2 Description of Proposed Action and Alternatives

2 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

The United States (U.S.) Department of the Navy's (Navy's) Proposed Action is the same as the Proposed Action presented in the 2011 *Gulf of Alaska Navy Training Activities Final Environmental Impact Statement/Overseas Environmental Impact Statement*[1] (U.S. Department of the Navy 2011a) and *Record of Decision for Final Environmental Impact Statement/Overseas Environmental Impact Statement for the Gulf of Alaska Navy Training Activities* (U.S. Department of the Navy 2011b) pursuant to the guidance of 40 Code of Federal Regulations (C.F.R.) §1502.9(c).

At-sea joint exercises in the Gulf of Alaska, as described in the 2011 GOA Final Environmental Impact Statement (EIS)/Overseas EIS (OEIS) support the training of combat-capable naval forces. This Supplemental EIS/OEIS is a supplemental document to the 2011 GOA Final EIS/OEIS and Record of Decision (ROD). The purpose of this Supplemental EIS/OEIS is to update the 2011 GOA Final EIS/OEIS with new information and analytical methods that emerged since 2011. There has been no change to the Proposed Action.

The 2011 GOA Final EIS/OEIS used an acoustic modeling methodology, marine mammal density information, and science that was the best available at the time. Following the completion of the 2011 GOA Final EIS/OEIS, a new modeling system known as the Navy Acoustics Effects Model (NAEMO) was developed by the Navy in cooperation with the National Marine Fisheries Service (NMFS) (as a cooperating agency) to conduct a more comprehensive acoustic impact analysis for in-water training and testing activities. The analysis also incorporates updated marine mammal density information and other relevant new science. By using this comprehensive modeling software and updated marine mammal density data (Gulf of Alaska Line-Transect Survey II [Rone et al. 2014]), the predicted impacts to marine mammals have changed from those in the 2011 GOA Final EIS/OEIS. Although there has been new information and analytical methods since the 2011 GOA Final EIS/OEIS, this new information does not present a substantially different picture of the environmental consequences or the significance of impacts resulting from the Navy's proposed action. However, in the interest of furthering the purposes of the National Environmental Policy Act (NEPA), this document analyzes those changes and associated potential environmental impacts to marine mammals. Using the best available science and analytical methodologies, this Supplemental EIS/OEIS re-analyzes training activities involving sonar, other active acoustic sources, and underwater explosives. Since training activities involving sonar and other active acoustic sources and underwater explosives only occur in the Temporary Maritime Activities Area (TMAA), this Supplemental EIS/OEIS analyzes impacts associated with these acoustic stressors to marine mammals within the TMAA portion of the 2011 GOA Final EIS/OEIS Study Area. Other activities beyond those that involve sonar, other active sources, or underwater explosives were re-evaluated, but not carried forward for alternatives re-analysis as those potential impacts are expected to remain the same as described in the 2011 GOA Final EIS/OEIS.

2.1 DESCRIPTION OF THE JOINT PACIFIC ALASKA RANGE COMPLEX

As noted in Section 1.1 (Introduction) of this Supplemental EIS/OEIS, the term "Alaska Training Areas" has been changed to the "Joint Pacific Alaska Range Complex." The Joint Pacific Alaska Range Complex is described in the 2011 GOA Final EIS/OEIS in Section 2.1 (Description of the Alaska Training Areas). There are no additional changes to the training areas.

[1] Hereafter referred to as the "2011 GOA Final EIS/OEIS."

2.1.1 GULF OF ALASKA TEMPORARY MARITIME ACTIVITIES AREA

The TMAA is depicted in Figure 2.2-1 and is described in Section 2.1.1 (Gulf of Alaska Temporary Maritime Activities Area) of the 2011 GOA Final EIS/OEIS. There are no changes to the TMAA in this Supplemental EIS/OEIS. The distances from Kodiak, Cordova, and Yakuta to the closest edge of the TMAA are 45 nautical miles (nm), 90 nm, and 130 nm, respectively. The distances from Kodiak, Cordova, and Yakuta to the center of the TMAA (defined as "140 nm offshore") are 190 nm, 170 nm, and 240 nm, respectively.

2.2 DESCRIPTIONS OF ACOUSTIC AND EXPLOSIVE SOURCES EMPLOYED IN THE TEMPORARY MARITIME ACTIVITIES AREA

The Navy uses a variety of sensors, platforms, weapons, and other devices, including those used to ensure the safety of Sailors and Marines, to meet its mission. Training with certain systems may introduce acoustic (sound) energy into the environment. The potential environmental impacts of these activities are analyzed in Chapter 3 (Affected Environment and Environmental Consequences) of this Supplemental EIS/OEIS. The training activities, event levels, and descriptions, to include their associated sensors, platforms, weapons, and other devices, covered under this Supplemental EIS/OEIS are the same activities that were covered under the 2011 GOA Final EIS/OEIS (see Chapter 2, Section 2.4, and Table 2-5). As such, they are not re-described here. However, because the Navy is using the new acoustic modeling system (NAEMO) and updated marine species density information, the model-predicted exposures to marine mammals have changed from those in the 2011 GOA Final EIS/OEIS and are discussed in Section 3.8 (Marine Mammals). This section organizes, presents, and discusses the updated approach and analysis of the NAEMO model in order to analyze the potential effects from sources of underwater acoustic sound or explosive energy.

2.2.1 CLASSIFICATION OF NON-IMPULSIVE AND IMPULSIVE SOURCES

In order to better organize and facilitate the analysis of approximately 300 individual sources of underwater non-impulsive sound or impulsive energy in use or in development by the Navy, a series of source classifications, or source bins, were developed. The use of source bins provides the following benefits:

- provides the ability for new sensors or munitions to be covered under existing regulatory authorizations, as long as those sources fall within the parameters of a "bin"
- simplifies the source utilization data collection and reporting requirements anticipated under the Marine Mammal Protection Act (MMPA), Endangered Species Act (ESA), and other regulations
- ensures a conservative approach to all impacts estimates, as all sources within a given class are modeled as the loudest source (lowest frequency, highest source level, longest duty cycle, or largest Net Explosive Weight [NEW]) within that bin
- allows analysis to be conducted in a more efficient manner, without any compromise of analytical results
- provides a framework to support the reallocation of source usage (hours/explosives) between different source bins, within certain limitations of the Navy's regulatory compliance parameters (i.e., MMPA Letter of Authorization and ESA Biological Opinion); this flexibility is required to support evolving Navy training requirements, which are linked to real world events

There are two primary types of sources classes: impulsive and non-impulsive. A description of each source classification is provided in Table 2.2-1 and Table 2.2-2. Impulsive bins are based on the NEW of the munitions or explosive devices or the source level for air and water guns.

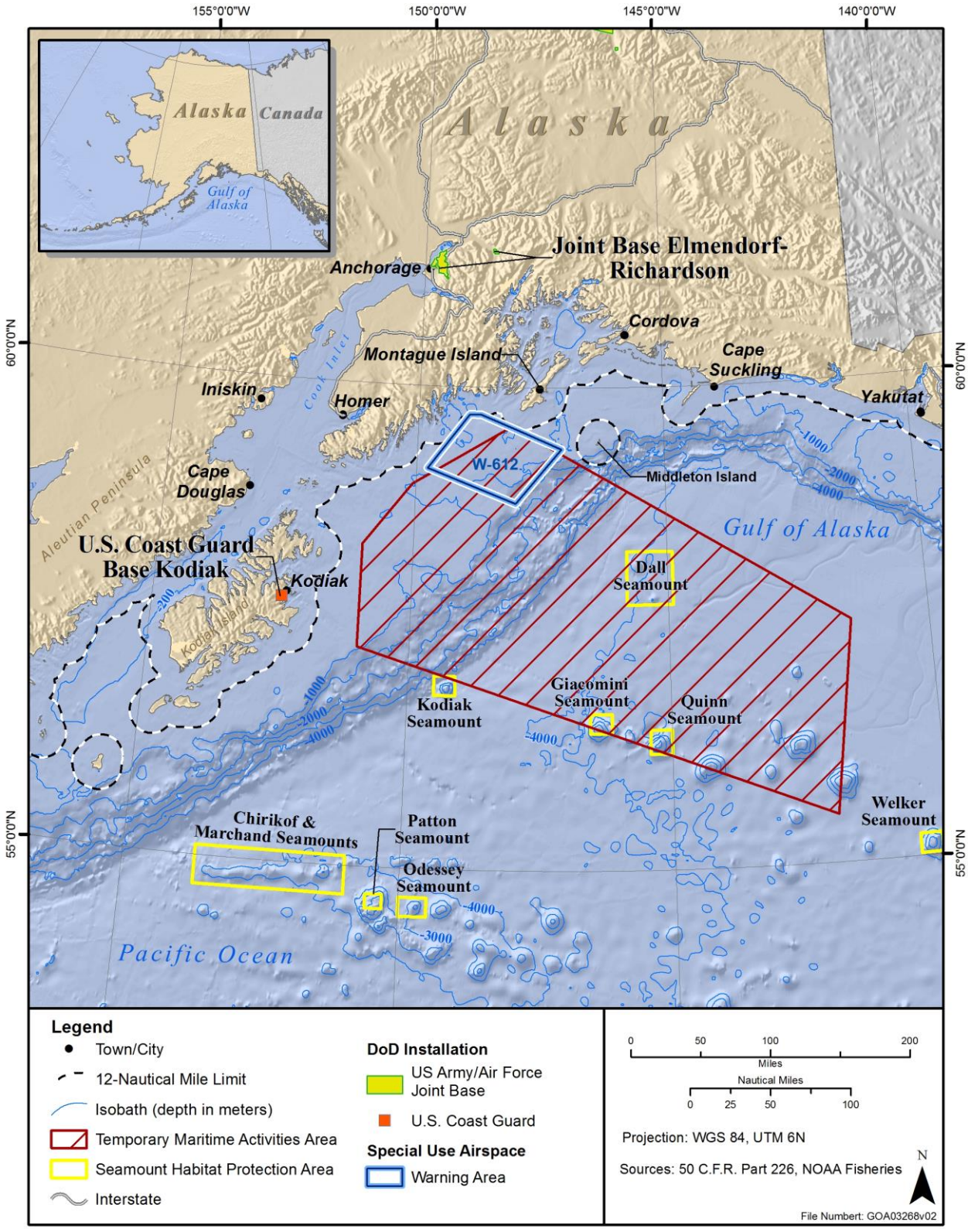

Figure 2.2-1: Gulf of Alaska Temporary Maritime Activities Area

Non-impulsive acoustic sources are grouped into bins based on the frequency,[2] source level,[3] and, when warranted, the application in which the source would be used during training. The following factors further describe the considerations associated with the development of non-impulsive source bins:

- Frequency of the non-impulsive source:
  - Low-frequency sources operate below 1 kilohertz (kHz)
  - Mid-frequency sources operate at and above 1 kHz, up to and including 10 kHz
  - High-frequency sources operate above 10 kHz, up to and including 100 kHz
  - Very high-frequency sources operate above 100 kHz but below 200 kHz
- Source level of the non-impulsive source:
  - Greater than 160 decibels (dB), but less than 180 dB
  - Equal to 180 dB and up to 200 dB
  - Greater than 200 dB
- Application in which the source would be used:
  - How a sensor is employed supports how the sensor's acoustic emissions are analyzed
  - Factors considered include pulse length (time source is on); beam pattern (whether sound is emitted as a narrow, focused beam or, as with most explosives, in all directions); and duty cycle (how often or how many times a transmission occurs in a given time period during an event)

Table 2.2-1: Non-Impulsive Acoustic Source Classes Analyzed

Source Class Category	Source Class	Description of Representative Source
Mid-Frequency (MF): Tactical and non-tactical sources that produce mid-frequency (1–10 kHz) signals	MF1	Hull-mounted surface ship sonar (e.g., AN/SQS-53C and AN/SQS-61)
	MF3	Hull-mounted submarine sonar (e.g., AN/BQQ-10)
	MF4	Helicopter-deployed dipping sonar (e.g., AN/AQS-22 and AN/AQS-13)
	MF5	Active acoustic sonobuoys (e.g., DICASS)
	MF6	Active underwater sound signal devices (e.g., MK-84)
	MF11	Hull-mounted surface ship sonars with an active duty cycle greater than 80%
High-Frequency (HF): Tactical and non-tactical sources that produce high-frequency (greater than 10 kHz but less than 100 kHz) signals	HF1	Hull-mounted submarine sonar (e.g., AN/BQQ-10)
	HF6	Active sources (equal to 180 dB and up to 200 dB) not otherwise binned
Anti-Submarine Warfare (ASW): Tactical sources such as active sonobuoys and acoustic countermeasures systems used during the conduct of ASW training activities	ASW2	Mid-frequency Multistatic Active Coherent sonobuoy (e.g., AN/SSQ-125)
	ASW3	Mid-frequency towed active acoustic countermeasure systems (e.g., AN/SLQ-25)
	ASW4	Mid-frequency expendable active acoustic device countermeasures (e.g., MK-3)
Torpedoes (TORP): Source classes associated with the active acoustic signals produced by torpedoes	TORP2	Heavyweight torpedo (e.g., MK-48, electric vehicles)

Notes: dB = decibels, DICASS = Directional Command Activated Sonobuoy System, kHz = kilohertz

[2] Bins are based on the typical center frequency of the source. Although harmonics may be present, those harmonics would be several decibels lower than the primary frequency.

[3] Source decibel levels are expressed in terms of sound pressure level and are values given in dB referenced to 1 micropascal at 1 meter.

Table 2.2-2: Explosive Source Classes Analyzed

Source Class	Representative Munitions	Net Explosive Weight[1] (lb.)
E5	5 in. projectiles	> 5–10
E6	AGM-114 Hellfire missile	> 10–20
E7	AGM-88 High-speed Anti-Radiation Missile	> 20–60
E8	250 lb. bomb (e.g., MK-81)	> 60–100
E9	500 lb. bomb (e.g. MK-82)	> 100–250
E10	1,000 lb. bomb (e.g., MK-83)	> 250–500
E11	MK-48 Torpedo	> 500–650
E12	2,000 lb. bomb (e.g., MK-84)	> 650–1,000

[1] Net Explosive Weight refers to the amount of explosives; the actual weight of a munition may be larger due to other components such as the casing for a bomb, missile, projectile, or device.
Notes: AGM = Air-to-Ground Missile, in. = inches, lb. = pounds

Within the Preferred Alternative in the 2011 GOA Final EIS/OEIS, there were three non-impulsive sources (HF1, ASW3, and ASW4; see Table 2.2-1) that were part of the ongoing training but at the time were not considered sources requiring analysis under NEPA, MMPA, or ESA given that they were used during anti-submarine Warfare (ASW) training events simultaneously with much more powerful sources (e.g., SQS-53 sonar). Since the less complex modeling in the 2011 GOA Final EIS/OEIS could only consider each source separately during a training scenario, there was no summation of total sound energy from multiple sources. In this supplemental analysis, the cumulative summation of total sound energy from multiple sources is considered in the acoustic modeling. Additionally, a high-duty cycle mode has been added to the modeling of the SQS-53 (MF11) system, as this mode was not previously analyzed in the Preferred Alternative in the 2011 GOA Final EIS/OEIS.

2.2.1.1 Sources Qualitatively Analyzed

There are in-water active acoustic sources with narrow beam widths, downward directed transmissions, short pulse lengths, frequencies above known hearing ranges, low source levels, or some combination of these factors, that are not anticipated to result in takes of protected species and, therefore, are not required to be quantitatively analyzed. These sources will be categorized as *de minimis* sources and will be qualitatively analyzed to reach the appropriate determinations under NEPA, the MMPA, and the ESA. When used during training activities, and in a typical environment, *de minimis* sources generally meet one or more of the following criteria:

- Acoustic source classes listed in Table 2.2-1 (actual source parameters are listed in the classified bin list)
- Acoustic sources that transmit primarily above 200 kHz
- Sources operated with source levels of 160 dB (dB referenced to [re] 1 µPa) or less

The types of sources with source levels less than 160 dB are typically hand held sonars, range pingers, transponders, and acoustic communication devices. Assuming spherical spreading for a 160 dB source, the sound will attenuate to less than 140 dB within 33 feet (ft.) (10 meters [m]), and less than 120 dB within 328.1 ft. (100 m) of the source.

Analysis of potential behavioral effects on marine mammals is estimated using a behavioral risk function (see Appendix C, Acoustic Primer, for details). The Behavioral Risk Function (BRF) equation is:

$$R = \frac{1 - \left(\frac{L - B}{K}\right)^{-A}}{1 - \left(\frac{L - B}{K}\right)^{-2A}}$$

R = risk (0–1.0)
L = received level (RL) in dB (140 dB)
B = basement RL in dB (120 dB)
K = RL increment above basement with 50 percent risk (45 dB)
A = risk transition sharpness

For odontocetes, pinnipeds, manatees, sea otters, and polar bears, A = 10; therefore, R = 0.0003, or 0.03 percent risk. For mysticetes, A = 8; therefore, R = 0.0015, or 0.15 percent risk.

Therefore:

- For all marine mammals subject to a BRF, these sources will not significantly increase the number of potential exposures as determined by the effects criteria.
- For beaked whales, the range to 140 dB behavioral threshold from a 160 dB source is 10 m (32.8 ft.). The likelihood of any potential effect is low because of the small affected area and the relative low density of beaked whales.
- For harbor porpoises, there will be a 100 m (328.1 ft.) zone from a 160 dB source to 120 dB behavioral threshold. Based on the above discussion and the extremely short propagation ranges to 120 dB, the potential for exposures that would result in changes to behavioral patterns to an extent where those patterns are abandoned or significantly altered is unlikely.
- For sea turtles, the behavioral threshold of 175 dB is above the 160 dB source level, and therefore no behavioral effect would be expected.
- Additionally, for all of the above calculations, absorption of sound in water is not a consideration, but would increase the actual transmission losses and further reduce the low potential for exposures.

2.2.1.2 Source Classes Qualitatively Analyzed

An entire source bin, or some sources from a bin, may be excluded from quantitative analysis (Table 2.2-3) within the scope of this Supplemental EIS/OEIS if one or more of the following criteria are met:

- The source is expected to result in responses which are short term and inconsequential based on the system acoustic characteristics (i.e., short pulse length, narrow beamwidth, downward directed beam, etc.) and manner of system operation.
- The sources are determined to meet the criteria specified in Section 2.2.1.1 (Sources Qualitatively Analyzed) or Table 2.2-3.
- Bins contain sources needed for safe operation and navigation.

Sources that meet these criteria will be qualitatively analyzed in Table 2.2-3 to determine the appropriate determinations under NEPA, MMPA, and ESA.

Table 2.2-3: Source Classes Excluded from Quantitative Analysis

Source Class Category	Source Bin	Description
Fathometers High-frequency sources used to determine water depth	FA1–FA4	Marine species are expected to exhibit no more than short-term and inconsequential responses to the sonar, profiler or pinger given their characteristics (e.g., narrow, downward-directed beam, and short pulse length). Such reactions are not considered to constitute "taking" and, therefore, no additional quantitative modeling is required for marine species that might be exposed to these sound sources. Fathometers use a downward directed, narrowly focused beam directly below the vessel (typically much less than 30 degrees), using a short pulse length (less than 10 msec). Use of fathometers is also required for safe operation of Navy vessels.
Hand-held Sonars High-frequency sonar devices used by Navy divers for object location	HHS1	Hand-held sonars generate very high frequency sound at low power levels, short pulse lengths, and narrow beam widths. Because output from these sound sources would attenuate to below any current threshold for marine species at a very short range, and because they are under positive control of the diver on which direction the sonar is pointed marine species reactions are not likely. No additional quantitative modeling is required for marine species that might be exposed to these sound sources.
Doppler Sonars/Speed Logs Navigation equipment, downward focused, narrow beamwidth, HF/VHF spectrum utilizing very short pulse length pulses.	DS2, DS3, DS4	Marine species are expected to exhibit no more than short-term and inconsequential responses to the sonar, profiler or pinger given their characteristics (e.g., narrow downward-directed beam), which is focused directly beneath the platform. Such reactions are not considered to constitute "taking" and, therefore, no additional quantitative modeling is required for marine species that might be exposed to these sound sources.
Imaging Sonars (IMS) High-frequency or very high-frequency, very short pulse lengths, narrow bandwidths. IMS1 is a side-scan sonar (high-frequency/very high-frequency, narrow beams, downward directed). IMS2 is a downward looking source, narrow beam, and operates above 180 kHz (basically a fathometer)	IMS1, IMS2	These side scan sonars operate in a very high frequency range (over 120 kHz) relative to marine mammal hearing (Richardson et al. 1995; Southall et al. 2007). The frequency range from these side scan sonars is beyond the hearing range of mysticetes (baleen whales) pinnipeds, manatees, and sea turtles, and, therefore, not expected to affect these species in the Study Area. The frequency range from these side scan sonars falls within the upper end of odontocete (toothed whale) hearing spectrum (Richardson et al. 1995), which means they are not perceived as loud acoustic signals with frequencies below 120 kHz by these animals. Therefore, marine species may be less likely to react to these types of systems in a biologically significant way. Further, in addition to spreading loss for acoustic propagation in the water column, high frequency acoustic energies are more quickly absorbed through the water column than sounds with lower frequencies (Urick 1983). Additionally, these systems are generally operated in the vicinity of the sea floor, thus reducing the sound potential of exposure even more. Marine mammals are expected to exhibit no more than short-term and inconsequential responses to the imaging sonar given their characteristics (e.g., narrow downward-directed beam and short pulse length [generally 20 msec]). Such reactions are not considered to constitute "taking" and, therefore, no additional allowance is included for animals that might be affected by these sound sources.

Table 2.2-3: Source Classes Excluded from Quantitative Analysis (continued)

Source Class Category	Source Bin	Description
Acoustic Modems (M) and Tracking Pingers (P)	M2, P1, P2, P3, P4	Acoustic modems, and tracking pingers operate at frequencies between 2 and 170 kHz, low duty cycles, (single pings in some cases), short pulse lengths (typically 20 msec), and relatively low source levels. Marine species are expected to exhibit no more than short-term and inconsequential responses to these systems given the characteristics as described above. Such reactions are not considered to constitute "taking" and, therefore, no additional quantitative modeling is required for marine species that might be exposed to or affected by these sound sources.
Acoustic Releases (R) Systems that transmit active acoustic signals to release a bottom-mounted object from its housing in order to retrieve the device at the surface	R1, R2, R3	Acoustic releases operate at mid and high-frequencies. Since these types of devices are only used to retrieve bottom mounted devices they typically transmit only a single ping. Marine species are expected to exhibit no more than short-term and inconsequential responses to these sound sources given that any sound emitted is extremely short in duration. Such reactions are not considered to constitute "taking" and, therefore, no additional quantitative modeling is required for marine species that might be exposed to these sound sources.
Side-Scan Sonars (SSS) Sonars that use active acoustic signals to produce high-resolution images of the seafloor	SSS1, SSS2, SSS3	Marine species are expected to exhibit no more than short-term and inconsequential responses to these systems given their characteristics such as a downward-directed beam and using short pulse lengths (less than 20 msec). Such reactions are not considered to constitute "taking" and, therefore, no additional allowance is included for animals that might be affected by these sound sources.
Small Impulsive Sources	Sources with explosive weights < 0.25 lb. NEW (< bin E1)	Quantitative modeling in multiple locations has validated that these low level impulsive sources are expected to cause no more than short-term and inconsequential responses in marine species due to the low explosive weight and corresponding very small zone of influence associated with these types of sources.

Notes: HF = high frequency, kHz = kilohertz, lb. = pound, msec = milliseconds, NEW = Net Explosive Weight, VHF = very high frequency

In summary, exposures from these sources are unlikely, but if an exposure does occur, the response would be considered inconsequential because it would not likely result in any biologically significant impact to the animal outside the normal variation of an animal's daily life.

2.3 PROPOSED ACTION AND ALTERNATIVES

Three alternatives were analyzed in the 2011 GOA Final EIS/OEIS: the No Action Alternative (Section 2.4), Alternative 1 (Section 2.5), and Alternative 2 (Section 2.6).

The No Action Alternative consisted of training activities of the types and levels of training intensity as conducted prior to 2011 and did not include ASW training activities involving the use of active sonar. Alternative 1 included all training activities addressed in the No Action Alternative and an increase in training activities. This increase would encompass conducting one large-scale carrier strike group (CSG) exercise, as well as the inclusion of ASW activities and the use of active sonar, occurring over a

maximum time period of up to 21 consecutive days during the summer months (April–October)[4]. Alternative 1 also proposed training required by force structure changes for new weapons systems, instrumentation, and technology as well as new classes of ships, submarines, and aircraft. In addition, Alternative 1 included the development and use of the portable undersea tracking range. Alternative 2 included all elements of Alternative 1 plus one additional CSG exercise during the summer months (April–October). Additionally, Alternative 2 included conducting one sinking exercise per CSG exercise for a total of two per year.[5] Alternative 2 was the Preferred Alternative and was selected in the ROD issued on 11 May 2011.

These alternatives have not changed and are carried forward in this Supplemental EIS/OEIS. All of the resource areas were examined to determine if they need to be re-analyzed in this Supplemental EIS/OEIS. The Supplemental EIS/OEIS updates the marine mammal resource analysis for each alternative in the 2011 GOA Final EIS/OEIS. Updates to the exposure results for marine mammals under the alternatives were performed utilizing NAEMO, new density data, and new scientific data available since the publication of the 2011 GOA Final EIS/OEIS. For other resource areas, the 2011 GOA Final EIS/OEIS analysis remains valid.

There are also no new training activities proposed in this Supplemental EIS/OEIS. Consistent with the 2011 GOA Final EIS/OEIS, the Navy has broken down each training activity into basic components analyzed for their potential environmental impacts.[6] Table 2.3-1 identifies all the Navy training activities that are conducted in the TMAA, and distinguishes which activities have been updated based upon new information and analytical methods.

[4] As discussed in the 2011 GOA Final EIS/OEIS, Chapter 2, Section 2.3.2.3 (Alternate Time Frame), an alternate period in which to hold Navy training in the ATA (TMAA), such as in the winter months, would not be feasible. Weather conditions in the GOA preclude conducting an integrated exercise during the winter. Winter sea conditions, storms, fog, fewer daytime hours, and other environmental conditions would lead to navigational safety concerns for both ships and airplanes involved in any winter exercise. Additionally, other services' training requirements prohibit overwater training when the water temperature decreases below an acceptable level (typical during the winter months in the GOA), as this needlessly jeopardizes the health and safety of exercise participants. Therefore, an alternate time frame would not meet the evaluation factor/screening criterion #4 for maritime activities at sea.

[5] See U.S. Department of the Navy, Chief, Naval Operations Instr. 1541.5, General Policy for Sinking Exercise Approval (29 July 2001) (hereinafter OPNAVINST 1541.5). "The Chief of Naval Operations shall approve or disapprove all valid SINKEX requests contingent upon availability of funding to complete environmental preparations." OPNAVINST 1541.5 para. 4a. "Further, SINKEX events are limited to those required to satisfy requirements for ship survivability or weapons lethality evaluation, major joint or multi-national exercises, or the evaluation of significant new multi-unit tactics or tactics and weapons combinations." OPNAVINST 1541.5 para. 2. The Navy recognizes that the likelihood of there being two SINKEX events in any one year in the TMAA is presently unlikely. In order to ensure flexibility to meet potential Fleet training requirements, however, this Supplemental EIS/OEIS conservatively analyzes the potential impacts of conducting up to two SINKEX events per year in the TMAA.

[6] NAEMO does not model sonar activities on an individual basis. Subsequently, individual events in the table for ASW are modeled together as one event in the model for each of the two exercises in the Proposed Action. This approach is consistent with the modeling and analysis of major sonar training exercises in other Navy training areas, i.e., Hawaii-Southern California Training and Testing Area, Northwest Training and Testing Area.

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Table 2.3-1: Current and Proposed Training Activities

Range Activity	2011 GOA Final EIS/OEIS Alternatives						Changes to the 2011 GOA Final EIS/OEIS Alternatives					
	Platform	System or Ordnance	Location	No Action Alternative	Alternative 1	Alternative 2	Platform	System or Ordnance	Location	No Action Alternative; Alternative 1; Alternative 2	Number of events (yearly) or Number of Sonar hours/items (yearly)[5]	Requires re-analysis utilizing NAEMO
ANTI-AIR WARFARE (AAW)												
Aircraft Combat Maneuvers	EA-6B, EA-18G, FA-18, F-16, F-15, F-22, E-2	None	TMAA, Air Force SUA[1]	300 sorties[2]	300 sorties	600 sorties	No Change					No
Air Defense Exercise	FA-18, F-16, F-15, F-22, EA-6B, EA-18G, E-2, P-3C, P-8 MMA, CVN, CG, DDG	None	TMAA	3 events	4 events	8 events	No Change					No
Surface-to-Air Missile Exercise	CVN, CG, DDG	Sea Sparrow Missile, Standard Missile 1, or RAM *Targets:* BQM-74E	TMAA	2 events	3 events	6 events	No Change					No
Surface-to-Air Gunnery Exercise	CG, DDG, AOE	5-inch/54BLP, 20 mm CIWS, 7.62 mm. *Targets:* Towed TDU-34	TMAA	2 events	3 events	6 events	No Change					No
Air-to-Air Missile Exercise	FA-18, F-16, F-15, F-22, E-2, EA-6B, EA-18G	AIM-7, AIM-9, AIM-120 *Targets:* TALD or LUU-2B/B	TMAA, Air Force SUA[1]	2 events	3 events	6 events	No Change					No
ANTI-SURFACE WARFARE (ASUW)												
Visit, Board, Search, and Seizure	MH-60S, RHIB, NSW Personnel	None	TMAA	12 events	12 events	24 events	No Change					No
Air-to-Surface Missile Exercise	MH-60R/S, FA-18, F-16, F-15, F-22, EA-6B, EA-18G	None	TMAA	1 event	2 events	4 events	No Change					No
Air-to-Surface Bombing Exercise	FA-18, F-16, F-15, F-22	MK-82 (live), MK-83 (live), MK-84 (live), BDU-45 (inert), MK-58 marine marker	TMAA	12 events	18 events	36 events	No Change					Yes
Air-to-Surface Gunnery Exercise	MH-60R/S	GAU-16 (0.50 cal) or M-60 (7.62 mm) machine gun *Targets:* HSMST, Trimaran, SPAR, Surface Target Balloon	TMAA	5 events	7 events	14 events	No Change					No
Surface-to-Surface Gunnery Exercise	CVN, CG, DDG, AOE	5 inch/54 BLP, 20 mm CIWS, 25 mm, 7.62 mm, 57 mm, .50 cal *Targets:* HSMST, Trimaran, SPAR, Surface Target Balloon	TMAA	5 events	6 events	12 events	No Change					Yes
Maritime Interdiction	All	None	TMAA	14 events	14 events	28 events	No Change					No
Sea Surface Control	FA-18, EA-6B, EA-18G, E-2, P-3C, P-8 MMA, CG, DDG	None	TMAA	6 events	6 events	12 events	No Change					No
Sinking Exercise[3]	FA-18, F-16, F-15, F-22, EA-6B, EA-18G, P-3C, P-8 MMA, MH-60R/S, CVN, CG, DDG	MK-82 (inert), MK-82 (live), MK-83, AGM-88 HARM, AGM-84, Harpoon, AGM-65 Maverick, AGM-114 Hellfire, AGM-119 Penguin, Standard Missile 1, Standard Missile 2, 5-inch/54 BLP	TMAA	n/a	n/a	2 events	Added SSN[4] (note SSN was included in original 2011 EIS/OEIS activity description but left off of original table)	No Change				Yes
ANTI-SUBMARINE WARFARE (ASW)												
ASW Tracking Exercise – Helicopter	MH-60R	*Targets*: SSN, MK-39 EMATT Sonobuoys: AN/AQS-22, SSQ-36 BT, SSQ-53 DIFAR (passive), SSQ-62 DICASS (active), SSQ-77 VLAD Other: MK-58 marine marker	TMAA	n/a	22 events	44 events	No Change	Same; however, removed SSQ-62 DICASS as all MF5 bin buoys are now accounted for in ASW Tracking – MPA	No Change	210 dips (increase of 18 dips due to modeling changes)		Yes
ASW Tracking Exercise – Maritime Patrol Aircraft (MPA)	P-3C, P-8 MMA	*Targets*: SSN, MK-39 EMATT Sonobuoys: SSQ-36 BT, SSQ-53 DIFAR (passive), SSQ-62 DICASS (active), SSQ-77 VLAD Other: MK-58 marine marker	TMAA	n/a	13 events	26 events	No Change			252 DICASS buoys (decrease of 14 buoys due to modeling changes)		Yes

Table 2.3-1: Current and Proposed Training Activities (continued)

Range Activity	2011 GOA Final EIS/OEIS Alternatives						Changes to the 2011 GOA Preferred Alternatives					
	Platform	System or Ordnance	Location	No Action Alternative	Alternative 1	Alternative 2	Platform	System or Ordnance	Location	No Action Alternative, Alternative 1, Alternative 2	Number of events (yearly) or Number of Sonar hours/items (yearly)[5]	Requires re-analysis utilizing NAEMO
ANTI-SUBMARINE WARFARE (ASW) (continued)												
ASW Tracking Exercise – Extended Echo Ranging (EER) (includes IEER & MAC)	P-3C, P-8 MMA	SSQ-110A EER/IEER, SSQ-125 MAC, SSQ-77 VLAD	TMAA	n/a	2 events	4 events	No Change	Same; however, removed all SSQ-110A EER/IEER	No Change	80 MAC buoys were modeled		Yes
ASW Tracking Exercise – Surface Ship	DDG	SQS-53C, SQS-56 MFA sonar *Targets*: SSN, MK-39 EMATT	TMAA	n/a	2 events	3 events	No Change	Same; however, removed all SQS-56 MFA sonar hours and added them to SQS-53 hours total. Added SQL-25 NIXIE as none were modeled in previous EIS/OEIS	No Change	619 hours MF1 + MF11 bins (decrease of 2 hours, previously 578 hours of MF1 and 52 hours of MF2, ASW3), NIXIE = 546 hours (NIXIE was not modeled in previous EIS/OEIS)		Yes
ASW Tracking Exercise – Submarine	SSBN, SSGN	*Targets*: MK-39 EMATT	TMAA	n/a	2 events	3 events	SSN	No Change		48 hours of MF3 (same as before), 24 hours of HF1 (same as before)		Yes
ELECTRONIC COMBAT (EC)												
EC Exercises	EA-6B, EA-18G, E-2, P-3, EP-3, CVN, CG, DDG	None	TMAA, Air Force SUA[1]	4 events	5 events	10 events	No Change					No
Chaff Exercises	EA-6B, EA-18G, P-3, EP-3, FA-18, CVN, CG, DDG, AOE	Chaff	TMAA, Air Force SUA[1]	2 events	2 events	4 events	No Change					No
Counter Targeting Exercises	EA-6B, EA-18G, P-3, EP-3, FA-18, CVN, CG, DDG, AOE	None	TMAA	4 events	4 events	8 events	No Change					No
NAVAL SPECIAL WARFARE (NSW)												
Special Warfare Operations	C-130, MH-60S, SDV, RHIB, NSW Personnel	None	TMAA, Air Force SUA[1] Army Training Lands[1]	10 events	10 events	20 events	No Change					No
STRIKE WARFARE (STW)												
Air-to-Ground Bombing Exercise	FA-18, F-16, F-15, F-22, EA-6B, EA-18G, E-2	MK-82/83/84 (live/inert), BDU-45 (inert), CATM-88C (not released)	Air Force SUA[1], Army Training Lands[1]	150 sorties	150 sorties	300 sorties	No Change					No
Personnel Recovery	CVN, CG, DDG, AOE, E-2, MH-60S, RHIB, NSW Personnel	None	Air Force SUA[1], Army Training Lands[1]	3 events	4 events	8 events	No Change					No
SUPPORT OPERATIONS												
Deck Landing Qualifications	Helicopters (Air Force, Army, Coast Guard – various)	None	TMAA	4 events	6 events	12 events	No Change					No

[1] Activities within and upon these areas are covered under separate NEPA analysis.
[2] A sortie is defined as a single activity by one aircraft (i.e., one complete flight from takeoff to landing).
[3] Per a 24 January 2014 EPA/Navy agreement, "Navy agrees that SINKEX vessels will not likely, in the future, include aircraft carriers or submarines" (as the target vessel of a SINKEX).
[4] SSN, as a firing platform, was included in original activity description but left off of original table.
[5] ASW is depicted in hours to be consistent with the new modeling technique. Although ASW is modeled as a scenario (multi-day) vice individual events, the hours per event have been provided for clarity.
Notes: AIM = Air Intercept Missile; ASW = Anti-submarine Warfare; BDU = Bomb Dummy Unit; BQM = Aerial Target Drone Designation; cal = caliber; CATM = Combat Arms and Training Maintenance; CG = Cruiser; CVN = Aircraft Carrier, Nuclear; CIWS = Close-in Weapons System; DDG = Destroyer; DICASS = Directional Command Activated Sonobuoy System; DIFAR = Directional Frequency and Ranging; EIS/OEIS = Environmental Impact Statement/Overseas Environmental Impact Statement; EMATT = Expendable Mobile ASW Training Target; EPA = Environmental Protection Agency; GOA = Gulf of Alaska; HARM = High Speed Anti-radiation Missile; HSMST = High Speed Maneuverable Surface Target; IEER = Improved Extended Echo Ranging; MAC = Military Operations in Urban Terrain Assault Course; MFA = Mid-frequency Active; mm = millimeters; MMA = Multi-mission Maritime Aircraft; MPA = Maritime Patrol Aircraft; n/a = not applicable; NAEMO = Navy Acoustic Effects Model; Navy = United States Department of the Navy; NEPA = National Environmental Policy Act; RAM = Rolling Airframe Missile; RHIB = Rigid Hull Inflatable Boat; SDV = Sea, Air, Land Delivery Vehicle; SINKEX = Sinking Exercise; SSN = Nuclear-Powered Fast Attack Submarine; SUA = Special Use Airspace; TALD = Tactical Air-Launched Decoy; TDU = Target Drone Unit; TMAA = Temporary Maritime Activities Area

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