DEPARTMENT OF THE NAVY
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IN REPLY REFER TO:
5090
Ser N01CE1/1218
04 Nov 09

Mr. Jim Lecky, Director
Office of Protected Resources
National Marine Fisheries Service (NMFS)
National Oceanic and Atmosphere Administration
B-SSMC3 Room 13821
1315 East West Highway
Silver Springs, MS 20910-3282

Dear Mr. Lecky:

On behalf Commander, U.S. Pacific Fleet, enclosed is the printed copy of the final revised Hawaii Range Complex (HRC) Letter of Authorization 2010 Renewal Application.

This report is submitted in accordance with the requirements of the HRC 12 January 2009 LOA authorization. The revised application reflects recommendations coming from the joint NMFS and Navy Adaptive Management Meeting held on 08 October 2008 in Washington, DC. An electronic copy of this document has been submitted to your staff.

Please extend my thanks to your staff for their continued support of the U.S. Navy's compliance process. We are available to meet with you or your staff should you have comments on the enclosed application or recommendations for future ones. My point of contact for this matter is Ms. Julie Rivers, 808-474-6391 or email: julie.rivers@navy.mil

Sincerely,

L. M. FOSTER
Director, Fleet Environmental
By direction

Request for Letter of Authorization Under the Marine Mammal Protection Act for Incidental Harassment Of Marine Mammals Resulting From U.S. Navy Training and Research Activities In The Hawaii Range Complex

Submitted By
Department of the Navy
Commander, United States Pacific Fleet
250 Makalapa Drive
Pearl Harbor, Hawaii 96860-3131

Submitted To
National Marine Fisheries Service
Office of Protected Resources
1315 East-West Highway
Silver Springs, Maryland 20910-3226

1 October 2009

FINAL

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ACRONYMS AND ABBREVIATIONS

AEER	Advanced Extended Echo Ranging
AFAST	Atlantic Fleet Active Sonar Training
ASW	Anti-Submarine Warfare
BOMBEX	Bombing Exercise
CNO	Chief of Naval Operations
DoN	Department of the Navy
EER	Extended Echo Ranging
FEIS	Final Environmental Impact Statement
GUNEX	Gunnery Exercise
HARPS	High Frequency Acoustic Recording Packages
HIMB	Hawaii Institute of Marine Biology
HRC	Hawaii Range Complex
IEER	Improved Extended Echo Ranging
LOA	Letter of Authorization
MDSU	Mobile Diving and Salvage Unit
MFAS	Mid-frequency Active Sonar
MISSILEX	Missile Exercise
MMO	Marine Mammal Observer
MMPA	Marine Mammal Protection Act
MTE	Major Training Exercise
NAVAIR	Naval Air Systems Command
NMFS	National Marine Fisheries Service
OPAREA	Operating Area
PAM	Passive Acoustic Monitoring
PIFSC	Pacific Islands Fisheries Science Center
PIRO	Pacific Island Regional Office
PMRF	Pacific Missile Range Facility
SINKEX	Sinking Exercise
SOCAL	Southern California Range Complex
SOEST	School of Ocean and Earth Science and Technology
SCC	Submarine Commanders Course
ULT	Unit Level Training

1. INTRODUCTION AND DESCRIPTION OF ACTIVITIES

Under the provisions of the Marine Mammal Protection Act of 1972 (MMPA), this document is the annual renewal Application to the National Marine Fisheries Service (NMFS) for a Letter of Authorization (LOA) [1] for incidental harassment of marine mammals from U.S. Navy (Navy) training and research [2] activities in the Hawaii Range Complex (HRC).

This LOA renewal is being sought to cover the period from January 2010 to January 2011 to cover the taking of marine mammals, as described by the MMPA, incidental to training and research[2] within the Hawaii Range Complex. The LOA will not address activities designated for armed conflict or direct combat support operations, nor during periods of heightened national threat conditions, as determined by the President and Secretary of Defense or their duly designated alternatives or successors, as assisted by the Chairman of the Joint Chiefs of Staff.

The U.S. Navy has been training as well as conducting research [2] in the area now defined as the Hawaii Range Complex for over 100 years. The table below shows the MMPA permit documentation applicable to the Hawaii Range Complex and NMFS' authorization (**Table 1**). Information contained in these references provide a complete description of the background for the Navy's request, overview of the Hawaii Range Complex, and description of the specified activities, description of marine mammals in the area, discussion of potential effects or lack of effects of specified activities on marine mammal, mitigation, marine mammal monitoring, and associated reporting. The descriptions contained in these references have not changed, except as where noted in this application renewal.

Table 1. Timeline of key Hawaii Range Complex MMPA documents

Timeline Date	From	Event	Reference
25 Jun 07	Navy	Letter Of Authorization Application (request for Incidental Harassment For Hawaii Range Complex) submitted to NMFS Office of Protected Resources	DoN 2007
25 Feb 08	Navy	Letter of Authorization Application Update submitted to NMFS Office of Protected Resources	DoN 2008a
2 May 08	Navy	Letter of Authorization Update #2 submitted electronically to NMFS Office of Protected Resources	DoN 2008b
09 May 08	Navy	Hawaii Range Complex Environmental Impact Statement\Overseas Environmental Impact Statement- Final May 2008 published	DoN 2008c
23 Jun 08	NMFS	Taking and Importing Marine Mammals; U.S. Navy Training In Hawaii Range Complex; Proposed Rule published in Federal Register (73 FR 35510)	NMFS 2008
08 Jan 09	NMFS	Letter of Authorization take marine mammals incidental to Navy exercises conducted in Hawaii Range Complex issued	NMFS 2009a
12 Jan 09	NMFS	Taking and Importing Marine Mammals; U.S. Navy Training In Hawaii Range Complex; Final Rule published in Federal Register (74 FR 1456)	NMFS 2009b

[1] under Section 101 (a)(5)(A) of the MMPA

[2] Research is an informal designation for "research, development, testing, and evaluation (RDT&E)" as described by the Navy and NMFS in the references cited above

The below sections discuss items that reflect changes from the Navy's April 2008 LOA application, and NMFS' Final Rule of 12 January 2009 for the Hawaii Range Complex:

A. Change from original LOA application (and subsequent updates) and Final Rule: Nomenclature corrections

In order for the Hawaii Range Complex LOA to be consistent with other U.S. Navy Range Complex MMPA Final Rules, the usage of the following like or similar sound sources (i.e. similar frequency or source levels as a sound source specifically authorized in the HRC MMPA Final Rule) is requested. Stated differently, although a particular sound source may have a different name than what is used in the Final Rule, its environmental affects are similar to or have less effect than the source named in the Final Rule. Specifically, the following sonar systems and explosives are considered as like sources for purposes of reporting sonar and explosive usage in this report and should be inserted into Table 2 and Table 3 of the Final Rule:

1. AQS-22 is representative of all helicopter dipping sonar, AQS-22 source level is higher than the AQS-13F.*

2. MK-48 is used as a surrogate for MK-46/MK-54. MK-48 sonar source level and net explosive weight is higher than the MK-46/MK-54 and thus have a lesser environmental affect than the Mk-48.*

3. The BQQ-10 is used as a surrogate for the BQQ-5. **

4. The SSQ-125 AEER will replace the SSQ-110A IEER system, so a total of 960 buoys (IEER or AEER) will be deployed.

* Included in the Southern California Range Complex Final Rule.

** Included in the Atlantic Fleet Active Sonar Training (AFAST) Final Rule.

B. Change from original LOA application (and subsequent updates) and Final Rule: Reporting Error of IEER Exposures resulting in Level B harassment

During the initial reporting and subsequent documentation of explosive ordnance modeling, the Navy submitted an error in calculating the number of exposures resulting from the use of 960 IEER buoys. The exposure numbers for IEER contained within the Navy's Update #2 to the Request for Letter of Authorization for the Incidental Harassment of Marine Mammals (DoN, 2008b) were actually the results of modeling with an increased number (3600) of buoys, which were reflective of the number of buoys which could have been deployed if Alternative 1 or 2 were selected. The number of exposures from utilizing 3600 IEER buoys are 35 TTS exposures, and 3 PTS exposures. These figures were reported for the deployment of 960 IEER buoys, in the Navy's Update #2 to the LOA, and NMFS's Final Rule. The appropriate modeling of 960 IEER buoys indicates that only 9 TTS exposures would result. A complete representation of the modeling and resulting decrease in requested takes for IEER use are presented in Chapter 6.

C. Change from Previous: IEER Transition to AEER system

Navy is developing the Advanced Extended Echo Ranging (AEER) system as a replacement to the IEER system. The proposed AEER system is operationally similar to the existing IEER system. AEER will still use the passive ADAR (AN/SSQ-101) sonobuoy as the systems acoustic receiver and will be deployed by Maritime Patrol Aircraft. However, instead of using an explosive AN/SSQ-110A as an impulsive source for the active acoustic wave, the AEER will use a battery powered tonal source, the new active AN/SSQ-125 sonobuoy. The AEER sonobuoy is intended to replace the IEER's use of explosives and is scheduled to enter the Fleet in FY10. As AEER is introduced for Fleet use, IEER will be removed. The same total

number of buoys will be deployed as were presented in the Final Rule, but a subset of them will be AEER instead of IEER.

For the purposes of analysis, replacement of the IEER system by the AEER system will be assumed to occur at 25% per year as follows: 2010 – up to ~ 25% replacement; 2011- up to ~ 50% replacement; 2012 – up to ~ 75% replacement; and from 2013 to 2015 – up to ~ 100% replacement, with no further use of the IEER system after 2015. The acoustic impact analysis for the AN/SSQ-125 in this document assumes a similar per-buoy effect as that modeled for the AN/SSQ-110A. This is based on a conversion factor derived from transitioning the IEER system to the AEER system in the AFAST study area. The resulting re-modeling of twenty five percent (25%) of the IEER buoys (and their associated exposures) to AEER buoys does not ultimately result in any quantifiable change in marine mammals takes. A complete presentation of this analysis is covered in Chapter 6. Since there is no difference to the requested marine mammal takes as a result of the Navy's transition to AEER, and the two buoy systems are operationally consistent, this small change does not ultimately affect NMFS' analysis of and conclusions regarding the proposed action.

Table 2. Revision to Table 2 "Estimated Annual use of each sonar source" from NMFS' 12 January 2009 HRC Final Rule

Changes indicated in red underline.

Sonar Type	Description of Sonar	Source Depth	Center Freq (kHz)	Source Level (dB)	Spacing (m)*	Vertical Directivity	Horizontal Directivity	Units per Hour	Total Amount per Year
MK-48*	Torpedo	27	>10	classified	144	Omni	Omni	one torpedo run	313
AN/SQS-53	Surface Ship	7	3.5	235	154	Omni	240° Forward	120 pings	1284
AN/SQS-56	Surface Ship	7	7.5	225	154	Omni	30° Forward	120 pings	383
AN/SSQ-62	Sonobuoy	27	8	201	450	Omni	Omni	8 sonobuoys	2423
AN/AQS-22**	Helo Dipping	27	4.1	217	15	Omni	Omni	2 dips	1010
AN/BQQ-10***	Submarine	91	classified	classified	n/a	Omni	Omni	2 pings	200

Table 2. Parameters used for modeling the six sonar sources and the estimated annual operation. Many of the actual parameters and capabilities of these sonars are classified. Parameters used for modeling were derived to be as representative as possible. When, however, there were a wide range of potential modeling values, a nominal parameter likely to result in the most impact was used so that the model would err towards overestimation.

*Spacing means distance between pings at the nominal speed.

*MK-48 used as a surrogate for MK-46/MK-54 in modeling; MK-48 source level is higher than the MK-46/MK-54 and thus they have a lesser environmental affect.

**AN/AQS-22 is representative of all helicopter dipping sonar; AN/AQS-22 source level is higher than AN/AQS-13F.

***AN/BQQ-10 is used as a surrogate for the AN/BQQ-5; system parameters are similar

Table 3. Revision to Table 3 "Summary of Exercise Types with sonar or explosive use anticipated to produce takes of marine mammals" from NMFS'' 12 January Hawaii Range Complex Final Rule. Changes indicated in red underline.

Training Operation	Explosive Sources	Location Where Exercises May be Conducted	Time of Year Conducted	Number Of Training Events per/year	Average Length of Exercise (hrs)	Number of Rounds per/year
Mine Neutralization	1 to 20-lb Demolition charge	Puuloa Underwater Range, Lima Landing, Naval Inactive Ship Maintenance Facility, MCBH, MCTAB, Barbers Point Range, Ewa Training Minefield	Anytime	68	6	68
A-S MISSILEX	Penguin Maverick	Pacific Missile Range Facility (W-188)	Anytime	50	5.5	50
S-S MISSILEX	Harpoon	Pacific Missile Range Facility (W-188)	Anytime	12	5	75
BOMBEX	Mk82, Mk83, Mk84,	Hawaii OpArea	Anytime	38	6	38
SINKEX	Multiple sources as described in narrative	Hawaii OpArea	Anytime	6	14.5	6
S-S GUNNEX	5 inch round, 76-mm round	Warning Areas W-191, 192, 193, 194, 196 and Mela	Anytime	91	3.5	3822
Naval Surface Fire Support	5 inch round, 76-mm round	Warning Area W-188	Anytime	28	8.1	644
IEER/AEER*	SSQ-110A/SSQ-125 Sonobuoy	Hawaii OpArea	Anytime	4	4 to 8	960

Table 3. Summary of the location, duration, time of year, and nature of the exercises involving underwater demolitions.

*SSQ-125 AEER tonal sonobuoy is replacing the SSQ-110A IEER explosive source sonobuoy; a total of 960 buoys (combination IEER or AEER) will be deployed.

2. DURATION AND LOCATION OF ACTIVITIES

There are no changes to Chapter 2 as described under the Navy's original July 2007 Request for Letter of Authorization, and subsequent NMFS' June 2008 Proposed Rule (NMFS 2008) and January 2009 Final Rule (NMFS 2009b), except as noted below.

Training using SSQ-110A IEER and SSQ-125 AEER sonobuoys would occur at locations within the Hawaii Range Complex where other sonobuoys would typically be used, predominantly within the Hawaii Operating Area. These locations are the same anti-submarine warfare training areas described in the Navy's July 2007 Request, and subsequent NMFS June 2008 Proposed Rule, and January 2009 Final Rule (DoN 2007, NMFS 2008, NMFS 2009b).

3. MARINE MAMMAL SPECIES AND NUMBERS

There are no changes to Chapter 3 as described under the Navy's original July 2007 Request for Letter of Authorization, and subsequent NMFS' June 2008 Proposed Rule (NMFS 2008) and January 2009 Final Rule (NMFS 2009b).

This section, therefore, remains as described in the Final Rule (NMFS 2009b).

4. AFFECTED SPECIES STATUS AND DISTRIBUTION

There are no changes to Chapter 4 as described under the Navy's original July 2007 Request for Letter of Authorization, and subsequent NMFS' June 2008 Proposed Rule (NMFS 2008) and January 2009 Final Rule (NMFS 2009b).

This section, therefore, remains as described in the Final Rule (NMFS 2009b).

5. HARASSMENT AUTHORIZATION REQUESTED

There are no changes to Chapter 5 as described under the Navy's original July 2007 Request for Letter of Authorization, and subsequent NMFS' June 2008 Proposed Rule (NMFS 2008) and January 2009 Final Rule (NMFS 2009b).

This section, therefore, remains as described in the Final Rule (NMFS 2009b).

6. NUMBERS AND SPECIES TAKEN

There are no changes to Chapter 6 as described under the Navy's original July 2007 Request for Letter of Authorization, and subsequent NMFS' June 2008 Proposed Rule (NMFS 2008) and January 2009 Final Rule (NMFS 2009b), except as where noted below.

A. Corrected Exposure Estimates for the Deployment of 960 IEER Buoys

During the initial reporting and subsequent documentation of explosive ordnance modeling, the Navy submitted an error in calculating the number of exposures resulting from the use of 960 IEER buoys. The exposure estimates reported for the usage of 960 IEER buoys in Table 6-5 of the Navy's Update #2 to the LOA (DoN, 2008b) and a subset of the exposures reported in Table 6 of NMFS' Final Rule (NMFS, 2009b) were actually the modeling results of utilizing 3600 IEER buoys. Table 4, depicts the exposure estimates which were initially reported. Table 5 is the accurate exposure estimates resulting from modeling 960 IEER buoys. As such, the Navy's authorization request due to IEER usage will decrease from 38 exposures (35 TTS, 3 PTS) to 9 exposures (all TTS).

Table 4. Exposures reported for 960 IEER Buoys in the Navy's Update #2 to the LOA (Table 6-5; DoN, 2008b)

	Total Estimated Exposures to Indicated MMPA Harassment Levels from Explosive Detonations		
Species	Level B Harassment	Level A Harassment	Mortality
Byrde's whale	0	0	0
Fin whale	0	0	0
Sei whale	0	0	0
Minke whale	0	0	0
Humpback whale	5	1	0
Sperm whale	1	0	0
Dwarf sperm whale	5	0	0
Pygmy sperm whale	2	0	0
Cuvier's beaked whale	1	0	0
Longman's beaked whale	0	0	0
Blainville's beaked whale	1	0	0
Unidentified beaked whale	0	0	0
Bottlenose dolphin	1	0	0
False killer whale	0	0	0
Killer whale	0	0	0
Pygmy killer whale	0	0	0
Short-finned pilot whale	2	0	0
Risso's dolphin	1	0	0
Melon-headed whale	1	0	0
Rough-toothed dolphin	2	0	0
Fraser's dolphin	3	0	0
Pantropical spotted dolphin	3	1	0
Spinner dolphin	1	0	0
Striped dolphin	4	1	0
Monk seal	2	0	0
Total	**35**	**3**	**0**

229 **Table 5. Accurate Explosive Exposure Estimates for 960 IEER Buoys. Changes shown in red underline**

	Total Estimated Exposures to Indicated MMPA Harassment Levels from Explosive Detonations		
Species	Level B Harassment	Level A Harassment	Mortality
Byrde's whale	0	0	0
Fin whale	0	0	0
Sei whale	0	0	0
Minke whale	0	0	0
Humpback whale	1	0	0
Sperm whale	0	0	0
Dwarf sperm whale	1	0	0
Pygmy sperm whale	1	0	0
Cuvier's beaked whale	0	0	0
Longman's beaked whale	0	0	0
Blainville's beaked whale	0	0	0
Unidentified beaked whale	0	0	0
Bottlenose dolphin	0	0	0
False killer whale	0	0	0
Killer whale	0	0	0
Pygmy killer whale	0	0	0
Short-finned pilot whale	1	0	0
Risso's dolphin	0	0	0
Melon-headed whale	0	0	0
Rough-toothed dolphin	1	0	0
Fraser's dolphin	1	0	0
Pantropical spotted dolphin	1	0	0
Spinner dolphin	0	0	0
Striped dolphin	1	0	0
Monk seal	1	0	0
Total	**9**	**0**	**0**

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Table 6. LOA Renewal Re-calculation of Estimated Explosive Exposures from all Sources in the Hawaii Range Complex Resulting from Updated IEER Modeling

Species	From NMFS Final Rule 12 January 2009				Proposed Changed Exposures Per This Renewal Application			
Species	Level B sub-TTS	Level B TTS	Level A	Mortality	Level B sub-TTS	Level B TTS	Level A	Mortality
Bryde's whale	0	0	0	0	0	0	0	0
Fin whale	0	0	0	0	0	0	0	0
Sei whale	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0
Humpback whale	5	12	1	0	5	8	0	0
Sperm whale	9	5	0	0	9	4	0	0
Dwarf sperm whale	13	13	0	0	13	9	0	0
Pygmy sperm whale	4	5	0	0	4	4	0	0
Cuvier's beaked whale	16	8	0	0	16	7	0	0
Longman's beaked whale	0	0	0	0	0	0	0	0
Blainville's beaked whale	2	2	0	0	2	1	0	0
Unidentified beaked whale	0	0	0	0	0	0	0	0
Bottlenose dolphin	0	1	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0
Short-finned pilot whale	2	5	0	0	2	4	0	0
Risso's dolphin	0	1	0	0	0	0	0	0
Melon-headed whale	0	1	0	0	0	0	0	0
Rough-toothed dolphin	2	4	0	0	2	3	0	0
Fraser's dolphin	6	6	0	0	6	4	0	0
Pantropical spotted dolphin	0	5	1	0	0	3	0	0
Spinner dolphin	2	2	0	0	2	1	0	0
Striped dolphin	2	7	1	0	2	4	0	0
Monk seal	0	3	0	0	0	2	0	0
Total	**62**	**80**	**3**	**0**	**62**	**54**	**0**	**0**

***Changes due to appropriate modeling of 960 IEER buoys shown in red underline.

B. Exposures From IEER\AEER Transition

As SSQ-125 (AEER) sonobuoys are being introduced for Fleet use, the use of SSQ-110A (IEER) sonobuoys will be decreased. The same total number of buoys (960) per year will be deployed as presented in the proposed rule, but a subset of them will be AEER instead of IEER. In order to assess the effect of transitioning 25% (or 240 buoys) of the IEER to AEER in FY10, the Navy utilized modeling results from the AFAST study area. Modeling indicated that a conversion factor of approximately 1.024 was necessary to convert the total number of exposures from IEER to AEER as a result of their differential active systems; the IEER utilizes an impulsive AN/SSQ-110A buoy while the AEER utilizes a tonal AN/SSQ-125 buoy.[3] Use of SSQ-125 (AEER) sonobuoys instead of SSQ-110A sonobuoys within the Hawaii Range Complex ultimately does not result in a quantifiable change to the Navy's exposure estimates for IEER usage, as outlined in Table 7. As discussed in the prior section, Table 5 is meant to

[3] The AFAST FEIS modeling indicated a complete transition of all buoys from IEER to AEER would result in an increase from 827 exposures to 847 exposures, indicating a conversion factor of approximately 1.024.

replace those exposure estimates (38 total; 35 TTS and 3 PTS) requested in the Navy's original LOA application and those outlined in the NMFS' Final Rule (NMFS 2009b) for IEER use.

Table 7. Explosive Exposure Estimates from the Transition from IEER to AEER Buoys in FY10

	Total Estimated Exposures to Indicated MMPA Harassment Levels from Explosive Detonations		
Species	Level B Harassment	Level A Harassment	Mortality
Byrde's whale	0	0	0
Fin whale	0	0	0
Sei whale	0	0	0
Minke whale	0	0	0
Humpback whale	1	0	0
Sperm whale	0	0	0
Dwarf sperm whale	1	0	0
Pygmy sperm whale	1	0	0
Cuvier's beaked whale	0	0	0
Longman's beaked whale	0	0	0
Blainville's beaked whale	0	0	0
Unidentified beaked whale	0	0	0
Bottlenose dolphin	0	0	0
False killer whale	0	0	0
Killer whale	0	0	0
Pygmy killer whale	0	0	0
Short-finned pilot whale	1	0	0
Risso's dolphin	0	0	0
Melon-headed whale	0	0	0
Rough-toothed dolphin	1	0	0
Fraser's dolphin	1	0	0
Pantropical spotted dolphin	1	0	0
Spinner dolphin	0	0	0
Striped dolphin	1	0	0
Monk seal	1	0	0
Total	**9**	**0**	**0**

Table 8. LOA Renewal Re-calculation of Estimated Explosive Exposures from all Sources in the Hawaii Range Complex due to IEER to AEER Transition

Species	From NMFS Final Rule 12 January 2009				Proposed Changed Exposures Per This Renewal Application			
Species	Level B sub-TTS	Level B TTS	Level A	Mortality	Level B sub-TTS	Level B TTS	Level A	Mortality
Bryde's whale	0	0	0	0	0	0	0	0
Fin whale	0	0	0	0	0	0	0	0
Sei whale	0	0	0	0	0	0	0	0
Minke whale	0	0	0	0	0	0	0	0
Humpback whale	5	12	1	0	5	8	0	0
Sperm whale	9	5	0	0	9	4	0	0
Dwarf sperm whale	13	13	0	0	13	9	0	0
Pygmy sperm whale	4	5	0	0	4	4	0	0
Cuvier's beaked whale	16	8	0	0	16	7	0	0
Longman's beaked whale	0	0	0	0	0	0	0	0
Blainville's beaked whale	2	2	0	0	2	1	0	0
Unidentified beaked whale	0	0	0	0	0	0	0	0
Bottlenose dolphin	0	1	0	0	0	0	0	0
False killer whale	0	0	0	0	0	0	0	0
Killer whale	0	0	0	0	0	0	0	0
Pygmy killer whale	0	0	0	0	0	0	0	0
Short-finned pilot whale	2	5	0	0	2	4	0	0
Risso's dolphin	0	1	0	0	0	0	0	0
Melon-headed whale	0	1	0	0	0	0	0	0
Rough-toothed dolphin	2	4	0	0	2	3	0	0
Fraser's dolphin	6	6	0	0	6	4	0	0
Pantropical spotted dolphin	0	5	1	0	0	3	0	0
Spinner dolphin	2	2	0	0	2	1	0	0
Striped dolphin	2	7	1	0	2	4	0	0
Monk seal	0	3	0	0	0	2	0	0
Total	**62**	**80**	**3**	**0**	**62**	**54**	**0**	**0**

*****Changes in explosive exposures due to the transition of 25% of IEER buoys to AEER shown in red underline.

7. IMPACTS TO MARINE MAMMAL SPECIES OR STOCKS

There are no changes to Chapter 7 as described under the Navy's original July 2007 Request for Letter of Authorization, and subsequent NMFS' June 2008 Proposed Rule (NMFS 2008) and January 2009 Final Rule (NMFS 2009b), except as where noted below.

This section, therefore, remains as described in the Final Rule (NMFS 2009b).

8. IMPACT ON SUBSISTENCE USE

There are no changes to Chapter 8 as described under the Navy's original July 2007 Request for Letter of Authorization, and subsequent NMFS' June 2008 Proposed Rule (NMFS 2008) and January 2009 Final Rule (NMFS 2009b).

This section, therefore, remains as described in the Final Rule (NMFS 2009b).

9. IMPACTS TO THE MARINE MAMMAL HABITAT AND THE LIKELIHOOD OF RESTORATION

There are no changes to Chapter 9 as described under the Navy's original July 2007 Request for Letter of Authorization, and subsequent NMFS' June 2008 Proposed Rule (NMFS 2008) and January 2009 Final Rule (NMFS 2009b).

This section, therefore, remains as described in the Final Rule (NMFS 2009b).

10. IMPACTS TO MARINE MAMMALS FROM LOSS OR MODIFICATION OF HABITAT

There are no changes to Chapter 10 as described under the Navy's original July 2007 Request for Letter of Authorization, and subsequent NMFS' June 2008 Proposed Rule (NMFS 2008) and January 2009 Final Rule (NMFS 2009b).

This section, therefore, remains as described in the Final Rule (NMFS 2009b).

11. MEANS OF EFFECTING THE LEAST PRACTICABLE ADVERSE IMPACTS – MITIGATION MEASURES

There are no changes to Chapter 11 as described under the Navy's original July 2007 Request for Letter of Authorization, and subsequent NMFS' June 2008 Proposed Rule (NMFS 2008) and January 2009 Final Rule (NMFS 2009b).

A. IEER\AEER Mitigation

There are no changes proposed to IEER\AEER mitigation.

Marine mammal mitigation measures for use of IEER during Navy training events in HRC are described in NMFS' June 2008 Proposed Rule[4] (NMFS 2008), NMFS' January 2009 Final Rule[5] (NMFS 2009b), and repeated below.

Mitigation Measures Previously Promulgated in NMFS Final Rule (NMFS 2009b)

A discussion of mitigation in terms of the IEER sonobuoy is presented to recap the Navy's current mitigation for these training and testing events. Below is the current HRC Range Complex IEER and AEER mitigation from the NMFS' 12 January Final Rule[6] (NMFS 2009b):

Extended Echo Ranging/Improved Extended Echo Ranging (IEER/AEER):

(i) Crews shall conduct visual reconnaissance of the drop area prior to laying their intended sonobuoy pattern. This search shall be conducted at an altitude below 457 m (500 yd) at a slow speed, if operationally feasible and weather conditions permit. In dual aircraft operations, crews are allowed to conduct coordinated area clearances.

(ii) Crews shall conduct a minimum of 30 minutes of visual and acoustic monitoring of the search area prior to commanding the first post detonation. This 30-minute observation period may include pattern deployment time.

(iii) For any part of the briefed pattern where a post (source/receiver sonobuoy pair) will be deployed within 914 m (1,000 yd) of observed marine mammal activity, the Navy shall deploy the receiver ONLY and monitor while conducting a visual search. When marine mammals are no longer detected within 1,000 yards (914 m) of the intended post position, the Navy shall co-locate the explosive source sonobuoy (AN/SSQ–110A) (source) with the receiver.

(iv) When able, Navy crews will conduct continuous visual and aural monitoring of marine mammal activity. This is to include monitoring of own-aircraft sensors from first sensor placement to checking off station and out of RF range of these sensors.

(v) Aural Detection: If the presence of marine mammals is detected aurally, then that shall cue the Navy aircrew to increase the diligence of their visual surveillance. Subsequently, if no marine mammals are visually detected, then the crew may continue multi-static active search.

(vi) Visual Detection:

A. If marine mammals are visually detected within 1,000 yards (914 m) of the explosive source sonobuoy (AN/SSQ–110A) intended for use, then that payload shall not be detonated. Aircrews may utilize this post once the marine mammals have not been re-sighted for 30 minutes, or are observed to have moved outside the 1,000 yard (914 m) safety buffer.

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[4] See §216.174 in 73 FR 33510, page 35573 (NMFS 2008)

[5] See §216.174 in 74 FR 1456, page 1488 (NMFS 2009b)

[6] See §216.174 in 74 FR 1456, page 1488 (NMFS 2009b)

B. Aircrews may shift their multi-static active search to another post, where marine mammals are outside the 1,000 yard (914 m) safety buffer.

(vii) Aircrews shall make every attempt to manually detonate the unexploded charges at each post in the pattern prior to departing the operations area by using the ‘‘Payload 1 Release’’ command followed by the ‘‘Payload 2 Release’’ command. Aircrews shall refrain from using the ‘‘Scuttle’’ command when two payloads remain at a given post. Aircrews will ensure that a 1,000 yard (914 m) safety buffer, visually clear of marine mammals, is maintained around each post as is done during active search operations.

(viii) Aircrews shall only leave posts with unexploded charges in the event of a sonobuoy malfunction, an aircraft system malfunction, or when an aircraft must immediately depart the area due to issues such as fuel constraints, inclement weather, and in-flight emergencies. In these cases, the sonobuoy will self-scuttle using the secondary or tertiary method.

(ix) The Navy shall ensure all payloads are accounted for. Explosive source sonobuoys (AN/SSQ–110A) that can not be scuttled shall be reported as unexploded ordnance via voice communications while airborne, then upon landing via naval message.

(x) Marine mammal monitoring shall continue until out of own-aircraft sensor range.

12. MINIMIZATION OF ADVERSE EFFECTS ON SUBSISTENCE USE

There are no changes to Chapter 12 as described under the Navy's original July 2007 Request for Letter of Authorization, and subsequent NMFS' June 2008 Proposed Rule (NMFS 2008) and January 2009 Final Rule (NMFS 2009b).

This section, therefore, remains as described in the Final Rule (NMFS 2009b).

13. MONITORING AND REPORTING MEASURES

There are no changes to Chapter 13 as described under the Navy's original July 2007 Request for Letter of Authorization, and subsequent NMFS' June 2008 Proposed Rule (NMFS 2008) and January 2009 Final Rule (NMFS 2009b), except as where noted below.

A. FY09 (August 1, 2008 to August 1, 2009) Marine Mammal Monitoring Accomplishments.

In the HRC monitoring plan, the Navy proposed to implement a diversity of field methods to gather field data from marine mammals and sea turtles in conjunction with training events. Studies were specifically designed to meet the questions outlined in the Introduction section of this document. Metrics (e.g. hours or events) were agreed to by Navy and NMFS and used as a goal for implementation.

During the study year (August to August), U.S. Pacific Fleet implemented aerial and vessel surveys, deployed marine mammal observers on Navy platforms and purchased passive acoustic recording devices. Much of this work was a continuation of U.S. Pacific Fleet -funded field work that has occurred in the Hawaiian Islands since the Rim of the Pacific (RIMPAC) exercise in 2006.

All metrics outlined in the HRC monitoring plan were met or exceeded – a significant achievement for the first year. Additional successes included design and implementation of aerial surveys conducting elliptical transects in close proximity (~200-2,500 yds) to Navy surface vessels as well as three types of surveys conducted in close proximity to underwater detonations (DoN 2008d).

There were also additional monitoring efforts within HRC that were funded by the Environmental Readiness Division of the Chief of Naval Operations (CNO N45) and the Office of Naval Research (ONR). Detailed results and major milestones from the Navy's Compliance Monitoring (U.S. Pacific Fleet), and Research and Development (R&D) monitoring (ONR/CNO N45) are presented in the Navy's HRC monitoring report (DoN 2009b).

A summary of Aug 2008 to Aug 2009 HRC monitoring major accomplishments are presented below and in **Table 9**.

- Aerial Visual Survey
  - During two Submarine Commanders Course (SCC) training events, and one unit level event, aerial surveys were conducted by non-Navy aircraft in close-proximity (e.g. between 200 and 2,500 yards) to Navy surface vessels. For SCC, logistical challenges were overcome by close coordination with PMRF range and P-3 pilots to allow for survey aircraft to share airspace with P-3 and helicopters involved in several training scenarios. This success proves that during certain training events specific to the HRC, contracted aircraft can be used to conduct behavioral monitoring of submerged and at-surface marine mammals during ASW and explosive training events.
  - Extended focal follows by airplane were performed for humpback whales, spinner dolphins, and a whale shark. Focal groups are further explained in aerial survey discussion.
  - A group of three humpback whales were tracked for a focal follow session near a Navy vessel. As the ship approached, the whales appeared to change their surfacing behavior, increase their dive times, and reduce the number of blows per surfacing.

- Vessel Visual Survey
  - Collaborated with NMFS, Pacific Islands Fisheries Science Center (PIFSC) on analysis of visual and acoustic data from a line-transect survey conducted in conjunction with an ASW training event. The survey duration was three weeks, with the training event occurring midway through.

- NMFS, PIFSC conducted the first small vessel survey conducted in conjunction with Navy underwater detonation events in the Puuloa Training Area. PIFSC obtained a focal follow of spinner dolphins that traveled through the underwater detonation area between events. They also recorded, via hydrophone, the underwater detonation.

- Passive Acoustic Monitoring
  - Four HARPs were purchased that will be deployed in FY10.

- Marine mammal observers
  - MMOs were successfully deployed on two destroyers involved in anti-submarine warfare training events off the PMRF range. The MMOs embarked simultaneously with aerial survey teams. MMOs coordinated aerial surveys during SCC, gathered visual sighting data and data on lookout implementation of mitigation measures.

  - MMOs embarked on small Navy surface vessels with Explosive Ordnance Disposal teams from Mobile Dive and Salvage Unit One (MSDU). The MMOs observed marine species in an underwater detonation area as well as implementation of mitigation measures.

- Hosted the first Hawaii Marine Mammal Pelagic Research Workgroup.

  - Provided thirty-eight Navy-funded researchers with the opportunity to present their projects and work towards more collaborative monitoring and research efforts. The research areas included passive acoustics, behavioral monitoring, tagging and sensor development.

412 **Table 9. U.S. Navy funded marine mammal monitoring accomplishments within the Hawaii Range**
413 **Complex from August 2008 to August 2009**

Study Type	U.S. Navy EIS/LOA monitoring	Associated event type	U.S. Navy R&D funded monitoring	Associated event type	MMPA/ESA requirement	Total accomplished
Aerial surveys (studies 1,2,3,4,5)	1) 27.5 hours from 18-22 Aug 2008 2) 28.5 hours from 15-19 Feb 2009 3) 48 hours from 17-25 June 2009 4) 3 events on 19 June 2009	SCC (ASW) SCC (ASW) Ultra-C (ASW) 20 lb UNDET	n/a	n/a	ASW = from 80 to 120 hours and 3 explosives events	ASW = 104 hours and 3 explosives events
Marine Mammal Observers (studies 1,3,4,5)	1) 40 hours from 15-19 Aug 2008 2) 40 hours from 15-19 Feb 2009 3) 25 hours from 18-19 June 2009 4) 15 hours from 9-10 June 2009	SCC (ASW) SCC (ASW) 20 lb UNDET 20 lb UNDET	n/a	n/a	ASW = up to 80 hours and 40 hours explosive events	ASW = 80 hours and 40 hours explosive events
Vessel surveys (studies 3,4)	1) 40+ hours from 15-19 Feb 2009 2) 2 events from 17-19 June 2009	SCC Ops (ASW) 20 lb UNDET	n/a	n/a	ASW = 40 hours and 2 explosive events	ASW = 40+ hours and 2 explosive events
Tagging (studies 1,3,4)	Navy entered into discussions with NMFS/PIRO office regarding tagging monk seals in FY10. PIRO has already ordered eight tags for collaborative monk seal tagging next year	n/a	Partial funding, via NMFS/SWFSC, to Cascadia Research Collective	n/a	Order tags and secure permit	NMFS/PIRO has ordered tags for monk seal tagging in FY10.
Passive Acoustic Monitoring (study 2)	n/a	n/a	1) ONR-funded PAM (BioWaves) on PMRF range; 2) ONR-funded PAM (HIMB) around Kauai and Oahu; 3) N45-funded HARP deployed off Hawaii Island (PIFSC/SIO/Cascadia); 4) ONR-funded hearing testing of odontocetes (HIMB); 5) U.S. Pacific Fleet-funded passive data collection and analysis at PMRF (SPAWAR); 6) Tracking with widely-spaced bottom-mounted hydrophones (SOEST); 7) NAVAIR-funded development of trigger and alert sonobuoy system (Guide-Star Engineering); 8) ONR-funded DECAF (density estimation of cetaceans using acoustic fixed sensors) project	n/a	Purchase up to four devices	Purchased four high frequency recording packages (HARPs) to be deployed in 2010 as well as all listed in R&D section

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415 **B. Adaptive Management Recommendations for 2010 Monitoring In Hawaii Range Complex**

416 Adaptive management is an iterative process of optimal decision making in the face of uncertainty, with
417 an aim to reducing uncertainty over time via system monitoring. Within the natural resource management
418 community, adaptive management involves ongoing, real-time learning and knowledge creation, both in a

substantive sense and in terms of the adaptive process itself. Adaptive management focuses on learning and adapting, through partnerships of managers, scientists, and other stakeholders who learn together how to create and maintain sustainable ecosystems. Adaptive management helps science managers maintain flexibility in their decisions, knowing that uncertainties exist and provides managers the latitude to change direction will improve understanding of ecological systems to achieve management objectives; and is about taking action to improve progress towards desired outcomes.

In March 2009, CNO N45 convened government and academic researchers to review the Navy's range complex monitoring plans. This diverse group of experts reviewed the methods that currently exist for monitoring, methods expected to be available in five years and the Navy's current plans. The team reinforced that the current methods being used by the Navy for monitoring were robust and strongly recommended that Navy continue to use a diversity of methods simultaneously. For the HRC range complex monitoring, as well as monitoring conducted in other range complexes, the Navy was successful in using a diversity of field methods to gather visual and acoustic data towards answering the questions posed by Navy and NMFS.

The Navy's adaptive management of the Hawaii Range Complex Monitoring Plan will involve close coordination with NMFS to align marine mammal monitoring with the Plan's overall objectives as stated within earlier sections of the Plan and in the Introduction of this report.

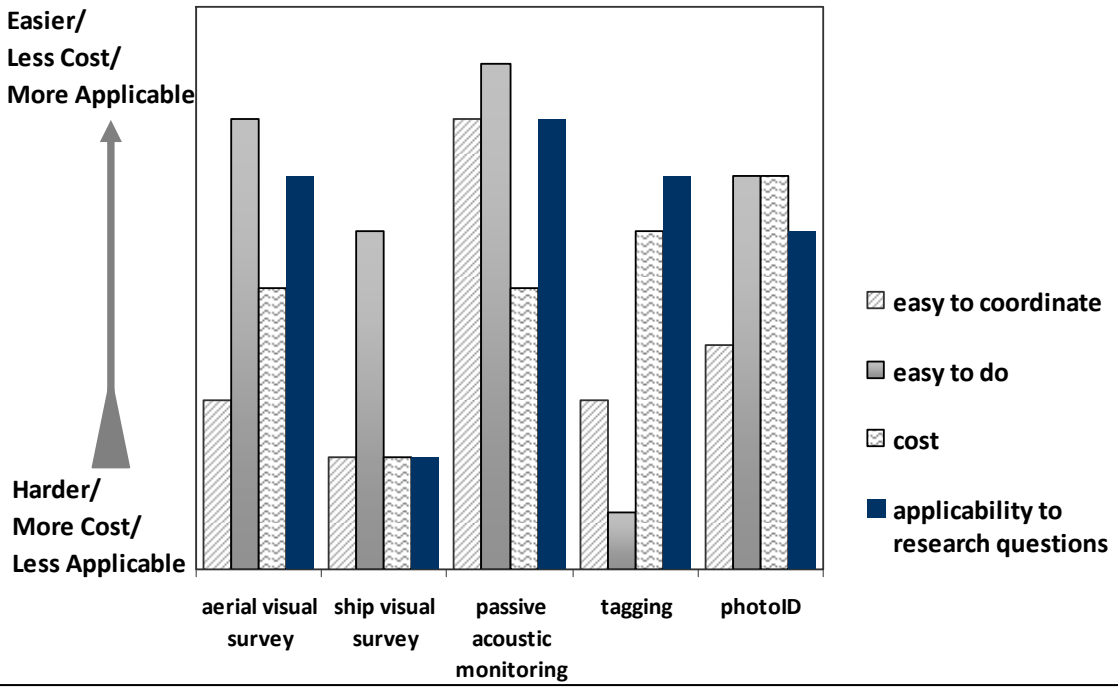
Significant progress was made during range complex compliance monitoring within the Hawaii Range Complex this year. This year's focus was expansion beyond monitoring techniques that are proven in the HRC, while targeting required metrics. Scheduling monitoring that involves civilian aircraft and ships operating concurrently with multiple Navy aircraft and ships in the same area required extensive pre-survey coordination between multiple Navy commands. The U.S. Pacific Fleet operational community (N7, N3 and MDSU) provided critical interface and coordination which was instrumental in using novel field methods to allow for researchers to conduct monitoring in close-proximity to Navy assets. The U.S. Pacific Fleet operational community also provided berthing and vessels (MDSU) for MMOs on four types of surface vessels.

Cancellations or major date shifts in Navy training events based on logistics, fiscal, or operational needs were challenging to overcome. These kind of changes are difficult to predict and more importantly, more difficult to reschedule from a monitoring prospective when contracts have been awarded, survey equipment has been purchased, rented or relocated; personnel availability and transport arranged; and fixed date contracts put into place. Several planned Navy training events scheduled for monitoring had to be re-scheduled to cover the change in monitoring design.

Figure 1 shows a highly subject preliminary assessment of various monitoring techniques from the Compliance and R&D programs in terms of how effective they may be in the SOCAL Range Complex (NOTE: data were not compared for HRC, but are thought to be similar) . By "subjective", the Navy refers to a review across a number of factors made by U.S. Pacific Fleet environmental planning staff based on lessons learned, data obtained, and associated coordination issues that arose during the monitoring described in the HRC-SOCAL Monitoring Report (DoN 2009c). This is an early preliminary assessment in that data analysis, especially of collected passive acoustic monitoring data is still ongoing. The kind of feedback obtained by this form of internal self-assessment, however, is useful in allowing the Navy to plan future range complex monitoring, as part of the Adaptive Management Process.

In view of lessons learned during implementation of the 2009 HRC Monitoring Plan, and as part of the Navy's adaptive management review for the Hawaii Range Complex, a proposed modification of the 2009 Plan to reflect the science needed for a revised 2010 HRC Monitoring Plan is shown in **Table 13**

Figure 1. Subjective assessment of techniques for adaptive management review for 2009 SOCAL Range Complex monitoring (NOTE: data were not compiled for HRC but are thought to be similar)



Definition of Subjective Categories

"**Easy to coordinate**" = ease of being able to gain SOCAL Range Complex access especially in associate with MTEs

"**Easy to do**" = ease of performing once on range; also includes standardization of technique to SOCAL Range Complex

"**Cost**"= costs associated with a particular technique; includes costs associated pre-event preparation/purchasing, field work, and post-field effort data analysis

"**Applicability to research questions**"= Will technique provide the enough scientific information to address the Navy-NMFS monitoring objectives over time; to some degree also reflective of value of a given technique given the three categories above

C. Proposed 2010 Monitoring Commitments

In view of lessons learned during implementation of the 2009 HRC Monitoring Plan (DoN 2009a), and as part of the Navy's adaptive management review for the Hawaii Range Complex, a modification of the 2009 Plan is recommended and shown in Tables 10 and 11.

The main rational for restructuring the monitoring shown in Table 13 is to:

- simplify the presentation of goals,
- provide more flexibility in types of events monitored given the often rapid change in Navy training schedules,
- align the technique with the best promise of more accurately addressing the Monitoring Plan objectives, and
- demonstrate the value of leverage data collection efforts from the HRC specific on-going ONR R&D program which is already concurrently addressing some portions of the information needed in support of the monitoring goals.

Original projection of 2010 monitoring needs discussed with NMFS in summer of 2008 and finalized in the 2009 HRC Monitoring Plan is laid out in Table 10. Given the lessons learned and data presented from 2009 monitoring (DoN 2009c), and leveraging from parallel N45 and ONR R&D program, modification of the 2010 U.S. Pacific Fleet funded portion of the Navy's overall monitoring in the Hawaii Range Complex is sought to align monitoring with the best science technique available. Therefore, Table 10 also presents using "red-lines" for the revisions that Navy seeks to incorporate in FY10.

Specific revisions for elements of the proposed 2010 monitoring include:

Visual: Recommended 2010 monitoring reflected in Tables 10 and 11 shows a shift towards combining all visual survey hours (aerial and vessel) into one overall category of "total visual survey hours" to allow for better flexibility when scheduling visual monitoring throughout the study year. While aerial surveys were more productive in terms of value and proximity to pre-, during, and post-training events, flexibility to select from future aerial or vessel survey is desired so that as future training events are identified, the best technique can be applied. The total number of hours remains essentially the same, however,

The commitment to conduct aerial surveys during nearshore explosive events was removed from FY10 commitments based upon experience in FY09. Specifically, most of the near-shore explosive events occur at Puuloa Range, which is located adjacent to the Honolulu International Airport. Flight path restrictions not only compromised monitoring survey design, but became potentially dangerous as well.

Additionally, operational data that became available after the HRC monitoring plan was completed shows that there are *no* near-shore explosive events with sufficient "high ground" to conduct shore-based monitoring. Therefore, this commitment has been removed.

Marine Mammal Observers (MMOs): The only change to this commitment is to change from a metric of *hours* to a metric of *events*. This is to account for the variable time duration of ASW and explosive events as experienced in FY09. MMOs will continue to be used for gathering species and behavioral data as well as implementation of the Lookout Effectiveness study currently under development by Navy, University of St. Andrews and NMFS Science Centers.

Marine Mammal Tagging: Tagging commitments did not change except to add that the 15 individuals tagged is a goal instead of a firm number.

505 PAM: Four HARPs will be deployed within the HRC Range Complex in FY10. CPF will also
506 continue to fund SPAWAR to gather data two days per month using the bottom-mounted
507 hydrophones at the Pacific Missile Range Facility. Additionally, CPF will coordinate with
508 autonomous devices deployed under the ONR/N45 R&D program which has additional devices
509 deployed within the Hawaii Range Complex. The HRC monitoring plan recommendation was to
510 deploy 10 new devices, however, this was prior to receiving information on the numerous Navy-
511 funded devices that are already deployed in the HRC.

512 **Table 10. Adaptive management review showing edits to FY10 monitoring proposed in HRC**
513 **monitoring plan (strike through are deletions and red font are additions).**
514

STUDY 1,3, 4 (exposures and behavioral responses)		
Aerial Surveys	- ~~40 hours of active sonar during~~During portions of ASW training events including major exercises, intermediate level exercises, or Unit Level Training (ULT). (120-160 combined hours with vessel) - ~~During three nearshore explosive events plus 1-2 SINKEX~~	Adaptive Management Review for FY10 (AMR)
Marine Mammal Observers (MMO)	- 80 hours during major exercises, intermediate level, ULT or explosive training events	
Vessel surveys (study 3, 4 only)	- ~~40 hours~~During portions of ASW training events including major exercises, intermediate level exercises, or Unit Level Training (ULT) - During two ~~nearshore~~ explosive events	
Marine Mammal Tagging (study 1, 3)	Tag a goal of 15 individuals in conjunction with ASW event	
Shore-based	~~Nearshore explosive events as they occur with "high ground" for monitoring~~	
STUDY 2 (geographic redistribution)		
Aerial Surveys Before And After Training Events	- ~~40 hours~~During portions of ASW training events including major exercises, intermediate level exercises, or Unit Level Training (ULT).	AMR
Passive Acoustic Monitoring (PAM)	Install and gather data from up to 10 autonomous devices	
STUDY 5 (mitigation effectiveness)		
MMO/ Lookout Comparison	- During 3 ASW training events including major exercises, intermediate level exercises, or Unit Level Training (ULT) - ~~40 hours d~~During 6 ~~nearshore~~ explosive events	AMR
Aerial Surveys	- ~~40 hours~~ During portions of ASW training events including major exercises, intermediate level exercises, or Unit Level Training (ULT) ~~- 40 hours during explosive events~~	

515

516 **Table 11. Summary of 2010 Adaptive Management goals red-lined in Table 10**

Monitoring Technique	Implementation	
Visual Surveys (aerial or vessel) STUDIES 1,2,3,4, 5	120-160 hours before, during and after ASW training events including major training exercises (MTE), SCC, Unit Level Training (ULT) and/or explosive events. "During" will be targeted by aerial surveys when feasible.	Adaptive Management Review (AMR) for FY11
Marine Mammal Observers (MMO) STUDIES 1,2,3, 4, 5	80 hours aboard Navy vessels during MTE, ULT, and/or explosive events	
Tagging STUDIES 1,2, 3	Tag a goal of 15 individual marine mammals	
Passive Acoustics Monitoring (PAM) STUDIES 1,2, 3	Install four HARPs; collaborate with data collection from other N45/ONR R&D funded autonomous PAM devices (goal of 10 devices total). Analyze PIFSC acoustic data collected in 2009.	
Mitigation Effectiveness STUDY 5	Lookout effectiveness study by MMOs on Navy surface vessels during 3 ASW events and 6 explosive events	

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Study 1= Are marine mammals and sea turtles exposed to mid-frequency active sonar (MFAS), especially at levels associated with adverse effects (i.e., based on NMFS' criteria for behavioral harassment, TTS, or PTS)? If so, at what levels are they exposed?
Study 2= If marine mammals and sea turtles are exposed to sonar, do they redistribute geographically as a result of continued exposure? If so, how long does the redistribution last?
Study 3= If marine mammals and sea turtles are exposed to MFAS, what are their behavioral responses to various levels?
Study 4= What are the behavioral responses of marine mammals and sea turtles that are exposed to explosives at specific levels?
Study 5= Is Navy's suite of mitigation measures for sonar and explosives, and major exercise measures agreed to by Navy through permitting effective at avoiding TTS, injury, and mortality of marine mammals and sea turtles

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14. RESEARCH

There are no changes to Chapter 14 as described under the Navy's original July 2007 Request for Letter of Authorization, and subsequent NMFS' June 2008 Proposed Rule (NMFS 2008) and January 2009 Final Rule (NMFS 2009b).

This section, therefore, remains as described in the Final Rule (NMFS 2009b).

15. LIST OF PREPARERS

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References are additions to those presented in the original LOA application.

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