

Stranding Response Plan for Major Navy Training Exercises in the Hawaii Range Complex *January 2009*

Strandings

Strandings, as defined by the Marine Mammal Protection Act (MMPA), have occurred throughout recorded history, although U.S. stranding programs have only been keeping consistent records in some cases as long as the last three decades but more commonly the last decade. Strandings may result from many different causes, including, for example, infectious agents, biotoxins, starvation, fishery interaction, ship strike, unusual oceanographic or weather events, sound exposure, or combinations of these stressors sustained concurrently or in series. In many cases, a cause of stranding or death cannot be unequivocally determined for a number of reasons. Several marine mammal strandings have been associated with mid-frequency active sonar (MFAS), however, scientific uncertainty remains regarding the exact combination of behavioral and physiological responses that link MFAS exposure to strandings (though several mechanisms have been theorized). Available evidence suggests that in some cases it may be the presence of additional specific environmental or physical conditions working in confluence with the exposure of marine mammals to MFAS that can potentially result in a stranding. The National Marine Mammal Stranding Network (created under the Marine Mammal Health and Stranding Response Program Act (MMHSRPA)) consists of over 100 organizations partnered with the National Marine Fisheries Service (NMFS) to investigate marine mammal strandings in U.S. waters. NMFS is currently developing (with help anticipated from the Navy, the petroleum industry, and other agencies and entities) a series of studies to correlate long-term stranding patterns and pathologies with all known anthropogenic stressors, such as sound and including seismic surveys and active military sonar. Among other things, the plan discussed below is intended to contribute to the better understanding of why strandings occur.

Introduction to the Stranding Plan

Pursuant to 50 CFR Section 216.105, the plan outlined below will be included by reference and summarized in the regulations and included fully as part of (attached to) the Navy's MMPA Letter of Authorization (LOA), which indicates the conditions under which the Navy is authorized to take marine mammals pursuant to training activities involving MFAS or explosives in the Hawaii Range Complex (HRC). This Stranding Response plan is specifically intended to outline the applicable requirements the authorization is conditioned upon in the event that a marine mammal stranding is reported in the Hawaii Range Complex (HRC) during a *major training exercise* (MTE) (see glossary below). As mentioned above, NMFS considers all plausible causes within the course of a stranding investigation and this plan in no way presumes that any strandings in the HRC are related to, or caused by, Navy training activities, absent a determination made in a Phase 2 Investigation as outlined in Paragraph 7 of this plan, indicating that MFAS or explosive detonation in the HRC were a cause and/or contributed to the stranding. This plan is designed to address the following three issues:

- **Mitigation** – When marine mammals are in a situation that can be defined as a *stranding* (see glossary below), they are experiencing physiological stress. When animals are

stranded, and alive, NMFS believes that exposing these compromised animals to additional known stressors would likely exacerbate the animal's distress and could potentially cause its death. Regardless of the factor(s) that may have initially contributed to the stranding, it is NMFS' goal to avoid exposing these animals to further stressors. Therefore, when live stranded cetaceans are in the water and engaged in what is classified as an *Uncommon Stranding Event* (USE) (see glossary below), the shutdown component of this plan is intended to minimize the exposure of those animals to mid-frequency active sonar (MFAS) and explosive detonations, regardless of whether or not these activities may have initially played a role in the event.

- **Monitoring** – This plan will enhance the understanding of how MFAS or explosive detonations (as well as other environmental conditions) may, or may not, be associated with marine mammal injury or strandings. Additionally, information gained from the investigations associated with this plan may be used in the adaptive management of mitigation or monitoring measures in subsequent LOAs, if appropriate.
- **Compliance** – The information gathered pursuant to this protocol will inform NMFS' decisions regarding compliance with Sections 101(a) (5) (B and C) of the MMPA.

In addition to outlining the necessary procedural steps for the Navy to undertake in the event of a USE during an MTE (as required by the LOA), this document describes NMFS' planned participation in stranding responses in the HRC, as NMFS' response relates specifically to the Navy requirements described here. The NMFS MMHSRP and the participating Pacific Island regional Stranding Networks have specific responsibilities regarding unusual marine mammal mortality events (UMEs) pursuant to Title IV of the MMPA. This document does not serve to replace or preclude any of the procedures currently in place for NMFS' response to UMEs. NMFS will pursue any activities to fulfill obligations relative to UMEs any time that a trigger is reached as determined by the Working Group on Marine Mammal Unusual Mortality Events. This document highlights (or adds to) applicable existing (and developing) protocols and procedures to be used with the specific circumstances and specific subset of strandings addressed here, namely a USE within the HRC during the MTE. This document has been reviewed and approved by the NMFS staff responsible for conducting and overseeing the referenced activities in Hawaii and this plan will be implemented by NMFS to the degree that resources are available and logistics are feasible.

General Notification Provision

If, at any time or place within the HRC, Navy personnel find a *stranded* marine mammal (see glossary below) either on the shore, near shore, or floating at sea, NMFS requests the Navy contact NMFS immediately (or as soon as clearance procedures allow) as described in the HRC Stranding Communication Protocol (currently under development, but subject to incorporation into this plan upon mutual agency approval). NMFS requests the Navy provide NMFS with species or description of animal (s), the condition of the animal (including carcass condition if the animal is dead), location, time of first discovery, observed behaviors (if alive), and photo or video (if available).

Operational Response Plan

This section describes the specific actions the Navy must take in order to comply with the LOA if a USE is reported to the Navy in the HRC coincident to, or within 72 hours of, an MTE. This Stranding Response Plan will include an associated HRC Stranding Communication Protocol (currently under development, but subject to incorporation into this plan upon mutual agency approval), which will indicate, among other things, the specific individuals (NMFS Office of Protected Resources - HQ senior administrators) authorized to advise the Navy that certain actions are prescribed by the Stranding Response Plan. A glossary is included at the end of this document. Words included in the glossary are italicized in this section the first time they are used.

1. Initial Stranding Response - The NMFS regional stranding network will respond to all reports of stranded marine mammals, when feasible. All marine mammals will receive examination appropriate to the condition code of the animal and the feasibility of the logistics. If a *qualified* individual determines that the stranding is a *USE*, NMFS staff (or qualified individual) will initiate a *Phase I Investigation*. NMFS will contact appropriate NMFS and Navy personnel (pursuant to the HRC Stranding Communication Protocol). NMFS and Navy will maintain a dialogue, as needed, regarding the identification of the USE and the potential need to implement shutdown procedures.

2. Shutdown Procedures – Shutdown procedures are not related to the investigation of the cause of the stranding and their implementation is in no way intended to imply that MFAS is the cause of the stranding. Rather, as noted above, shutdown procedures are intended to protect cetaceans *exhibiting indicators of distress* and involved in a USE (see glossary) by minimizing their exposure to possible stressors (MFAS or explosive detonations), regardless of the factors that initially contributed to the USE. Only individuals specifically identified in the HRC Stranding Communication Protocol (NMFS Protected Resources – HQ senior administrators) will be authorized to advise the Navy of the need to implement shutdown procedures (pursuant to the Stranding Response Plan/LOA).

- a) If no live or freshly dead cetaceans are involved in the USE, NMFS will advise the Navy that shutdown procedures need not be implemented. Aerial surveys will be conducted if feasible (see second bullet under b, below).
- b) If live or freshly dead cetaceans are involved in the USE, the Navy will implement the following procedures:
 - o If live cetaceans involved in the USE are in the water (i.e., could be exposed to sonar), NMFS will advise the Navy of the need to implement shutdown

procedures defined in the glossary (pursuant to the Stranding Response Plan/LOA).

- NMFS will coordinate internally, with the Navy, and with other agencies and entities with the intent of obtaining aerial survey arrangements. If an aircraft is available, a survey will be conducted within 14 nm (on the shore and in the water) to look for additional animals that meet the USE criteria. NMFS will request that the Navy assist with aerial surveys, as resources are available.
 - If no additional animals that meet the USE criteria are found (including if no aircraft were available to conduct a survey), and the originally detected animals are not in the water, and will not be put back in the water for rehabilitation or release purposes, or are dead, NMFS will advise the Navy that shutdown procedures need not be implemented at any additional locations.
 - If additional cetacean(s) meeting the USE criteria are detected by surveys, the shutdown procedures will be followed for the newly detected animal(s) beginning at 2(a) above.
- If a qualified individual determines that it is appropriate to put live animals that were initially on the beach back in the water for rehabilitation or release purposes, NMFS will advise the Navy of the need to implement shutdown procedures pursuant to the Stranding Response Plan/LOA.

c) If the Navy finds an injured or dead animal floating at sea during an MTE, the Navy shall notify NMFS (pursuant to HRC Stranding Communication Protocol) immediately or as soon as operational security considerations allow. The Navy should provide NMFS with the information outlined in the general notification provision above, as available. Based on the information provided, NMFS will determine if a modified shutdown is appropriate on a case-by-case basis.

d) In the event, following a USE, that: a) qualified individuals are attempting to herd animals back out to the open ocean and animals are not willing to leave, or b) animals are seen repeatedly heading for the open ocean but turning back to shore, NMFS and the Navy will coordinate (including an investigation of other potential anthropogenic stressors in the area) to determine if the proximity of MFAS operations or explosive detonations, though farther than 14 nm from the distressed animal(s), is likely decreasing the likelihood that the animals return to the open water. If so, NMFS and the Navy will further coordinate to determine what measures are necessary to further minimize that likelihood and implement those measures as appropriate. Navy and NMFS will maintain a dialogue regarding the plan to return the animal(s) to the water.

3. Restart Procedures

- If at any time, the subject(s) of the USE at one location die or are euthanized, NMFS will immediately advise the Navy that the shutdown around that location is no longer needed,
- Shutdown procedures will remain in effect until NMFS determines that, and advises the Navy that, all live animals involved in the USE have left the area (either of their own volition or herded). Leading up to restart, NMFS will coordinate internally, with the Navy, and with other federal and state agencies with the intent of securing arrangements to track the movement of the animals following the dispersal of the USE (aircraft, vessel, or tags). If the Navy has restarted operations in the vicinity of the animals, NMFS and the Navy will further coordinate to determine (based on location and behavior of tracked animals and location/nature of Navy activities) if the proximity of MFAS operations or explosive detonations is likely increasing the likelihood that the animals re-strand. If so, NMFS and the Navy will further coordinate to determine what measures are necessary to minimize that likelihood and implement those measures as appropriate.

4. Information - Within 72 hours of the notification of the USE the Navy will inform NMFS where and when they were operating MFAS or conducting explosive detonations (within 80 nm and 72 hours of the event). Within 7 days of the completion of any exercises that were being conducted within 80 nm or 72 hours prior to the event, the Navy will further provide information to NMFS (per the HRC Stranding Communication Protocol), *as available*, regarding the number and types of acoustic/explosive sources, direction and speed of units using MFAS, and marine mammal sightings information associated with those training activities. Information not initially available regarding the 80 nm, 72 hours, period prior to the event will be provided as soon as it becomes available. The Navy will provide NMFS investigative teams with additional relevant unclassified information as requested (or classified information to qualified NMFS staff), if available.

5. Phase 1 Investigation – Within 4 weeks of a USE (when feasible), NMFS will conduct and complete the Phase 1 Investigation (list of procedures typically included in Phase 1 investigation are included in the Glossary of this document, description of actual procedures are contained in the Biomonitoring Protocols) for all USEs that occur in the HRC coincident with MTEs. Results from the Phase 1 Investigation will be categorized in one of the two ways discussed below and trigger the indicated action:

- If the results of the Phase 1 Investigation indicate that the USE was likely caused by something (such as entanglement or ship strike) other than MFAS or explosive detonations authorized by the Navy's LOA, the USE investigation will be considered complete as related to the MMPA authorization.
- If NMFS cannot conclude that the stranding was likely caused by something other than MFAS or explosive detonations authorized by the Navy LOA, rather, the results of the Phase 1 Investigation range from completely inconclusive to including potential early indicators that acoustic exposure could have played a role, a Phase 2 Investigation will be conducted by qualified individuals, under the direction of NMFS staff, and an individual case report will be prepared for each animal (list of procedures typically included in

Phase 2 investigation are included in the Glossary of this document, description of actual procedures are contained in the Biomonitoring Protocols).

6. Memorandum of Agreement (MOA) - The Navy and NMFS will develop an MOA, or other mechanism consistent with federal fiscal law requirements (and all other applicable laws), that allows the Navy to assist NMFS with the Phase 1 and 2 Investigations of USEs through the provision of in-kind services, such as (but not limited to) the use of plane/boat/truck for transport of stranding responders or animals, use of Navy property for necropsies or burial, or assistance with aerial surveys to discern the extent of a USE. The Navy may assist NMFS with the Investigations by providing one or more of the in-kind services outlined in the MOA, when available and logistically feasible and which do not negatively affect Fleet operational commitments.

7. Phase 2 Investigation - Results from the Phase 2 Investigation (procedures outlined in the Biomonitoring Protocols) will be categorized in one of the three ways discussed below and trigger the indicated action:

- If the results indicate that the USE was likely caused by something (such as entanglement or blunt force trauma) other than MFAS or explosive detonations authorized by the Navy's LOA, the *USE* investigation will be considered complete as related to the MMPA authorization.
- If the results are inconclusive which is, historically, the most likely result, i.e. NMFS can neither conclude that the USE was likely caused by something other than acoustic trauma nor conclude that there is a high likelihood that exposure to MFAS or explosive detonations were a cause of the USE, the USE investigation will be considered complete as related to the MMPA authorization.
- If the results of a comprehensive and detailed scientific investigation into all possible causes of the stranding event indicate that there is a high likelihood that MFAS or explosive detonation were a cause of the USE, one of the following will occur:
 - If the total mortalities determined to be caused by MFAS or explosive detonation do not exceed the number analyzed for the 5-yr period in the regulations (10 and 0, respectively), they will be recorded (to add on to if there is another stranding) and NMFS will take no further action beyond that indicated in 8, below.
 - If the total mortalities determined to be caused by MFAS exceed the number analyzed for the 5-yr period in the regulations, NMFS will begin the process of determining whether or not suspension or withdrawal of the authorization is appropriate.

The Navy will be provided at least ten working days to review and provide comments on NMFS' summary and characterization of the factors involved in the USE. NMFS will consider the

Navy's comments prior to finalizing any conclusions and/or deciding to take any action involving any take authorization.

8. USE Response Debrief and Evaluation – Within 2 months after a USE, NMFS and Navy staff will meet to discuss the implementation of the USE response and recommend modifications or clarifications to improve the Stranding Response Plan. These recommendations will feed into the adaptive management strategy discussed below.

9. Adaptive Management - The regulations under which the Navy's LOA (and this Stranding Response Plan) are issued will contain an adaptive management component. This gives NMFS the ability to consider the results of the previous years' monitoring and/or the results of stranding investigations when prescribing mitigation or monitoring requirements in subsequent years. In the event that NMFS concludes that there is a high likelihood that MFAS or explosive detonations were a cause of a USE, NMFS will review the analysis of the environmental and operational circumstances surrounding the USE. In subsequent LOAs, based on this review and through the adaptive management component of the regulations, NMFS may require the mitigation measures or Stranding Response Plan be modified or supplemented if the new data suggest that modifications would either have a reasonable likelihood of reducing the chance of future USEs resulting from a similar confluence of events or would increase the effectiveness of the stranding investigations. Further based on this review and the adaptive management component of the regulations, NMFS may modify or add to the existing monitoring requirements if the data suggest that the addition of a particular measure would likely fill in a specifically important data gap. Additionally, the USE Debrief and Evaluation discussed above (in combination with adaptive management) will allow NMFS and the Navy to further refine the Stranding Response Plan for maximum effectiveness.

Communication

Effective communication is critical to the successful implementation of this Stranding Response Plan. Very specific protocols for communication, including identification of the Navy personnel authorized to implement a shutdown and the NMFS personnel authorized to advise the Navy of the need to implement shutdown procedures (NMFS Protected Resources HQ – senior administrators) and the associated phone trees, etc. (to be included in the document entitled “HRC Stranding Communication Protocols”) are currently in usable draft form and will be finalized for the HRC by March 2009 and updated yearly (or more frequently, as appropriate).

The Stranding Response Plan is dependent upon advance notice to NMFS of the planned upcoming MTE. NMFS and the Navy will develop a mechanism (that conforms with operational security requirements) wherein the Navy can provide NMFS with necessary advance notification of MTEs.

NMFS will keep information about planned MTE's in a confidential manner and will transmit information to NMFS personnel responding to USE's to the minimum necessary to accomplish the NMFS mission under this plan.

Glossary:

Freshly dead – Code 2 carcass condition (2a-as if just died, no bloating; or 2b-slight decomposition, slight bloating, blood imbibitions visible).

Major training exercise (MTE) – An MTE, within the context of this document, means RIMPAC, USWEX, and Multi Strike Group exercises involving MFAS or explosives. These exercises are expected to encompass approximately 40 to 60 days per year.

Exhibiting Indicators of Distress – Animals exhibiting an uncommon combination of behavioral and physiological indicators typically associated with distressed or stranded animals. This situation would be identified by a qualified individual and typically includes some combination of the following characteristics:

- Marine mammals continually circling or moving haphazardly in a tightly packed group – with a member occasionally breaking away and swimming towards the beach.
- Abnormal respirations including increased or decreased rate or volume of breathing, abnormal content or odor
- Presence of an individual of a species that has not historically been seen in a particular habitat, for example a pelagic species in a shallow bay when historic records indicate that it is a rare event.
- Abnormal behavior for that species, such as abnormal surfacing or swimming pattern, listing, and abnormal appearance

Phase 1 Investigation – A Phase 1 Investigation, for the purposes of this document, will typically include the following tests and procedures (which are described in NMFS' Biomonitoring Protocols):

- Demographics of the stranding
- Environmental parameters
- Behavioral assessment of group
- Live animal
 - physical examination
 - blood work
 - diagnostics such as AEP or ultrasound
 - assessment or treatment
- Dead animal
 - External examination and external human interaction evaluation
 - Morphometrics
 - Photographs
 - Diagnostic imaging including CT/MRI scans or ultrasound as appropriate and feasible
 - Necropsy with internal examination, descriptions, photographs and sample collection

Note that several factors will dictate whether all or a subset of these procedures are conducted, including:

- The condition of a carcass
- For live cetaceans - the time it would take necessary personnel and equipment to arrive at the site
- Availability (both in time and space) of resources and feasibility of implementation

Phase 2 Investigation – A Phase 2 Investigation, for the purposes of this document, will typically include the following tests and procedures (which are described in NMFS’ Biomonitoring Protocols):

- Analyses and review of diagnostic imaging obtained in Phase I
- Histopathology
- Special stains
- Ancillary diagnostics (e.g., PCR for infections, gas emboli)
- CT of ears
- Additional diagnostic imaging as needed
- Histology of ears
- Case summaries
- Review

Note that several factors will dictate whether all or a subset of these procedures are conducted, including:

- The condition of a carcass
- Logistics for transport
- Available resources
- Validated diagnostic techniques

Qualified – NMFS has a rigorous set of standards and training in place to qualify stranding responders. For the purposes of this document, NMFS will identify (in the Biomonitoring Protocol) the specific qualifications necessary for individuals to be considered qualified for the following activities: 1) identifying a USE; 2) determining if an animal is freshly dead (Code 2); 3) conducting a Phase 1 or Phase 2 Investigation; and, 4) making determinations as to cause of death. These qualifications are currently in development and will be refined and finalized in the Biomonitoring Protocols for the HRC. Not all qualified individuals (veterinarians, technicians, etc.) will be NMFS employees. However, only specific individuals (NMFS Protected Resources, HQ – senior administrators) indicated in the HRC Stranding Communication Protocol will be empowered to advise the Navy of the need to implement shutdown procedures.

Stranding – an event in the wild in which:

- (a) a marine mammal is dead and is –
 - (i) on the beach or shore of the United States; or
 - (ii) in waters under the jurisdiction of the United States (including any navigable waters); or
- (b) a marine mammal is alive and is –
 - (i) on a beach or shore of the United States and unable to return to the water;

- (ii) on a beach or shore of the United States and, although able to return to the water, is in apparent need of medical attention; or
- (iii) in the waters under the jurisdiction of the United States (including navigable waters), but is unable to return to its natural habitat under its own power or without assistance.

Shutdown Procedures – The act of the Navy ceasing operation of sonar or explosive detonations within a designated area for a designated time. The time is designated by the Restart Procedures (# 3, above). The designated area, for the purposes of this document, is an area within 14 nm of any live, in-water animal involved in the USE. This distance (14 nm) is the distance at which sound from the sonar source is anticipated to attenuate to approximately 140-145 dB (SPL). The risk function predicts that less than 1% of the animals exposed to sonar at this level (mysticete or odontocete) would respond in a manner that NMFS considers Level B Harassment. As indicated above in 2(d), if this distance appears too short (i.e, the proximity of sonar use may likely be deterring the animals from returning to the open water), NMFS and the Navy will further coordinate to determine what measures are necessary to further minimize that likelihood and implement those measures as appropriate.

Uncommon Stranding Event (USE) – A stranding event that takes place during an MTE and involves any one of the following:

- Two or more individuals of any cetacean species (not including mother/calf pairs, unless of species of concern listed in next bullet) found dead or live on shore within a two day period and occurring on same shore lines or facing shorelines of different islands.
- A single individual or mother/calf pair of any of the following marine mammals of concern: beaked whale of any species, kogia sp., risso's dolphin, melon-headed whale, pilot whales, humpback whales, sperm whales, blue whales, fin whales, sei whales, or monk seal.
- A group of 2 or more cetaceans of any species exhibiting indicators of distress.

Supplemental Documents in Development

HRC Stranding Communication Protocol – This document, which is currently in development, will include all of the communication protocols (phone trees, etc.) and associated contact information required for NMFS and the Navy to carry out the actions outlined in this Stranding Response Plan. This document is currently in usable draft form and will be finalized by March 2009 and updated yearly (or more frequently, as appropriate).

Biomonitoring Protocols for the HRC – This document (which is currently in a usable draft form, but will be finalized in 2009) will contain protocols for the procedures that are necessary for NMFS staff to implement this Stranding Plan including:

- Qualifications necessary for individuals to implement certain parts of the Stranding Plan, such as: identifying a USE, identifying a Code 2 animal, or conducting a Phase 1 or 2 Investigation
- A protocol for the stranding responders that outlines the actions to take in the event of a stranding during MTEs

- Protocols for the investigators that describe in detail the procedures implemented for Phase 1 and Phase 2 Investigations

Memorandum of Agreement – This document (or other mechanism consistent with federal fiscal law requirements and all other applicable laws), which will be finalized in 2009, will establish a framework whereby the Navy can assist with stranding investigations when feasible. This document will include a comprehensive list of the specific ways the Navy could provide this assistance.

LOA Stranding Plans in Other Geographic Regions

The frequency and nature of strandings (naturally occurring or otherwise), the nature of military operations, and the NMFS resources and qualified staff available for stranding response, can be very different in different geographic regions. Measures and procedures developed for and implemented in this Stranding Response Plan may not be appropriate, or even possible, in other geographic regions. As the need arises, NMFS and the Navy will work together to develop appropriate Stranding Response Plans for other geographic regions based on available information and resources. This Stranding Response Plan is not intended to serve as a template for other geographic regions, and, in fact, Stranding Plans for other areas may be significantly different.