 of the 71 total sightings for 106 animals.
- There were 9 instances when MFAS was turned off due to marine mammal sightings during COMPTUEX 08-3. There were 8 detections of at least 12 marine mammals within NDE safety zones (< 1,000 meters) during MFAS transmissions. In each of these events, the participating ship secured MFAS upon initial animal sighting.
- There were no obvious indications or reports that any marine mammal sighted during COMPTUEX 08-3 behaved in a manner not associated with normal movement or foraging; however, biological information available for this report is limited.
- Based on visual reports of marine mammals from U.S. Navy lookouts during COMPTUEX 08-3, the U.S. Navy's Composite Training Unit Exercise/Joint Task Force Exercise Environmental Assessment/Overseas Environmental Assessment (EA/OEA) acoustic modeling appears to have over-estimated the number of potential acoustic exposures, including those to ESA-listed species. The acoustic model tends to over predict exposures due to limitations of available marine mammal density estimates, assumptions that animals are universally distributed throughout an area, and do not leave or enter the area. Additionally, exposures are calculated without accounting for any mitigation measures that are used.

## INTRODUCTION

This report is presented to fulfill U.S. Navy written reporting requirements of the 23 January 2007 National Defense Exemption (NDE) from the Requirements of the MMPA for Certain DoD Military Readiness Activities That Employ Mid-Frequency Active Sonar (MFAS) or Improved Extended Echo Ranging Sonobuoys. Additionally, the 9 February 2007 *Biological Opinion (BO) on the U.S. Navy's Composite Training Unit Exercises (COMPTUEX) and Joint Task Force Exercises (JTFEX) Off Southern California From February 2007 to January 2009* requires the submittal of a written report to the Office of Protected Resources at NMFS (reporting requirements outlines in box below). This report also fulfills the BO reporting requirements. Training restrictions applicable to COMPTUEX 08-3, including those contained in court-ordered MFAS mitigation measures and National Environmental Policy Act (NEPA) alternative arrangements, are also noted in this report. Notification of the reports availability will also be provided to CEQ in support of the Alternative Arrangements agreed to on January 19, 2008.

### COMPTUEX/JTFEX BO (NMFS 2007) Reporting Requirements:

5. 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' Southwest Regional Office) with a written report that shall include the following information.

a. Summary of exercise (starting and ending date of exercise, number of ships and aircraft involved in exercise, and number of hours passive and active sonar was used during the exercise);

b. Specific mitigation measures Navy implemented during exercise;

c. Number of blue whales, fin whales, humpback whales, sei whales, sperm whales, and Guadalupe fur seals that (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 number of blue whales, fin whales, humpback whales, sei whales, sperm whales, and Guadalupe fur seals that had been exposed to MFAS at received levels equal to or greater than 173 dB re 1  $\mu\text{Pa}^2\cdot\text{s}$ ;

d. Reports of the activity or activities that blue whales, fin whales, humpback whales, sei whales, sperm whales, and Guadalupe fur seals 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 exercise;

Reports of observations shall identify 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 observation; and how long an observer or set of observers maintained visual contact with a marine mammal;

e. evaluation of effectiveness of those mitigation measures at avoiding exposing endangered whales to ship traffic and endangered whales and pinnipeds to MFAS. This evaluation shall identify the specific observations that support any conclusion U.S. Navy reaches about effectiveness of mitigation measures;

f. evaluation of 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  $\mu\text{Pa}^2\cdot\text{s}$ ) with specific evidence that supports any conclusions U.S. Navy reaches.

## REPORT ORGANIZATION

This report contains unclassified material and provides the information and analysis for Composite Training Unit Exercise (COMPTUEX) 08-3 and is submitted in fulfillment of NDE and BO written requirements. The report focuses on addressing the biological impact questions presented in the COMPTUEX/JTFEX BO (NMFS 2007) Reporting Requirements text box shown on the preceding page. Discussion on impacts of mitigation measures on U.S. Navy training is contained in separate, classified reporting.

This report is organized by section in the following order:

### **Background**

**Section A - Exercise Summary** provides exercise specific information including the starting and ending dates, the number of ships and aircraft participating, and the number of hours of MFAS used by all emitters.

**Section B - Mitigation Measure Summary** describes specific mitigation measures implemented.

**Section C/D - Biological Observations and Exposure Assessment** provides an overview of marine mammal observations obtained during the exercise in terms of BO required Terms and Conditions (statements 5c and 5d listed previously). The exposure assessment during COMPTUEX 08-3, estimates potential MFAS exposure for animals observed within 1,000 yards. The BO required that this analysis focus on marine mammal observations within 1,000 yards of an MFAS transmission; however, NEPA alternative arrangements granted on 15 January 2008 required analysis of marine mammal observations within 1,000 meters of an MFAS transmission. Therefore, analysis results are presented for ranges within 1,000 meters, although sighting reports are sometime still recorded in yards by exercise participants.

**Section E/F - Mitigation Assessment** discusses the effectiveness of the NDE and BO safety zones when marine mammals are sighted in the vicinity of ships using MFAS.

**Appendix A** - categorizes and list specific NDE based mitigation measures and subsequent court-ordered mitigation implemented during the exercise.

## **BACKGROUND**

Composite Training Unit Exercises (COMPTUEX) is part of an Integrated Phase of the Fleet Readiness Training Plan (FRTTP) and may involve either a Carrier Strike Group (CSG) or an Expeditionary Strike Group (ESG). A COMPTUEX is conducted as a series of scheduled training events that occur according to a given time schedule against an opposition force. COMPTUEX provides an opportunity for the Strike Group to become proficient in myriad required warfare skill sets. Additionally, it stresses the integration or coordination of the different warfare areas and provides realistic training on in-theater operations.

Prior to the exercise, NMFS-approved Marine Species Awareness Training (MSAT) was provided to exercise participants. A Letter of Instruction (LOI) which reiterated the mitigation measures to be employed during the exercise was also distributed to participants and explained procedures for reporting marine mammal sightings discussed in Section C/D. On 23 January 2007, the Deputy Secretary of Defense granted the US Navy an exemption from certain permitting requirements of the MMPA for Certain DOD Military Readiness Activities That Employ Mid-Frequency Active Sonar (MFAS) or Improved Extended Echo Ranging Sonobuoys. This exemption included a list of mitigation measures developed in coordination with NMFS to be used when operating MFAS. On January 17, 2008, a federal appeals court temporarily lifted a preliminary injunction which imposed training restrictions on COMPTUEXs and JTFEXs conducted in the Southern California Operating Area (SOCAL OPAREA). The stay was granted in part based on the Council on Environmental Quality (CEQ) granting Navy authorization for "Emergency Alternative Arrangements" under NEPA. Those emergency alternative measures required Navy to continue to adhere to the NDE mitigation measures that were developed in coordination with NMFS; ensure active public participation in the preparation of the SOCAL Environmental Impact Statement (EIS); implement measures for adaptive management; and continue long-term research commitments. The NDE mitigation measures implemented during COMPTUEX 08-3 are presented in **Appendix A**.

During COMPTUEX 08-3, the U.S. Navy adhered to the NDE mitigation measures; the measures set forth in the CEQ Alternative Arrangements, as well those measures by applicable court order.

## SECTION A EXERCISE SUMMARY

### EXERCISE PARTICIPANTS

COMPTUEX 08-3 was conducted from 20-27 March 2008, for the USS PELELIU (LHA 2) ESG (Table 1 and Figure 1). Participating units included ESG assigned ships (surface combatants, amphibious assault ships, submarines, and supply ships), and MFAS-equipped opposition forces (including submarines). Three SQS-53 MFAS-equipped surface ships were present in COMPTUEX 08-3. However, there was minimum active sonar use by some ESG and non-ESG assigned platforms due to either tactical considerations for surface ships and submarines or lack of MFAS capability (amphibious assault ships, supply ships). There was no ASW helicopter dipping sonar available for this exercise.

#### Total MFAS Use

During COMPTUEX 08-3, 65 hours of MFAS time was reported from all sources including hull mounted surface ship sonar (AN/SQS-53). There was no submarine hull-mounted sonar, or helicopter dipping sonar use reported. Key caveats to the derivation of this total are presented in Section 3.

**Table 1.** Exercise summary for COMPTUEX 08-3 conducted within the SOCAL OPAREA March 2008.

Participants	Event Name	Dates	MFAS Use Reported (hours)
USS PELELIU ESG	COMPTUEX 08-3	20-27 March 2008	65 hrs
Number of MFAS equipped surface ships : Estimated number of potential ASW helicopters:			 3 (Arleigh Burke class DDG) No dipping sonar helicopters participated



**Figure 1.** Approximate area of reported marine mammal sightings during exercise COMPTUEX 08-3.  
Note: this polygon only represents the area in which marine mammal sightings were reported by exercise participants and does not imply overall operational region or areas where MFA sonar was used.

## **SECTION B MITIGATION MEASURES FOLLOWED**

**Appendix A** contains a list of mitigation measures used during COMPTUEX 08-3.

The NDE issued on January 23, 2007, provides for protection of marine mammals, in the absence of an MMPA Letter of Authorization, by including specific conditions to minimize potential impacts on marine mammals. These mitigation measures were developed in coordination with NMFS, the agency with substantive responsibility for marine mammals. All NDE mitigation measures were adhered to during COMPTUEX 08-3. Those NDE measures include specific details for personnel training, lookout and watchstander responsibilities, specific operating procedures, and coordination and reporting requirements.

In addition, the Navy adhered to the Alternative Arrangements approved by the Council on Environmental Quality pursuant to 40 C.F.R. section 1506.11 (Volume 73, Federal Register, No. 16, pages 4189-4193) and any additional measures imposed by applicable court order (also included in **Appendix A**).

## **SECTION C/D- BIOLOGICAL OBSERVATIONS AND EXPOSURE ASSESSMENT**

Section C/D provides an overview of marine mammal observations that require reporting under the Terms and Conditions of the NMFS BO (NMFS 2007).

The biological summary in this section includes the total number of marine mammals sighted, the number of marine mammals observed within 1,000 meters during MFAS transmission, and science-based analysis of species likely present in Southern California during this time of year.

### **COMPTUEX 08-3 BIOLOGICAL OBSERVATIONS**

**Figure 1** shows the approximate boundaries of all marine mammal sightings during COMPTUEX 08-3. All marine mammal sightings described in this section were made by standard Navy surface ship and aircrew lookouts using reporting procedures as detailed in the formal LOI issued prior to the exercise.

There were a total of 71 marine mammal sightings for a minimum estimated 192 animals during COMPTUEX 08-3. There were two detections where the number of animals was not known, but given the likely species type (whales which typically travel in smaller groups than some common SOCAL dolphin species), these would not have added significantly to the reported estimated totals. The majority of animals sighted were “unspecified whale” and “large whale” which, combined, totaled 46 of the 71 sightings accounting for 63 animals or approximately 65% (46/71) of the total estimated number of sightings. There were 10 dolphin sightings of 90 animals or approximately 47% (90/192) of the total estimated number of animals. In addition, there were 10 sightings of 10 “small whales”, 4 sightings of 28 pinnipeds (seals or sea lions), and one sighting where the marine mammal type was not reported.

(63+90+10+28+1 = 192 animals; 46+10+10+4 +1= 71 sightings)

Of the total 71 sightings and estimated 192 animals detected during COMPTUEX 08-3, 28 sightings of 37 animals were within 2,000 meters of a reporting MFAS-equipped surface ship (**Table 2**). This represents 39% of the total sightings and 19% of the total animals. As discussed in the “MFAS EXPOSURE ASSESSMENT” assessment below, of these 28 sightings within 2,000 meters, there were eight sightings that resulted in MFAS mitigation.

Of note, three of the six ships assigned to the ESG participating in COMPTUEX 08-3 were amphibious assault ships which do not have MFAS capability. These three vessels accounted for approximately 24 of the 71 total sightings for 106 animals.

The CEQ Alternative Arrangement requirement #3 states that “*Navy will use meters rather than yards to describe the safety zone set forth in NDE mitigation measure 20.*” While surface ships sometimes continue to report initial sightings in yards, this report presents the sightings following conversion to meters. Individual sightings and estimated numbers of marine mammals observed within 2,000 meters (2,200 yards) of a MFAS equipped U.S. Navy ship during COMPTUEX 08-3 are presented in **Table 2**. These sightings were taken during the exercise based on visual observations from five trained U.S. Navy lookouts per ship during ASW events, or three lookouts during non-ASW events. An additional 19 sightings of marine mammals by MFAS equipped ships at ranges greater than 2,000 meters (not shown in **Table 2**) occurred when no MFAS transmission occurred.

U.S. Navy ships reported sea states during these reported marine mammal sightings as ranging from 1 to 4 (**Tables 2 and 3**).

**Table 2.** Marine mammal sightings and actions by exercise participants for marine mammals sighted within 2,000 meters of a MFAS equipped U.S. Navy vessel during COMPTUEX 08-3.

nr = not reported; unk = unknown

Date-Time local	Description of Actions Taken	Sea State	#	Animal Type	MFAS in use?	Sonar Secured ?
20 Mar 1256	Surface ship sights 1 "whale" at 1500 yards. MFAS was not in use. No action taken.	1	1	whale	no	N/A
20 Mar 1349	Surface ship sights 1 "small whale" traveling south at 5000 yards. MFAS not in use. No action taken.	1	1	sm whale	no	N/A
21 Mar 0840	Surface ship sights 1 "small whale" traveling south at 1500 yards. MFAS not in use. No action taken.	2	1	sm whale	no	N/A
21 Mar 1110	Surface ship sights 1 "small whale" traveling west at 2000 yards. MFAS not in use. No action taken.	4	1	sm whale	no	N/A
22 Mar 0736	Surface ship sights 2 "whales" at 200 yards. MFAS not in use. No action taken. Ship changes course to move further away from the whales.	1	2	whale	no	N/A
22 Mar 0939	Surface ship sights 1 "small whale" traveling south at 1500 yards. MFAS not in use. No action taken.	2	1	sm whale	no	N/A
22 Mar 1855	Surface ship sights 1 "whale" at 500 yards. MFAS not in use. No action taken.	2	1	whale	no	N/A
23 Mar 0815	Surface ship sights 2 "whales" at 700 yards. MFAS not in use. No action taken.	3	2	whale	no	N/A
23 Mar 0821	Surface ship sights 1 "whale" at 1000 yards. MFAS not in use. No action taken.	3	1	whale	no	N/A
24 Mar 0722	Surface ship sights unknown number of whales at unreported range and over various bearings indication multiple animals. MFAS was in use. MFAS secured.	nr	unk	whale	yes	yes
24 Mar 0822	Surface ship reports passive detection of an unknown number of whales estimated at between 500 and 1000 yards. MFAS was in use. MFAS secured.	nr	unk	whale	yes	yes
24 Mar 0857	Surface ship sights "unknown marine mammal" at 500 yards. MFAS in use. MFAS secured.	3	1	nr	yes	yes
24 Mar 0916	Surface ship sights 1 "whale" at 1000 yards. MFAS was not in use. No action taken. Ship changed course to further avoid whales.	3	1	whale	no	N/A
24 Mar 0941	Surface ship sights 1 "whale" at 250 yards. MFAS was not in use. No action taken. Ship changes course to further avoid whale.	3	1	whale	no	N/A
24 Mar 1028	Surface ship sights 2 "whales" at 250 yards. MFAS was not in use. No action taken.	3	2	whale	no	N/A
24 Mar 1230	Surface ship sights 6 "whales" at 500 yards. MFAS was in use. MFAS secured. Ship changes course to further avoid the whales. Ship reports training was inhibited. No apparent change in animal movement or behavior noted.	2	6	whale	yes	yes
24 Mar 1531	Surface ship sights 1 "whale" at 100 yards. MFAS was in use. MFAS secured. Whale seen to swim under ship's bow. Ship reports significant training impact.	2	1	whale	yes	yes
24 Mar 1632	Surface ship sights 1 "whale" at 1000 yards. MFAS was in use. MFAS secured. Ship reports significant training impact.	2	1	whale	yes	yes
24 Mar 1015	Surface ship sights 1 "whale" at 1000 yards. MFAS not in use. No action taken.	3	1	whale	no	N/A
24 Mar 1132	Surface ship sights 1 "whale" at 1000 yards. MFAS in use. MFAS secured.	3	1	whale	yes	yes
24 Mar 1244	Surface ship sights 1 "small whale" traveling south at 1500 yards. MFAS not in use. No action taken.	1	1	sm whale	no	N/A
25 Mar 1812	Surface ship sights 1 "small whale" at 1500 yards. MFAS not in use. No action taken.	2	1	sm whale	no	N/A

<b>Date-Time local</b>	<b>Description of Actions Taken</b>	<b>Sea State</b>	<b>#</b>	<b>Animal Type</b>	<b>MFAS in use?</b>	<b>Sonar Secured ?</b>
25 Mar 1210	Surface ship sights 2 "whales" at 1000 yards. MFAS was in use. MFAS secured.	2	2	whale	yes	yes
26 Mar 0900	Surface ship sights 1 "whale" swimming south at 2000 yards. MFAS not in use. No action taken.	3	1	whale	no	N/A
26 Mar 0900	Surface ship sights 2 "whales" at 200 yards. MFAS not in use. No action taken.	3	2	whale	no	N/A
26 Mar 0722	Surface ship sights 1 "large whale" at 1300 yards. MFAS not in use. No action taken.	3	1	lg whale	no	N/A
26 Mar 0751	Surface ship sights 2 "whales" at 2000 yards. MFAS not in use. No action taken.	3	2	whale	no	N/A
26 Mar 2021	Surface ship sights 1 "small whale" at 1000 yards. MFAS not in use. No action taken.	2	1	sm whale	no	N/A

**Table 3.** SOCAL sea states as reported by ship exercise participants for COMPTUEX 08-3 conducted within the SOCAL OPAREA from 20-27 March 2008.

Graphic	Beaufort Wind Force Scale *	Observed Sea Surface Condition	Sailor's Term	Effects on Land	Typical Wind Speed (MPH)
	0	Mirror smooth and glassy surface	Calm	Calm; smoke rises straight up	0
<b>Beaufort Scale 1</b> 	1	Small ripples or capillary waves on glassy surface	Light Air	Smoke drifts with wind direction	1-3
<b>Beaufort Scale 2</b> 	2	Larger ripples or wavelets on glassy surface	Light Breeze	Leaves begin to rustle; wind felt on face	4 - 7
<b>Beaufort Scale 3</b> 	3	Wavelets of irregular direction and shape; a few crests break on glassy surface	Gentle Breeze	Small flags extend; leaves in constant motion	8 - 12
<b>Beaufort Scale 4</b> 	4	Small chop, defined direction; numerous whitecaps	Moderate Breeze	Dust, leaves, and loose paper move	13 - 18
<p>* One of the first scales to estimate wind speeds and the effects at sea was created by Britain's Admiral Sir Francis Beaufort (1774-1857) who developed the scale in 1805 to help sailors estimate winds via visual observations. The scale starts with 0 and goes to a force of 12. The Beaufort scale is still used today to estimate wind strengths.</p>					

**Table 4** provides a summary of recent marine mammal sighting data conducted quarterly from July 2004 to November 2005 (Soldevilla et al. 2006). This paper represents data useful for predicting potential marine mammal seasonal assemblages within Southern California, and one of the few reports with winter survey results.

More detailed information on marine mammal seasonal occurrence in Southern California can be found in Forney and Barlow (1998), Carretta et al. (2000), Soldevilla et al. (2006), Barlow and Forney (2007), and Oleson et al. (2007). Based on the references discussed above, and given the time of year COMPTUEX 08-3 occurred (March), likely ESA species present in Southern California during the exercise include fin whales and sperm whales, although sperm whales have a much more variable abundance in the deep offshore waters off California (Barlow and Forney 2007). The majority of sperm whale sightings reported in Barlow and

Forney (2007) were from waters west of the Patton Escarpment, in areas of the SOCAL OPAREA not used for this exercise (west of the polygon in **Figure 1**). Blue whales and humpback whales are thought to winter off Baja California, coastal Mexico (for humpback whales), in the Gulf of California, and on the Costa Rica Dome (Forney and Barlow 1998; Carretta et al. 2007). At-sea distributions of Guadalupe sea lions are poorly documented so no determination of presence or absence can be inferred. For non-ESA-listed animals, the three most abundant dolphins expected are common dolphins (short-beaked and long-beaked), Pacific white-side dolphins, and bottlenose dolphins (**Table 4**).

**Table 4.** Visual detections of cetaceans over California Cooperative Oceanic Fisheries Investigations (CalCOFI) cruises from July 2004–November 2005. Total number of individuals sighted per species for each trip (Table from: Soldevilla et al. 2006). Red box indicates sightings from same seasonal time period but not year as COMPTUEX 08-3 (Mar/Apr).

	Jul. 2004	Nov. 2004	Jan. 2005	Apr. 2005	Jul. 2005	Nov. 2005	Total
Blue whale	9	7	–	–	14	–	30
Fin whale	11	9	–	2	7	32	61
Gray whale	–	1	4	–	–	–	5
Humpback whale	2	22	–	17	7	7	55
Minke whale	–	–	–	1	2	1	4
Sperm whale	14	–	–	5	5	3	27
Killer whale	–	–	–	–	6	–	6
Baird's beaked whale	20	–	–	–	–	–	20
Cuvier's beaked whale	2	4	–	–	–	–	6
Unid. beaked whale	–	2	–	–	–	–	2
Unid. whale	34	25	6	7	18	6	96
Common dolphin—short-beaked	1657	1946	2421	440	2184	412	9060
Common dolphin—long-beaked	475	3729	60	1650	1084	235	7233
Common dolphin—unid. spp	843	852	29	32	3481	1621	6858
Risso's dolphin	17	102	12	26	–	235	392
Northern right whale dolphin	–	2	5	299	3	14	323
Pacific white-sided dolphin	25	183	44	157	81	2	492
Rough-toothed dolphin	–	–	–	9	–	–	9
Striped dolphin	77	–	–	–	–	–	77
Bottlenose dolphin	30	11	–	20	–	56	117
Unid. dolphin	900	2204	1220	183	207	392	5106
Dall's porpoise	2	–	21	58	–	17	98
Harbor porpoise	2	–	–	–	–	–	2
Total individuals sighted	4120	9099	3822	2906	7099	3033	30079

## MFAS EXPOSURE ASSESSMENT

As in any review of the operational aspects of U.S. Navy ASW operations using MFAS, specific source levels, numbers of sources, and frequencies of sonar used during COMPTUEX 08-3 are classified because release of this information may provide potential adversaries with critical tactical data. The following discussion is focused on the 1) amount of time spent visually searching the ocean, 2) the amount of time conducting MFAS training, and 3) a discussion of individual events when MFAS was active and marine mammals were spotted within 1,000 meters.

This report presents marine mammal sighting information, but not mitigation, out to 1,000 meters. Mitigation discussions reference the 200, 500, and 1,000 meter safety zones applicable to this exercise.

**1) Visual sighting effort:** Visual sighting effort for COMPTUEX 08-3 is calculated using the length of the exercise (7 days), the number of hours per day (24), the standard operating procedure for all vessels to conduct visual searches 24/7 with three lookouts on watch and scanning the ocean at all times, and an additional two lookouts during ASW events, and the presence of 3 MFAS-equipped vessels.

U.S. Navy MFAS-equipped surface ships performed 504 hours of visual sighting effort during COMPTUEX 08-3 (7 days x 24 hrs/day = 168 hrs x 3 ships = 504 hours). This accounts for the total exercise time, including both MFAS and non-MFAS training events. Not included in this time is additional sighting effort from three non-MFAS equipped amphibious assault ships also assigned to the ESG.

**2) MFAS use:** During COMPTUEX 08-3, 65 hours of MFAS time was reported from all sources including hull-mounted surface ship SQS-53 sonar (**Table 1**). Since there was no ASW helicopter participation during COMPTUEX 08-3, there was no dipping sonar use reported. There were also no reports of submarine hull-mounted sonar use.

Note, however, that the 65 hours of MFAS time is not indicative of continuous and consecutive use. MFAS is only used for a relatively small portion of any given exercise time frame. Total active sonar hours represent the sum of the total time of a number of individual training events during COMPTUEX 08-3. In other words, an individual unit using MFAS records when the sonar was turned on at the beginning of a training event and reports MFAS time until the event is finished. These sonar hours are reported into the U.S. Navy's Sonar Positional Reporting System (SPORTS) as a conservative estimate of total sonar hours based on a unit reporting it had sonar "on" for a training event, and then sonar "off". The sonar "on period" may not always be directly equivalent to all actual active sonar transmission (i.e., sound in the water) since there may be tactical and maintenance reasons why MFAS may not be in transmit mode for the portions of a training event reported in SPORTS. Therefore, MFAS hours derived from SPORTS and presented in this after action report are a conservative over estimate of total MFAS hours. The sonar "on period" is conservative in that it does not account for the time MFAS is not in transmit mode due to tactical or maintenance reasons. Therefore, based on standardized reporting protocols the number of MFAS hours does not represent actual total sonar ping hours.

Furthermore, during periods when there is an active transmission, MFAS puts sound into the water at discrete intervals. Sonar signals are not a continuous source of acoustic energy. A surface ship sonar signal consists of a pulse (i.e., ping) approximately one second long with a period of time between successive pings based on the classified tactical considerations. Navy's modeling of time between pings is 30 seconds which results in an overstatement of the energy

in the water because time between pings is, in many instances, greater than 30 seconds. Accordingly, during typical active sonar use, MFAS is silent for the vast majority of the time. This was the case for COMPTUEX 08-3. Therefore, for the 65 hours of total sonar period reported, the actual amount of time sonar put energy into the water was less than two and a half hours. The calculation for this determination is presented below:

$$2 \text{ seconds of pings} / 1 \text{ minute} \times 60 \text{ min} / 1 \text{ hr} \times 65 \text{ hrs} = 7,800 \text{ sec (130 min or 2.2 hrs)}$$

Ten nautical miles distance at sea is almost the same equivalent distance as from the shore line at the Ocean Beach pier to La Mesa in San Diego, or from the shoreline at Santa Monica to Beverly Hills in Los Angeles. Over a one hour time, only 120 seconds of acoustic energy would be released during this period. MFAS propagation loss results in significant loss of any biologically relevant energy over distances greater than 200 meters from the source. Animals at one location would not be expected to be continuously exposed to repeated sonar signals, and quite possibly be exposed to from zero to two or three pings (0-3 seconds) depending on animal movement or diving patterns. Marine mammals observed within MFAS mitigation zones would have even less exposure when MFAS is either powered down up to 75% or turned off.

**3) MFAS Events:** **Table 5** shows COMPTUEX 08-3 marine mammal sightings in relation to applicable safety zones.

MFAS was secured (i.e., turned off) or powered down by surface ships based on marine mammal sightings within the NDE safety zones ( $\leq 200$  meters, 201-500 meters, and 501-1,000 meters) eight times during COMPTUEX 08-3. There were no sightings during MFAS use between 1,000 to 2,000 meters, and therefore, no MFAS secure or power down events at these ranges.

To address NMFS requirements to assess potential exposure levels of marine mammals to sonar, general transmission loss formulas derived from Urick (1982) were used and results are presented in **Table 5**. Estimated exposures can be determined based on standard generic formulas of how sound propagates in water [defined as spherical spreading where propagation loss from a source =  $20 \log [R]$  with "R" being range from the source (Urick 1982)]. However, spherical spreading is only an appropriate sound propagation formula to a range of 1,000 yards from a source in open ocean, after which sound propagation is determined by cylindrical spreading [defined as spherical spreading where propagation loss from a source =  $10 \log [R]+30$  with "R" being range from the source  $>1000$  yards and 30 being the spherical loss from 0 to 1000 yards]. Depending on the range of the sighting reported in **Table 5**, either Urick's spherical or cylindrical formula was used.

This estimate of potential exposure makes a very conservative assumption. It uses the horizontal range from a visual sighting to account for an animal across all depths at which an animal travels and predicts the maximum, worst case potential exposure. In other words, this estimated worst case exposure is presented independent of the animal's actual depth level, since a) time and depth of current and previous dives cannot be deduced from a limited surface sighting, and b) oceanographic and tactical conditions influence actual sound propagation at different depths. Given relative motion of ships and animals at sea, the time spent with any given exposure from surface ships is likely to be limited.

### *NDE Safety Zone Assessment for COMPTUEX 08-3*

During COMPTUEX 08-3, there were eight instances when U.S. Navy ships turned off their MFAS due to the presences of marine mammals within various safety zones.

There was one sighting of potentially multiple whales at various bearings from the ship, but unreported ranges. MFAS exposure analysis can not be made in this case, although MFAS was turned off at the initial sighting.

200 meter NDE safety zone: There was one sighting of a single whale within 200 meters of a transmitting MFAS ship (**Table 5**). The animal was sighted at 100 yards, after which MFAS was secured. Although potentially exposed to MFAS receive level (RL) of 195 dB re 1 Pa<sup>2</sup>·s prior to securing the sonar, the animal was observed to continue swimming normally and reportedly swam under the ship's bow. The animal was reported to have no other obvious behavioral reaction to either the ship or sonar. A total of 22 minutes of lost MFAS training time occurred due to the securing event.

201-500 meter NDE safety zone: There were two sightings of seven marine mammals (6 whales, and 1 unspecified animal) within 500 meters of a transmitting MFAS ship (**Table 5**). In both cases, MFAS was secured upon initial animal sighting at 500 yards (457 meters) and remained off until the animal was no longer in sight. Estimated exposure prior to MFAS being secured for both cases was 181 dB re 1 Pa<sup>2</sup>·s. A total of 329 minutes (5.5 hours) of lost MFAS training time occurred due to these three securing events.

501-1,000 meter NDE safety zone: There were three visual sightings of four whales within 1,000 meters of a transmitting MFAS ship (**Table 5**). In all three cases, MFAS was secured upon initial animal sighting at 1,000 yards (914 meters) and remained off until the animal was no longer in sight. Estimated exposure prior to MFAS being secured for all three cases was 175 dB re 1 Pa<sup>2</sup>·s. Over 400 minutes (6.7 hours) of lost MFAS training time occurred due to these three securing events. There was a fourth case within this NDE range where an unknown number of marine mammals were detected by passive sonar (i.e., listening vice active transmission) at possibly between 500-1,000 m from the transmitting MFAS ship. Sonar, which was on at the time, was secured following this determination. As discussed below, accurate range detections by passive means is rare using typical ASW ship sensors.

1,001-2,000 meter litigation imposed Training Restriction zone: There were no sightings of marine mammals within this range during MFAS transmission.

**Table 5.** Sightings during COMPTUEX 08-3 where MFAS was on and mitigation occurred (listed by range).

Assessment by Range for Surface Ship MFA sonar		
NDE Range	Marine Mammal Type	Comments <i>Estimated exposure based on 20 Log [R] spherical spreading propagation loss for ranges less than 1000 meters and where nominal MFAS source level (SL) assumed to be 235 dB (Urick 1982); for ranges &gt; 1000 m, then propagation loss is better approximated as 10 Log(R) + 30 dB</i> [ Pictograms represent ship movement (blue circle and arrow) and sighting location of marine mammal (green square) relative to ship's movement ]
200 meters Sonar secured (turned off)	Multiple whales	24 Mar: Surface ship sights unknown number of whales at unreported range and over various bearings indication multiple animals. MFAS was in use. MFAS secured. MAX. est. MFAS exposure: can not be estimated without range
	1 whale	24 Mar: Surface ship visually sights 1 "whale" at 100 yards. MFAS in use. MFAS secured (i.e., turned off) until animal no longer sighted. Whale seen to swim under ship's bow. MAX. est. MFAS exposure: <b>195 dB</b> * re 1 Pa <sup>2</sup> :s <i>(* Exposure prior to secure assuming SL 235 dB)</i> 
200-500 meters Sonar reduced -10 dB (surface ship only)	6 whales	24 Mar: Surface ship visually sights 6 "whales" at 500 yards. MFAS in use. MFAS secured until animal no longer sighted. Ship changes course to further avoid the whales. No apparent change in animal movement or behavior noted MAX. est. MFAS exposure prior to secure: <b>181 dB</b> re 1 Pa <sup>2</sup> :s <i>(Exposure prior to secure assuming SL 235 dB)</i> 
	1 unspecified marine mammal	24 Mar: Surface ship sights "unknown marine mammal" at 500 yards. MFAS in use. MFAS secured until animal no longer sighted. MAX. est. MFAS exposure prior to secure: <b>181 dB</b> re 1 Pa <sup>2</sup> :s <i>(Exposure prior to secure assuming SL 235 dB)</i> 
500- 1000 meters Sonar reduced -6 dB (surface ship only)	Unknown number of whales	24 Mar: Surface ship reports passive detection of an unknown number of whales estimated at between 500 and 1000 yards. MFAS was in use. MFAS secured. MAX. est. MFAS exposure prior to secure: <b>181 to 175 dB</b> re 1 Pa <sup>2</sup> :s <i>(Exposure prior to secure assuming SL 235 dB at ranges between 500 to 1000 yards)</i>
	1 whale	24 Mar: Surface ship visually sights 1 "whale" at 1000 yards. MFAS in use. MFAS secured until animal no longer sighted. MAX. est. MFAS exposure: <b>175 dB</b> * re 1 Pa <sup>2</sup> :s <i>(Exposure prior to secure assuming SL 235 dB)</i> 
	1 whale	24 Mar: Surface ship visually sights 1 "whale" at 1000 yards. MFAS in use. MFAS secured until animal no longer sighted. MAX. est. MFAS exposure: <b>175 dB</b> * re 1 Pa <sup>2</sup> :s <i>(Exposure prior to secure assuming SL 235 dB)</i> 
	2 whales	25 Mar: Surface ship visually sights 2 "whales" at 1000 yards. MFAS in use. MFAS secured until animal no longer sighted. MAX. est. MFAS exposure: <b>175 dB</b> * re 1 Pa <sup>2</sup> :s <i>(Exposure prior to secure assuming SL 235 dB)</i> 
<2000 meters	N/A	No reports
Assessment by Range for Helicopter MFA dipping sonar		
Range	Marine Mammal Type	Comments
< 200 meters- Sonar secured (turned off)	N/A	No reports; no dipping helo used

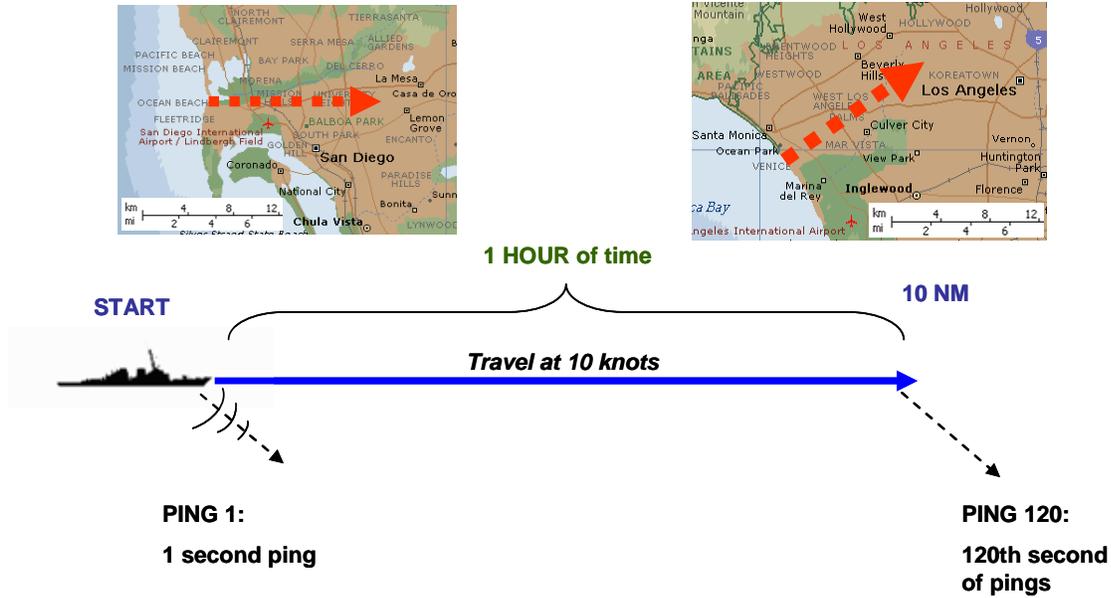
## **PASSIVE SONAR**

Passive sonar is an acoustic device used for listening to underwater sound 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 is employed whenever possible. Given the nature of passive sonar technology and underwater sound propagation, determining range and absolute position of a marine mammal is exceedingly difficult and generally not possible with any single ship-based passive sonar. Skilled operators or unique circumstances may sometimes allow real-time or near-real time determinations of marine mammal range at the expense of interrupting the ship's ASW training at the time. Active sonar, on the other hand, is critical in providing range and bearing to potential underwater submarines and mines.

In addition, passive sonar can only detect marine mammals that are vocalizing (i.e., making underwater sound as part of communication and echolocation). Marine mammal vocalization is based on individual needs at a particular moment, species-level foraging, and mating strategies, and other oceanographic or biological factors. For instance, for some species, only males typically vocalize (ex. humpback whales, blue whales, fin whales, and minke whales). Depending on oceanographic conditions and animal source levels, when marine mammals do vocalize, sounds can easily travel one to several tens of kilometers (km) (0.5 nautical mile (nm) to tens of nm) for some mid-to-low frequency animals, and tens to hundreds of km for very low frequency baleen whales (i.e., blue and fin whales). These ranges demonstrate that even if the marine mammal vocalization can be detected, it does not mean the mammal is necessarily close to the passive sonar sensor. Determining when or if a marine mammal is within an NDE mitigation zone or legally mandated training restriction zone by passive acoustic detection is not always possible. There was one instance where an estimated distance within 1,000 meters of a MFAS-equipped surface ship was determined by passive acoustic means (**Table 5**). The ship subsequently secured active sonar transmission.

## **OTHER EVENTS**

No marine mammal ship strikes occurred during COMPTUEX 08-3. During COMPTUEX 08-3, there were five instances where U.S. Navy ships not using MFAS at the time proactively maneuvered to avoid close encounters with marine mammals. There were no reports of stranded or injured marine mammals during or after COMPTUEX 08-3.



**Figure 2.** Example showing relative movement of MFAS surface ship over one hour and the limited amount of actual sonar energy used during this time period base on duty cycle of hull mounted sonar. This represents a generalized, typical scenario.

## SECTION E/F- MITIGATION ASSESSMENT

### COMPTUEX 08-3 ASSESSMENT

#### OVERVIEW

This section of the report provides an assessment of the effectiveness of the mitigation and monitoring measures used in COMPTUEX 08-3. The NDE requires the U.S. Navy to submit a report to NMFS that includes a discussion of the nature of any effects or lack of effects of mitigation measures based on modeling results and marine mammal sightings. In addition, the BO Terms and Conditions require a report that evaluates the mitigation measures and provides results of the U.S. Navy's exercise monitoring and reporting program. In this case, the mitigation measures under the BO are the same as the NDE measures; therefore, the discussion is presented together in this section.

ASW proceeds slowly and requires careful development of a tactical frame of reference over time. 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. From an individual operator perspective, securing sonar essentially clears the screen of all information, which then has to be rebuilt over time when the system power is restored. Lost MFAS time not only equates to lost exercise time, but has a broader, 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.

Mitigation measures were designed to minimize interactions between marine mammals and Navy vessels employing MFAS at levels with the potential to result in a Temporary Threshold Shift (TTS) or Permanent Threshold Shift (PTS) (DoN 2007). Navy ships were not tasked nor expected to maintain contact with marine mammals sighted for purposes of monitoring requirements. To do so would have unnecessarily interfered with military readiness activities and may have resulted in concerns with whether Navy ships were intentionally harassing marine mammals.

#### MODELING ESTIMATES APPLICABLE TO COMPTUEX 08-3

For the COMPTUEX/JTFEX EA/OEA (DoN 2007) an estimate of potential acoustic exposure to marine mammals was generated in support of the NEPA process. **Table 6** shows estimated marine mammal acoustic exposures from model derived calculations based on estimated marine mammal densities, operational parameters, sound transmission loss, and potential energy accumulated based strictly on pre-exercise acoustic impact modeling (DoN 2007). **Table 6** lists possible marine mammal species generally occurring in Southern California waters based solely on *estimated* distribution and abundance, but does not take into account potential seasonal distribution. The table highlights the ESA-listed species described in the COMPTUEX/JTFEX BO (NMFS 2007), and shows estimated potential acoustic exposures derived from acoustic impact modeling (DoN 2007 COMPTUEX/JTFEX EA/OEA).

The exercise-specific model estimated total potential exposures over two years of Southern California COMPTUEX and JTFEX exercises. Extrapolating for a single exercise results in an estimated 12,198 potential exposures (11,564 sub-TTS Level B, 590 TTS Level B, and 44 Level A).

The number of marine mammals visually observed and potentially exposed to MFAS greater than 173 dB during COMPTUEX 08-3 was significantly lower than pre-exercise modeling assumptions. From **Table 5**, a total of at least 11 marine mammals (10 whales and one unspecified animal) were potentially exposed to Level B sub-TTS behavioral threshold (173-194 dB), and one whale was exposed to potential Level B (195 dB). Compared to model predicted values of 11,564 Level B sub-TTS and 590 Level B exposures, the number of actual sighted animals exposed to MFAS during COMPTUEX 08-3 was significantly less than modeled values (11 vs. 11,564; and 1 vs. 590).

The discrepancy between pre-exercise modeling and actual sightings is due to the conservative nature of the acoustic effects model process combined with lack of specific scientific information on regional occurrence and distribution for many species. Over-estimation of exposures in acoustic effects models can be partially attributed to the following factors: 1) acoustic exposures do not account for mitigation measures, 2) marine mammal density estimates are based on NMFS survey data that may be limited in duration and time of year (e.g., many surveys only occur in spring-summer, or summer-fall); and 3) marine mammal densities are averaged across active sonar activity areas and, therefore, are evenly distributed without consideration for real-world animal grouping or variation.

It is important to understand that there are limitations to the ecological data (diving behavior, migration or movement patterns and population dynamics) used in acoustic exposure modeling. The model results must be interpreted within the context of a given species' ecology. The large SOCIAL OPAREA makes individual mammals' repeated or prolonged exposures to sonar signals unlikely. Similarly, due to the time delay between MFAS pings, platform speed, and animal movement, exposure of any animal to sonar that would lead to harassment would be minimized.

## **NDE AND BO EXPOSURE ASSESSMENT**

1) All measures promulgated in the 23 January 2007 *Mid-Frequency Active Sonar Mitigation Measures during Major Training Exercises or within Established DOD Maritime Ranges and Established Operating Areas* (NDE) and those agreed to in the NEPA Emergency Alternative Arrangements were implemented before and during COMPTUEX 08-3.

2) In addition to the above assessment of the NDE, the BO calls for a report that evaluates the effectiveness of the U.S. Navy's exercise mitigation measures. The three categories of measures (Personnel Training, Lookout and Watchstander Responsibilities, and Operating Procedures) outlined in the NDE are effective in detecting and responding appropriately to the presence of marine mammals, when visually observed. Fleet commanders and ship watch teams continue to improve individual awareness and enhance reporting through various pre-exercise conferences, lessons learned, and these after action reports. The NDE safety zones are adhered to and vessels apply mitigation when marine mammals are first visually observed within a zone. The U.S. Navy acknowledges that the mitigation measures do not account for potential marine mammals not visually observed, which is even difficult to determine within the civilian marine mammal scientific survey community. Deep diving animals if exposed may not be exposed to significant levels for long periods, given the moving nature of ship MFAS use, and even less frequent pings from lower power aviation deployed MFAS systems (dipping sonar, sonobuoys). For instance, during a one hour dive by a beaked whale or sperm whale, a MFAS ship moving at a nominal 10 knot speed could cover about 10 nm from its original location, well beyond ranges predicted to have significant exposures.

3) NMFS (2007) COMPTUEX/JTFEX BO Terms and Conditions require the U.S. Navy to estimate the number of ESA-listed marine mammals that may have been exposed to received energy level equal to or greater than 173 dB re 1  $\mu\text{Pa}^2\cdot\text{s}$ . A total of at least 12 marine mammals some of which may have been ESA-listed whales were potentially exposed during COMPTUEX 08-3 with no apparent or reported detrimental results from this exposure. Given the March time frame of this exercise, it is possible that some of the sighted whale species were actually non-ESA listed gray whales on their northward migration.

4) The Navy's environmental planning document estimated that a single COMPTUEX or JTFEX would be expected to potentially expose 101 ESA-listed marine mammals from all MFAS sources. (See the exposure estimates for ESA-listed species in **Table 6**). Yet only approximately 12 potential ESA-listed or non-ESA listed marine mammals were actually observed during COMPTUEX 08-3 at ranges that may have exposed them to a received level greater than 173 dB.

5) For all marine mammal sightings occurring during COMPTUEX 08-3, there was no obvious indication or report that any animal behaved in a manner not associated with normal movement, or foraging; however, the level of biological information available at the time of this report is limited.

### **Data Limitations and Improvements**

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  $\mu\text{Pa}^2\cdot\text{s}$ . However, many of the ESA-listed species in SOCAL with the exception perhaps the sperm whale, are easier to spot on the surface due to shorter dive times and larger animal size.

Data needed to address this question will be reviewed as it becomes available for potential incorporation into future exercises, although this remains a problematic science issue for even non-Navy marine mammal surveys. Real-time passive sonar systems used by the U.S. Navy, and to some degree by most of the marine mammal science community, lack the ability to automatically classify detected species, although there is substantial academic research into improving this capability. Most current passive data sets rely on extensive post-collection analysis by skilled subject matter experts to conclusively establish species identification. In addition to species classification, range detection using moving passive acoustic systems on U.S. Navy ships is limited in real time at the typical 8-10 knot speeds at which many ASW training events occur. Indeed, if passive range detection of any submerged contacts (submarines, marine mammals) was more advanced and easier, then there would be less tactical reliance on active sonar systems. Also, non-vocalizing marine mammals cannot currently be detected using passive systems. For instance, in minke whales, it is often only the male of the species that frequently vocalizes.

The U.S. Navy continues conducting robust and realistic exercises, and development of long-term range complex monitoring plans. The goal of these plans is to integrate multiple tools in an effort to generate better assessments of marine mammal occurrence and possible MFAS effects, or lack thereof. In accordance with the COMPTUEX-JTFEX BO, data collection needs to address unresolved questions regarding likely area-specific species composition and potential for alternative detection technologies may be incorporated into future exercises as the U.S. Navy's exercise monitoring program evolves.

**Table 6.** Total estimated annual exposures based on pre-exercise modeling for MFAS sonar from DoN 2007 based on seven exercises per year (COMPTUEXJTFEX EA/OEA Tables 4.3-6 and 4.3-7) (*left three columns*), and estimated exposures per exercise (estimated total exposures divided by seven) (*right three columns*).

Species	DoN 2007 annual estimated exposures			Estimated single exercise exposures		
	Level B Sub TTS	Level B	Level A	Level B Sub TTS	Level B	Level A
<b>ESA-listed</b>						
Blue whale	325	14	0	46.4	2.0	0
Fin whale	263	10	0	37.6	1.4	0
Humpback whale	33	0	0	4.7	0	0
Sei whale	2	0	0	0.3	0	0
Sperm whale	59	4	0	8.4	0.6	0
<b>Non-ESA listed</b>						
Baird's beaked whale	4	0	(4)*	0.6	0	0.6
Bottlenose dolphin	516	30	0	73.7	4.3	0
Bryde's whale	2	0	0	0.3	0.0	0
Common dolphin	69,258	3,464	8	9894.0	494.9	1.14
Cuvier's beaked whale	208	10	(218)*	29.7	1.4	31.1
Dall's porpoise	142	3	0	20.3	0.4	0
Dwarf sperm whale	0	0	0	0.0	0.0	0
False killer whale	16	0	0	2.3	0.0	0
Gray whale	64	0	0	9.1	0.0	0
Killer whale	12	1	0	1.7	0.1	0
<i>Mesoplodon</i> spp.	0	0	0	0.0	0.0	0
Minke whale	24	2	0	3.4	0.3	0
Northern right whale dolphin	3,003	227	0	429.0	32.4	0
Pacific white-sided dolphin	1,949	101	0	278.4	14.4	0
Pantropical spotted dolphin	547	0	0	78.1	0	0
Pygmy sperm whale	859	56	0	122.7	8.0	0
Risso's dolphin	2,050	96	0	292.9	13.7	0
Rough-toothed dolphin	0	0	0	0	0	0
Short-finned pilot whale	0	0	0	0	0	0
Striped dolphin	1,554	72	0	222.0	10.3	0
Ziphiid beaked whale	49	3	(52)*	7.0	0.4	7.4
California sea lion	0	0	0	0	0	0
Northern elephant seal	0	0	0	0	0	0
Pacific harbor seal	6	0	0	0.9	0	0
Total=				<b>11,564</b>	<b>590</b>	<b>44</b>

\* ALL predicted beaked whale Level B exposures (sub-TTS and TTS) counted as Level A exposures as an overly conservative metric

## REFERENCES

- Barlow, J. and K.A. Forney. 2007. Abundance and population density of cetaceans in the California Current ecosystem. *Fishery Bulletin* 105(4):509-526.
- Burtenshaw, J.C., E.M. Oleson, J.A. Hildebrand, M.A. McDonald, R.K. Andrew, B.M. Howe, and J.A. Mercer. 2004. Acoustic and satellite remote sensing of blue whale seasonality and habitat in the Northeast Pacific. *Deep-Sea Research II* 51:967-986.
- Carretta, J.V., M.S. Lowry, C.E. Stinchcomb, M.S. Lynn, R.E. Cosgrove. 2000. Distribution and abundance of marine mammals at San Clemente Island and surrounding offshore waters: results from aerial and ground surveys in 1998 and 1999. National Marine Fisheries Service, Southwest Fisheries Science Center, La Jolla, CA. Administrative Report LJ-00-02.
- Carretta, J.V., K.A. Forney, M.S. Lowry, J. Barlow, J. Baker, B. Hanson, and M.M. Muto. 2007. DRAFT U.S. Pacific Marine Mammal Stock Assessments: 2007. NOAA-TM-NMFS-SWFSC-414.
- Culik, B. 2004. Review of Small Cetaceans- Distribution, Behavior, Migration and Threats. United Nations environmental Programme (UNEP) and the Secretariat of the Convention on the Conservation of Migratory Species (CMS). Marine Mammal Action Plan/Regional Seas Report No. 177.
- Geraci, J.R. and V.J. Lounsbury. 2005. *Marine Mammals Ashore- A field guide for strandings* 2nd edition. National Aquarium Baltimore.
- DoN. 2007. Final Environmental Assessment/Overseas Environmental Assessment for Joint Task Force Exercises and Composite Training Unit Exercises- February 2007. Department of the Navy.
- Forney, K.A., and J. Barlow. 1998. Seasonal patterns in the abundance and distribution of California cetaceans, 1991-1992. *Marine Mammal Science* 14(3):460-489.
- Forney, K.A. J. Barlow, and J.V. Carretta. 1995. The abundance and distribution of California cetaceans, Part II: Aerial surveys in winter and spring of 1991 and 1992. *Fisheries Bulletin* 93:15-26.
- Reeves, R.R., B.S. Stewart, P.J. Clapham, J.A. Powell. 2002. *National Audubon Society Guide to Marine Mammals of the World*. Alfred A. Knoff, New York. 523 pp.
- NMFS. 2007. Biological opinion on the U.S. Navy's proposed Composite Training Unit Exercises and Joint Task Force Exercises off Southern California from February 2007 to January 2009. Office of Protected Resources, National Marine Fisheries Service, Silver Springs, MD. 182 pp.
- Soldevilla, M.S., S.M. Wiggins, J. Calambokidis, A. Douglas, E.M. Oleson, J.A. Hildebrand. 2006. Marine Mammal Monitoring and Habitat Investigations During CALCOFI Surveys. In: *California Cooperative Oceanic Fisheries Investigations Reports*. Volume 47, January 1 to December 31, 2006. pp. 79-91.
- Urick, R.J. 1982. *Sound Propagation in the Sea*. Peninsula Publishing, Los Altos CA.

**APPENDIX A – MITIGATION MEASURES EMPLOYED**

This appendix contains a list of applicable mitigation measures employed at the time COMPTUEX 08-3 occurred.

**Table A-1.** List of applicable mitigation measures for Southern California exercises.

	<b>NDE II (01/07 Exemption)</b>	<b>2008 CTX/JTFX (with Court restrictions as of May 2008)</b>
<b>PERSONNEL TRAINING</b>	<p>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.</p> <p>All Commanding Officers, Executive Officers, and officers standing watch on the bridge will have reviewed the MSAT material prior to training event employing MFA sonar.</p> <p>Navy lookouts will undertake extensive training in order to qualify as a watchstander in accordance with Lookout Training Handbook (NAVEDTRA 129869-B).</p> <p>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 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 from being counted as those listed in previous measures so long as supervisors monitor their progress and performance.</p> <p>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.</p>	<p>All surface ship lookouts and topside watchstanders (i.e., OODS, JOODS) as well as maritime patrol aircraft (MPA) aircrews and ASW/MIW helicopter aircrews must complete Marine Species Awareness Training (MSAT) by viewing the U.S. Navy MSAT DVD.</p> <p>All units that employ MFAS shall ensure they fully understand and implement the marine mammal mitigation measures and reporting requirements promulgated in this message.</p> <p>Foreign participants are encouraged to follow mitigation measures to the extent they will not impair operations or operational capabilities.</p> <p>Commanding officers shall thoroughly review this guidance with key personnel and watchstanders to ensure full situational awareness and compliance.</p>
<b>AREA OF OPERATION</b>		<p>MFA sonar OPAREA. Use of MFAS in the SOCAL Operating Area for CTX 08-3 will occur in W-291 and SOAR only. Subject to additional restrictions as set forth in subsequent paragraphs.</p> <p>MFA Sonar Exclusion Zones. MFAS shall not be employed within 12 nm of the California coastline.</p> <p>Catalina Basin Exclusion. MFAS shall not be employed in the Catalina Basin (located between Santa Catalina Island and San Clemente Island).</p> <p>San Clemente Island Exclusion. MFAS shall not be employed within 5 nm of the western shore of San Clemente Island.</p>
<b>PRE-USE MONITORING</b>	<p>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.</p> <p>Helicopters shall observe/survey the vicinity of an</p>	<p>Pre-Exercise Monitoring – Dedicated Aircraft. Dedicated aerial monitoring shall be conducted by either military or contract aircraft to monitor for the presence of marine mammals for 60 minutes prior to the first employment of MFAS and</p>

	<b>NDE II (01/07 Exemption)</b>	<b>2008 CTX/JTFX (with Court restrictions as of May 2008)</b>
	<p>ASW exercise for 10 minutes before the first deployment of active (dipping) sonar in the water.</p> <p>Submarine sonar operators will review detection indicators of close-aboard marine mammals prior to the commencement of ASW operations involving active mid-frequency sonar.</p> <p><i>(See pre-exercise monitoring requirements under Environmental Factors Measure, below.)</i></p>	<p>commencement of the ASW portion of the exercise. A gap between completion of aerial monitoring and the first use of MFAS shall be avoided (and shall not exceed 60 minutes). If marine mammals are detected, report sightings to assigned aircraft control unit (ACU) or Tactical Support Center (TSC) for submission to CIC. CIC will disseminate the sighting information to all platforms in the area with a recommendation for appropriate action.</p> <p>Subject to para. 6.E.6. exception, if marine mammals are detected within 2200 yards (2000 meters), MFAS shall not be employed until (1) the marine mammals are seen to leave the vicinity, or (2) the MFAS sonar employing unit has transited at least 2200 yards (2000 meters) away from the marine mammals.</p> <p>Exercise monitoring – individual units. Individual units are required to monitor for the presence of marine mammals for 60 minutes prior to the first use of MFAS each day. Dedicated aerial monitoring in the previous paragraph satisfies this requirement for the first day’s use of MFAS. or subsequent days of the exercise, units shall continuously monitor for and report the presence of marine mammals throughout the exercise, as a matter of course, units will already be in compliance with this daily 60 minute monitoring requirement.</p> <p>Prior to start-up or restart of active sonar, operators will ensure that the 2200 yard (2000 meter) MFAS shutdown zone is clear of marine mammals.</p> <p>Sub sonar operators will check for passive indication of marine mammals close aboard prior to use of MFAS. Close aboard is defined as visible bearing rate on DIMUS display. Ship sonar operators will check for passive indication of marine mammals on the underwater telephone in order to alert lookouts prior to use of MFAS.</p>
<b>DURING USE MONITORING</b>	<p><b><u>Surface Vessels:</u></b></p> <p>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.</p> <p>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.</p> <p>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.</p> <p>On surface vessels equipped with MFA, pedestal-</p>	<p>During Exercise Monitoring – Military and contract aircraft participating in the exercise shall monitor for marine mammals during their assigned missions and report sightings to assigned Aircraft Control Unit (ACU) or Tactical Support Center (TCS) for submission to CIC. CIC will disseminate the sighting information to all platforms in the area with a recommendation for appropriate action (e.g., MFAS shut down; MFAS power down; surface or subsurface vessels to avoid area or increase distance from mammals; aerial platforms to increase vigilance). Any spotting of marine mammals shall be communicated to units employing MFAS with all possible speed to allow for timely compliance with 2200 yard (2000 meter) MFAS shutdown zone (subject to para. 6.E.6. exception).</p>

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	<p>mounted “Big Eye” (20x110) binoculars will be present and in good working order to assist in the detection of marine mammals in the vicinity of the vessel.</p> <p>Personnel on lookout will employ visual search procedures employing a scanning methodology in accordance with the Lookout Training Handbook (NAVEDTRA 12968-B).</p> <p>After sunset and prior to sunrise, lookouts will employ Night Lookout Techniques in accordance with the Lookout Training Handbook.</p> <p>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 (i.e., 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.</p> <p><b><u>Aircraft:</u></b></p> <p>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.</p> <p><b><u>Passive Acoustic:</u></b></p> <p>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 mammals to the appropriate watch station for dissemination and appropriate action.</p> <p>During MFA operations, personnel will utilize all available sensor and optical systems (such as Night Vision Goggles) to aid in the detection of marine mammals.</p> <p><i>(See additional exercise monitoring measures under Environmental Factors Measure, below.)</i></p>	<p>During Exercise Monitoring – Lookouts. On the bridge of surface ships, there will always be at least three non-dedicated watchstanders required to look out for marine mammals whose duties include observing the water surface around the vessel.</p> <p>In addition to the three personnel on watch, all surface ships participating in ASW exercises will have at least two dedicated lookouts at all times when MFAS is being used during the exercise, required to look out for marine mammals.</p> <p>Each person on watch will have a set of binoculars to aid in detection of marine mammals. On surface vessels equipped with MFAS, pedestal-mounted (Big Eye/ 20 x 110) binoculars will be used as feasible to assist in detection of marine mammals in the vicinity of the vessel.</p> <p>All sightings of marine mammals by all watchstanders and all lookouts will be reported directly to the Combat Information Center (CIC) or via the appropriate watch stations for submission to CIC. CIC will disseminate the sighting information to all platforms in the area with a recommendation for appropriate action (e.g., MFAS shut down; MFAS power down; surface or subsurface vessels to avoid area or increase distance from mammals; aerial platforms to increase vigilance).</p> <p>During MFAS operations, personnel will utilize all available sensor and optical systems (such as night vision goggles) to aid in detection of marine mammals.</p> <p>Personnel on lookout will employ visual search procedures employing a scanning methodology IAW lookout training handbook (NAVEDTRA 12968-D).</p>
<b>MFAS OPERATIONS</b>	<p>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.</p>	<p>MFAS Operations. Operate MFAS at the lowest practicable level, not to exceed 235 dB, except to meet tactical training objectives.</p>
<b>SAFETY ZONE SHIPS</b>	<p>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.</p> <p>(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,</p>	<p>6.E.4. MFAS Shutdown Zone. Cease use of MFAS (either hull mounted or aircraft based sonobuoys or active dipping sonar) when marine mammals are spotted within 2200 yards (2000 meters) until unit has transited at least 2200 yards (2000 meters) away from the marine mammals or the mammals are seen to exit the safety zone. If sonar is shut down due to presence of marine mammals, then reporting requirements described in para. 7 apply.</p>

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	<p>has not been detected for 30 minutes, or the vessel has transited more than 2,000 yards beyond the location of the last detection.</p> <p>(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.</p> <p>(iii) Should the marine mammal be detected within or closing to inside 200 yards of the sonar dome, active sonar transmission 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.</p> <p>(iv) Special conditions applicable for dolphins and porpoise 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.</p> <p>(v) If the need for power-down should arise as detailed in “Safety Zones” above, the ship or submarine 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).</p>	<p>6.E.5. Bow Riding Exception. Special conditions applicable to 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 intentionally riding the vessel’s bow wave, MFAS shutdown is no longer required for as long as the dolphins or porpoises continue to exhibit bow wave riding behavior. Note: this provision also applies to 6.E.6 and 6.E.7.</p> <p>6.E.6. MFAS Shutdown Exception. Officer Conducting the Exercise (OCE) will determine critical point in the exercise (CPE) and promulgate to all participating units when a CPE exists. When CPE exists, the following mitigation measures will apply:</p> <p>6.E.6.A 1000 meters. When a marine mammal is detected within 1000 meters from the sonar source, power down MFAS by 6 dB below normal operating levels.</p> <p>6.E.6.B. 500 meters. When a marine mammal is detected within 500 meters from the sonar source, power down MFAS by 10 dB below normal operating level.</p> <p>6.E.6.C. 200 meters. When a marine mammal is detected within 200 meters from the sonar source, shut down MFAS.</p> <p>6.E.6.D. A critical point in the exercise is a point when, in the discretion of the Officer Conducting the Exercise (OCE), the continued use of MFAS is critical to the certification of a STRKGRU or the effective training of its personnel.</p> <p>6.E.6.E. OCE Critical Point in the Exercise (CPE) determination shall be promulgated via chat to exercise participants.</p>
<b>SAFETY ZONE SONOBUOYS</b>	<p>Aircraft with deployed sonobuoys will use only the passive capability of sonobuoys when marine mammals are detected within 200 yards of the sonobuoy.</p>	<p>Sonobuoys. Aircraft shall observe/survey the vicinity of each ASW event location for 10 min prior to commencement of the prosecution (i.e. before deploying DICASS sonobuoys). Subject to para. 6.E.6. Exception, if marine mammals are spotted within the 2200 yard (2000 meter) safety zone, all use of active sonar shall cease until the mammals are seen to exit the safety zone.</p> <p>Sonobuoys (CPE determination only). Aircraft deploying sonobuoys will cease active transmissions and use only passive capability of sonobuoys when marine mammals are detected within 1000 meters of the sonobuoy (no SSD) and 2000 meters (during SSD conditions).</p> <p>Sonobuoys. Whenever SSD is present, aircraft deploying sonobuoys will cease active transmissions and use only passive capability of sonobuoys when marine mammals are detected</p>

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		within 2000 meters of the sonobuoy.
<b>HELO DIPPING</b>	<p>Helicopters shall observe/survey the vicinity of an ASW exercise for 10 minutes before the first deployment of active (dipping) sonar in the water.</p> <p>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.</p>	<p>Helicopters. Helicopters shall observe/survey the vicinity of each ASW event location for 10 min prior to commencement of the prosecution (i.e. before deploying active dipping sonar). Subject to para. 6.E.6. Exception, if marine mammals are spotted within the 2200 yard (2000 meter) safety zone, all use of active sonar shall cease until the helicopter has transited at least 2200 yards (2000 meters) away from the marine mammals, or the mammals are seen to exit the safety zone. If sonar is shut down due to presence of marine mammals, then reporting requirements described in para. 7 apply.</p> <p>When CPE exists (No SSD), the following mitigation measures will apply for dipping sonar:</p> <p>When a marine mammal is spotted within 1000 meters of any helicopter-based sonar, power down helicopter-based sonar to 500 watts (to approximately 204 dB), to be maintained until the animal has left the area, is not sighted for 30 minutes, or the sonar-emitting helicopter transits more than 1000 meters from the location of the sighting;</p> <p>When a marine mammal is detected within or closing to within 500 meters of any helicopter-based sonar, shut down helicopter-based sonar, to be maintained until the animal has left the area, is not seen for 30 minutes, or the sonar-emitting helicopter transits more than 500 meters beyond the location of the sighting.</p> <p>When CPE exists (SSD present), the following mitigation measures will apply for dipping sonar:</p> <p>When a marine mammal is spotted within 2000 meters of any helicopter-based sonar, power down helicopter-based sonar to 500 watts (to approximately 204 dB), to be maintained until the animal has left the area, is not sighted for 30 minutes, or the sonar-emitting helicopter transits more than 2000 meters from the location of the sighting;</p> <p>When a marine mammal is detected within or closing to within 1000 meters of any helicopter-based sonar, shut down helicopter-based sonar, to be maintained until the animal has left the area, is not seen for 30 minutes, or the sonar-emitting helicopter transits more than 1000 meters beyond the location of the sighting.</p>
<b>SURFACE DUCTING MEASURE</b>		<p>Significant Surface Ducting Conditions. Significant surface ducting conditions is defined as a mixed layer of constant water temperature extending from the sea surface to 100 feet or more.</p> <p>When significant surface ducting conditions are detected and CPE is not designated by OCE, units</p>

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		<p>shall comply with para. 6.E.4. MFAS shutdown zone.</p> <p>When significant surface ducting conditions are detected and CPE has been designated by OCE, units will utilize the following mitigation measures:</p> <p>2000 meters (2200 yards). A 6 dB power down will occur when a marine mammal is detected within 2000 meters (2200 yards) from the sonar source.</p> <p>1000 meters (1100 yards). A 10 dB power down will occur when a marine mammal is detected within 1000 meters (1100 yards) from the sonar source.</p> <p>500 meters (550 yards). MFAS shut down will occur when a marine mammal is detected within 500 meters (550 yards) from the sonar source.</p> <p>Surface ducting conditions will be monitored by the SCC and promulgated to all ASW units.</p>
<p><b>ENVIRONMENTAL FACTORS MEASURE</b></p>	<p>26. Increased vigilance during major ASW training exercises with tactical active sonar when critical conditions are present:</p> <p>Based upon lessons learned from strandings in the Bahamas (2000), the Madeiras (2000), the Canaries (2002) and Spain (2006), beached whales are of particular concern since they have been associated with MFA operations. Navy should avoid planning major ASW training exercises with MFA in areas where they will encounter conditions that, in their aggregate, may contribute to a marine mammal stranding event.</p> <p><b>[note: This increased vigilance is not required in Southern California because the below conditions do not exist in the aggregate in this region.]</b></p> <p>The conditions to be considered during exercise planning include:</p> <p>(1) Areas of at least 1,000 m depth near a shoreline where there is a <u>rapid change in bathymetry</u> on the order of 1,000-6,000 meters occurring across a relatively short horizontal distance (e.g., 5 nm).</p> <p>(2) Cases for which <u>multiple ships or submarines</u> (<math>\geq 3</math>) operating MFA in the same area over extended periods of time (<math>\geq 6</math> hours) in close proximity (<math>\leq 10</math> nm apart).</p> <p>(3) An area surrounded by <u>land masses, separated by less than 35 nm and at least 10 nm in length</u>, or an <u>embayment</u>, wherein operations involving multiple ships/subs (<math>\geq 3</math>) employing MFA near land may produce sound directed toward the channel or embayment that may cut off the lines of egress for marine mammals.</p> <p>(4) Although not as dominant a condition as bathymetric features, the historical presence of a</p>	

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	<p><u>significant surface duct</u> (i.e., a mixed layer of constant water temperature extending from the sea surface to 100 or more feet).</p> <p>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 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 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.</p> <p>All Safety Zone requirements described in Measure 20 apply.</p> <p>The post-exercise report must include specific reference to any event conducted in areas where the above conditions exist, with the exact location and time/duration of the event, and noting results of surveys conducted.</p>	
<b>REPORTING REQUIREMENTS</b>	<p>Navy will coordinate with the local NMFS Stranding Coordinator regarding 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.</p> <p>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.</p> <p>If a stranding occurs during an ASW exercise, NMFS and Navy will coordinate to determine if MFA should be temporarily discontinued while the facts surrounding the stranding are collected.</p> <p><i>(See special reporting requirements under Environmental Factors Measures.)</i></p>	<p>7. Reports and Data Collection. Data collection requirements will support marine mammal After Action Report (AAR) required to comply with MMPA and ESA post-exercise assessment products.</p> <p>Marine Mammal After Action Report. All units are required to submit an AAR input to Commander, ESG. Commander ESG shall consolidate all reports into a final AAR message within 10 days of completion of the exercise. This timeline is required due to regulatory requirements that Navy verbally report marine mammal sighting information and impacts to MFAS Ops to National Marine Fisheries Services within 15 business days from exercise completion.</p> <p>The Final Report will be comprised of two parts. Part one will report all marine mammals sighted during the exercise, and will include the data listed below:</p> <p>A. DTG of initial sighting.</p> <p>B. Unit and posit (unit name and lat/long). Note, if report is for ASW helo assigned to vessel, this must be reported separately from surface ship reports.</p> <p>C. Description of animal by species if known,</p>

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		<p>otherwise specify dolphin/porpoise, large whale, small whale, seal/sea-lion, etc.</p> <p>D. Estimated number of animals.</p> <p>E. True bearing and range from unit.</p> <p>F. Sea state-WEAX at time of obs (i.e., wave height and visibility).</p> <p>G. Animal observation at time of sighting: describe animal's motion relative to ship, how long animal was in view, and any further ampn of what was seen.</p> <p>H. MFAS status at initial sighting: MFAS on, MFAS off, NA (for non-MFAS equipped ships).</p> <p>I. Action taken (none, altered course to avoid, MFAS power down, MFAS shut down).</p> <p>Only in cases where MFAS is powered down or shut down, the following additional information is required in order to conduct post-exercise Impact assessment.</p> <p>J. Unit course and speed.</p> <p>K. Animal direction of relative motion and estimated speed.</p> <p>L. Action timeline: length of time for MFAS power down or shut down.</p> <p>M. As applicable, whether significant surface ducting conditions existed at time of marine mammal sighting.</p> <p>N. As applicable, at time of marine mammal sighting, start and stop time that unit implemented CPE measures and, as applicable, action taken (i.e., 6 dB/1000 meters, 10 dB/500 meters or MFAS shutdown at 200 meters).</p> <p>O. Action impact summary (i.e., tactical degradation assessment – none, slight, moderate, significant).</p> <p>P. Action impact analysis (i.e., demonstration of operational impact to ASW prosecution and realistic training at time of marine mammal sighting).</p> <p>Repeat paras. A-P as necessary to report additional sightings.</p> <p>Sightings shall be in the following format: A. DTG/B. Unit and Posit/C. Description/D. #Animals/E. Brng-Rng/F. Sea State-WEAX/G. Behavior/H. MFAS status.</p> <p>If MFAS mitigation measures were required, report the following additional information: I. Action taken/J. Unit CRS-SPD/K. Animal crs-spd/L. Action timeline/M. Significant surface ducting (SSD) conditions/N. Start and stop time of CPE</p>

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		<p>measure/O. Impact summary/P. Impact analysis.</p> <p>Part two of the report will provide (1) a commander's assessment of the overall effectiveness of the mitigation measures (to include discussion of circumstances affecting operating during instances that CPE designated and/or powerdown was required due to significant surface ducting conditions), (2) make recommendations to improve these measures, and (3) report any impact to training fidelity caused by these measures. It is particularly important for the commander to capture the negative impact that these measures have on realistic training.</p> <p><b>Ongoing Reporting:</b></p> <p><b>Sightings:</b></p> <p>Sightings of all marine mammals shall be passed via the chain of command to the COMTHIRDFLT Fleet Watch Officer in order to alert other units in the area to the possibility of the marine mammal's presence.</p> <p><b>Collision:</b></p> <p>A Navy report is required in the event of a whale collision. If possible, take video and/or photographs of the stricken whale. Coordinate further actions with C3F.</p> <p>Attempt to identify distinguishing characteristics of the whale involved. The 'whale wheel,' a device that lists various species of whales and their identifying features, can assist in this regard.</p> <p><b>Stranding/Floating:</b></p> <p>In addition, a Navy report is required in the event sighting of a stranded or floating marine mammal. If possible, take video and/or photographs of the marine mammal carcass. Coordinate further actions with C3F.</p> <p><b>Report of Training:</b></p> <p>All units that employ MFAS shall ensure they fully understand and implement the marine mammal mitigation measures and reporting requirements promulgated in this message.</p> <p>Foreign participants are encouraged to follow mitigation measures to the extent they will not impair operations or operational capabilities.</p> <p>Commanding officers shall thoroughly review this guidance with key personnel and watchstanders to ensure full situational awareness and compliance.</p>