16 August 2010

V. Frank Stone, Ph.D.
Director, Marine Mammal Research and Development Program
Chief of Naval Operations
Environmental Readiness Division (N45)
2511 Jefferson Davis Highway, #2000
Arlington, VA 22202

Dear Dr. Stone:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the U.S. Navy's Integrated Comprehensive Monitoring Program, dated 23 December 2009. Based on that review, the Commission offers the following comments and recommendations.

**RECOMMENDATIONS**

The Marine Mammal Commission—

- requests that, when feasible, it be included in meetings at which the Navy and the National Marine Fisheries Service are addressing matters pertaining to the Integrated Comprehensive Monitoring Program and potential effects of Navy activities on marine mammals;
- supports the Integrated Comprehensive Monitoring Program's emphasis on assessing the efficacy of monitoring methods as a means of evaluating the reliability of monitoring results;
- recommends that during its annual review of progress in implementing the Integrated Comprehensive Monitoring Program and, as performance information becomes available, the Navy set standards for the various monitoring methods it uses;
- recommends that the Navy expand the top-level goals in the Integrated Comprehensive Monitoring Program to emphasize the use of monitoring information to reduce the adverse impact of its activities to the least practicable level, as defined in the Marine Mammal Protection Act;
- recommends that the Navy consider the application of a similar program aimed at better understanding of the potential effects of low-frequency active sonar;
- recommends that the Navy continue behavioral response studies for the purpose of complementing monitoring efforts and eventually providing a better and more functional understanding of marine mammal responses to human-generated sounds and ways to monitor and mitigate such effects; and
- supports the Navy's inclusion of baseline conditions and cumulative effects in the Integrated Comprehensive Monitoring Program and recommends that the Navy continue to pursue studies on these topics as it develops monitoring programs for each of its range complexes.

## RATIONALE

Over the past decade, the Marine Mammal Commission has raised questions and made recommendations to the Navy regarding its monitoring methods during activities that may result in the take of marine mammals. Many of these activities involve the use of various sonars, primarily low-frequency active and mid-frequency active. The Commission has made similar recommendations to other agencies and organizations whose activities also introduce sound into the marine environment, such as seismic studies related to oil and gas operations. The Commission's principal concern with regard to monitoring methods has been whether they provide reliable information on the number and nature of takes of marine mammals during the course of those sound-producing activities. That question is central to the issue of whether such activities have no more than a negligible impact on marine mammal populations, a requirement for incidental take and harassment authorizations. For the past several years, the Navy has responded to the Commission's concerns and recommendations by indicating that it was developing an Integrated Comprehensive Monitoring Program and that the program would address the points raised by the Commission.

The 23 December 2009 document appears to be the Navy's first major step in developing an Integrated Comprehensive Monitoring Program, and the Commission considers it an excellent start. The program described in the document reflects a strong commitment by the Navy to understand and minimize the impact of its actions on the marine mammals, ensure that it meets the negligible impact standard, and generally uphold its goal of being a good steward of the marine environment. In that regard, the program seems consistent with the Navy's commitment of resources and sponsorship of activities and events (e.g., workshops) that engage many of the nation's experts in studying and mitigating the sound-related effects of Navy activities. The Navy deserves acknowledgement and credit for this important first step toward an Integrated Comprehensive Monitoring Program. The following recommendations and rationale are intended to help the Navy as it continues to develop this important program.

### Annual Review

The Marine Mammal Commission is charged with providing oversight and advice with regard to the activities of federal agencies, including the Navy and the National Marine Fisheries Service. The Navy and the Service's Office of Protected Resources have been working together to ensure that the Navy meets its environmental responsibilities associated with its many and varied activities. The Commission believes that close consultation between the two agencies has been essential for development of the Integrated Comprehensive Monitoring Program and should be continued or even enhanced where appropriate. Among other things, the consultation provides an opportunity to avoid miscommunication about highly technical matters that determine or influence the potential for Navy activities to affect marine mammals. In its oversight role, the Marine Mammal Commission also would benefit from participating in those meetings so that Commission staff can be apprised of pertinent information firsthand, ask questions in a timely fashion, and perhaps provide suggestions for improving aspects of the program. With those benefits in mind, the Marine Mammal Commission requests that, when feasible, it be included in meetings where the Navy and

the National Marine Fisheries Service are addressing matters pertaining to the Integrated Comprehensive Monitoring Program and potential effects of Navy activities on marine mammals.

**Evaluating Monitoring Results versus Efficacy**

The Integrated Comprehensive Monitoring Program recognizes the important distinction between monitoring results and monitoring efficacy. Often the results are deemed more important because they help managers form conclusions as to whether certain activities have specific effects. However, to be confident in their conclusions, managers also need to know that the available results are a reliable indicator of actual effects. For that reason, the Marine Mammal Commission has long stressed the need for the Navy and other agencies and organizations that undertake marine activities to evaluate the efficacy of their monitoring methods. The Marine Mammal Commission supports the program's emphasis on assessing the efficacy of monitoring methods as a means of evaluating the reliability of monitoring results.

**Standards for Monitoring Methods**

The program provides a framework that the individual range complexes will follow to develop their specific monitoring plans and studies. At least to a degree, it makes sense that tailored approaches are needed for each range complex because they differ with respect to activities and environmental conditions. At the same time, however, the full array of available monitoring methods is limited, and the different range complexes may be implementing monitoring plans that, while differing to a degree, also have many common features. If that is the case, then as the Navy begins to implement the program, it should see opportunities to impose monitoring standards that apply across multiple range complexes, if not all of them. For example, the Navy may wish to set performance standards for watchstanders, passive and active acoustic monitoring methods, or aerial and shipboard surveys conducted before and after exercises. When feasible, imposing such standards is a way of ensuring that all complexes are achieving a reasonable level of proficiency in monitoring effects. With that in mind, the Marine Mammal Commission recommends that during its annual review of progress in implementing the Integrated Comprehensive Monitoring Program and, as performance information becomes available, the Navy set standards for the various monitoring methods it uses.

**Monitoring Goals**

Section 2 of the Integrated Comprehensive Monitoring Program describes top-level goals for the program. The goals are cast largely in terms of increasing knowledge and understanding of the effects of Navy activities on marine mammals. Such goals are certainly consistent with a science-based approach to monitoring. However, the Commission believes that the primary goal of this program should not be simply to increase knowledge and understanding, but also to identify, characterize, and reduce impacts in accordance with the Marine Mammal Protection Act. Therefore, the Marine Mammal Commission recommends that the Navy expand the top-level goals in the Integrated Comprehensive Monitoring Program to emphasize the use of monitoring information to

reduce the adverse impacts of its activities to the least practicable level as defined in the Marine Mammal Protection Act.

**Low-frequency Active Sonar**

The Integrated Comprehensive Monitoring Plan does not refer to the need to monitor the adverse impact of low-frequency active sonar. Although the potential effects of low- and mid-frequency sonars are not the same, they overlap in some respects and, importantly, much remains to be learned about the long-term effects of low-frequency active sonar. Although the Commission does not suggest incorporating low-frequency active sonar into this Integrated Comprehensive Monitoring Program, it may warrant a similar program that could be modeled after this one. With that in mind, the Marine Mammal Commission recommends that the Navy consider the application of a similar program aimed at better understanding of the potential effects of low-frequency active sonar.

**Marine Mammal Behavioral Responses**

Under certain circumstances, mid-frequency sonar can lead to events that result in the serious injury or death of marine mammals. That being said, the available evidence does not indicate that such outcomes are common. Indeed, behavioral responses are likely to be more common, and they may range from those that are temporary and biologically insignificant to those that lead to or that may have adverse effects on survival or reproduction. Such responses might include displacement from essential habitat, disruption of social bonds, or physiological stress and changes in physical condition. The Navy's sponsorship of behavioral response studies at the Atlantic Undersea Test and Evaluation Center and more recently in the Southern California Range Complex already have proven highly informative and useful for studying the behavioral responses of marine mammals to Navy sonars and other sounds. The 2006 report from a Marine Mammal Commission workshop strongly recommended such studies, and the Commission continues to believe they are essential if scientists are to fully and confidently describe the responses of marine mammals to such sounds. With that in mind, the Marine Mammal Commission recommends that the Navy continue behavioral response studies for the purpose of complementing monitoring efforts and eventually providing a better and more functional understanding of marine mammal responses to human-generated sounds and ways to monitor and mitigate such effects.

**Baseline Conditions and Cumulative Effects**

Ultimately, our collective ability to ensure that Navy activities have no more than negligible effects on marine mammal stocks and their habitats will depend on our ability to assess baseline conditions and evaluate cumulative effects. Both tasks pose serious challenges to scientists and managers because they require long-term study and extensive data. Given the inherent variability in marine mammal demography and behavior, so-called "baseline" conditions might be more accurately characterized as "base-range" conditions to indicate that such characterization requires both measures of central tendency (e.g., means, medians, modes) as well as measures of variability (e.g., standard errors, standard deviations, variances). The data to estimate these parameters may be difficult to collect and may encompass multiple sources of variation (e.g., over time, space, and other

factors). Analyses of cumulative effects also require extensive amounts of data, particularly when the relationships involved appear insignificant on an individual basis but significant when combined together.

The Integrated Comprehensive Monitoring Program document references the need for assessing baseline conditions and for assessing cumulative effects. The Navy's work on these topics will benefit marine mammals (1) directly by further clarifying the mechanisms by which Navy operations may affect them and (2) generally by providing new and important information about the abundance, density, distribution, and behavior of marine mammals and their responses to human generated sound—information that otherwise might not be available. In this regard, the Marine Mammal Commission supports the Navy's inclusion of these topics in the Integrated Comprehensive Monitoring Program and recommends that the Navy continue to pursue studies on these topics as it develops monitoring programs for each of its range complexes.

Once again, the Marine Mammal Commission compliments the Navy on the development of its Integrated Comprehensive Monitoring Program and looks forward to the development and implementation of programs specific to each of the range complexes.

Please contact me if you have any questions regarding the Commission's recommendations.

Sincerely,

Timothy J. Ragen, Ph.D.
Executive Director

Cc: Mr. James H. Lecky
Mr. John Quinn
Mr. Donald Schregardus