

Mr. P. Michael Payne
Chief, Permits Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3226

Dear Mr. Payne:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application submitted by the U.S. Navy under section 101(a)(5)(A) of the Marine Mammal Protection Act. The applicant is seeking a Letter of Authorization to take marine mammals incidental to military readiness training operations in the Naval Undersea Warfare Center, Keyport Range Complex, in Washington state from September 2009 through April 2014. The Commission also has reviewed the National Marine Fisheries Service's 3 July 2008 *Federal Register* notice announcing receipt of the application and inviting comments on its proposal to develop and implement regulations to authorize and govern the requested taking.

The planned training operations would occur within the Keyport Range Complex, which includes three sites: the Keyport Range Site, Dabob Bay Range Complex, and Quinault Underwater Tracking Range. The operations would expose various species of marine mammals within this complex to mid and high-frequency acoustic transmissions from a number of sources, including active acoustic devices (frequencies of 10 to 100 kHz, source levels of less than 203 dB re 1 μ Pa-1m SPL); unmanned undersea vehicle tracking systems (10 to 100 kHz, source levels of less than 195 dB re 1 μ Pa-m); torpedo sonars (10 to 100 kHz, source levels generally less than 233 dB re 1 μ Pa-m SPL); range targets and special tests (5 to 100 kHz with a source level of less than 195 dB re 1 μ Pa-m at the Keyport Range Site and source levels of less than 238 dB re 1 μ Pa-m at the Dabob Bay Range Complex and Quinault Underwater Tracking Range sites); special sonars (100 to 2,500 kHz, source level of less than 235 dB re 1 μ Pa-m); sonobuoys and helicopter dipping sonar (2 to 20 kHz, source levels of less than 225 dB re 1 μ Pa-m SPL); side-scan sonar (100 to 700 kHz, source levels of less than 235 dB re 1 μ Pa-m SPL); and other acoustic sources, including acoustic modems, targets, aids to navigation, sub-bottom profilers, and engines (10 to 300 kHz, source levels of less than 210 dB re 1 μ Pa-m SPL).

In addition, the Navy is planning to expand the boundaries of all three sites to support additional range activities, including testing, training, and evaluation of system capabilities such as guidance, control, and sensor accuracy of manned and unmanned vehicles in multiple marine environments (e.g., differing depths, salinity levels, temperatures, sea states, etc.). As a result of the planned expansions, the average use would increase from 55 to 60 days per year for the Keyport Range Site. Use of the Quinault site would increase from 14 to 16 days per year for offshore activities and from none to 30 days per year for surf-zone activities. Use of the Dabob Bay site (i.e., number of days and types of activities) would not change.

RECOMMENDATIONS

The Marine Mammal Commission recommends that the National Marine Fisheries Service and the Navy ensure that the contemplated rule and any Letter of Authorization issued under that rule provide authorization for the taking of all marine mammal species that may be exposed to Level A or Level B

harassment as a result of the proposed research, development, testing, and evaluation activities. Further, the Marine Mammal Commission recommends that, if the National Marine Fisheries Service proceeds with publication of a proposed rule to authorize the taking of small numbers of marine mammals incidental to the proposed military training operations, the Navy be required to:

- A. Explain its apparent ability to mitigate Level B harassment for some, but not other species that are expected to be exposed to the same sound sources, at the same times, and in the same locations;
- B. Revise the general short-term exercise monitoring plan to enable the Navy to assess fully the effects of its research, development, testing, and evaluation activities on marine mammals in the Keyport Range Complex, and
- C. provide the schedule for initiating that plan so as to obtain, on an on-going basis, biological data for documenting long-term trends in marine mammal abundance and distribution that can be used to inform subsequent exercise planning;
- D. develop and implement a plan to calibrate and verify the performance of the visual monitoring, passive acoustic monitoring, and other monitoring and mitigation measures being proposed to enable the Navy, the National Marine Fisheries Service, and other interested parties to evaluate their effectiveness;
- E. provide additional details concerning the proposed mitigation and monitoring measures that would be implemented under the Navy's Range Operating Policies and Procedures Manual.

Further, the contemplated regulations, if issued, should require that the Navy:

- 1) Implement a plan to obtain monitoring performance validation data before beginning operations,
- 2) Provide a more detailed and substantive explanation of the risk estimation protocols, and
- 3) Modify its criteria for resuming full operational sonar use following a power-down or shutdown and provide follow-up data on the effectiveness and costs associated with such mitigation and monitoring efforts;
- 4) Clarify whether it is applying a standard, minimum set of consistent risk assessment criteria to all range complexes or whether it is using different risk estimate methodologies for individual range complexes. If the latter, the Marine Mammal Commission recommends that the Navy provide a synopsis of all proposed actions as they are submitted that explains how and why each action differs in its risk calculation protocol from others that have gone before;
- 5) Provide a mathematical demonstration as to why the linear assumptions being used to estimate the number of individual marine mammals that would be exposed to an instantaneous pressure threshold during a given sonar run are appropriate, including whether they significantly alter the cumulative energy distribution across a set of individual marine mammals or oversimplify the directed use of sonar and the "random walk" behavior of marine mammals. It would be useful if such a demonstration compared these straight line assumptions with examples using more realistic sonar tracks and actual or at least "random walk" type animal tracks;

- 6) Suspend an activity if a marine mammal is killed or seriously injured and the death or injury could be associated with the Navy's activities. Authorization for resumption of the activity should be contingent upon a review by the Service of the circumstances of the death or injury and the Navy's plans for avoiding additional mortalities; and
- 7) Submit annual reports providing full documentation of methods, results, and interpretation pertaining to all monitoring tasks and the dates and locations of operations, marine mammal sightings, and estimates of the amount and nature of potential takes of marine mammals by harassment or in other ways.

RATIONALE

Estimated Taking by Harassment

The Service's *Federal Register* notice and the application are not consistent regarding the species and number of animals for which incidental taking authorization is being sought. The application indicates that various numbers of six species (Steller sea lions, northern fur seals, California sea lions, northern elephant seals, Pacific harbor seals, and harbor porpoises) could be taken by Level B harassment over the five-year authorization period.

The *Federal Register* lists only five species, omitting Steller sea lions. This discrepancy should be resolved. Further, the application suggests that a small number of other cetacean species (fin, humpback, sei, and sperm whales) could be taken by Level B harassment, but authorization to take these species has not been requested.

The application states that an ongoing consultation under the Endangered Species Act has preliminarily determined that the proposed research, development, testing, and evaluation activities may affect these whale species. The application indicates, however, that authorization to take these species is not being requested based on the expectation that the consultation will conclude that harassment of these species can be avoided through the implementation of mitigation measures.

Because few mitigation measures are known to be 100 percent effective, the Marine Mammal Commission recommends that the National Marine Fisheries Service and the Navy ensure that the contemplated rule and any Letter of Authorization issued under such a rule provide authorization for the taking of all marine mammal species that may be exposed to Level A or Level B harassment as a result of the proposed research, development, testing, and evaluation activities.

As a related matter, the tables on pages 171–173 of the application summarize modeled mid- and high-frequency acoustic exposures by species and reflect potential Level B harassment numbers with and without the implementation of mitigation procedures as specified in the Navy's Range Operating Policies and Procedures Manual. The tables show between 1 and 56 takes of each species, including 54 killer whales in Dabob Bay and 56 Dall's porpoises in Quinault.

The potential harassment of all species listed is mitigated down to zero, with the exception of pinnipeds and harbor porpoises. It is unclear why mitigation measures, if 100 percent effective for some species, would not similarly reduce or eliminate takes of pinnipeds and harbor porpoises as these species are expected to occur in the same areas at the same times and will be exposed to the same sound sources.

Further, page ES-2 of the Executive Summary states that range operating policies and procedures will substantially decrease the number of animals potentially exposed to and affected by the proposed activities. However, the final numbers presented in Table 6-26 shows that 2,064 takes at levels that could cause a temporary threshold shift in hearing would be reduced only to 2,062 takes (i.e., there would be approximately only one-tenth of 1 percent reduction).

For the overall Level B harassment totals, the proposed mitigation would reduce the numbers by only 1.6 percent, from 15,538 to 14,901 animals. It is unclear how a reduction in risk of just over 1 percent constitutes a “substantial decrease” as a result of mitigation procedures and why these measures are so ineffective in reducing the number of takes of pinnipeds and harbor porpoises as compared with other species.

The Marine Mammal Commission recommends that the Navy explain its apparent ability to mitigate Level B harassment for some, but not other species that are expected to be exposed to the same sound sources, at the same times, and in the same locations. Note also that the risk estimation tables (Tables 6-23 to 6-26) contain at least one error: the risk function estimates of Level B harassment seem to be reversed, with unmitigated takes estimated at 41 and mitigated takes at 109. This apparent error should be corrected.

Monitoring and Mitigation

As discussed in our 23 May and 25 July 2008 letters (copies enclosed) regarding the Navy’s requests for authorization to take marine mammals incidental to other military readiness activities, the Navy’s investment in developing and refining monitoring and mitigation capabilities, including a Marine Species Monitoring Plan, is commendable.

We note, however, that the Navy’s general short-term exercise monitoring plan does not cover the proposed research, development, testing, and evaluation activities in the Keyport Range Complex. The Navy’s application states that the plan could readily be adapted for such activities if deemed necessary.

The Commission believes that short-term monitoring is warranted to assess the effects of these activities on marine mammals, and the Marine Mammal Commission recommends that the Navy revise the general short-term exercise monitoring plan to enable it to assess fully the effects of its research, development, testing, and evaluation activities on marine mammals in the Keyport Range Complex and provide the schedule for initiating that plan so as to obtain, on an on-going basis, biological data for documenting long-term trends in marine mammal abundance and distribution that can be used to inform subsequent exercise planning.

Our previous letters also noted that the performance verification procedures used in many of the Navy’s military readiness operations have yet to be thoroughly evaluated. The Commission believes that the Navy should develop and implement a plan for obtaining performance data to justify its confidence in critical mitigation measures such as “watchstander” training, the probability of detecting various marine species of concern, and night vision and passive acoustic measures in the Keyport Range and other areas where various activities are planned. Verifying and validating measures to mitigate environmental effects would not be unduly costly and would clarify whether the Navy’s claims regarding the proposed mitigation efforts are realistic.

The Marine Mammal Commission therefore recommends that the Navy develop and implement a plan to calibrate and verify the performance of the visual monitoring, passive acoustic monitoring, and other monitoring and mitigation measures being proposed to enable the Navy, the National Marine Fisheries Service, and other interested parties to evaluate their effectiveness.

The Navy's application and the Service's *Federal Register* notice state that mitigating potential impacts to the environment during research, development, testing, and evaluation activities would be accomplished through strict adherence to the Navy's operating policies and procedures. However, the measures that would be implemented for protecting marine mammals are described, for the most part, only in general terms.

The Marine Mammal Commission recommends that the Navy provide additional details concerning the proposed mitigation and monitoring measures that would be implemented. The Marine Mammal Commission further recommends that the proposed regulations, if issued, require that the Navy

- (1) Implement a plan to obtain monitoring performance validation data before beginning operations,**
- (2) Provide more detailed and substantive explanation of the risk estimation protocols, and**
- (3) Modify its criteria for resuming full operational sonar use following a power-down or shutdown and provide follow-up data on the effectiveness and costs associated with such mitigation and monitoring efforts.**

The proposed power-down/shutdown period is too short, and we have previously recommended that the period be changed to 60 minutes for deep-diving species and 30 minutes for all other species. With respect to this last point, perhaps a six-month or one-year trial could be conducted, with re-evaluation of the burden imposed by this requirement after sufficient data have been acquired to determine whether this is a practical measure that the Navy could implement permanently.

Risk Estimate Methodology

The Commission notes that the Navy's overall explanation as to how the risk estimates were derived for the Keyport Range Complex is the most detailed and complete to date. It is unclear, however, whether the methodology used to derive these risk estimates also was used for all other range complexes, including the recent analyses for the Hawaii Range Complex, or whether it applies only to the Keyport Range Complex.

The Marine Mammal Commission recommends that the Navy clarify whether it is applying a standard, minimum set of consistent risk assessment criteria to all range complexes or whether it is using different risk estimate methodologies for individual range complexes. If the latter, the Marine Mammal Commission recommends that the Navy provide a synopsis of all proposed actions as they are submitted that explains how and why each action differs in its risk calculation protocol from others that have gone before.

Figure 6-14 on page 145 shows a smoothed-line graph of the ensonified area calculated by discrete 5-m depth bins. However, because the calculations were based on the placement of the data into those bins rather than being derived from the original differential equation, this "smoothing" is not

appropriate. Rather, the data for the depth bins should be presented as a bar graph, similar to the way that data are presented in Figure 6-19 on page 152.

The applicant indicates that its protocol for estimating the number of individual marine mammals that would be exposed to an instantaneous pressure threshold during a given sonar run likely results in an overestimate. The same assumptions that cause the number to be overestimated also lead to the underestimation of the number of repeat exposures per individual, such that the cumulative energy to which an animal is exposed over the entire set of pings in a series will be the lowest possible.

The applicant states that exposure to only one or two pings will maximize the effect on a given marine mammal and that additional pings do little to add to that energy exposure. The Commission is concerned that these faulty assumptions might lead to an underestimate of the number of takes resulting in permanent or temporary threshold shifts secondary to cumulative energy exposures.

Sonar is used to search for specific targets, and realistic animal tracks are seldom, if ever, straight lines. **As a result, the potential for an animal to receive several high-level pings out of a series lasting tens of minutes or even hours is not unreasonable. In light of these potential problems, the Marine Mammal Commission recommends that the applicant and/or the Service provide a mathematical demonstration as to why the linear assumptions being used to estimate the number of individual marine mammals that would be exposed to an instantaneous pressure threshold during a given sonar run are appropriate, including whether they significantly alter the cumulative energy distribution across a set of individual marine mammals or oversimplify the directed use of sonar and the “random walk” behavior of marine mammals. It would be useful if such a demonstration compared these straight line assumptions with examples using more realistic sonar tracks and actual or at least “random walk” type animal tracks.**

Lethal Taking/Serious Injury

Neither the Service nor the Navy anticipates that any marine mammal strandings or deaths will result from the proposed activities, and the applicant is not requesting authorization for such takes. However, the Commission believes that the proposed rule should require that, in the event of a death of a marine mammal, activities be temporarily suspended until an initial investigation of the cause of the death is conducted. Such an investigation is needed to help ensure that additional deaths of marine mammals do not occur.

The Marine Mammal Commission therefore recommends that incidental take regulations, if issued, require that the Navy suspend an activity if a marine mammal is killed or seriously injured and the death or injury could be associated with the Navy’s activities. Authorization for resumption of the activity should be contingent upon a review by the Service of the circumstances of the death or injury and the Navy’s plans for avoiding additional mortalities.

Reporting

The *Federal Register* notice states that “[p]rocedures for reporting marine mammal sightings on the Keyport Range complex shall be promulgated, and sightings shall be entered into the Range Operating System and forwarded to NOAA/NMML Platforms of Opportunity Program.” The Commission notes that post-event reports have great potential value to the Navy and the Service.

The Marine Mammal Commission therefore recommends that the Service require that the applicant submit annual reports providing full documentation of methods, results, and interpretation pertaining to all monitoring tasks, and the dates and locations of operations, marine mammal sightings, and estimates of the amount and nature of potential takes of marine mammals by harassment or in other ways.

If you or your staff has questions about any of the Commission's recommendations, please let me know.

Sincerely,

Timothy J. Ragen, Ph.D.
Executive Director
Marine Mammal Commission

Enclosures