UNITED STATES NAVY

INTEGRATED COMPREHENSIVE MONITORING PROGRAM

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EXECUTIVE SUMMARY

The Navy is responsible for compliance with a suite of Federal environmental laws and regulations that apply to marine mammals and other marine protected species, including the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). As part of the regulatory compliance process associated with these Acts, the Navy is responsible for meeting specific requirements for monitoring and reporting on activities involving active sonar and/or detonations from underwater explosives.

This Integrated Comprehensive Monitoring Program (ICMP) provides the overarching framework for coordination of the United States Navy monitoring program. It has been developed in direct response to Navy Range permitting requirements established in the various MMPA Final Rules, ESA Consultations, Biological Opinions, and applicable regulations. As a framework document, the ICMP applies by regulation to those activities on ranges and operating areas for which the Navy sought and received incidental take authorizations.

The ICMP is intended for use as a planning tool to focus Navy monitoring priorities pursuant to ESA and MMPA requirements. Top priority will always be given to satisfying the mandated legal requirements across all ranges. Once legal requirements are met, any additional monitoring-related research will be planned and prioritized using guidelines provided by the ICMP, consistent with availability of both funding and scientific resources. As a planning tool, the ICMP is a “living document”. It will be routinely updated as the Program matures. Initial areas of focus for maturing the document in 2010 include further refinement of monitoring goals, adding a characterization of the unique attributes associated with each range complex / study area to aid in shaping future monitoring projects, as well as a broader description of the data management organization and access procedures.

The ICMP will be evaluated annually through the adaptive management process to assess progress, provide a matrix of goals for the following year, and make recommendations for refinement and analysis of the monitoring and mitigation techniques. This process includes conducting an annual Adaptive Management Review (AMR) at which the Navy and National Marine Fisheries Service (NMFS) jointly consider the prior year goals, monitoring results, and related science advances to determine if modifications are needed to more effectively address monitoring program goals. Modifications to the ICMP that result from AMR decisions will be incorporated by an addendum or revision to the ICMP. The ICMP updates will be provided to NMFS by 31 December annually beginning in 2010. This adaptive management process recurs annually, with some modifications to the process in 2011, when the Navy, with guidance and support from NMFS, is to host a Monitoring Workshop that incorporates outside experts and expanded participation.

Section 1 introduces the ICMP, including purpose, objectives, specific ranges and geographic areas included, and additional background material. Section 2 describes overall monitoring goals and prioritization guidelines. Section 3 discusses standard data collection and management procedures. Section 4 addresses the coordination of reporting requirements, including a specific timeline for coordination of the current year’s reporting requirements, and the recordkeeping system that documents how each Range Complex contributes to ongoing monitoring objectives. Section 5 outlines the adaptive management process, including provisions for annual reviews as well as a monitoring workshop in 2011. Section 6 discusses near-term plans for continued maturation of the Monitoring Program.

Section 7 provides roles and responsibilities among the various Navy components. References are listed in Section 8.

OPNAV (N45) is responsible for maintaining and updating this ICMP as required to reflect the results of future regulatory agency final rulemaking, adaptive management reviews, best available science, improved assessment methodologies, or more effective protective measures. This will be done in consultation with Navy technical experts, Fleet Commanders, and Echelon II Commands as appropriate as part of the adaptive management process.

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1. INTRODUCTION

The Navy is responsible for compliance with a suite of Federal environmental laws and regulations that apply to marine mammals and other marine protected species, including the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). As part of the regulatory compliance process associated with these Acts, the Navy is responsible for meeting specific requirements for monitoring and reporting on military readiness activities involving active sonar and underwater detonations from explosives and explosive munitions. These military readiness activities include both Fleet training events and Navy-funded research, development, test and evaluation (RDT&E) activities.

This Integrated Comprehensive Monitoring Program (ICMP) plan provides the overarching framework for coordination of the United States Navy monitoring program. It is intended for use as a planning tool to focus Navy monitoring priorities pursuant to ESA and MMPA requirements and as an adaptive management tool to analyze and refine monitoring and mitigation techniques over time. It has been developed in direct response to Navy Range permitting requirements established in the various MMPA Final Rules, ESA Consultations, Biological Opinions, and applicable regulations. As a framework document, the ICMP applies by regulation to those activities on ranges and operating areas for which the Navy sought and received incidental take authorizations.

The ICMP currently includes specific monitoring plans that have been or are being developed for the Southern California (SOCAL) Range Complex, Atlantic Fleet Active Sonar Training (AFAST) Study Area, Hawaii Range Complex (HRC), Mariana Islands Range Complex (MIRC), Northwest Training Range Complex (NWTRC), Gulf of Alaska (GOA), Virginia Capes (VACAPES) Range Complex, Cherry Point Range Complex, Jacksonville (JAX) Range Complex[1], Gulf of Mexico (GOMEX) Range Complex, Naval Sea Systems Command Naval Undersea Warfare Center Keyport (NUWC Keyport) Range Complex, and Naval Sea Systems Command Naval Surface Warfare Center Panama City Division (NSWC PCD) Study Area. These range complexes and study areas are depicted in Figure 1. Note that the AFAST study area encompasses multiple smaller ranges. Additional ranges or study areas may be added to the ICMP consistent with future Navy range permitting requirements.

Table 1 provides a status listing of the MMPA Final Rules for ranges and study areas presently included in the ICMP, and the applicable dates for those Final Rules that are in effect. This table is current as of 27 November 2009. Unless otherwise specified, references to “MMPA Final Rules” throughout this document include all of the rules listed by Table 1 that have a status of “In Effect”. A listing of the corresponding Letters of Authorization and Monitoring Plans in effect as of the data date is provided in the Reference section. While the ICMP also applies to range-specific monitoring plans that are still being developed, modifications to the ICMP may be required to appropriately reflect requirements established by future Rules.

[1] Note, the Jacksonville Range Complex includes operating areas for both Jacksonville, FL and Charleston, SC and is sometimes referred to as the Charleston / Jacksonville (CHASJAX) Range Complex. For purposes of this document, references to this Range Complex will simply be as Jacksonville Range Complex, which is consistent with the nomenclature used in the MMPA Final Rule.

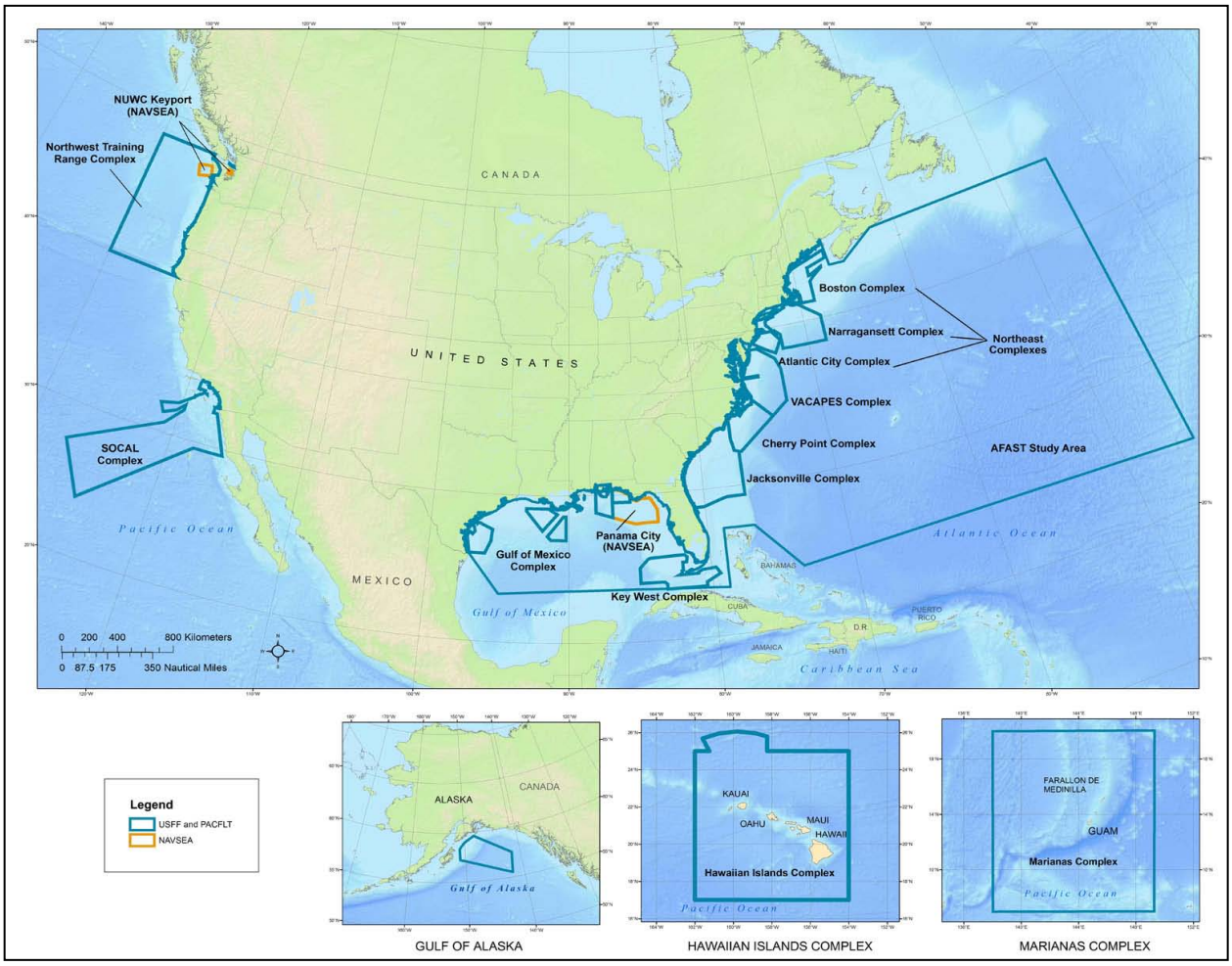

Figure 1: Navy Range Complexes and Study Areas included under the ICMP

Table 1: Status of MMPA Final Rules for Navy Range Complexes included in the ICMP
(Data date: 27 November 2009)

RANGE	MMPA Final Rule Reference (or status)	Dates Applicable
Hawaii Range Complex (HRC)	**IN EFFECT**: Taking and Importing Marine Mammals; U.S. Navy Training in the Hawaii Range Complex; Final Rule, 74 Fed. Reg. 1456 (January 12, 2009) (to be codified at 50 C.F.R. § 216).	5 Jan 2009 – 5 Jan 2014
Southern California (SOCAL) Range Complex	**IN EFFECT**: Taking and Importing Marine Mammals; U.S. Navy Training in the Southern California Range Complex; Final Rule, 74 Fed. Reg. 3883 (January 21, 2009) (to be codified at 50 C.F.R. § 216).	14 Jan 2009 - 14 Jan 2014
Atlantic Fleet Active Sonar Training (AFAST) Study Area	**IN EFFECT**: Taking and Importing Marine Mammals; U.S. Navy's Atlantic Fleet Active Sonar Training (AFAST); Final Rule, 74 Fed. Reg. 4844 (January 27, 2009) (to be codified at 50 C.F.R. § 216).	22 Jan 2009 - 22 Jan 2014
Cherry Point Range Complex	**IN EFFECT:** Taking and Importing Marine Mammals; U.S. Navy Training in the Cherry Point Range Complex; Final Rule, 74 Fed. Reg. 28370 (June 15, 2009) (to be codified at 50 C.F.R. § 218).	5 Jun 2009 – 4 Jun 2014
Jacksonville (JAX) Range Complex	**IN EFFECT**: Taking and Importing Marine Mammals; U.S. Navy Training in the Jacksonville Range Complex; Final Rule, 74 Fed. Reg. 28349 (June 15, 2009) (to be codified at 50 C.F.R. § 218).	5 Jun 2009 – 4 Jun 2014
Virginia Capes (VACAPES) Range Complex	**IN EFFECT**: Taking and Importing Marine Mammals; U.S. Navy Training in the Virginia Capes Range Complex; Final Rule, 74 Fed. Reg. 28328 (June 15, 2009) (to be codified at 50 C.F.R. § 218).	5 Jun 2009 – 4 Jun 2014
Naval Sea Systems Command Naval Surface Warfare Center Panama City Division (NSWC PCD) Study Area	**PROPOSED:** Taking and Importing Marine Mammals; U.S. Naval Surface Warfare Center Panama City Division Mission Activities; Proposed Rule, 74 Fed. Reg. 20156 (April 30, 2009) (to be codified at 50 C.F.R. § 218).	TBD. Proposed Rules closed to public comments on 1 Jun 2009.
Naval Sea Systems Command Naval Undersea Warfare Center Keyport (NUWC Keyport) Range Complex	**PROPOSED**: Taking and Importing of Marine Mammals; U.S. Navy's Research, Development, Test, and Evaluation Activities Within the Naval Sea Systems Command Naval Undersea Warfare Center Keyport Range Complex; Proposed Rules, 74 Fed. Reg. 32264 (July 7, 2009) (to be codified at 50 C.F.R. § 218).	TBD. Proposed Rules closed to public comments on 6 Aug 2009.
Northwest Training Range Complex (NWTRC)	**PROPOSED**: Taking and Importing Marine Mammals; Navy Training Activities Conducted Within the Northwest Training Range Complex; Proposed Rules, 74 Fed. Reg. 33828 (July 13, 2009) (to be codified at 50 C.F.R. § 218).	TBD. Proposed Rules closed to public comments on 19 Aug 2009.
Gulf of Mexico (GOMEX) Range Complex	**PROPOSED**: Taking of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Training Operations Conducted Within the Gulf of Mexico Range Complex; Proposed Rules, 74 Fed. Reg. 33960 (July 14, 2009) (to be codified at 50 C.F.R. § 218).	TBD. Proposed Rules closed to public comments on 13 Aug 2009.
Mariana Islands Range Complex (MIRC)	**PROPOSED**: Taking and Importing Marine Mammals; Military Training Activities and Research, Development, Testing and Evaluation Conducted Within the Mariana Islands Range Complex (MIRC); Proposed Rule, 74 Fed. Reg. 53796 (October 20, 2009) (to be codified at 50 C.F.R. § 218).	TBD. Proposed Rules closed to public comments on 19 Nov 2009.
Gulf of Alaska (GOA) Range Complex	**STATUS:** Letter of Authorization (LOA) application submitted to NMFS on March 20, 2009 and revised/resubmitted on November 20, 2009.	TBD

There are two broad categories of authorized activities covered by the ICMP. These include:

1) Authorized Fleet activities carried out on Fleet-permitted ranges in support of military readiness, and
2) Authorized Navy Acquisition Community RDT&E activities carried out on NAVSEA-permitted ranges in support of military readiness.

There are variations in the monitoring and mitigation requirements between Fleet and Acquisition Community activities. This is in part due to the significant differences in the nature of activities conducted by these two communities relative to factors such as the types of sound sources, numbers and size of platforms (boats, ships, aircraft), as well as numbers of individuals involved. Monitoring and mitigation measures are tailored to the specific authorized activities consistent with permitting requirements. For the Fleet-permitted ranges, the associated monitoring plans are generally "range-specific" and apply across all authorized activities on that range. For the NAVSEA-permitted ranges, their monitoring plans tend to be "project-specific", that is, specifically tailored to each individual authorized activity.

Appendices A and B provides a listing by range complex / study area of specific sound sources and activities included in the associated MMPA Final Rules / Proposed Rules for the Fleet and Naval Sea Systems Command (NAVSEA) action proponents respectively. Note that for Atlantic ranges in the AFAST study area, monitoring and mitigation requirements for mid-frequency active sonar (MFAS), high-frequency active sonar (HFAS), and underwater detonations from explosive sonobuoy (specifically IEER) Fleet military readiness activities are addressed in the AFAST MMPA Final Rule. Monitoring requirements associated with Fleet military readiness activities involving other types of underwater detonations are established in the MMPA Final Rules for the individual range complexes (e.g., VACAPES, JAX, Cherry Point, and GOMEX) where these activities will be conducted.

The MMPA Final Rules detail specific requirements for this document. The following quote is from the Final Rule for the SOCAL Range Complex[2]. Similar language is found in each of the other MMPA Final Rules listed by Table 1.

> "The Navy shall complete an Integrated Comprehensive Monitoring Plan (ICMP) in 2009. This planning and adaptive management tool shall include:
> (1) A method for prioritizing monitoring projects that clearly describes the characteristics of a proposal that factor into its priority.
> (2) A method for annually reviewing, with NMFS, monitoring results, Navy R&D, and current science to use for potential modification of mitigation or monitoring methods.
> (3) A detailed description of the Monitoring Workshop to be convened in 2011 and how and when Navy/NMFS will subsequently utilize the findings of the Monitoring Workshop to potentially modify subsequent monitoring and mitigation.
> (4) An adaptive management plan.
> (5) A method for standardizing data collection across Range Complexes."

[2] See 74 Fed. Reg. 3915 (January 21, 2009) (50 C.F.R.§216.175(c)).

The MMPA Final Rules further provide that the primary objectives of the ICMP are to:

- Monitor and assess the effects of Navy activities on protected marine species;
- Ensure that data collected at multiple locations is collected in a manner that allows comparison between and among different geographic locations;
- Assess the efficacy and practicality of the monitoring and mitigation techniques;
- Add to the overall knowledge base of protected marine species and the effects of Navy activities on these species.

The ICMP meets these requirements and objectives by:

- Identifying top-level goals for the monitoring program, as well as guidelines for use in prioritizing monitoring projects and related RDT&E activities;
- Defining standard procedures for the compilation and management of data from range/project-specific monitoring plans;
- Establishing an adaptive management process that includes annual reviews with NMFS;
- Making provisions to review relevant monitoring-related research and, where appropriate, incorporate findings as updates to the range/project-specific monitoring plans and mitigation measures through adaptive management; and
- Providing an unclassified recordkeeping system that will allow interested parties to see how each Range Complex is contributing to ongoing monitoring.

As the overarching framework, the ICMP focuses Navy monitoring priorities pursuant to ESA and MMPA requirements. However, the ICMP does not include or specify the actual monitoring fieldwork components, nor does it commit to fund specific monitoring-related activities. Individual Navy permit-holders and research sponsors are responsible for defining the range/project-specific fieldwork components and research activities for their respective range monitoring plans and research programs. Top priority will always be given to satisfying the mandated legal requirements across all ranges. Once legal requirements are met, any additional monitoring-related activities will be planned and prioritized using guidelines provided by the ICMP, consistent with availability of both funding and scientific resources.

The ICMP will be evaluated annually through the adaptive management process to assess progress, provide a matrix of goals for the following year, and make recommendations for refinement and analysis of the monitoring and mitigation techniques. This process includes conducting an Adaptive Management Review (AMR) at which Navy and National Marine Fisheries Service (NMFS) will jointly consider the prior year goals, monitoring results, and related science advances to determine if modifications are needed to more effectively address monitoring program goals. Modifications to the ICMP that result from AMR decisions will be incorporated by an addendum or revision to the ICMP. These ICMP updates will be provided to NMFS by 31 December annually beginning in 2010. This adaptive management process recurs annually, with some modifications to the process in 2011, when the Navy, with guidance and support from NMFS, is to host a Monitoring Workshop that incorporates outside experts and expanded participation.

The ICMP is organized in the following way. Section 2 describes overall monitoring goals and prioritization guidelines. Section 3 discusses standard data collection and management procedures. Section 4 addresses the coordination of reporting requirements and the recordkeeping system that documents how each Range Complex contributes to ongoing

monitoring objectives. Section 5 outlines the adaptive management review process, including provisions for a monitoring workshop in 2011. Section 6 discusses near-term plans for continued maturation of the Monitoring Program. Section 7 provides roles and responsibilities among the various Navy components. References are listed in Section 8.

2. MONITORING GOALS AND PRIORITIZATION GUIDELINES

Research relating to the effects of anthropogenic sound on marine species is an evolving science. The Navy is committed to utilizing the best available science in developing and implementing the monitoring programs required pursuant to ESA and MMPA. The Navy demonstrated this commitment by funding approximately $26 million annually in marine mammal-related research projects for fiscal years 2007-2009[3] to better understand how marine mammals hear and how they are affected by sound. Researchers at Navy laboratories and warfare centers are investigating marine-mammal bioacoustics, marine mammal distribution and abundance, and passive acoustic detection of marine mammals. The Navy also collaborates with universities, institutes, conservation agencies, private industries, and independent researchers around the world to better understand what combinations of ocean conditions, bathymetry, and sonar usage patterns may lead to marine species disturbances. The Navy intends to continue this level of annual investment in protected marine species research over the next five years.[4]

As the overarching framework for coordination of the Navy's monitoring efforts, the ICMP guides the research investment by establishing top-level goals and guidelines for use in prioritizing monitoring projects and related RDT&E activities. The guidelines are not intended to supersede the specific legal requirements that each range complex must meet for monitoring and mitigation of ongoing Navy military readiness activities as detailed by its governing Letter of Authorization (LOA). Top priority will continue to be given to satisfying the mandated legal requirements across all ranges.

To meet requirements in the MMPA Final Rules for Navy Range Complexes[5], this section provides a method for prioritizing monitoring projects that clearly describes the characteristics of a proposal that factor into its priority. However, as noted previously, the ICMP does not specify or commit to fund specific monitoring-related research; that remains the responsibility of individual research sponsors. The ICMP also makes provisions for maintaining an unclassified record of Navy-sponsored monitoring projects and research using the procedures described in Section 4.

The adaptive management process described in Section 5 will be used to review and, when appropriate, incorporate findings from relevant research as updates to the range/project-specific monitoring plans. Adaptive management will also be used to evaluate and update the goals and priorities presented here on an annual basis. ICMP updates resulting from the adaptive management process will be documented and provided to NMFS by 31 December annually beginning in 2010.

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[3] Research funding level from http://www.navy.mil/oceans/environmental.html on 14 April 2009.

[4] Projected investment level from http://www.navy.mil/oceans/science.html on 15 July 2009.

[5] *E.g.*, 50 C.F.R. § 216.175(c).

2.1 MONITORING GOALS

Monitoring measures prescribed in range/project-specific monitoring plans and Navy-funded research relating to the effects of anthropogenic sound on protected marine species should be designed to accomplish one or more of the following top-level goals:

- An increase in the probability of detecting marine mammals and other threatened or endangered marine species, both within the safety zone (thus allowing for more effective implementation of the mitigation) and in general to generate more data to contribute to the effects analyses.

- An increase in our understanding of how many marine mammals and other threatened or endangered marine species are likely to be exposed to levels of Mid-Frequency Active Sonar (MFAS), High-Frequency Active Sonar (HFAS), underwater detonations, or other stimuli that are associated with specific adverse effects, such as behavioral harassment, Temporary Threshold Shift (TTS), or Permanent Threshold Shift (PTS).

- An increase in our understanding of how marine mammals and other threatened or endangered marine species respond (behaviorally or physiologically) to MFAS/HFAS, underwater detonations, or other stimuli at specific received levels that result in the anticipated take of individual animals.

- An increase in our understanding of how anticipated adverse effects on individual animals may impact the population, species, or stock (specifically through effects on annual rates of recruitment or survival).

- An increase in our understanding of the effectiveness of certain mitigation and monitoring measures.

- A better understanding and record of the manner in which the authorized entity complies with the incidental take authorization.

As the overall ICMP continues to develop, these top-level goals will be further refined through the development of a series of subquestions associated with each goal. The combination of top-level goals and associated subquestions will then be used to shape future monitoring efforts. This goal refinement effort will be an important area of focus for the Program during 2010.

Several of the top-level goals listed above focus on understanding the short-term effects to individual animals from naval anthropogenic sound. For the purposes of the ICMP, short-term is defined as the period during which the behavioral response is empirically determined or presumed to be directly attributable to exposure to naval anthropogenic sound.

To begin to address these top-level goals, the current set of range-specific Monitoring Plans have been designed as a collection of focused ‘‘studies’’ to gather data that will allow the Navy to address the following questions (not all questions apply to each range):

- 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, temporary threshold shift (TTS), or permanent threshold shift (PTS))? If so, at what levels are they exposed?

- If marine mammals (and sea turtles) are exposed to MFAS, do they redistribute geographically as a result of continued exposure? If so, how long does the redistribution last?

- If marine mammals (and sea turtles) are exposed to MFAS, what are their behavioral responses to various received levels?

- What are the behavioral responses of marine mammals and sea turtles that are exposed to explosives?

- Is the Navy's suite of mitigation measures for MFAS (e.g., measures agreed to by the Navy through permitting) effective at avoiding TTS, injury, and mortality of marine mammals?

Monitoring measures that are put in place to meet the above goals and focused studies will produce data sets that include short-term individual observations. These observations, in combination with parallel monitoring and data analysis efforts by others, support research efforts directed towards identifying biologically significant behavioral responses that may have either cumulative or population-level effects. These data sets will also support the assessment of population trends, including species composition, distribution, and abundance, to determine the efficacy of mitigation and monitoring measures, and increase knowledge regarding the response of marine mammals and other threatened or endangered marine species to Navy sound sources. These data sets may also help to provide important information on the geographic and temporal extent of key habitats and provide baseline information to account for natural perturbations such as El Niño or La Niña events. Additionally, the data sets will provide observational data and baseline information to determine the spatial and temporal extent of reactions to Navy operations, or indirect effects from changes in prey availability and distribution. These data sets will be managed and made available for use by the procedures outlined in Section 3.

In developing range/project-specific monitoring plans or research programs to address these top-level goals and focused studies, sponsors should strive to prevent creating situations that leave the Navy "data rich but information poor." That is, it is often easier to collect some types of information than it is to analyze and draw meaningful conclusions from it. One example of this potential situation is the collection of marine mammal vocalizations using passive acoustic monitoring, where terabytes of acoustic data can be collected over the course of a given monitored event. To fully benefit from this type of monitoring and data collection investment, it is critical that sufficient funding for data analysis be factored into the program plans.

2.2 PRIORITIZATION GUIDELINES

In establishing prioritization guidelines, it is important to "begin with the end in mind." The desired end-result from Navy monitoring and mitigation conducted pursuant to ESA and MMPA requirements is a comprehensive and accurate assessment of applicable Navy military readiness and scientific research activities that involve active sonar and/or underwater detonations, performed in a manner that enables Fleet Commands, Program Executive Offices (PEOs), and other Echelon II Commands to meet their requisite operational, training, acquisition, research, development, testing, and evaluation requirements.

The guidelines presented here maximize marine resource protection by focusing Navy efforts and resources on those geographic areas where potential effects to marine mammals and other threatened or endangered marine species are most likely to occur due to concentrated and repetitive Navy activities. However, the guidelines are not intended to preclude monitoring activities in other areas of moderate or low Navy use when there might be special biological circumstances or other overriding considerations. The guidelines are intended for use when developing or modifying range/project-specific monitoring plans and monitoring-related research programs that will be considered as part of the adaptive management process described in Section 5. The guidelines are not intended to supersede the specific legal requirements that each range complex must meet for monitoring and mitigation of ongoing Navy military readiness activities as detailed in its governing LOA. Top priority will continue to be given to satisfying the mandated legal requirements across all ranges. Once legal requirements are met, additional monitoring activities will be prioritized using the guidelines that follow, consistent with availability of both funding and scientific resources.

In shaping, designing or evaluating prospective monitoring projects, sponsors should consider the following factors for each proposal:

a. Number of monitoring goals that the project addresses,

b. Relative density of marine mammals and other protected marine species in the proposed area,

c. Relative occurrence of concentrated and repetitive Navy active sonar activities in the proposed area,

d. Level of anticipated impacts to marine mammals in the area,

e. Presence of unique biological and /or physical attributes that better allow monitoring goals to be addressed,

f. Degree to which the proposed activity might provide unique contributions or additional diversity to the data set collection that will assist in meeting the top-level goals,

g. Ability to leverage and/or augment existing efforts by Navy monitoring to positive effect,

h. Availability of specialized Navy assets within a specific area to support monitoring efforts, e.g. instrumented ranges,

i. Return on investment as measured by confidence level in the likelihood of obtaining meaningful monitoring data based on factors such as prior success with the specific method itself, anticipated sea states, seasonal weather patterns, local animal densities and migration patterns, and anticipated success rate for integrating the monitoring method with training events, and

j. Degree to which the proposed activity might affect the ability of Navy Commands to meet their requisite operational, training, acquisition, research, development, testing, and evaluation requirements.

Many of the factors listed above are highly dependent on the specific location at which the proposed activity is to be conducted. To better assist planning efforts within the ICMP, a characterization of the unique attributes associated with each range complex / study area will be developed and added as an update to this document during 2010.

The monitoring requirements established in the MMPA Final Rules listed by Table 1 are currently in effect for five-year periods beginning in 2009. To fully evaluate and respond to the effects of naval anthropogenic sound on living marine resources, it is anticipated that monitoring time frames extending beyond the initial five years will be needed.

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3. DATA COLLECTION AND MANAGEMENT

This section discusses standardized data collection and management methods in support of Navy monitoring activities, and is a required element of the ICMP under the MMPA Final Rules for Navy ranges and operating areas. The Navy makes substantial investments in monitoring programs to ensure compliance with terms of ESA consultations and MMPA authorizations, and to provide for adaptive program management. Standardized procedures are essential to make the most of this investment. The objective for this standardization is to collect data in a manner that will enable comparison between and among different geographic locations to the extent that is scientifically justifiable. These standardized approaches apply to both range/project-specific monitoring plans as well as Navy-funded R&D studies.

Improved monitoring and assessment methodologies are likely to be developed as the science surrounding marine species monitoring continues to evolve. These improvements will be reviewed and assessed annually as part of the adaptive management process conducted jointly by Navy and NMFS. This process will determine whether modifications to the standardized collection and management methods are appropriate for the upcoming year. If so, updates to the ICMP will be made to reflect the results of Navy-NMFS adaptive management decisions to incorporate the improved monitoring and assessment methodologies as standard procedures and provided to NMFS by 31 December annually. As discussed in Section 5, adaptive management reviews will be done in consultation with Navy technical experts, Fleet Commanders, and Echelon II Commands as appropriate.

3.1 DATA COLLECTION

There is a large suite of monitoring methods that may be used to detect, locate, identify, and study the behaviors and responses of individual marine animals *in situ*. Some of the more prevalent categories of monitoring techniques and tools include:

- Visual Observations made using Navy lookouts, Civilian Marine Species Observers, vessel-based surveys, aerial surveys, shore surveys, and photo-identification,
- Acoustic Monitoring using both passive and active methods, and
- Behavioral Monitoring through tag attachments.

This suite of methods is continually evolving in step with advances in research. Each monitoring technique has advantages and disadvantages that vary temporally and spatially. Therefore, a combination of techniques is generally recommended so that the detection and observation of marine animals is maximized. The optimal choice of monitoring approach will vary depending on the purpose for the monitoring, the type of data to be collected, and a number of other factors such as the species of concern (whether frequently on surface, deep-diving, or cryptic), animal density, geographical location, weather, visibility, expected sea state conditions, type of Navy activities conducted in the area, and the total size of the area to be monitored. The particular choice of monitoring approaches will also be influenced by duration of monitoring period, effectiveness, practicality, impact to training, and cost.

It is beyond the scope of this framework document to fully describe this suite of monitoring methods or to prescribe "best practices" for the implementation of these independent techniques for monitoring purposes. Instead, the focus here is on prescribing both essential as well as desired data elements to be collected and recorded as "standard data" to support future data comparisons to the extent that is scientifically appropriate.

This section prescribes the data elements that are to be collected as standard practice for both range/project-specific monitoring as well as Navy-funded R&D studies. While it may not be scientifically valid to directly combine data sets from varied platforms such as shipboard and aerial surveys, the use of standardized sampling and survey protocols will be critical to meeting the overall monitoring goals, as well as assisting better data comparison between years and across different sets of observations. While detailed sampling and survey protocols are specific to independent monitoring techniques and outside the scope of this document, some overall guidelines on sample size and statistical analysis are provided by Appendix C.

Each range/operating area LOA designates particular types and quantities of military readiness activities that require mitigation, monitoring, and reporting pursuant to MMPA and ESA. The LOA details the specific mitigation measures that must be implemented when conducting these activities, and the data that is to be recorded and documented for the various compliance reports. While the information presented here is intended to highlight common data collection requirements from the LOAs, requirements imposed in the range/project-specific LOA take precedence over the information listed here.

The MMPA Final Rules pertaining to Fleet military readiness activities prescribe essential data elements that are to be recorded for individual marine mammal sightings during MFAS/HFAS Major Training Exercises (MTEs) and SINK Exercises (SINKEXs). Table 2 highlights these essential data elements. As one step towards collecting this data in a standardized manner, formatted marine species sighting forms are used by Navy lookouts during monitored military readiness activities. Appendix D provides the current Fleet version of this form. Note, while the LOAs prescribe the collection of these data elements specifically during Fleet MTEs and SINKEXs, the marine species sighting form may also be used to document sightings during other monitored military readiness activities. Its use is not strictly limited to MTEs or SINKEXs.

The MMPA Proposed Rules pertaining to RDT&E activities also prescribe the reporting of individual marine mammal sightings. For purposes of standardized data collection, Marine Species Observers monitoring RDT&E activities, as well as third-party biologists under contract to the Navy for marine species monitoring, should be tasked to collect (at minimum) the essential data elements highlighted by Table 2. They may elect to use a different format than that presented in Appendix D as long as these essential data elements are included. In addition, the governing LOA, once issued, should be verified in event additional essential data elements are prescribed for marine species sightings associated with RDT&E activities. To the extent possible, data will be collected from all distinct habitats in the region to avoid potential sampling bias.

Table 2 also lists additional oceanographic data elements that are highly desirable to fully support analysis of the observations and associated acoustic propagation conditions. Distribution and abundance of marine species are highly dependent on oceanographic

DATA ELEMENTS TO BE RECORDED FOR INDIVIDUAL MARINE ANIMAL SIGHTINGS ASSOCIATED WITH MONITORED MILITARY READINESS ACTIVITIES	
COMMON DATA ELEMENTS	
1)	Location of sighting (lat / long)
2)	Species (if species not possible— indication of whale/dolphin/pinniped/turtle)
3)	Number of individuals
4)	Calves observed (y/n)
5)	Initial Detection Sensor
6)	Indication of specific type of platform observation made from (including, for example, type of surface vessel, i.e., FFG, DDG, or CG)
7)	Length of time observers maintained visual contact with marine animal(s)
8)	Wave height (in feet)
9)	Visibility
10)	Sonar source in use (y/n). If impulsive or explosive source in use, skip to line 15.
IF ACTIVE SONAR SOURCE IN USE:	
11)	Indication of whether animal is <200yd, 200–500yd, 500–1000yd, 1000– 2000yd, or >2000yd from sonar source in (10) above
12)	Mitigation Implementation— Whether operation of sonar sensor was delayed, or sonar was powered or shut down, and how long the delay was.
13)	If source in use (from 10 above)) is hull-mounted, true bearing of animal from ship, true direction of ship's travel, and estimation of animal's motion relative to ship (opening, closing, parallel)
14)	Observed behavior— Watchstanders shall report, in plain language and without trying to categorize in any way, the observed behavior of the animals (such as animal closing to bow ride, paralleling course/ speed, floating on surface and not swimming, etc.) [END for active source essential data elements]
IF IMPULSIVE/EXPLOSIVE SOURCES ARE BEING USED:	
15)	Whether sighting was before, during, or after detonations/exercise, and how many minutes before or after.
16)	Distance of individual/group from actual detonations—or target spot if not yet detonated—use four categories to define distance: (a) The modeled injury threshold radius (MITR) for the largest explosive used in that exercise type in that OPAREA; (b) the required exclusion zone (e.g., 1 nm for SINKEX); (c) the required observation distance (if different than the exclusion zone) (e.g., 2 nm for SINKEX); and (d) greater than the required observed distance. In this example, the observer would indicate if < MITR, from MITR — 1 nm, from 1 nm—2 nm, and > 2 nm.
17)	Observed behavior— Watchstanders will report, in plain language and without trying to categorize in any way, the observed behavior of the animals (such as animal closing to bow ride, paralleling course/ speed, floating on surface and not swimming etc.), including speed and direction.
18)	Resulting mitigation implementation—Indicate whether explosive detonations were delayed, ceased, modified, or not modified due to marine mammal presence and for how long.
19)	If observation occurs while explosives are detonating in the water, indicate munition type in use at time of marine mammal detection. [END for explosive source essential data elements]
OPTIONAL DATA ELEMENTS, PROVIDE AS AVAILABLE or KNOWN	
20)	Sound Velocity Profile for location
21)	Sea surface temperature
22)	Presence of strong gulf stream currents, fronts, and/or mesoscale eddies (y/n)
23)	Other prominent oceanographic features

Table 2: Data Elements to be recorded for individual marine animal sightings associated with monitored military readiness activities

conditions and other environmental factors. Some scientific literature suggests that animals often limit their range to certain habitat areas or broad ocean regions based on sea surface temperature, bathymetric features, and prey abundance. Thus, it is desirable to include data from additional oceanographic and environmental monitoring, predictive forecasts of oceanographic conditions, or some mix of both to account for ambient conditions. The Navy's meteorological and oceanographic community has an extensive array of ocean data gathered by satellite sensing, direct measurements, and predictive models that may be used to support this. Oceanographic conditions can be monitored by a variety of different platforms including satellites, *in situ* observation systems such as buoys, and vessel surveys. For more extensive monitoring efforts, UAVs or gliders might be utilized to obtain oceanographic data. In addition, the recent distribution of joint civilian-government agency Ocean Observing Systems, ocean monitoring satellites, and in-situ buoys offer multiple information sources that could support the Navy's protected marine species monitoring program. Whenever possible, these optional data elements should be recorded for individual marine mammal sightings or relevant groups of individual sightings when made in close proximity to each other. Note that these optional data elements, if available, are typically recorded pre- or post-monitoring by personnel other than the Navy lookouts assigned to sight for marine animals.

3.2 DATA MANAGEMENT

As previously discussed, results from Navy-funded monitoring activities will establish time-series data sets that may be used to research trends in species abundance, behavioral reactions and mitigation effectiveness. The data collected through protected marine species monitoring and mitigation activities across all permitted Navy range complexes and relevant Navy-funded RDT&E activities will be incorporated into an electronic centralized data repository established under the guidance of OPNAV N45. These data will be used to support a Navy-wide analysis of monitoring and produce required reports for NMFS on behalf of the Navy Action Proponent. The electronic central repository will include data that are the result of activities conducted under the MMPA authorizations, such as monitoring data from sonar activities and underwater detonations from designated ranges and OPAREAS, marine species sighting observations, and exercise reports pertaining to protected marine species monitoring. The repository will also include annual results from Navy-funded R&D programs such as technical and professional journal articles. Due to the potential for inclusion of classified data, distribution of raw acoustic time series data from monitoring activities is subject to the written consent of the Secretary of the Navy or appointed designee. Unclassified NMFS-required monitoring reports, as specified by the MMPA Final Rules, will be made publicly available by posting on the internet.

As the ICMP matures, and greater amounts of monitoring data are recorded and available for analysis, ways of efficiently organizing this data to support discovery and access within the bounds of existing regulations will become increasingly important. Navy and NMFS will continue to work together to develop a data-sharing process that best supports the regulatory process in a transparent manner. Procedures will be developed in a structured manner to meet specific access requirements for the various Fleet, Scientific, and General Public user groups. Unclassified NMFS-required monitoring reports as specified by the

MMPA Final Rules are currently available on the NMFS website. These reports along with unclassified results from monitoring-related Navy R&D programs will also be publicly available from the Navy repository by the end of calendar year 2010. A more complete description of the data management organization and access procedures will be provided in the next ICMP update.

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4. REPORTING

This section addresses the overarching structure and coordination that will be used to coordinate reporting requirements from range/project-specific monitoring plans, and the recordkeeping system that tracks and documents how each Range Complex or Operating Area contributes to ongoing monitoring.

4.1 REPORT COORDINATION

The Navy is required to monitor and report on the effects of Navy actions on protected marine species. The MMPA Final Rules and LOAs specify the compilation of reports that summarize range/project-specific monitoring activities, analyses and results. These reports are submitted to the NMFS Office of Protected Resources (NMFS OPR) and provide critical inputs to the adaptive management process that allows the Navy and NMFS to assess and refine the Navy's overall monitoring effort. If there is a conflict between the reporting information described here and the requirements specified in the NMFS MMPA LOA, the LOA requirements take precedence.

Navy range action proponents are responsible for report development and submittal. The action proponents include Commander United States Fleet Forces Command (USFF), Commander Pacific Fleet (CPF), and Commander Naval Sea Systems Command (NAVSEA). Note, while Commander NAVSEA is the Action Proponent, he has designated Commander NUWC Keyport Division and Commander NSWC Panama City Division as the responsible individuals for report development and submittal. It is recognized that some information provided in the annual reports may be classified and not releasable to the public.

For the Fleet range complexes and study areas, there are two recurring reports required annually: an Annual Exercise Report and an Annual Monitoring Plan Report.

The primary purpose of the Annual Exercise Report is to report on authorized military readiness activities conducted within each range complex or study area, as well as the monitoring and mitigation performed in association with those activities. Table 3 provides a summary of contents for this multi-part report. As noted in Section 1, Anti-Submarine Warfare (ASW) military readiness activities that take place within the AFAST Study Area are covered in entirety under the AFAST MMPA Final Rules and LOA. Subsequently, only the explosives summary section is required in the Annual Exercise Report for the Cherry Point, Jacksonville, Virginia Capes, and Gulf of Mexico Range Complexes.

The Annual Monitoring Plan Report describes the implementation and results from the associated range/project-specific monitoring plan. It relies on standardized data collection methods across the Navy range complexes to allow for comparison of different geographic locations. The individual range reports may be provided to NMFS within a consolidated report that includes the required Monitoring Plan Reports from multiple Range Complexes.

For the NAVSEA ranges, there is a single recurring annual report required on RDT&E military readiness activities authorized under their permit. This report includes an estimated number of hours of sonar operation broken down by source type as well as a report of all marine mammal sightings.

Summary Sections contained in the Annual Exercise Report
Summary of MFAS/HFAS Major Training Exercises
a) Exercise info for Integrated Coordinated, and Major Training Exercises (MTEs)
– (i) Exercise designator. – (ii) Date that exercise began and ended. – (iii) Location. – (iv) Number and types of active sources used in the exercise. – (v) Number and types of passive acoustic sources [*sic*] used in exercise. – (vi) Number and types of vessels, aircraft, etc., participating in exercise. – (vii) Total hours of observation by lookouts. – (viii) Total hours of all active sonar source operation. – (ix) Total hours of each active sonar source (along with explanation of how hours are calculated for sources typically quantified in alternate way (buoys, torpedoes, etc.)). – (x) Wave height (high, low, and average during exercise).
b) Individual marine mammal sighting info (for each sighting in each MTE).
– See list of data elements described in Section 3.1
c) An evaluation (based on data gathered during all of the MTEs) of the effectiveness of mitigation measures designed to avoid exposing marine mammals to mid-frequency sonar. This evaluation shall identify the specific observations that support any conclusions the Navy reaches about the effectiveness of the mitigation.
ASW Summary
a) Summarized information For MTEs & non-major training exercises Include total annual hours of each type of sonar source (along with explanation of how hours are calculated for sources typically quantified in alternate way (buoys, torpedoes, etc.)), plus other range-specific information.
b) Cumulative Impact Report
c) Annual (and seasonal, where practicable) depiction of non-major training exercises geographically across the Study Area.
SINKEX Summary
a) Exercise info for each SINKEX completed that year
– (i) Location. – (ii) Date and time exercise began and ended. – (iii) Total hours of observation by lookouts before, during, and after exercise. – (iv) Total number and types of rounds expended/explosives detonated. – (v) Number and types of passive acoustic sources used in exercise. – (vi) Total hours of passive acoustic search time. – (vii) Number and types of vessels, aircraft, etc., participating in exercise. – (viii) Wave height in feet (high, low, and average during exercise). – (ix) Narrative description of sensors and platforms utilized for marine mammal detection and timeline illustrating how marine mammal detection was conducted.
b) Individual marine mammal sighting info (for each sighting in each MTE).
– See list of data elements described in Section 3.1
IEER / AEER Summary
– (i) Total number of IEER and AEER events conducted. – (ii) Total expended/detonated rounds (buoys). – (iii) Total number of self-scuttled IEER rounds.
Explosives Summary
– (i) Total annual number of each type of explosive exercise (of those identified as part of the ‘‘specified activity’’ in this MMPA Final Rule) conducted in the action area – (ii) Total annual expended/detonated rounds (missiles, bombs, etc.) for each explosive type.

Table 3: Summary Sections contained in the Annual Exercise Report

Each range complex submits annual summaries as applicable for authorized military readiness activities.

The annual reporting requirements associated with the MMPA Final Rules are designed to provide NMFS with monitoring data from the previous year to allow NMFS to consider the data and issue annual LOAs. As part of the adaptive management process described in Section 5, NMFS and the Navy will meet yearly, prior to LOA issuance, to discuss these annual reports and to determine whether mitigation or monitoring modifications are appropriate. Range/project-specific monitoring plans are then updated and submitted as part of the LOA Renewal Application. If substantial modification, as determined by NMFS, to the described mitigation or monitoring will occur during the upcoming season, the NMFS will provide the public a period of 30 days for review and comment on the request.

There are also non-recurring reporting requirements. For both Fleet and NAVSEA ranges and study areas, these requirements include a draft "Range Complex 5-year Comprehensive Report" that analyzes and summarizes all multi-year marine mammal information gathered during authorized activities for which annual reports are required. This report is submitted at the end of the fourth year of the rule, covering activities that occurred through a specified data cutoff date.

For the Fleet ranges only, the non-recurring requirements also include a draft "Comprehensive National ASW Report" that analyzes, compares, and summarizes the active sonar data gathered from Navy lookouts pursuant to the implementation of range-specific monitoring plans. This National ASW Report is not required for the Cherry Point, Jacksonville, Virginia Capes, and Gulf of Mexico Range Complexes, as active sonar data from these OPAREAS is included in the AFAST reporting requirements. Further guidance to support the preparation of these two comprehensive reports will be promulgated by OPNAV N45 in conjunction with the Adaptive Management Process.

Table 4 provides an overall summary listing of report dates under the current MMPA Final Rules, current as of 27 November 2009. Similar reporting requirements are anticipated for Navy range complexes that have yet to receive MMPA authorizations. NMFS is responsible for establishing the specific timeline for each year's report submittals. It should be noted that, as part of adaptive management, there might be a potential total overhaul of the report submission dates to better streamline the overall process.

The Navy shall respond to NMFS comments and requests for additional information or clarification on the individual annual or comprehensive reports if submitted within three months of receipt. These reports will be considered final after the Navy has addressed NMFS' comments or provided the requested information, or three months after the submittal of the draft if NMFS does not comment by then.

It is anticipated that reporting requirements will be added pursuant to the implementation of monitoring plans and MMPA Final Rules for the Naval Surface Warfare Center Panama City Division Study Area, Naval Undersea Warfare Center Keyport Range Complex, Mariana Islands Range Complex, the Northwest Training Range Complex, and the Gulf of Alaska Range Complex. The ICMP plan will be updated as appropriate to reflect these requirements through the adaptive management process.

Table 4: Common reporting requirements for range complexes/study areas covered by ICMP
(Data date: 27 November 2009)

RANGE	Annual Exercise Report	Annual Monitoring Plan Report	5-Year Comprehensive Monitoring Report	Comprehensive National ASW Report
Hawaii Range Complex (HRC)	1 Aug cutoff / 1 Oct submit	1 Aug cutoff / 1 Oct submit	1 June 2012 cutoff / 30 Nov 2012 submit	1 Jan 2014 cutoff / June 2014 submit
Southern California (SOCAL) Range Complex	1 Aug cutoff / 1 Oct submit	1 Aug cutoff / 1 Oct submit	1 June 2012 cutoff / 30 Nov 2012 submit	1 Jan 2014 cutoff / June 2014 submit
Atlantic Fleet Active Sonar Training (AFAST) Study Area	1 Aug cutoff / 1 Oct submit	1 Aug cutoff / 1 Oct submit	1 June 2012 cutoff / 30 Nov 2012 submit	1 Jan 2014 cutoff / June 2014 submit
Cherry Point Range Complex	Annual report required, but submittal date not specified.	1 Jan cutoff / 1 Mar submit	1 Dec 2012 cutoff / 31 May 2013 submit	Not Applicable
Jacksonville (JAX) Range Complex	Annual report required, but submittal date not specified.	1 Jan cutoff / 1 Mar submit	1 Dec 2012 cutoff / 31 May 2013 submit	Not Applicable
Virginia Capes (VACAPES) Range Complex	Annual report required, but submittal date not specified.	1 Jan cutoff / 1 Mar submit	1 Dec 2012 cutoff / 31 May 2013 submit	Not Applicable
Naval Surface Warfare Center Panama City Division (NSWC PCD) Study Area	Not Applicable	PROPOSED: 1 Jun cutoff / 1 Sep submit	PROPOSED: 1 June 2012 cutoff / 30 Nov 2012 submit	Not Applicable
Naval Undersea Warfare Center Keyport (NUWC Keyport) Range Complex	Not Applicable	PROPOSED: 1 Sep cutoff / 1 Dec submit	PROPOSED: 1 Sep 2013 [*sic*] cutoff / 30 Jun 2013 submit	Not Applicable
Northwest Training Range Complex (NWTRC)	PROPOSED: 1 Aug cutoff / 1 Oct submit	PROPOSED: 1 Jun cutoff / 1 Sep submit	PROPOSED: 1 June 2013 cutoff / 30 Nov 2013 submit	PROPOSED: 1 Jan 2014 cutoff / June 2014 submit
Gulf of Mexico (GOMEX) Range Complex	Annual report required, but submittal date not specified.	PROPOSED: 1 Sep cutoff / 1 Nov submit	PROPOSED: 1 Sep 2013 cutoff / 30 Mar 2014 submit	Not Applicable
Mariana Islands Range Complex (MIRC)	PROPOSED: 1 Jun cutoff / 15 Nov submit	PROPOSED: 15 Sep cutoff / 15 Nov submit	PROPOSED: 15 Jul 2014 [*sic*] cutoff / 30 Nov 2013 submit	PROPOSED: 1 Jan 2014 cutoff / June 2014 submit
Gulf of Alaska (GOA) Range Complex	TBD	TBD	TBD	Other MMPA Final Rules indicate that GOA will be included in this report, but GOA MMPA Final Rule not yet published.

4.2 RECORDKEEPING SYSTEM

OPNAV (N45) is responsible for coordinating the development, funding, and assessment of Navy marine research, and ensuring prioritization of research monitoring projects consistent with the top-level goals and priorities established by the ICMP or other applicable legal requirements. Monitoring activities will be allocated and resourced based on the strength of particular and specific monitoring proposals. With NMFS concurrence, they will not be allocated based on maintaining an equal (or commensurate to effects) distribution of monitoring effort across the Range complexes. For example, if careful prioritization and planning through the ICMP (which would include a review of both past monitoring results and current scientific developments) were to show that a large, intense monitoring effort in on one range complex would likely provide extensive, robust and much-needed data that could be used to understand the effects of sonar on the marine environment throughout different geographical areas, it may be appropriate to have other Range Complexes dedicate money, resources, or staff to the specific monitoring proposal identified as ‘‘high priority’’ by the Navy and NMFS, in lieu of focusing on smaller, lower priority projects divided throughout their home Range Complexes. In the event that monitoring is allocated in this fashion, clear recordkeeping is needed to demonstrate how each Range Complex / project is contributing to all of the ongoing monitoring. This will be done by maintaining a record of these resource allocation decisions in the electronic central data repository previously discussed in Section 3.

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5. ADAPTIVE MANAGEMENT

The MMPA Final Rules for Navy Range Complexes[6] require an adaptive management process to be established. Section 5.1 describes the process that will be used to annually review, with NMFS, monitoring results, Navy RDT&E, and current science to use for potential modification of mitigation or monitoring methods. The MMPA Final Rules also prescribe a Monitoring Workshop to be held in 2011 to review cumulative monitoring results from 2009 and 2010. Section 5.2 discusses this Monitoring Workshop, as well as how and when Navy/NMFS will subsequently utilize the findings of the Monitoring Workshop to potentially modify subsequent monitoring and mitigation.

5.1 ANNUAL REVIEWS

The reporting requirements associated with the MMPA Final Rules are designed to provide NMFS with monitoring data from the previous year in sufficient time to allow NMFS to consider the data before reissuing subsequent LOAs. Using the data collection and reporting procedures previously described in Sections 3 and 4, the Navy's monitoring data and marine species sighting observations will be consolidated and made available for analysis. NMFS and Navy will then meet to conduct an annual Adaptive Management Review (AMR). The AMR is a multipart review at which NMFS and the Navy jointly consider prior year goals, monitoring results and advancing science to assess overall progress. The review will determine if modifications are needed in mitigation or monitoring measures to more effectively address monitoring program goals. The AMR will consider data as available from across all of the range complexes included within the ICMP. At present, only one AMR per year is planned, and it will be applicable to all range complexes covered by the ICMP. The AMR will also consider an updated matrix of goals and prioritization guidelines proposed for the following year.

OPNAV N45 is responsible for the overall AMR meeting coordination and agenda. Navy action proponents will be asked to assign staff familiar with range/project-specific monitoring results to participate in this review and present an overview of the past year's monitoring activities. Additionally, sponsors of Navy-funded monitoring-related research will be asked to participate and provide a summary of their activities and accomplishments. Other potential presentation and discussion topics for the AMR include:

- Lessons learned from previous year's monitoring efforts,
- Other (outside of Navy-funded) monitoring-related science advances,
- Effectiveness of existing monitoring and mitigation tools,
- Operational feasibility of new tools and technologies,
- Recommendations for refinement and analysis of monitoring and mitigation methods, and
- Recommendations for the next year's monitoring activities.

[6] *E.g.*, 50 C.F.R. § 216.175(c).

If available, collaboration with regional NMFS scientists, academic scientists, and other non-Navy subject matter experts will be informally sought.

Products of the AMR include a determination as to whether mitigation or monitoring modifications are appropriate for the upcoming year, and an updated matrix of monitoring goals and prioritization guidelines. Adaptations and refinements to monitoring programs that result from the AMR will be incorporated into the range/project-specific monitoring plans as they come up for renewal in the normal course of events.

Adaptive Management will also lead to updates and improvements to the overall ICMP. The updated matrix of goals and prioritization guidelines resulting from the AMR will be incorporated by an annual addendum or revision to the ICMP. Additionally, expanded descriptions of the data repository, details for data standardization protocols, expanded information on range-specific characteristics, and planning information for the 2011 Monitoring Workshop are among the candidate information to be included in future updates. Annual ICMP updates will be provided to NMFS by 31 December beginning in 2010.

With the annual Adaptive Management Review, NMFS and Navy will have the ability to consider new data from different sources for purposes of making minor modifications to improve the effectiveness of range/project-specific monitoring plans, or to potentially identify substantial changes for subsequent 5-year regulations. This could result in mitigation or monitoring measures being added, modified, or deleted for subsequent annual LOAs. If a request to renew a Letter of Authorization indicates that a substantial modification as determined by NMFS to the described activity, mitigation, or monitoring during the upcoming season will occur, NMFS will provide the public a period of 30 days for review and comment on the request.

AMRs potentially could lead to significant restructuring of the monitoring plans put forward by individual ranges. In order to obtain robust, much-needed data that addresses high priority monitoring goals, monitoring activities may be prioritized and resourced based on the likely contribution of specific monitoring proposals to stated monitoring goals, as well as the likely technical success of the proposed monitoring approach based on a review of past monitoring results. This is in contrast to allocating monitoring resources based on maintaining an equal (or commensurate to effects) distribution of monitoring effort across Range complexes. For example, if careful prioritization and planning were to suggest that a large, intense monitoring effort in one Range Complex could be used to understand the effects of sonar throughout different geographical areas, it may be appropriate to have other Range Complexes dedicate money, resources, or staff to the specific monitoring proposal identified as ‘‘high priority’’ by the Navy and NMFS, in lieu of focusing on smaller, lower priority projects divided throughout their home Range Complexes.

A record of decisions and monitoring resource allocations made as a result of the AMR will be documented and maintained in the electronic central data depository previously discussed in Section 3. This will allow NMFS and other interested parties to see how each Range Complex is contributing to all of the ongoing monitoring (funding, staffing, and level of effort).

This adaptive management process recurs annually. However, there will be modifications to the process in 2011, when the Navy, with guidance and support from NMFS, is to host a Monitoring Workshop that incorporates outside experts and expanded participation.

5.2 MONITORING WORKSHOP IN 2011

As part of the Adaptive Management process in 2011, the Navy, with guidance and support from NMFS, will convene a Monitoring Workshop, including marine mammal and acoustic experts as well as other interested parties. This Monitoring Workshop, tentatively scheduled for April 2011 at a location yet to be determined, will present a consolidated overview of monitoring activities accomplished in 2009 and 2010 pursuant to the regulations in place to govern the unintentional taking of marine mammals incidental to authorized activities conducted on Navy ranges and operating areas. It will also include outcomes of selected monitoring-related research activities. One possible outcome of this workshop is the potential identification of substantial changes in monitoring approaches for subsequent 5-year regulations.

Participation in this jointly sponsored NMFS / Navy Workshop will be by invitation only. Participants will include, among others, recognized experts in marine species monitoring from across Government, academia, and the private sector. After considering the current science and working within the framework of available resources and feasibility of implementation, Monitoring Workshop participants will be asked to submit their individual recommendations to the Navy and NMFS. Navy and NMFS will then analyze the input from the Monitoring Workshop participants and determine the best way forward from a national perspective.

The workshop will not be used to seek or achieve consensus on a way forward for the monitoring program. NMFS has statutory responsibility to prescribe regulations pertaining to monitoring and reporting, and will develop in coordination with the Navy the most effective and appropriate monitoring and reporting protocols for future authorizations. As necessary, NMFS will incorporate any changes into future LOAs and future rules. If the modification to the described activity, mitigation, or monitoring is determined by NMFS to be substantial, NMFS will provide the public a period of 30 days for review and comment.

OPNAV N45 will take the lead for Navy in coordinating this Monitoring Workshop with NMFS. There will be a series of detailed planning meetings for this 2011 workshop starting with the 2010 Adaptive Management Review.

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6. ICMP NEAR-TERM DEVELOPMENT FOCUS AREAS

To be an effective planning tool, the ICMP must continue to develop and evolve over time. Specific recommendations for near-term development of the ICMP have been suggested throughout the document, and are compiled here for ease in tracking. A progress report covering each of the focus areas listed below will be included with the Adaptive Management Review. Updated information will also be included in the next annual revision of this document, which will be provided to NMFS by December 31, 2010.

There are three specific areas that have been identified for the initial ICMP near-term development.

1. **Top-level Goal Refinement**. The Navy, in consultation with NMFS, will refine the top-level goals provided by section 2 through the development of a series of subquestions associated with each goal. The combination of top-level goals and associated subquestions will then be used to identify, in advance, at the ICMP level, the types of monitoring projects that would achieve these goals. For example, the series of subquestions in combination with a review of existing data might lead to proposing a density survey in a data-poor area, or proposing to tag an animal and record its responses to a nearby exercise.

2. **Characterization of Navy Range Complexes / Study Areas**. Many of the prioritization guideline factors provided by section 2 are highly dependent on the specific location at which the proposed monitoring activity is to be conducted. To better assist planning efforts within the ICMP, one would like to predict a confidence level for the likelihood of obtaining meaningful monitoring data in any given location based on factors such as prior success with the specific monitoring method itself, anticipated sea states, seasonal weather patterns, local animal densities and migration patterns, and anticipated success rate for integrating the monitoring method with training events at that location. For this framework document to support that level of comparative analysis, it needs to include reference information that allows the user a top-level view of attributes across the various Navy range complexes. This characterization of the unique attributes associated with each range complex / study area will be developed and results added with the next update.

3. **Data Management Organization and Access Procedures Development**. Section 3 provided a preliminary description of the centralized electronic repository for data associated with the ICMP, and the types of data that might be made available, as appropriate, to various categories of users. At present, there is a mix of classified and unclassified data that falls under the ICMP umbrella. As the ICMP matures, and greater amounts of monitoring data are recorded and available for analysis, ways of efficiently organizing this data to support discovery and access within the bounds of existing regulations will become increasingly important. Navy and NMFS will continue to work together to develop a data-sharing process that best supports the regulatory process in a transparent manner. Procedures will be developed in a structured manner to meet specific access requirements for the various Fleet, Scientific, and General Public user groups. Unclassified NMFS-required monitoring reports as specified by the MMPA Final Rules are currently available on the NMFS website. These reports along with unclassified results from monitoring-related Navy R&D programs will also be publicly available from the Navy repository by the end of calendar year 2010. A more complete description of the data management organization and access procedures will be provided in the next ICMP update.

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7. ROLES AND RESPONSIBILITIES

OPNAV (N45) is responsible for maintaining and updating this ICMP as appropriate to reflect future regulatory agency final rulemaking, adaptive management reviews, best available science, improved assessment methodologies, or more effective protective measures. This will be done in consultation with Navy technical experts, Fleet Commanders, and Echelon II Commands as appropriate.

OPNAV (N45) shall

- Coordinate the development, funding, and assessment of Navy marine research, ensuring prioritization of monitoring projects consistent with the top-level goals established by the ICMP or other applicable legal requirements.
- Establish an electronic central repository that includes both monitoring data from activities conducted under the MMPA authorizations and annual results from Navy-funded R&D programs.
- Review annual ESA and MMPA reports prepared by Echelon II Commands to ensure a standardized approach is maintained that will enable appropriate consolidation and comparison of data.
- Chair an annual Adaptive Management Review (AMR) with NMFS on a schedule that supports the reissuance of LOA and annual Biological Opinions (BO) to maintain uninterrupted Fleet training and operations as well as Acquisition Community RDT&E activities. Attendees should include representatives from OPNAV, Office of the Assistant Secretary of the Navy for Installations and Environment (OASN I&E), Office of Naval Research (ONR), and Echelon II commands. OPNAV (N45) may approve additional attendees.
- In conjunction with the Adaptive Management Review, submit an annual evaluation of monitoring-related goals and priorities to NMFS.
- Co-chair planning sessions with NMFS to address detailed planning for the April 2011 Monitoring Workshop.

USFF, CPF, NAVSEA, and other permit holders shall

- Coordinate completion of environmental planning, permitting, consultations, and reports to support uninterrupted Fleet training and research, development, testing, and evaluation requirements,
- Conduct monitoring measures consistent with applicable NMFS MMPA Final Rules, Biological Opinions, and other governing legal requirements,
- Monitor changes in ESA species, critical habitats, Habitat Areas of Particular Concern (HAPC), sanctuaries and protected marine species regulations as it may effect Navy military readiness activities authorized under their permits, and
- Assign staff to participate in the Adaptive Management Review.

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8. REFERENCES

MMPA FINAL RULES / PROPOSED RULES:

Taking and Importing Marine Mammals; U.S. Navy Training in the Hawaii Range Complex; Final Rule, 74 Fed. Reg. 1456 (January 12, 2009) (to be codified at 50 C.F.R. pt. 216).

Taking and Importing Marine Mammals; U.S. Navy Training in the Southern California Range Complex; Final Rule, 74 Fed. Reg. 3883 (January 21, 2009) (to be codified at 50 C.F.R. pt. 216).

Taking and Importing Marine Mammals; U.S. Navy's Atlantic Fleet Active Sonar Training (AFAST); Final Rule, 74 Fed. Reg. 4844 (January 27, 2009) (to be codified at 50 C.F.R. pt. 216).

Taking and Importing Marine Mammals; U.S. Navy Training in the Cherry Point Range Complex; Final Rule, 74 Fed. Reg. 28370 (June 15, 2009) (to be codified at 50 C.F.R. pt. 218).

Taking and Importing Marine Mammals; U.S. Navy Training in the Jacksonville Range Complex; Final Rule, 74 Fed. Reg. 28349 (June 15, 2009) (to be codified at 50 C.F.R. pt. 218).

Taking and Importing Marine Mammals; U.S. Navy Training in the Virginia Capes Range Complex; Final Rule, 74 Fed. Reg. 28328 (June 15, 2009) (to be codified at 50 C.F.R. pt. 218).

Taking and Importing Marine Mammals; U.S. Naval Surface Warfare Center Panama City Division Mission Activities; Proposed Rule, 74 Fed. Reg. 20156 (April 30, 2009) (to be codified at 50 C.F.R. pt. 218).

Taking and Importing of Marine Mammals; U.S. Navy's Research, Development, Test, and Evaluation Activities Within the Naval Sea Systems Command Naval Undersea Warfare Center Keyport Range Complex; Proposed Rules, 74 Fed. Reg. 32264 (July 7, 2009) (to be codified at 50 C.F.R. pt. 218).

Taking and Importing Marine Mammals; Navy Training Activities Conducted Within the Northwest Training Range Complex; Proposed Rules, 74 Fed. Reg. 33828 (July 13, 2009) (to be codified at 50 C.F.R. pt. 218).

Taking of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Training Operations Conducted Within the Gulf of Mexico Range Complex; Proposed Rules, 74 Fed. Reg. 33960 (July 14, 2009) (to be codified at 50 C.F.R. pt. 218).

Taking and Importing Marine Mammals; Military Training Activities and Research, Development, Testing and Evaluation Conducted Within the Mariana Islands Range Complex (MIRC); Proposed Rule, 74 Fed. Reg. 53796 (October 20, 2009) (to be codified at 50 C.F.R. pt. 218).

LETTERS OF AUTHORIZATION / REQUESTS FOR LETTER OF AUTHORIZATION:

Commander, Naval Surface Warfare Center Panama City Division. Request for Letter of Authorization for the incidental harassment of marine mammals resulting from the Naval Surface Warfare Center Panama City Division Mission Activities. Submitted to National Marine Fisheries Service March 2008.

Commander, Naval Undersea Warfare Command Division Keyport. Request for Letter of Authorization for the incidental harassment of marine mammals resulting from Navy Research, Development, Test, and Evaluation Activities conducted within the NAVSEA NUWC Keyport Range Complex Extension. Submitted to National Marine Fisheries Service April 2008.

Commander, U.S. Fleet Forces Command. Request for Letter of Authorization for the incidental harassment of marine mammals resulting from Navy Training Operations conducted within the Gulf of Mexico Study Area. Submitted to National Marine Fisheries Service October 2008.

Commander, U.S. Fleet Forces Command. Request for Letter of Authorization for the incidental harassment of marine mammals resulting from Training and Research, Development, Testing and Evaluation Activities conducted within the Mariana Islands Range Complex. Submitted to National Marine Fisheries Service August 2008.

Commander, U.S. Fleet Forces Command. Request for Letter of Authorization for the incidental harassment of marine mammals resulting from Training and Research, Development, Testing and Evaluation Activities conducted within the Mariana Islands Range Complex, Update #1. Submitted to National Marine Fisheries Service February 2009.

Commander, U.S. Pacific Fleet. Request for Letter of Authorization for the incidental harassment of marine mammals resulting from Navy Training Activities conducted within the Northwest Training Range Complex. Submitted to National Marine Fisheries Service September 2008.

Commander, U.S. Pacific Fleet. Request for Letter of Authorization for the incidental harassment of marine mammals resulting from Navy Training Activities conducted within the Gulf of Alaska Range Complex. Submitted to National Marine Fisheries Service November 2009.

Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service Letter of Authorization signed 8 January 2009 for Commander, U.S. Pacific Fleet incidental to take marine mammals incidental to Navy exercises conducted in the Hawaii Range Complex (HRC).

Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service Letter of Authorization signed 22 January 2009 for Commander, U.S. Fleet Forces Command to take marine mammals incidental to Navy activities conducted in the Atlantic Fleet Active Sonar Training (AFAST) in the Atlantic Ocean and Gulf of Mexico.

Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service Letter of Authorization signed 22 January 2009 for Commander, U.S. Pacific Fleet incidental to take marine mammals incidental to Navy exercises conducted in the Southern California (SOCAL) Range Complex.

Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service Letter of Authorization signed 5 June 2009 for Commander, U.S. Fleet Forces Command to take marine mammals incidental to U.S. Navy training activities conducted in the Cherry Point Range Complex in the Atlantic Ocean.

Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service Letter of Authorization signed 5 June 2009 for Commander, U.S. Fleet Forces Command to take marine mammals incidental to U.S. Navy training activities conducted in the Jacksonville (JAX) Range Complex in the Atlantic Ocean.

Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service Letter of Authorization signed 5 June 2009 for Commander, U.S. Fleet Forces Command to take marine mammals incidental to U.S. Navy training activities conducted in the Virginia Capes (VACAPES) Range Complex in the Atlantic Ocean.

RANGE-SPECIFIC MONITORING PLANS

Hawaii Range Complex Monitoring Plan dated December 2008.

Atlantic Fleet Active Sonar Training Range Complex Monitoring Plan dated January 2009.

Southern California Range Complex Monitoring Plan dated 9 January 2009.

Jacksonville Range Complex Monitoring Plan (draft) dated February 2009.

VACAPES Range Complex Monitoring Plan (draft) dated February 2009.

Cherry Point Range Complex Monitoring Plan dated April 2009.

Northwest Training Range Complex Monitoring Plan (draft) dated 20 April 2009.

OTHER REFERENCES:

CNO Memo dated 6 Mar 2006, “Mid-Frequency Active Sonar Effects Analysis Interim Policy”.

DRAFT United States Navy Comprehensive Marine Species Monitoring Program dated October 2007. Naval Facilities Engineering Command Pacific, Pearl Harbor, HI. Prepared by: ManTech SRS Technologies, Inc., 3865 Wilson Boulevard, Suite 800, Arlington, VA 22203 under Contract No. N68711-02-D-8043; Task Order No. 0035 in collaboration with: Cascadia Research Collective; Centre for Research into Ecological and Environmental Modeling, University of St. Andrews; Greeneridge Sciences, Inc.; LGL Limited; Kim Holland, Ph.D. University of Hawaii; and U. S. Navy Marine Resources Support Group.

Endangered Species Act (ESA), 16 U.S.C. §1531, *et seq*.

Executive Order 12114, “Environmental Effects Abroad of Major Federal Actions”.

Marine Mammal Protection Act (MMPA), 16 U.S.C. §1361, *et seq*., as amended by the 2004 National Defense Authorization Act, Pub. L. No. 108-136, 319, 117, Stat. 1433.

National Environmental Policy Act (NEPA), 42 U.S.C. §4321, *et seq.*

OPNAVINST 5090.1C, Environmental Readiness Program Manual dated 30 October 2007.

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APPENDIX A:

Sound Sources and Activities authorized or anticipated to be authorized under the MMPA Final Rules for Fleet Training Range Complexes / Study Areas

Green: Proposed Rules Yellow: TBD Range / Sound Source / Activity	AFAST	SOCAL	HRC	VACAPES	Cherry Pt	JAX	NWTRC	GOMEX	MIRC	GOA
Use of mid-frequency active sonar (MFAS) and high frequency active sonar (HFAS) sources for Fleet Training:										
AN/AQS–22 or 13 (helicopter dipping sonar)	X	X	X						X	
AN/BQQ–10 or 5 (submarine mounted sonar)	X	X	X						X	
AN/BQS–15 (submarine navigation)	X	X					X		X	
AN/SLQ–25 (NIXIE—towed countermeasure)	X	X								
AN/SQQ–32 (over the side mine-hunting sonar)	X									
AN/SQS–53 (hull-mounted sonar)	X	X	X				X		X	
AN/SQS–56 (hull-mounted sonar)	X	X	X				X		X	
AN/SSQ–125 (AEER sonar sonobuoys)	X	X					X		X	
MK–1 or 2 or 3 or 4 (Submarine-fired Acoustic Device Countermeasure (ADC))	X									
MK–46 or 54 (lightweight torpedoes)	X	X							X	
MK–48 (heavyweight torpedoes)	X	X	X				X		X	
Noise Acoustic Emitters (NAE - Sub-fired countermeasure)	X									
SSQ–62 DICASS (sonobuoys)	X	X	X				X		X	
MK-84 range tracking pingers for ASW tracking							X		X	
Portable Undersea Tracking Range Uplink							X		X	
Detonation of underwater explosives for Fleet Training:										
AN/SSQ–110A (IEER explosive sonobuoy) (5 lbs)	X	X	X				X		X	
MK–48 Heavyweight Torpedo (851 lbs)		X	X				X		X	
Airborne Mine Neutralization System (AMNS)				X						
Demolition Charges (20 lbs)		X	X	X	X	X	X		X	
AGM–65 E/F Maverick missile (78.5 lbs)		X	X	X		X	X		X	
Harpoon missile (448 lbs)		X	X				X		X	
AGM–114 Hellfire missile				X	X	X	X		X	
AGM–88 High-speed anti-radiation missile (HARM)				X			X		X	
Tube-launched Optically tracked Wire-guided (TOW) missile					X					
SLAM missile							X		X	
MK–82 Bomb / GBU-12		X	X				X		X	
MK–83 Bomb / GBU-16 / GBU -32		X	X	X			X	X	X	
MK–84 Bomb / GBU-10		X	X				X		X	
5” Naval Gunfire (9.5 lbs)		X	X	X	X	X	X		X	
76 mm rounds (1.6 lbs)		X	X				X		X	
MK3A2 anti-swimmer concussion grenades (0.5 lbs)						X		X	X	
Training Events or Activity:										
ASW Exercise	X	X	X				X		X	
MINEX (Neutralization, Avoidance, Countermeasures)	X	X	X	X	X	X	X		X	
MISSILEX (Air-to-Surface)		X	X	X	X	X	X		X	
MISSILEX (Surface-to-Surface)			X							
BOMBEX (Air-to-Surface)		X	X	X			X	X	X	
SINKEX		X	X				X		X	
GUNEX (Surface-to-Surface)		X	X				X		X	
Naval Surface Fire Support			X							
FIREX with Integrated Maritime Portable Acoustic Scoring System (IMPASS)				X	X	X				
Small Arms Training with grenades						X		X	X	
Maintenance	X	X								
RDT&E (unspecified)	X	X							X	

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APPENDIX B:

Sound Sources and Activities anticipated to be authorized under the MMPA Final Rules for NAVSEA RDT&E Ranges / Study Areas

Green: Proposed Rules Range Sound Source / Activity	NUWC Keyport	NSWC PCD
Use of mid-frequency and high frequency active sound sources for NAVSEA RDT&E:		
Acoustic communication modems, HF	X	X
Acoustic devices for general range and UUV tracking (HF)	X	
Aids to navigation (range equipment)	X	
AN/AQS-22 (helicopter dipping sonar)	X	
AN/AQS–20 (helicopter towed mine-hunting sonar)		X
AN/SQQ–32 (over the side mine-hunting sonar)		X
AN/SQS–53/56 (hull-mounted sonar, Kingfisher)		X
AN/WLD–11 RMS Navigation (HF)	X	X
F84Y (Tower-mounted parametric sonar used to simulate mine-like objects, HF)		X
Object detection and navigation sonars (multiple HF)	X	X
Range Targets with active acoustic devices (MF, HF)	X	
Sidescan Sonars (multiple HF frequencies)	X	X
Sonobuoys, active	X	
Special Test Systems with active acoustic devices (MF, HF)	X	
Sub-bottom profilers (MF, HF)	X	X
Torpedo Sonars (HF)	X	
TVSS (Toroidal Volume Search Sonar, HF)		X
Detonation of underwater explosives for NAVSEA RDT&E:		
Live Ordnance (1 – 10 lb net explosive weight)		X
Live Ordnance (11 – 75 lb net explosive weight)		X
Live Ordnance (76 – 600 lb net explosive weight)		X
Line Charges (1750 lb net explosive in 5 lb increments)		X
Projectiles (5in, 40mm, 30mm, 20mm, 76mm, 25mm, and small arms)		X
NAVSEA RDT&E Activity:		
Acoustic and non-acoustic sensor testing	X	
Countermeasure testing	X	
Impact testing	X	
Inert mine detection, classification, and localization	X	
Ordnance Live T&E		X
Projectile Firing T&E		X
Sonar T&E		X
Surf zone clearing T&E with line charges		X
Surface Operations – equipment deployment and recovery	X	X
Surface Operations – system development	X	X
Surface Operations – test support	X	X
Surface Operations – tows	X	X
UUV and UAS testing	X	
Vehicle propulsion testing	X	

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APPENDIX C:
Sample size and Statistical analysis

Specific guidelines for sample size and statistical analysis are under development. This is a PLACEHOLDER for a FUTURE UPDATE.

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APPENDIX D:
Marine Mammal Sighting Form for Navy Lookouts

Version 3.0N - 19 MAR 09

USS_____DAILY MARINE MAMMAL LOG

A. DTG: Z	B. Species/Type of Mammal:	C. Number of Mammals:	D. Calves: YES/NO
E. Initial Detection Source: VISUAL / AURAL	F. Initial Brg/Rng: T / Yds	G. Unit Position: LAT: LONG:	
H. Unit Course/Speed: T / Kts	I. Last Known Brg/Rng: T / Yds	J. Total Time Visually Observed: MIN	
K. Wave Height: FT	L. Visibility: NM	M. MFAS Active:	N. MFAS Action Taken:
IF MFAS WAS TRANSMITTING WHEN MAMMAL WAS SIGHTED AND SUBSEQUENTLY POWERED DOWN/SHUT DOWN, OR COURSE CHANGED:			
O. Duration of Action: MIN	P. Maneuver Conducted:	Q. Degrees of Course Chg: DEG	R. Range Action Taken: YDS
S. Action impact (note 1):			
T. Narrative of observation (note 2) :			

A. DTG: Z	B. Species/Type of Mammal:	C. Number of Mammals:	D. Calves: YES/NO
E. Initial Detection Source: VISUAL / AURAL	F. Initial Brg/Rng: T / Yds	G. Unit Position: LAT: LONG:	
H. Unit Course/Speed: T / Kts	I. Last Known Brg/Rng: T / Yds	J. Total Time Visually Observed: MIN	
K. Wave Height: FT	L. Visibility: NM	M. MFAS Active:	N. MFAS Action Taken:
IF MFAS WAS TRANSMITTING WHEN MAMMAL WAS SIGHTED AND SUBSEQUENTLY POWERED DOWN/SHUT DOWN, OR COURSE CHANGED:			
O. Duration of Action: MIN	P. Maneuver Conducted:	Q. Degrees of Course Chg: DEG	R. Range Action Taken: YDS
S. Action impact (note 1):			
T. Narrative of observation (note 2) :			

A. DTG: Z	B. Species/Type of Mammal:	C. Number of Mammals:	D. Calves: YES/NO
E. Initial Detection Source: VISUAL / AURAL	F. Initial Brg/Rng: T / Yds	G. Unit Position: LAT: LONG:	
H. Unit Course/Speed: T / Kts	I. Last Known Brg/Rng: T / Yds	J. Total Time Visually Observed: MIN	
K. Wave Height: FT	L. Visibility: NM	M. MFAS Active:	N. MFAS Action Taken:
IF MFAS WAS TRANSMITTING WHEN MAMMAL WAS SIGHTED AND SUBSEQUENTLY POWERED DOWN/SHUT DOWN, OR COURSE CHANGED:			
O. Duration of Action: MIN	P. Maneuver Conducted:	Q. Degrees of Course Chg: DEG	R. Range Action Taken: YDS
S. Action impact (note 1):			
T. Narrative of observation (note 2) :			

A. DTG: Z	B. Species/Type of Mammal:	C. Number of Mammals:	D. Calves: YES/NO
E. Initial Detection Source: VISUAL / AURAL	F. Initial Brg/Rng: T / Yds	G. Unit Position: LAT: LONG:	
H. Unit Course/Speed: T / Kts	I. Last Known Brg/Rng: T / Yds	J. Total Time Visually Observed: MIN	
K. Wave Height: FT	L. Visibility: NM	M. MFAS Active:	N. MFAS Action Taken:
IF MFAS WAS TRANSMITTING WHEN MAMMAL WAS SIGHTED AND SUBSEQUENTLY POWERED DOWN/SHUT DOWN, OR COURSE CHANGED:			
O. Duration of Action: MIN	P. Maneuver Conducted:	Q. Degrees of Course Chg: DEG	R. Range Action Taken: YDS
S. Action impact (note 1):			
T. Narrative of observation (note 2) :			

Note 1: Tactical Degradation Assessment. Impact examples: None. Slight - Degraded ASW screen when ship maneuvered to open whales. Moderate: Lost Contact when power reduced. Significant: Engagement interrupted when MFAS was Shutdown.
Note 2: Describe actions of marine mammals and ship's reactions. Aircraft include altitude. Narrative examples: Dolphins sighted at 1200 YDS off Port bow, closing the ship, CPA of 600 YDS. Powered down MFAS for 35 min until lost sight of whales.
Porpoises sighted by Lookouts using NVGs, range 550 YDS, opening the ship. Powered down MFAS -6dB for 10 min until outside of 1000 YDS.
LoneWolf 42, flying SW at 60kts, 1200 FT, sighted pod of dolphins within 100 YDS DICASS 12. Buoy was not active at the time.

Example:

A. DTG: **061234 Z JAN 09**	B. Species/Type of Mammal: **Whale**	C. Number of Mammals: **2**	D. Calves: YES/NO
E. Initial Detection Source: VISUAL / AURAL	F. Initial Brg/Rng: **215** T / **1400** Yds	G. Unit Position: LAT: **123456N** LONG: **1234555E**	
H. Unit Course/Speed: **265** T / **12** Kts	I. Last Known Brg/Rng: **095** T / **900** Yds	J. Total Time Visually Observed: **14** MIN	
K. Wave Height: **4** FT	L. Visibility: **12** NM	M. MFAS Status: **ON**	N. MFAS Action Taken: **Powerdown**
IF MFAS WAS TRANSMITTING WHEN MAMMAL WAS SIGHTED AND SUBSEQUENTLY POWERED DOWN/SHUT DOWN, OR COURSE CHANGED:			
O. Duration of Action: **14** MIN	P. Maneuver Conducted: **Turn Stbd**	Q. Degrees of Course Chg: **45** DEG	R. Range Action Taken: **800** YDS
S. Action impact (note 1): **slight - degraded integrity of ASW screen, as ship maneuvered to avoid whales**			
T. Narrative of observation (note 2): **two whales paralleled ship's course, CPA of 600 yds after maneuver. Powered down MFAS for 14 min until lost sight of whales.**			

Data Fields:

A. DDHHMM Z MMM YY
B. WHALE / DOLPHIN / PORPOISE / SEAL / SEAL LION / TURTLE /GENERIC (i.e unknown)
C. Number
D. YES / NO
E. VISUAL / AURAL
F. Bearing in Degrees True / Range in Yards
G. Position: DDMMSS N/S DDDMMSS E/W
H. Course in Degrees True / Speed in Knots
I. Bearing in Degrees True / Range in Yards
J. Minutes
K. Feet
L. Nautical Miles
M. NO / YES
N. Powerdown -6dB / Powerdown -10dB / Shutdown / None
O. Minutes
P. Turn STBD / Turn PORT / -
Q. Degrees
R. Range in Yards
S. Tactical Degradation Assessment examples:
   - None
   - Slight - Degraded ASW screen integrity when ship maneuvered to open whales.
   - Moderate - Lost Contact when power reduced.
   - Significant - Engagement interrupted when MFAS was Shutdown.
T. Observation examples:
   - Dolphins sighted at 1200 YDS off Port bow, closing the ship. Maneuvered to confirm Bow Riding and continued MFAS operations
   - Pod of whales sighted fin slapping 600 YDS off STBD bow, paralleling ships course. Ship maneuvered to Port to open range.
   - Porpoises sighted 250 YDS off STBD Beam, opening ship. Powered down MFAS by -6dB until they opened to 1000 YDS. Lost sight astern.
   - DragonSlayer 12, flying NW at 60 kts, 1200FT, spotted pod of dolphins within 150 YDS of DICASS Buoy 12. Buoy was passive at the time, and remained so until dolphins were seen leaving the area. 80% cloud layer at 3500 FT. Photos taken.