

5 MITIGATION AND MONITORING

This chapter describes mitigation and monitoring measures that would be applied to the proposed project.

Mitigation, as defined by the Council on Environmental Quality (CEQ), includes measures to avoid the impact altogether by not taking a certain action or parts of an action or to minimize potential effects by limiting the degree or magnitude of a proposed action and its implementation. As presented throughout the document, several mitigation measures have been proposed as part of the alternatives. These measures described below would mitigate the potential effects of NPAL subsea sounds on marine animals by focusing on the operational characteristics of the NPAL sound source.

The California and Hawaii ATOC MMRPs were designed to determine the potential effects of the acoustic transmissions on marine mammals and other marine life, focusing on short-term effects. As described in Chapter 1, all of the effects detected by the ATOC MMRPs were subtle and found only after intensive statistical analyses. Therefore, the need to conduct further marine mammal monitoring studies is now to advance the understanding of the potential for long-term effects from the acoustic transmissions. The measures to accomplish this objective are described below.

5.1 MEASURES TO MITIGATE THE SOUND SOURCE

Several mitigation measures were identified throughout this EIS that would minimize the potential effects of the NPAL sound source. These measures are summarized as follows:

Mitigation Measure 1: The sound source would operate at the minimum duty cycle necessary to support the large-scale acoustic thermometry and long-range propagation objectives.

Transmissions would continue with roughly the same transmission schedule as that used during the first feasibility phase of the ATOC study. The proposed nominal duty cycle would be six 20-min transmissions (one every 4 hours), every fourth day, with each transmission preceded by a 5-min ramp-up period, representing an average duty cycle of 2 percent.

Mitigation Measure 2: Any increases in the duty cycle beyond the nominal 2 percent (with a maximum of 8 percent) would not occur during the peak humpback season (January – April).

To provide for short-term long-range acoustic propagation studies, the proposed action includes the possibility of an 8 percent duty cycle for up to two months out of each year. The 8 percent duty cycle would not occur during the peak humpback whale season (January – April).

Mitigation Measure 3: The sound source would operate at the minimum power level necessary to support large-scale acoustic thermometry and long-range sound transmission objectives.

Lower power levels are preferred to minimize the potential for effects on marine life. Figure A-1, Kauai Source Power Density Spectrum, indicates a peak spectrum power output value of 180 dB. The source is capable of a total power output, integrated across the entire 35 Hz bandwidth, of 195 dB re 1 μ Pa at 1 m from the source. In addition, the transmission length of 20 minutes is designed to spread the energy over time, at much lower source levels, than if the signals were sent as short, loud pulses of the same total energy. The ATOC MMRPs found only subtle effects that would not be expected to adversely impact the survival of an individual whale or the status of North Pacific whale populations when the source was transmitting at the proposed source level

Mitigation Measure 4: Transmissions from the NPAL sound source would be preceded by a 5-minute ramp-up of the source power.

An initial 5-minute stepped ramp-up period currently helps reduce the potential for startling animals and provides them an opportunity to move away from the source before transmissions at the maximum power level begin.

Mitigation Measure 5: All NPAL vessels and aircraft would be equipped with required air pollution controls.

Locating the source site at Midway Atoll would require installation by vessels while Marine Mammal Monitoring Studies for both alternatives would include aerial surveys.

Mitigation Measure 6: For the Midway Alternative, the portions of the cable and any protective casing in the nearshore area and surf zone would be designed to minimize the potential for adverse effects.

Mitigation Measure 7: For the Preferred Alternative and the Midway Alternative, the source cable, and possibly the sound source, would not be removed at the end of the experiment.

5.2 MONITORING TO PREVENT LONG-TERM EFFECTS TO MARINE ANIMALS

The following monitoring measures to prevent adverse changes in distribution and abundance to marine animals would be conducted as a component of the proposed action:

Monitoring Measure 1: The focus of the Marine Mammal Monitoring Studies is to advance the understanding of the potential for long-term effects of man-made sound on marine mammals by monitoring the distribution and abundance of marine mammals in the vicinity of the sound source.

The Marine Mammal Monitoring Studies element of the proposed action is designed to advance the understanding of the potential for long-term effects of the sound transmissions on marine life through the conduct of aerial surveys in the vicinity of the sound source. Thus, ONR would seek answers to the most important scientific issues surrounding potential long-term effects: animal abundances and distribution. A total of four aerial surveys would be conducted during each

humpback whale season. The Marine Mammal Monitoring Studies would have four components:

- data analysis: NPAL abundance and distribution data would be statistically analyzed and compared with those data collected during the Kauai ATOC Marine Mammal Research Program (MMRP);
- data reporting: NPAL aerial survey results, data compilations and findings would be published in reports (documents and/or electronic versions);
- data sharing: ONR/Scripps would make all published reports available in the public domain. Information from the Marine Mammal Monitoring Studies would be provided annually to NMFS for review; and
- data monitoring: Marine mammal stranding data in Hawaii would be monitored for any long-term trends.

Monitoring Measure 2: Monitor marine mammal stranding data.

Coordination with the local marine mammal stranding network would be conducted to detect any long-term trends.

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