Request for 2011 Renewal Of The 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

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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
EAR	Ecological Acoustic Recorder
EER	Extended Echo Ranging
FEIS	Final Environmental Impact Statement
GUNEX	Gunnery Exercise
HARP	High Frequency Acoustic Recording Package
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 2011 to January 2012 to cover the taking of marine mammals, as described by the MMPA, incidental to training and research[2] within the Hawaii Range Complex. It builds upon three prior documents – 1) the NMFS issued MMPA Final Rule and Letter of Authorization from January 2009, 2) the Navy's 2010 LOA Renewal Application from October 2009, and 3) the NMFS issued Letter of Authorization from January 2010. Key tables from the 2010 LOA Renewal are provided herein for reference, even if there are no changes from last year. Unless otherwise noted herein, there will not be a substantial modification to the described work, mitigation or monitoring undertaken during the upcoming 12 months. Monitor reports required by 50 C.F.R. §216.175(c) through (j) will be submitted no later than October 1st, 2010.

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.

[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

Table 1. Timeline of key Hawaii Range Complex MMPA documents

Timeline Date	From	Event	Reference
25 Jun 07	Navy	Request for Letter Of Authorization (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
02 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
31 Dec 08	Navy	2009 Hawaii Range Complex Monitoring Plan-Final December 2008.	DoN 2008d
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
01 Oct 09	Navy	Annual Range Complex Exercise Report January to 01 August 2009 For The U.S. Navy's Hawaii Range Complex And Southern California Range Complex.	DoN 2009a
01 Oct 09	Navy	Marine Mammal Monitoring For The U.S. Navy's Hawaii Range Complex (HRC) And Southern California (SOCAL) Range Complex-Annual Report 2009.	DoN 2009b
01 Oct 09	Navy	2010 Hawaii Range Complex Monitoring Plan (included in Annual HRC/SOCAL Monitoring Report)	DoN 2009b
01 Oct 09	Navy	Request for 2010 Letter of Authorization Under the MMPA for Incidental Harassment Of Marine Mammals Resulting From U.S. Navy Training and Research Activities In The Hawaii Range Complex	DoN 2009c
14 Jan 10	NMFS	Letter of Authorization take marine mammals incidental to Navy exercises conducted in Hawaii Range Complex issued	NMFS 2010

2. DURATION AND LOCATION OF ACTIVITIES

There are no changes to Chapter 2 as described under NMFS January 2009 Final Rule (NMFS 2009b), Navy's 2010 Request for Letter of Authorization (DoN 2010), and NMFS subsequent 2010 Letter of Authorization issued 14 January 2010.

This section, therefore, remains as described in the Final Rule (NMFS 2009b) and 2010 Letter of Authorization (NMFS 2010a).

3. MARINE MAMMAL SPECIES AND NUMBERS

There are no changes to Chapter 2 as described under NMFS January 2009 Final Rule (NMFS 2009b), Navy's 2010 Request for Letter of Authorization (DoN 2010), and NMFS subsequent 2010 Letter of Authorization issued 14 January 2010.

This section, therefore, remains as described in the Final Rule (NMFS 2009b) and 2010 Letter of Authorization (NMFS 2010a).

4. AFFECTED SPECIES STATUS AND DISTRIBUTION

Chapter 4 as described under NMFS January 2009 Final Rule (NMFS 2009b), Navy's 2010 Request for Letter of Authorization (DoN 2010), and NMFS subsequent 2010 Letter of Authorization issued 14 January 2010 is updated based upon recent marine mammal publications. These publications do not add new species or densities.

- New information on the range of false killer whales, pygmy killer whales, Blainville's beaked whales and bottlenose dolphins in the Hawaiian Islands were published in the last year (Baird et al 2009, Baird et al 2010, McSweeney et al 2009, Reeves et al 2009, Schorr et al 2009). As a result of these projects, NMFS is evaluating the potential ESA-listing for an insular stock of false killer whales.
- Stock assessment reports were released for the central north Pacific stock of humpback whales and the Hawaii stock of false killer whales in 2009 (Allen et al 2009, NMFS 2009c).
- As part of the HRC monitoring plan, the Navy funded NMFS to deploy tags on monk seals. Tracks are available for only four animals at this time. However, one adult male (R012) that was tagged on Oahu traveled offshore for about 1 month. This type of trip is thought to be very uncharacteristic for monk seals. This animal traveled over 2000 miles, round trip, in waters over 5000 m deep. Throughout the trip he spent the majority of time diving near the surface (Reuland and Littnan 2010). The full report may be found in the Navy's Annual monitoring report for the HRC and SOCAL.
- A new publication documented observations of both Bryde's and sei whales east of Oahu. The Bryde's whale sighting is the first to be reported near- shore (<70 km) waters of the main Hawaiian Islands, and the two sei whale sightings are the first near Oahu (Smultea et al 2010).

5. HARASSMENT AUTHORIZATION REQUESTED

There are no changes to Chapter 5 as described under NMFS January 2009 Final Rule (NMFS 2009b), Navy's 2010 Request for Letter of Authorization (DoN 2010).

Therefore, pursuant to 50CFR§216.172, the Navy requests for the following for 2011:

Level B Harassment:

Mysticetes

- Humpback whale (*Megaptera novaeangliae*) – 9894
- Minke whale (*Balaenoptera acutorostrata*) - 70
- Sei whale (*Balaenoptera borealis*) - 46
- Fin whale (*Balaenoptera physalus*) - 46
- Bryde's whale (*Balaenoptera edeni*) - 70

Odontocetes

- Sperm whales (*Physeter macrocephalus*) - 800
- Pygmy sperm whales (*Kogia breviceps*) -952
- Dwarf sperm whale (*Kogia sima*) - 2334
- Cuvier's beaked whale (*Ziphius cavirostris*) - 1265
- Blainville's beaked whale (*Mesoplodon densirostris*) - 393
- Longman's beaked whale (*Indopacetus pacificus*) - 116
- Rough-toothed dolphin (*Steno bredanensis*) - 1185
- Bottlenose dolphin (*Tursiops truncatus*) - 807
- Pan-tropical dolphins (*Stenella attenuata*) - 2419
- Spinner dolphins (*Stenella longirostris*) - 463
- Striped dolphins (*Stenella coeruleoalba*) - 3530
- Risso's dolphin (*Grampus griseus*) - 547
- Melon-headed whale (*Peponocephala electra*) - 657
- Fraser's dolphin (*Lagenodelphis hosei*) - 1372
- Pygmy killer whale (*Feresa attenuata*) - 216
- False killer whale (*Pseudorca crassidens*) - 51
- Killer whale (*Orcinus orca*) - 51
- Short-finned pilot whale (*Globicephala macrorynchus*) - 1978

Pinnipeds:

- Hawaiian monk seal (*Monachus schauinslandi*) - 121

Level A Harassment and/or mortality of ten (10) individuals of each of the species listed below over the course of the 5-year regulations:

- Bottlenose dolphin (*Tursiops truncatus*)
- Pygmy and Dwarf sperm whales (*Kogia breviceps* and *sima*)
- Melon-headed whale (*Peponocephala electra*)
- Pan-tropical spotted dolphin (*Stenella attenuata*)
- Pygmy killer whale (*Feresa attenuata*)
- Short-finned pilot whale (*Globicephala macrorynchus*)
- Striped dolphin (*Stenella coeruleoalba*)
- Cuvier's beaked whale (*Ziphius cavirostris*)

- Blainville's beaked whale (*Mesoplodon densirostris*)
- Longman's beaked whale (*Indopacetus pacificus*)

6. NUMBERS AND SPECIES TAKEN

There are no changes to Chapter 6 as described under the combination of NMFS January 2009 Final Rule (NMFS 2009b), Navy's 2010 Request for Letter of Authorization (DoN 2010), and NMFS subsequent 2010 Letter of Authorization issued 14 January.

This section, therefore, remains as described in the Final Rule (NMFS 2009b) and 2010 Letter of Authorization (NMFS 2010a).

7. IMPACTS TO MARINE MAMMAL SPECIES OR STOCKS

There are no changes to Chapter 7 as described under NMFS January 2009 Final Rule (NMFS 2009b), Navy's 2010 Request for Letter of Authorization (DoN 2010), and NMFS subsequent 2010 Letter of Authorization issued 14 January 2010.

This section, therefore, remains as described in the Final Rule (NMFS 2009b) and 2010 Letter of Authorization (NMFS 2010a).

8. IMPACT ON SUBSISTENCE USE

There are no changes to Chapter 8 as described under NMFS January 2009 Final Rule (NMFS 2009b), Navy's 2010 Request for Letter of Authorization (DoN 2010), and NMFS subsequent 2010 Letter of Authorization issued 14 January 2010.

This section, therefore, remains as described in the Final Rule (NMFS 2009b) and 2010 Letter of Authorization (NMFS 2010a).

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

There are no changes to Chapter 9 as described under NMFS January 2009 Final Rule (NMFS 2009b), Navy's 2010 Request for Letter of Authorization (DoN 2010), and NMFS subsequent 2010 Letter of Authorization issued 14 January 2010.

This section, therefore, remains as described in the Final Rule (NMFS 2009b) and 2010 Letter of Authorization (NMFS 2010a).

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

There are no changes to Chapter 10 as described under NMFS January 2009 Final Rule (NMFS 2009b), Navy's 2010 Request for Letter of Authorization (DoN 2010), and NMFS subsequent 2010 Letter of Authorization issued 14 January 2010.

This section, therefore, remains as described in the Final Rule (NMFS 2009b) and 2010 Letter of Authorization (NMFS 2010a).

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

There are no changes to Chapter 11 as described under NMFS January 2009 Final Rule (NMFS 2009b), Navy's 2010 Request for Letter of Authorization (DoN 2010), and NMFS subsequent 2010 Letter of Authorization issued 14 January 2010.

This section, therefore, remains as described in the Final Rule (NMFS 2009b) and 2010 Letter of Authorization (NMFS 2010a).

12. MINIMIZATION OF ADVERSE EFFECTS ON SUBSISTENCE USE

There are no changes to Chapter 12 as described under NMFS January 2009 Final Rule (NMFS 2009b), Navy's 2010 Request for Letter of Authorization (DoN 2010), and NMFS subsequent 2010 Letter of Authorization issued 14 January 2010.

This section, therefore, remains as described in the Final Rule (NMFS 2009b) and 2010 Letter of Authorization (NMFS 2010a).

13. MONITORING AND REPORTING MEASURES

There are no changes to Chapter 13 as described under NMFS January 2009 Final Rule (NMFS 2009b), Navy's 2010 Request for Letter of Authorization (DoN 2010), and NMFS subsequent 2010 Letter of Authorization issued 14 January 2010 except where noted below.

A. FY10 (August 1, 2009 to August 1, 2010) Marine Mammal Monitoring Accomplishments.

In the HRC monitoring plan, as revised in the 2010 HRC LOA Renewal Application, the Navy proposed to continue implementing 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 answer the following questions:

> 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

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, embarked marine mammal observers on Navy platforms, deployed passive acoustic recording devices and tagged marine mammals. There were also additional monitoring efforts within HRC that were funded by the Energy and Environmental Readiness Division of the Chief of Naval Operations (OPNAV N45) and the Office of Naval Research (ONR).

A summary of Aug 2009 to Aug 2010 HRC monitoring major accomplishments are presented below and in Table 2. Detailed results are available in the annual monitoring report for 2010.

- Aerial Visual Survey
    - During two Submarine Commanders Course (SCC) training events, 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 continued success during six SCC proves that during certain training events in the HRC contracted aircraft can be used to conduct behavioral monitoring of submerged and at-surface marine mammals during ASW training events.
- Vessel Visual Survey
    - A vessel survey was conducted in conjunction with RIMPAC, scheduled to coincide with two opposed transit events off Kauai and Niihau.

- Passive Acoustic Monitoring
    - Four devices were deployed in the HRC will gather data for several months near areas used for underwater detonations and anti-submarine warfare exercises.
    - Marine mammal acoustic data were recorded using the instrumented hydrophone range at Pacific Missile Range Facility.
- Marine mammal observers (MMOs)
    - The Navy's lookout effectiveness study was initiated by four Navy MMOs aboard a frigate involved in the Submarine Commanders Course off the PMRF range. The MMOs embark coincided with an aerial survey.
    - MMOs embarked on small Navy surface vessels with Explosive Ordnance Disposal teams from Mobile Dive and Salvage Unit One (MSDU-1). The MMOs observed marine mammals and sea turtles in an underwater detonation area as well as implementation of mitigation measures.
- Tagging
    - Eleven monk seals were tagged on Oahu, Molokai and Kauai in collaboration with National Marine Fisheries Service, Pacific Islands Fisheries Science Center.

Table 2. U.S. Navy funded marine mammal monitoring accomplishments within the Hawaii Range Complex from August 2009 to August 2010

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
Visual surveys (Studies 1,2,3,4,5)	1) 31.3 hours - 26-30 Aug 2009 (aerial) 2) 33 hours – 15-19 Feb 2010 (aerial) 3) 21.5 hours 26-28 June 2010 (vessel) 4) 78 hours – 17-25 July 2010 (vessel)	1) SCC (ASW) 2) SCC (ASW) 3) Pre-RIMPAC (ASW and explosives) 4) RIMPAC (ASW)	n/a	n/a	120-160 hours before, during and after ASW and/or explosive events	163.8 hours of visual surveys
Marine Mammal Observers (Studies 1,2,3,4,5)	1) 42.5 hrs (21.25 hrs x 2 MMOs] – 26-30 Aug 2009 2) 197 hrs [49.2 hrs x 4 MMOs] - 15-19 Feb 2010	1) SCC (ASW) 2) SCC (ASW)	n/a	n/a	80 hours aboard Navy vessels during ASW and/or explosive events	239.3 hours
Tagging (Studies 1,2,3)	11 Hawaiian monk seals tagged off Kauai, Oahu and Molokai	Coverage overlaps ULT, SCC, RIMPAC	Partial funding, via NMFS/SWFSC, to Cascadia Research Collective for cetacean tagging	n/a	Tag 15 marine mammals	11 monk seals tagged
Passive Acoustic Monitoring (Studies 1,2,3)	1) Two Ecological Acoustic Recording (EAR) devices deployed on Pu`uloa 8 July 2010 2) Two EARS deployed off Ni`ihau 17 July 2010	RIMPAC	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)	n/a	Deploy 4 devices and collaborate with data collection from other Navy-funded devices. Analyze PIFSC data collected in 2009.	4 EAR devices deployed, two off Oahu and two off Niihau/Kauai Contract awarded to further analyze data from 10 ONR-funded EARS deployed around Oahu and Kauai Data collected and analyzed from PMRF instrumented range. PIFSC data from 2009 survey analyzed and reported.
Mitigation Effectiveness (Study 5)	1) 42 hours from 26-30 Aug 2009 2) 197 hours from 15-19 Feb 2010 3) 2 explosive events - 10 July and 17 July 4) 4 explosive events, 15 July	1) SCC (ASW) 2) SCC (ASW) 3) RIMPAC Sinking Exercise 4) RIMPAC Underwater Detonations	n/a		Lookout effectiveness study by MMOs during 3 ASW events and 6 explosive events	Lookout effectiveness during 2 ASW events and 6 explosive events

Metrics exceeded:

Visual surveys: visual surveys (four total) were conducted before, during and after all the multi-unit ASW events in the HRC, totally more than the targeted number of hours.

Marine mammal observers: hours were exceeded four-fold for marine mammal observer hours. This was in part, due to the lookout effectiveness study design which recommends four marine mammal observers participate in each embark.

Passive Acoustic Monitoring: continuation of acoustic recording and analysis from the PMRF instrumented range was not committed to in prior monitoring plans, however, it has been ongoing with ONR and CPF funding for many years.

Metric shortfalls:

Tagging: the Navy's goal was to tag 15 marine mammals however, only eleven were successfully tagged by the 1 August 2010 data cutoff. NMFS is still striving to complete the necessary number of deployments and tagging will continue to complete all 15 deployments. Falling short of our goal is primarily a result of the unpredictability of field work. During multiple field trips, NMFS was presented with an unprecedented lack of seals on the beaches, particularly on Kauai. In three, week-long trips to Kauai, only 4 instruments were deployed. Of the seals that were encountered on those trips, most were pregnant females, young of the year, or animals that were not suitable candidates for instrumentation due to some sort of injury or molt status. During the first field trip to Kauai in February 2010 three cell phone tags were deployed. All of these tags fell off within a few weeks of deployment. This malfunction was due to a bad batch of epoxy that was used to secure the tags to a neoprene base. New epoxy was used on all subsequent deployments to prevent similar issues.

Mitigation effectiveness: The HRC had fewer ASW events in 2010 than is typical, with no USWEX occurring during the data year. These fewer events translated to fewer opportunities to monitor. So, although the hours for MMOs well-exceeded the goal of hours, there were two ASW events monitored for this study instead of three.

B. Adaptive Management Recommendations for 2011 Monitoring In Hawaii Range Complex

Adaptive management is an iterative process of optimal decision making in the face of uncertainty, with an aim to reducing uncertainty over time via system monitoring. Within the natural resource management 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.

The Navy and NMFS convened meetings in 2009 (Raleigh Durham, NC) and July 2010 (Washington DC) in the interest of soliciting input on monitoring objectives and methods. Additionally, the Fleets will convene a monitoring plan review meeting in October 2010 prior to the 2011 Adaptive Management meeting. Results of these meetings as well as success and challenges in the field continue to feed Adaptive Management.

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. We continued to successfully schedule monitoring using civilian aircraft and ships operating concurrently with multiple Navy aircraft and ships in the same area, which required extensive pre-survey coordination between multiple Navy commands. The U.S. Pacific Fleet operational community 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. They also provided berthing and vessels for MMOs on two 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.

C. Proposed 2011 Monitoring Commitments

In view of lessons learned during implementation of the 2010 HRC Monitoring Plan and as part of the Navy's adaptive management review for the Hawaii Range Complex, slight modification of the 2010 Plan is recommended for 2011, shown in Tables 3 and 4.

The main rational for restructuring the monitoring shown in Table 3 is to:

- simplify the presentation of goals, and
- align the technique with the best promise of more accurately addressing the Monitoring Plan objectives

Specific revisions for 2011 monitoring include:

Visual Surveys: Minor change in order to allow maximum flexibility of platform choice.

Marine Mammal Observers (MMOs): There are two changes to this section. Firstly, since the MMOs are the method being used for study 5, it was erroneous in the 2010 plan to separate out Mitigation Effectiveness in the table. Therefore, it has been combined for FY11. Secondly, there is a change from the 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 FY10. MMOs will continue to be used for gathering species and behavioral data as well as implementation of the Lookout Effectiveness developed in 2010 by Navy, University of St. Andrews and NMFS Science Centers.

Tagging: No change.

PAM: Other than wording changes, the addition here is to include the hydrophones in the Pacific Missile Range Facility instrumented range for acoustic data gathering and analysis. This was not included in prior monitoring plans, however, the data collection has been ongoing for many years. Adding this method of passive acoustic monitoring will expand our capabilities.

Table 3. Adaptive management review showing updates to FY10 monitoring plan (strike through are deletions and red font are additions).

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~~ MMO team aboard Navy surface platforms during 2 ASW and 6 explosive events.	
Tagging **STUDIES 1,2,3**	Tag a goal of 15 individual marine mammals.	
Passive Acoustic Monitoring (PAM) **STUDIES 1,2,3**	~~Install~~ four ~~HARPs~~ PAM devices deployed throughout the year. ~~; collaborate with~~ Continue collaboration of data collection and analysis from ~~other~~ additional N45/ONR R&D funded autonomous PAM devices ~~(goal of 10 devices total)~~. ~~Analyze PIFSC acoustic data collected in 2009.~~ - Continue use of the Pacific Missile Range Facility instrumented range hydrophones to gather and analyze marine mammal acoustic data.	
~~**Mitigation Effectiveness**~~ ~~**STUDY 5**~~	~~Lookout effectiveness study by MMOs on Navy surface vessels during 3 ASW events and 6 explosive events~~	

Legend:

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

Table 4. Final 2011 monitoring commitments resulting from changes red-lined in Table 3.

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.	Adaptive Management Review (AMR) for FY11
Marine Mammal Observers (MMO) **STUDIES 1,2,3, 4, 5**	MMO team aboard Navy surface platforms during 2 ASW and 6 explosive events	
Tagging **STUDIES 1,2, 3**	Tag a goal of 15 individual marine mammals	
Passive Acoustic Monitoring (PAM) **STUDIES 1,2, 3**	- 4 PAM devices deployed through the year. Begin data analysis. Continue collaboration of data collection and analysis from additional N45/ONR-funded autonomous PAM devices. - Continue use of the Pacific Missile Range Facility instrumented range hydrophones to gather and analyze marine mammal acoustic data.	

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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