MARINE MAMMAL COMMISSION
4340 EAST-WEST HIGHWAY, ROOM 905
BETHESDA, MD 20814

2 October, 2007

Public Affairs Officer
Pacific Missile Range Facility
PO Box 128
Kekaha, HI 96752-0128

Dear Sir:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors, has reviewed the Draft Environmental Impact Statement/Overseas Environmental Impact Statement (DEIS) provided by the Department of the Navy in support of its planned Navy Pacific Fleet training and defense-related research on the Hawaii Range Complex (HRC). The HRC consists of onshore as well as offshore areas covering 235,000 square nautical miles around the Hawaiian Islands, with an additional 2.1 million square-mile Temporary Operating Area of sea and air space. The HRC is a complex of instrumented ocean areas, airspace, ocean surface operation areas, targets, and land range facilities. The DEIS identifies three alternative levels of training and research-related activities and estimates the potential unmitigated and mitigated environmental effects from range-wide training and research, development, testing, and evaluation activities. Based on a finding of no significant adverse impacts, with mitigation, the Navy has submitted an application for a Marine Mammal Protection Act Letter of Authorization (LOA) to authorize the incidental take of marine mammals that may result from the implementation of the activities analyzed in the DEIS.

The HRC DEIS covers an unprecedented scope of effort and affected area in a document that is for the most part thorough and clear. Later in this letter we note a number of particularly difficult issues or concepts that have been described with considerable clarity and addressed with novel and improved measures. The Commission also has identified three major elements of the DEIS in need of reconsideration and revision.

RECOMMENDATIONS

The Marine Mammal Commission believes that the Final EIS/OEIS and associated request for an LOA under the Marine Mammal Protection Act require major revision with regard to the estimation of risk, the mitigation of that risk, and, perhaps most important, the evaluation of action alternatives. Therefore, the Marine Mammal Commission recommends that the Navy—

- create an alternative of reduced or no range use, and adequately document the likely consequences for national defense readiness, to be weighed against whatever reductions in environmental risk would be obtained by the no action or reduced action alternative;
- provide a comprehensive description of the proposed dose-response relationships and the manner in which they will be used; and

- provide a comprehensive description of the various monitoring and mitigation measures that might be used, evaluate the performance of those measures taking into account existing marine mammal monitoring and mitigation data, and instigate planning to evaluate and address the strengths and shortcomings of the proposed measures.

RATIONALE

The three major areas of recommended revisions to the DEIS are as follows:

Action Alternatives—In the HRC DEIS the Navy takes the unusual, if not unprecedented, approach of treating the current ongoing level of training activity as the "no action" alternative, with two options of increased activity as alternatives 1 and 2. Typically a no action alternative refers to the consequence of not going forward with the requested action at all. Instead the Navy argues that all three proffered alternatives can be mitigated to zero effect, and therefore the environmental risk of choosing any of the options would be the same. We do not believe that the risk can be mitigated to zero (and will offer arguments in support of that perspective), in which case the consideration of an alternative that offers reduced environmental risk is essential to making an informed decision about the costs and benefits of all reasonably available alternatives.

The DEIS would benefit from a review of anticipated changes in Naval training that are being implemented for other reasons, but which might also affect the potential environmental risks. Cost savings and reduced manning goals are reasons other than environmental stewardship that have driven research and acquisition efforts by the U.S. Navy to reduce the time and money demands of training. Growing costs of fuel and the climatic consequences of large scale combustion of hydrocarbon fuels in military training are another emerging factor in considering the merits of alternatives, despite the well-established and widely accepted merits of realism in training. Such considerations should be described in the EIS to promote informed decisionmaking about alternatives and the relative environmental risks of each.

The Commission recognizes that a considerable amount of effort will be required to document both the Navy's ongoing efforts to reduce training cost and expense and its efforts to document the impact of any loss of training capability on readiness. However, we also believe that much of the needed information already exists within the Navy and could be relatively easily brought into the HRC EIS. For example, recent efforts by the Department of Defense to document for Congress the cost of lost training due to "encroachment" on range activities, such as the loss of the Vieques range, could provide this specific EIS with information on the potential impacts on readiness from lost HRC training opportunities. Similarly, existing documentation required to justify the costs of Navy research, development, testing and evaluation efforts to improve training also exist and should be useful in determining the trade-offs and feasibility of implementing alternative training procedures.

For these reasons, the Marine Mammal Commission recommends that the Navy create an alternative of reduced or no range use, and adequately document the likely consequences for national defense readiness, to be weighed against whatever reductions in environmental risk would be obtained by the no action or reduced action alternative.

Risk Estimation Protocols—The Commission recognizes the considerable effort the Navy and the National Marine Fisheries Service have applied to the development of clear, scientifically based Level A acoustic risk criteria and commends the comparable effort to develop Level B risk criteria using dose-response relationships to better reflect the natural individual variability within a given population. However, a number of aspects of the risk estimation process are not well explained, specifically the means by which animal density data and sound field data are integrated to produce the sound exposure levels for risk evaluation, and the estimated effectiveness of mitigation measures on risk of either injury or behavioral harassment. The use of heuristic techniques such as time-invariant probabilistic two-dimensional representations of animal density, and the use of time averaging techniques for prolonged and intermittent sound exposure are among the features of this novel and complex risk estimation procedure that need to be explained in greater detail. This explanation should include one or more illustrative examples of how data on animal abundance and distribution are derived from the literature, or how data on the nature and duration of activities on the range are combined and translated into an exposure metric. Therefore, the Marine Mammal Commission recommends that the Navy provide a comprehensive description of the proposed dose-response relationships and the manner in which they will be used. Such information is necessary to allow readers to evaluate the nature and level of risk to marine mammals.

Monitoring And Mitigation—With regard to monitoring and mitigation, the HRC DEIS suffers two main shortcomings: it does not include a comprehensive description of monitoring and mitigation options, and it offers estimates of performance for proposed mitigation measures that are inconsistent with existing performance data from similar survey and mitigation efforts. Although the methods for assessing mitigation performance are well understood and such an assessment can be easily carried out, the Navy apparently has not done so. The Navy's own SURTASS LFA EIS includes such analyses, and these same analyses should already have been conducted for the kinds of ongoing fleet activities listed in the HRC DEIS. In the absence of such information, we believe it is incumbent upon the Navy to include a plan for obtaining performance data to justify its confidence in such critical mitigation measures as sonar ramp-up, watchstander training effectiveness, and watchstander probability of detection of marine mammals and other species of concern. This is most obviously true of watchstander performance, for which substantial quantitative data are available from many well-documented surveys for marine mammals and sea turtles. Probabilities of detection for experienced survey observers under ideal conditions, counting highly visible species, still do not rise to the 100 percent probability of detection claimed for Navy watchstanders who have far less experience sighting animals at sea and multiple duties to perform. Detection probabilities are even lower for difficult-to-detect species such as beaked whales or sea turtles. Such probability-of-detection data are easily verified by well-known methods such as dual ship surveys or multiple independent blind control surveys of similar design. Such verification and validation procedures are regularly undertaken by the Navy to verify training performance and to establish the performance of new systems under standard research, development, testing, and evaluation processes that precede acquisition and fleet use. Performing similar verification and validation for environmental effects mitigation would not be unduly costly and would clarify whether the Navy is in fact being realistic in its claims for its proposed mitigation efforts.

In addition, passive acoustics and other sensing technologies that might improve marine mammal detection and risk mitigation are rejected without undergoing similar performance evaluation and development. Dismissing additional mitigation as not well enough developed to use and then making no effort to bring such tools to maturity should not be an acceptable position when the potential adverse effects of the proposed action are significant and the action agency is as technically adept and strong in new technology acquisition as the Navy. For these reasons, the Marine Mammal Commission recommends that the Navy provide a comprehensive description of the various monitoring and mitigation measures that might be used, evaluate the performance of those measures taking into account existing marine mammal monitoring and mitigation data, and instigate planning to evaluate and address the shortcomings of the proposed measures.

DETAILED COMMENTS

The following detailed comments either reinforce the above points with reference to specific parts of the HRC DEIS, or note additional areas of strength or weakness within the DEIS that merit consideration by the Navy.

Action Alternatives—Pages 2-8 to 2-12 define the action alternatives in greatest detail. The national defense plans behind these three alternatives are not sufficiently described to enable the reader to assess whether there is any national defense readiness cost or benefit to any of these alternatives. Therefore, readers of this DEIS cannot make an informed decision as to whether the "historical" level of training must be maintained to prevent the Navy from suffering substantive, quantifiable decrements in some readiness area essential to its long-term plans. Such plans must exist to justify the expenditure of billions of dollars of fuel, expendable equipment and sailor hours.

Similarly, the DEIS should describe the consequences to readiness and options available if either Alternative 1 or 2 are rejected. This information is essential to weigh and consider the costs and benefits in terms of both readiness and environmental impact. Part of that consideration should include an option for reducing amounts, types and locations of training to ensure national ocean stewardship and environmental quality goals. For example, RIMPAC is one of the specified training events that is slated for expansion in Alternatives 1 and 2. The DEIS should explain under this alternative why it is necessary for the number of ships in this exercise to expand. The Navy should be able to provide an unclassified yet substantive basis for asking that an increased environmental footprint be allowed, along with the added cost, manpower, and loss of time available for other activities, all of which are all implicit in the three alternatives.

The assertion on page 4-65, line 25-29 that because no beaked whales have stranded in Hawaii the HRC activities are therefore not likely to pose a risk to beaked whales in the future is inconsistent with an otherwise well-reasoned and thorough DEIS. This is a case where absence of evidence is mistakenly offered as evidence of absence even though it is mutually agreed that the historical record is known to be unreliable, that historical usage patterns of the area by the Navy may not in fact be reliable predictors of future Naval training needs, and where the problem of concern is known to be more complicated than simply stranding or not stranding in the presence of sonar sound. Reporting of strandings in the main Hawaiian Islands has probably not been consistent until quite recently, and is even less consistent in the history of the northwestern Hawaiian Islands.

Furthermore, stranding is not the only possible outcome of concern. It is also easily arguable that the Navy has in fact not been pursuing the same level and type of training, research, development, testing, and evaluation activities "with essentially the same equipment for the past 30 years."

The DEIS dismisses specific instructive events, such as the USS Shoup transit of Haro Strait (p. 4-85-86) without serious discussion. For example, the reports of behavioral effects on killer whales, Dall's porpoise, and minke whales are not included in this discussion but beg the question as to why the Navy believes these types of effects are not of concern. Other aspects of this event, like the modeling of the Shoup sound fields, were included in the joint Navy-National Marine Fisheries Service development of the dose-response functions used in this DEIS, so it seems inconsistent to consider some aspects of the Shoup event highly relevant to this EIS, but not others.

Supporting data and a more considered discussion are needed for the assertion that none of the Japanese beaked whale strandings cited by Brownell et al (2004) coincided with naval activities in Japan. The cited Center for Naval Analysis examination of the data is probabilistic, not deterministic, and sets a probability that temporal patterns between two sets of events (beaked whale strandings and naval sonar use) are or are not correlated. It does not necessarily indicate that no events co-occurred, but only that the degree of co-occurrence may or may not be explained by chance alone (p. 4-65, line 21-23).

Risk Estimation—The DEIS derivation of the "shorthand" version of mid-frequency sound exposure is difficult to understand. While it is understandable that some details of the operating characteristics of the 53-C sonar may be classified, considerable detail has been provided in previous unclassified examples of typical 53-C pings and ping series: the Evans and England 2001 report includes discussion of source levels when in omnidirectional mode (235 dB nominal source Sound Pressure Level (SPL)) and beam-steered or "searchlight" mode (nominal 240+ dB SPL) at 10-20 second intervals, the recent report from the JASON panel includes detailed discussions of sonar ping characteristics, and no doubt other unclassified sources of information could be readily found. The DEIS should include the already released and presumably unclassified information that justifies its use of the expedient of 235 dB SLP, 1-second pings at 30-second intervals to characterize the range of sonar usage patterns and subsequent risk outcomes that might occur (p. 4-96).

Information on sound frequency, source level, or basic usage pattern for other sources of noise (helicopter dipping sonars, torpedo sonars, etc.) is completely lacking. These omissions should be corrected because almost all risk assessments for environmental sound now include such a table of source characteristics to facilitate evaluation of the potential acoustic risk associated with them.

The risk calculation process (p. 4-99) and especially the exposure volume calculation (lines 6-11), are very difficult to follow. For example, it is difficult to understand the process by which 10 hours of sonar pings by a presumably moving vessel are translated into one hour "averages" and how these in turn are applied to a static volume of water populated by apparently static animals. Similarly, it is not clear to us how sound energy, used to calculate the hourly averages, is to be translated into the single ping sound pressure level threshold within the dose-response function to yield either a probable Level B take or probable no-take. Are all animals within the specified water volume assumed to be at the depth of greatest sound intensity? Do they remain there for the entire

hour or ten hours? How, once the threshold is triggered, is multiple counting avoided? Intuitively, one thinks in terms of an individual animal and its tendency to move up and down in the water column and to travel in the two-dimensional horizontal plane over time relative to the source, which also is moving. It is hard to understand how this variability in exposure regime over time is captured in the described process, or if it is ignored, how the calculation may over- or under-estimate risk due to the simplifying assumptions of the model. Some sample calculations, and even graphical representations of the probability density surfaces for sound and animal density would be useful in helping the reader navigate this complicated and novel risk estimation process.

The characteristics of the Extended EchoRanging (EER) source are not clear. Rather than refer to another, difficult-to-access document (the JTFEX/COMPTUEX document), it might be better to provide actual charge weight or impulse source level of the EER "ping" (p. 4-102, line 20-27).

With regard to the establishment of the extent of Level A take (page 4-175), the Navy goes to great lengths to suggest that it has zero risk of causing a Level A take because its models are actually grossly overestimating encounter rates. This brings up the question of why the Navy is using models it believes to be defective and unsupported by the best available knowledge. More to the point, however, the mitigation is presumed to reduce to zero the risk of unmitigated exposures, whatever their level. But then on lines 23-27 the Navy arbitrarily "agrees to" ask for two lethal or injurious takes for each of five species, apparently also selected arbitrarily as no specific reason or reasons are provided. If there is in fact no rationale for doing this, and all the presented evidence is to the contrary, then it is not clear why the Navy should ask for any Level A takes. Earlier in section 4 the DEIS suggests that a possible concession to uncertainty about beaked whale sensitivity to mid-frequency sonar would be to count 1 percent of all estimated Level B takes as Lethal A takes. Given an estimate of over 2,000 Level B takes, that would indicate a potential for 20 Level A takes of beaked whales if this precaution is invoked, well above the nominal 2 per species suggested on page 4-175. These contrary statements are at best ambivalent about the risk and at worst misleading to the reader. To avoid such confusion we believe the DEIS needs to adopt a single approach to risk estimation based on the best available information and use that approach consistently. We do not believe that it is acceptable to offer an indefensible risk estimate and then create arbitrary concessions.

On page 4-21-22, and in Table 4.1.2.3.1-1 on the same page, the blast risk criteria differ slightly from those used by the National Marine Fisheries Service in various Gulf of Mexico rig removal and construction projects, e.g., Bienville Offshore Energy Terminal DEIS of June 2007, vol. 2, Appendix C. This discrepancy between current regulatory agency *de facto* standards and the Navy's proposed criteria should be reconciled before issuance of the FEIS and requested Letter of Authorization. Also, here and elsewhere in the HRC DEIS it is "Navy policy" to use a temporary threshold shift (TTS) criterion of 12 psi peak pressure for charges greater than 2,000 pounds TNT-equivalent, but a TTS criterion of 23 psi for smaller charges (also see page 4-104, line 6-13). The basis for this differential threshold criterion for the same physiological damage issue is not clear and should be clarified.

The Navy has done a commendable job in this DEIS of explaining the relationship between physiological and behavioral effects as biological phenomena, versus the definition of regulatory criteria under the Marine Mammal Protection Act of Level A or Level B harassment. This is a confusing but necessary set of distinctions and the DEIS does a very good job on pages 4-35 and 36 of clarifying those relationships and explaining the Navy's rationale for apportioning risk among physiological and behavioral effects to then determine the Level A or Level B consequences of a given physiological or behavioral effect.

The Navy also has done a good job of clearly exploring the relationship of permanent threshold shift (PTS) and temporary threshold shift, the relationship between Sound Pressure Level (SPL) and Sound Energy Level (SEL), and other metrics. These relationships are not generally well understood and the DEIS does a good job of clearly explaining them on pages 4-37 through 4-47.

The DEIS also provides a thorough exploration of the relationship of rectified diffusion, decompression syndrome (DCS), acoustic resonance and other physiological or biomechanical effects of sound (pages 4-48 and 49). The DEIS continues with a similarly strong background review of these physiological phenomena and the scientific evidence for and against manmade sound as a contributing factor on pages 4-49 and 50. While the potential risk to marine mammals from sound via these mechanisms needs further scientific exploration, the DEIS offers the reader sufficient information and original reference material to make an informed judgment based on the currently available science.

The use of a dose-response relationship to capture the probabilistic nature of behavioral reaction to sound is well described, with excellent depth of background references (pages 4-53 through 63). The amount and relevance of data to support this particular dose-response curve is not ideal, nor is it even as substantive as the data used in the SURTASS LFA dose-response function, but the DEIS does indicate an intent by Navy to obtain more and better data to strengthen that risk estimating function.

On page 4-63b, lines 334-342, various environmental conditions of special concern are cited as factors in estimating risk for beaked whales. Those conditions include canyon-like bathymetry, surface ducts, etc. However the process by which these factors are to be considered in estimating risk is not described in sufficient detail to enable the estimates to be vetted by an independent outside evaluator. In Section 9, the appendix containing the report after the 2006 RIMPAC exercises, these factors are actually recommended for removal from consideration based on the idea that they are poorly defined and difficult to apply, and/or existing data do not support the idea that these features are in any way predictive of beaked whale occurrence or elevated risk. It should be noted that although more useful data are being generated on the distribution and abundance of beaked whales in the Hawaiian Islands by McSweeney, Baird, Barlow and others, these sources of information are not sufficiently cited and the manner in which such information will be used in planning is not sufficiently described, even though the Navy supported some of the work to generate those data (e.g. Baird et al, 2006). The seasonal avoidance of humpback whales is well described throughout the document, and a convincing case is made that this is factored into event planning. The same is not true for beaked whales. Similarly, on page 4-63b, line 30-33 and in the risk threshold tables a special category is created for harbor porpoises and justification is provided for

their special treatment. Since harbor porpoises are not a species found in the HRC this information should be eliminated from this document.

A somewhat outdated paper by Ketten (1998) is cited as the source of an upper hearing limit for baleen whales of 20 kHz (p. 4-64, line 8). More recent observational data by Nowacek et al. (2004) and others, and more recent unpublished analyses by Ketten (2004) and colleagues from Boston University and the Navy Research Lab also suggest that the upper frequency limit for at least some baleen whales may be above 20 kHz (but likely below 30 kHz). It would strengthen the EIS to incorporate recently published work, or citable gray literature references from these researchers.

Mitigation And Monitoring—The Navy has high expectations for the effectiveness of watchstanders in mitigation efforts. Such expectations should be substantiated because 1) a great deal of evidence argues to the contrary, and 2) other means such as passive or active acoustics, radar, infra-red or other sensors may substantially augment visual watches and may be more effective. Page 6-23, lines 1-2 hints at a watchstander validation process, but the statement lacks convincing details. The British Royal Navy has a well developed process for both shoreside simulator training and shipboard training that provides a mechanism to quantifiably validate watchstander performance. We would encourage the U.S. Navy to adopt a similar process, especially when the proposed estimate of Level B and Level A takes is being reduced from tens of thousands of takes to zero through the use of visual monitoring alone.

The Navy should provide greater detail on the listed protocols for passive acoustic monitoring and mitigation, and reconcile that information with assertions elsewhere in the DEIS that visual monitoring alone is sufficient to assure 100 percent detection of all species of concern before they enter within range of the mitigation zones. A number of mitigation actions are listed on page 6-3. Measure #3 asserts that all personnel manning passive anti-submarine warfare (ASW) sensors will monitor for marine mammals. A great deal of detail is missing and needed before a reader can assess whether this is an effective practice. It is not clear whether the personnel will receive any training comparable to visual watchstanders to enable them to detect and classify marine mammal sounds, how well the available sensors (which were designed for other purposes) will detect and process marine mammal sounds, or whether they will be more or less effective than the SURTASS LFA passive acoustic system (effective only to 500 Hz), which failed to detect any marine mammals in more than 400 hours of monitoring (SURTASS LFA Final Report, 2000-2006). In addition, the DEIS should describe communications between ASW personnel and command personnel responsible for making decisions about mitigation action (sonar source level reduction, shut-down, etc.). Mitigation measure #13 describes a similar effort using submarine sensors without providing sufficient details as to the effectiveness of such effort, or the communication chain by which such information makes its way to decisionmakers responsible for taking mitigation action in a timely manner.

The use of permanent or temporary monitoring arrays (passive acoustic or other) also is insufficiently described. The Navy refers throughout the DEIS to the potential utility of the Pacific Missile Range Facility (PMRF) monitoring arrays like BARSTUR and BSURE, and to new devices like the portable array or Scripps ARP/HARP bottomed monitoring devices, but offers no concrete plan for implementation of such monitoring on a regular basis, or for validation of performance.

On page 6-23, line 32 the Navy proposes to capture data on animal presence before and after exercises but cites security reasons for not capturing data during exercises. We would propose that the Navy consider approaches that could capture and archive data throughout that period and either offer declassified redacted data to confirm effect/no effect at all stages of the exercise, or make the classified data available for assessment by appropriately cleared persons.

The Portable Offshore Training Range mentioned in the DEIS deserves further discussion, both as a sound source and as a possible mitigation tool. Described on page 2-51, the portable range produces sound to communicate the relative positions of the listening nodes and to communicate with vessels and other devices carrying pingers through the range. The sound is of relatively low amplitude, with a source level of 190 dB re 1 microPascal SPL, but it is within the range of hearing of most marine mammals at a nominal 8.8, 17, and 40 kHz. The patches of territory where the portable offshore range might be deployed run outside the figure and it appears possible in some cases that such portable range use could be very close to the protected waters of the northwestern Hawaiian Islands. It is not clear how use of the portable ranges would be scheduled and whether the National Marine Fisheries Service would be consulted during this decision. In light of these concerns, discussion of potential environmental impacts of the portable ranges in section 4 seems insufficient. Similarly, the potential for this portable listening array to be used for mitigation monitoring or for post-test analysis of visual observer performance also are not discussed in Section 6. The permanent ranges at the Pacific Missile Range Facility figure prominently in bolstering monitoring for activities within the area covered by those ranges, and it is not clear why the portable ranges are not used similarly.

The criteria for resumption of sonar use after detection of a marine mammal seem unrealistically short. Thirty minutes without re-acquiring visual contact with an animal previously detected within the mitigation zone is too short for animals that may dive for more than 30 minutes, or might go more than 30 minutes without presenting another detectable surfacing due to glare, waves, or wind-hindered visibility. The alternative, resumption after the ship has travelled 2000 yards means about 5-6 minutes for a ship travelling at 10 knots. This provides even less time to determine whether the animal has been able to clear the safety zones or whether the animal has in fact fled underwater at 5 knots running straight before the ship and thus could have actually closed range since it was first detected.

The use of ramp-up as a mitigation tool has been a subject of considerable debate and in section 6-8 and Appendix F the Navy rightly questions the effectiveness of this procedure. Ramp-up procedures have never been tested to either validate their effectiveness or to verify that they are ineffective, or perhaps even counterproductive. From the DEIS it appears that the Navy has no plans to take advantage of the current temporary defense exemption to test whether or not ramp-up is in fact effective. Such an assessment effort would be straightforward and could potentially save the Navy considerable time and money if ramp-up were shown to be useless. Alternatively, if the test showed ramp-up to be effective, then confidence in the Navy's environmental risk reduction protocol would be greatly strengthened.

The considerable list of precautions for beaked whales described in mitigation measure #14 (page 6-4) are impressive, but the Navy stated in its RIMPAC 2006 report (DEIS Section 9, appendix F) that most of these measures were difficult to define, of unproven relevance, or overly expensive and therefore not recommended in light of the experiences in the RIMPAC 2006 exercise. In aggregate, the Navy's arguments against these measures elsewhere in the document create an impression that the proposed mitigation efforts may not be regularly applied during planning and execution of ASW exercises and similar sound-producing activities on the range complex. Verification and validation of actual decision processes are a critical aspect of acceptance of the proposed protocol, and we would encourage the Navy to look into the kinds of decision aids and recording devices used by the British Royal Navy to create an alteration-proof record of real-time actions during the planning and execution of its environmental mitigation practices for underwater sound from sonars. We note that the U.S. Navy outlines a process whereby the Officer in Tactical Command has the authority to give consideration to delay, suspend or alter activities, and that it will issue post-exercise reports that would presumably be available as unclassified public documents. Presumably these would be similar to the LFA and RIMPAC unclassified after-action reports and/or as classified documents reviewable by appropriately cleared persons (p. 6-5). That framework could form the basis for an effective verification procedure, and thus greatly reduce concerns about external verification and accountability without unduly taxing Naval resources.

Related to the above concern, the risk estimation and reduction procedures for beaked whales are not as clear as they should be (p. 4-114, line 22-28 for Blainville's beaked whales, p. 4-115, line 24-31 for Cuvier's beaked whales). The contention that more than 2000 encounters with beaked whales would all be successfully mitigated through visual monitoring alone is inconsistent with numerous reports of the low probability of detection of beaked whales even in dedicated visual surveys (e.g., Barlow and Gisiner, 2006). Indeed a wealth of literature on visual survey methods suggests that probabilities of detection for almost all species fall well below 50 percent in most circumstances. The U.S. Coast Guard's considerable body of data on the difficulty of detecting persons or small objects in the water by visual means alone is consistent with the marine mammal survey data, suggesting that with maximal motivation, where human life is at stake, the odds of detecting a relatively small, low-profile object at sea are small. In fact, the Navy's own SURTASS LFA Final Report for mitigation effort 2002-2006 found that visual survey was a poor source of marine mammal detections relative to its own active marine mammal detection sonar. Similarly, while the RIMPAC EIS predicted more than 33,000 takes, visual survey resulted in only 29 actual detection events (for a total of about 100 animals detected) within that mitigation zone. Even within the very much smaller 190 dB threshold zone, the estimated number of takes in the RIMPAC EIS was 256, more than double what was detected visually. Either the model greatly over-predicted takes relative to the number of animals that were actually present (which is likely, but unavoidable due to the uncertainties involved), and/or animals were present but not detected (also more likely than not). The Navy has the means to quantitatively test the effectiveness of visual watch and other means of mitigation and should be able to present a strong plan for iterative testing and improvement of its mitigation monitoring capabilities. The Navy's own very conscientious watches for collisions, and rigorous reporting of all collisions, indicate that marine mammals escape detection almost every year, to the point where they actually come in physical contact with the vessel without being detected. All this evidence shows that the effectiveness of visual monitoring will be nowhere near the 100% that would be required to justify a decision of no effect in this DEIS.

The Navy presents a confusing and inconsistent stance on the utility of non-Naval platforms or independent observers on Naval platforms. The arguments for safety and limitations of berthing space in this section and in Appendix F are well taken, and it would seem reasonable not to expect to include non-military personnel and aircraft as a regular part of normal training and exercise. But that would not seem to preclude a deliberately designed test, outside the context of an actual exercise, to generate some of the performance statistics needed to properly evaluate the effectiveness of various mitigation measures the Navy either considers highly effective, or wishes to eliminate as ineffective and cumbersome. The verification and validation procedures are quite familiar in the Navy and are used often in assessing the performance of new tactical sensors and weapons systems, as well as for assessing personnel, individual unit and multi-ship performance on tactical mission requirements such as minehunting or ASW. The DEIS in fact alludes to such efforts on page 6-25 lines 5-21 and again on page 6-24, lines 4-30, but does not make a definite commitment to try the new technologies or to conduct the third-party testing that would verify performance. Technologies such as passive acoustics are well known to the Navy and the advancement of these technologies for tactical applications is already an existing and growing area of emphasis for the Navy. It would seem that the advancement of supplemental or alternative monitoring technologies would be a priority during the defense exemption, and afterward, as the Navy tries to improve its understanding of the actual risk posed by these environmental concerns, the actual numbers and habitat types of the animals of concern, and the means by which they may be avoided. The argument advanced on pages 6-8 and 9 that new mitigation technologies are expensive and limited in availability should be followed by an explanation about how the Navy plans to go about changing that, just as it would for any technology that was deemed of tactical or safety benefit, from hearing protection aboard aircraft carriers to improvements to torpedo propulsion systems. Page 6-9 refers to the Navy's commitment to continue to fund research, without adequate explanation as to whether the current amount is sufficient, excessive or insufficient to support the Navy's need to plan and execute its mission with an acceptable level of risk to the environment. Simply committing to an amount, without a plan as to how that helps solve the problem, is of little value in this context.

The DEIS asserts that archiving and analysis of survey data is unnecessary and unproductive (e.g. page 6-8, lines 34-40), and in section 9 (Appendix F) argues against efforts to use monitoring data for studies of habitat use, abundance or other biologically meaningful questions. The Navy argues that such effort extends beyond the requirement to monitor and verify effect or lack thereof, and that such additional effort imposes a burden of data analysis and communication that detracts from other mission-essential activities (p. 6-7). The Commission believes that such data and the follow-up analyses that can be done with them are equally valuable to the Navy in planning future activities, and as such, the data provide value to the Navy beyond the immediate need to verify compliance for the activity during which they are collected. Data from prior exercises constitute a valuable resource for making better decisions in the future and for developing an improved ability to meet future training requirements. In a data-poor world, in which the Navy itself contends that it is making overly conservative assumptions about risk, the addition of data to make better informed decisions in the future is probably the most valuable mitigation tool the Navy has, and one that is more likely to reduce the burden of compliance than increase it (or more positively stated, renders the Navy more effective in meeting its environmental stewardship goals). Therefore a plan to archive, analyze and frequently update information obtained from mitigation monitoring should be a

clearly developed part of this EIS and part of the Navy's overall plan for addressing its environmental stewardship goals.

We thank the Navy for this opportunity to comment on the HRC DEIS and hope that the Commission's comments prove beneficial to the development of the Final EIS and Request for a Letter of Authorization under the Marine Mammal Protection Act. We have tried to keep our recommendations within the demonstrated capabilities of the Navy and hope that the recommended changes will enhance its ability to carry out its mission-essential activities in a manner consistent with its long and widely respected record of leadership in ocean environmental stewardship.

Sincerely,

Timothy J. Ragen, Ph.D.
Executive Director

cc: RADM Larry Rice
The Honorable Donald Schregardus
Craig Johnson

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