

MASTER GLOSSARY OF TERMS

Term	Definition
Acoustics	The scientific study of sound, especially of its generation, transmission, and reception.
Action proponent	The commander, commanding officer, or civilian director of a unit, activity, or organization who initiates a proposal for action, as defined in 40 Code of Federal Regulations (C.F.R.) 1508.23, and who has command and control authority over the action once it is authorized. Commander, United States (U.S.) Pacific Fleet is the action proponent for the Gulf of Alaska Navy Training Activities Supplemental Environmental Impact Statement (EIS)/Overseas EIS (OEIS).
Active sonar	A system that detects objects by creating a sound pulse, or ping, that transmits through the water and reflects off the target, returning in the form of an echo. This is a two-way transmission (source to reflector to receiver).
Alternative	A different method for accomplishing the Proposed Action. An action alternative modifies some combination of factors affecting the location, timing, or scope of the activity while still accomplishing the purpose of the Proposed Action. The No Action Alternative provides a baseline (existing condition or historic condition) against which to compare the action alternatives, but may not necessarily fulfill the purpose of the Proposed Action.
Ambient sound	The typical or persistent environmental background sound present in the ocean.
Anadromous	Species of fish that are born in freshwater, migrate to the ocean to grow into adults, and return to freshwater to spawn.
Anthropogenic sound	Acoustic energy emitted from human activities.
Anti-Submarine Warfare	Naval operations that involve detecting, tracking, and potential engagement with submarines, their supporting forces, and operating bases that demonstrate hostile intent or are declared hostile by appropriate authority.
Baleen	In some whales (see Mysticete below), the parallel rows of fibrous plates that hang from the upper jaw and are used for filter feeding.
Bathymetry	The measurement of water depth at various places in a body of water; the information derived from such measurements.
Behavioral effect	Defined in this Supplemental EIS/OEIS as a variation in an animal's behavior or behavior patterns that results from an anthropogenic acoustic exposure and exceeds the normal daily variation in behavior, but which arises through normal physiological process (it occurs without an accompanying physiological effect).
Benthic	Referring to the bottom-dwelling community of organisms (i.e., plants and animals) that creep, crawl, burrow, or attach themselves to either the sea bottom or such structures as ships, buoys, and wharf pilings (e.g., crabs, clams, worms).
Biologically important activities/behaviors	Those activities or behaviors essential to the continued existence of a species, such as migration, breeding/calving, or feeding.
Biologically important area	For cetacean species with distinct migrations, areas, and time periods where they are known to concentrate for specific behaviors such as reproducing, feeding, or migrating. For other cetacean species, areas and months within which small and resident populations occupy a limited geographic extent.
Biological Opinion	A document that is the result of Endangered Species Act, Section 7 formal consultation. This document states the opinion of the Service (National Marine Fisheries Service or U.S. Fish and Wildlife Service) on whether or not a Federal action is likely to adversely affect or jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat and, if so, the Service provides recommendations to minimize or avoid adverse impacts.
Cetacean	An order of aquatic mammals such as whales, dolphins, and porpoises.

Term	Definition
Critical habitat	The term “critical habitat” for a threatened or endangered species means (1) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Endangered Species Act, on which are found those physical or biological features (i) essential to the conservation of the species, and (ii) that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.
Cumulative impact	The impact on the environment which results from adding the incremental impact of the Proposed Action to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes the other actions.
Decibel (dB)	A unit used to express the relative difference in power, usually between acoustic or electrical signals, equal to 10 times the common logarithm of the ratio of the two levels. Since the decibel scale is exponential and not linear, a 20 dB sound is 10 times louder than a 10 dB sound, and a 30 dB sound is 100 times louder than a 10 dB sound.
Demersal	Living at or near the bottom of a water body, but having the capacity for active swimming. Term used particularly when describing various fish species.
Distinct population segment (DPS)	A vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species. The Endangered Species Act provides for listing species, subspecies, or DPSs of vertebrate species.
Duty cycle	Duty cycle describes the portion of time that a sound source actually generates sound. It is defined as the percentage of the time during which a sound is generated over a total operational period.
Endangered species	Any species which is in danger of extinction throughout all or a significant portion of its range.
Essential fish habitat	Those waters and substrate that are defined within Fishery Management Plans for federally managed fish species as necessary to fish for spawning, breeding, feeding, or growth to maturity.
Exclusive Economic Zone	A maritime zone adjacent to the territorial sea that may not extend beyond 200 nautical miles (nm) from the baselines from which the breadth of the territorial sea is measured.
Federal Register	The official daily publication for actions taken by the federal government, such as Rules, Proposed Rules, and Notices of federal agencies and organizations, as well as Executive Orders and other Presidential documents.
Frequency	The number of oscillations or waves per second is called the frequency of the sound, and the metric is Hertz (Hz). One Hz is equal to one oscillation per second, and 1 kilohertz (kHz) is equal to 1,000 oscillations per second.
Harassment	Under the 1994 Amendments to the Marine Mammal Protection Act (MMPA) and as used in this document, harassment is statutorily defined as, any act of pursuit, torment, or annoyance which (Level A Harassment) “has the potential to injure a marine mammal or marine mammal stock in the wild,” or (Level B Harassment) “has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering,” but which does not have the potential to injure a marine mammal or marine mammal stock in the wild. Under the Endangered Species Act, the term “harass” is defined as “an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering.”
High-frequency	As defined by the U.S. Department of the Navy (Navy), frequencies greater than 10–100 kHz.

Term	Definition
Hydrophone	An underwater receiver used to detect the pressure change caused by sound in the water. That pressure is converted to electrical energy. It can then be translated to something that can be heard by the human ear. Sometimes the detected acoustic pressure is outside the human range of hearing.
Impulse sound	Impulse sounds are sounds defined as brief, broadband, atonal, transients (American National Standards Institute 1994; Jansen 1998, Chapter 12). ¹ Examples of impulse sounds (at least at the source) are explosions, gunshots, sonic booms, seismic airgun pulses, and pile driving strikes. These sounds are all characterized by a relatively rapid rise from ambient pressure to a maximal pressure value followed by a decay period that may include a period of diminishing oscillating maximal and minimal pressures. The rapid rise-time characteristic of these sounds ensures that they are also broadband in nature, with the higher-frequency components being related to the rapidity of the rise-time. Pulses, either as isolated events or repeated in some succession, generally have an increased capacity to induce physical injury as compared with sounds that lack these features (Southall et al. 2007). ²
Infauna	Animals living within the sediment.
In-water devices	In-water devices as discussed in this analysis are unmanned vehicles, such as remotely operated vehicles, unmanned surface vehicles, unmanned undersea vehicles, and towed devices.
Isobath	A line on a chart or map connecting points of equal depths; bathymetric contour.
Letter of Authorization (LOA)	The Marine Mammal Protection Act (MMPA) provides for an “incidental take” authorization (i.e., LOA) for specified activities, provided the National Marine Fisheries Service finds that the takings will have a negligible impact on marine mammal species or stocks, will not have an “unmitigable adverse impact” on the availability of the species or stocks for subsistence uses, and promulgates the permissible methods of taking, other means of effecting the least practicable adverse impact on species or stocks and habitat, and requirements pertaining to monitoring and reporting of such “incidental takes.” The small numbers requirement does not apply to military readiness activities.
Level A harassment	Level A harassment includes any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild.
Level B harassment	Level B harassment includes any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where such behavioral patterns are abandoned or significantly altered. Unlike Level A harassment, which is solely associated with physiological effects, Level B harassment is associated with both physiological and behavioral effects.
Lookout	A person assigned to stand watch, whose specific duties include observing the air and surface of the water, visually searching for any object or disturbance that may be indicative of a threat to the ship and its crew, such as debris, a periscope, surfaced submarine, or surface disturbance, or that may indicate the presence of biological resources.
Low-frequency	As defined by the Navy, frequencies less than 1 kHz.
Masking	The obscuring of sounds of interest by interfering sounds, generally at the same frequencies.
Mid-frequency	As defined by the Navy, frequencies between 1 and 10 kHz, inclusive.

¹ American National Standards Institute. (1994). ANSI S1.1-1994 (R 2004) American National Standard Acoustical Terminology (Vol. S1.1-1994 [R 2004]). New York, NY: Acoustical Society of America; Jansen, G. (1998). Physiological Effects of Noise. *Handbook of Acoustical Measurements and Noise Control*.

² Southall, B. L., Bowles, A. E., Ellison, W. T., Finneran, J. J., Gentry, R. L., Greene, C. R., Jr., Kastak, D., Ketten, D. R., Miller, J. H., Nachtigall, P.E., Richardson, W. J., Thomas, J.A., & Tyack, P. L. (2007). Marine mammal noise and exposure criteria: initial scientific recommendations. *Aquatic Mammals*, 33, 411-521.

Term	Definition
Military expended materials	Those munitions, items, devices, equipment and materials which are uniquely military in nature, and are used and expended in the conduct of the military training and testing mission, such as sonobuoys, flares, chaff, drones, targets, bathymetry measuring devices and other instrumentation, communications devices, and items used as training substitutes. This definition may also include materials expended (such as propellants, weights, guidance wires) from items typically recovered, such as aerial target drones and practice torpedoes.
Military Operations Area	Airspace with defined vertical and lateral limits established for the purpose of separating or segregating certain military training activities from instrument flight rules traffic and to identify visual flight rules traffic where these activities are conducted.
Mitigation measure	Measures that will minimize, avoid, rectify, reduce, eliminate, or compensate for significant environmental effects.
Monitoring	The Navy's efforts to track compliance with take authorizations help evaluate the effectiveness of implemented mitigation measures, and gain a better understanding of the effects of the Proposed Action on marine resources.
Munitions (military)	All ammunition products and components produced or used by or for the U.S. Department of Defense (DoD), or the U.S. Armed Services for national defense and security, including military munitions under the control of the DoD, the U.S. Coast Guard, the U.S. Department of Energy, and the National Guard.
Mysticete	Any whale of the suborder Mysticeti having plates of whalebone (baleen plates) instead of teeth. Mysticetes are filter-feeding whales, also referred to as baleen whales, such as blue, fin, gray, and humpback whales.
Noise	Unintentional byproduct of acoustic emissions (waste) such as vessel or aircraft engine noise.
Non-impulse sound	Non-impulse sounds can be tonal, broadband, or both. Some of these non-impulse sounds can be transient signals of short duration but without the essential properties of impulse sounds (e.g., rapid rise-time). Examples of sources producing non-impulse sounds include vessels; aircraft; machinery operations, such as drilling or wind turbines; and many active sonar systems. The duration of such sounds, as received at a distance, can be greatly extended in highly reverberant environments. It is critical to note that a sound that has characteristics of an impulse sound at the source may, as a result of propagation effects, lose those characteristics at some (variable) distance, and could be characterized as non-impulse for certain receivers (Southall et al. 2007). ³
Notice of Intent	A written notice published in the <i>Federal Register</i> that announces the intent to prepare an EIS. Also provides information about a proposed federal action, alternatives, the scoping process, and points of contact within the lead federal agency regarding the EIS.
Odontocete	Any toothed whale (without baleen plates) of the suborder Odontoceti such as sperm whales, killer whales, dolphins, and porpoises.
Onset permanent threshold shift (onset PTS)	In this Supplemental EIS/OEIS, the smallest amount of PTS (onset PTS) is taken to be the indicator for the smallest degree of injury that can be measured. The acoustic exposure associated with onset PTS is used to define the outer limit of the Level A harassment zone.
Onset temporary threshold shift (onset TTS)	In this Supplemental EIS/OEIS, the smallest measurable amount of TTS (onset TTS) is taken as the best indicator for slight temporary sensory impairment. The acoustic exposure associated with onset TTS is used to define the outer limit of the portion of the Level B harassment zone attributable to physiological effects.

³ Southall, B. L., Bowles, A. E., Ellison, W. T., Finneran, J. J., Gentry, R. L., Greene, C. R., Jr., Kastak, D., Ketten, D. R., Miller, J. H., Nachtigall, P.E., Richardson, W. J., Thomas, J.A., & Tyack, P. L. (2007). Marine mammal noise and exposure criteria: initial scientific recommendations. *Aquatic Mammals*, 33, 411-521.

Term	Definition
Ordnance	Explosives, chemicals, pyrotechnics, and similar stores (e.g., bombs, guns and ammunition, flares, smoke, or napalm).
Passive sonar	A sonar system for detecting or receiving acoustic energy without the system itself emitting acoustic energy.
Pelagic	The open, upper portion of marine waters rather than waters adjacent to land or near the sea floor, and the species which typically occupy this habitat.
Permanent threshold shift (PTS)	A nonrecoverable (permanent) change in the threshold of hearing due to destruction of tissues within the auditory system from exposure to high-intensity sound. PTS therefore qualifies as an injury and is classified as Level A harassment under the wording of the MMPA.
Ping	Pulse of sound created by sonar.
Pinger	A pulse generator using underwater sound transmission to relay data such as subject location. Includes range and tracking pingers.
Pinniped	Any member of the suborder (Pinnipedia) of aquatic carnivorous mammals (i.e., seals and sea lions) with all four limbs modified into flippers.
Platform	A vessel, aircraft, pier, barge, etc. from which training activities can be conducted.
Predation	A biological interaction where a predator organism feeds on another living organism or organisms known as prey. The act of predation results in the ecologically significant death of the prey.
Range complex	A geographically defined area that encompasses military operating areas, ranges, test facilities, and other designated sites on the sea, on land, or in the airspace.
Received level	The level of sound that arrives at the receiver (such as a marine animal or a hydrophone). The received level is the source level minus the transmission losses from the sound traveling through the water.
Record of Decision (ROD)	A summary of the decision made by the action proponent (e.g., Navy) from the alternatives presented in the Final EIS. The ROD is published in the <i>Federal Register</i> .
Resonance	A phenomenon that exists when an object is vibrated at a frequency near its natural frequency of vibration—the particular frequency at which the object vibrates most readily. Several factors determine the frequency at which resonance will occur.
Restricted Area (Airspace)	Airspace where aircraft are subject to restriction due to the existence of unusual, often invisible hazards (e.g., release of ordnance) to aircraft. Some areas are under strict control of the DoD, and some are shared with nonmilitary agencies.
Restricted Area (Surface)	A restricted area is a defined water area for the purpose of prohibiting or limiting public access to the area. Restricted areas generally provide security for Government property and/or protection to the public from the risks of damage or injury arising from the Government's use of that area (33 C.F.R. §334).
Scoping	An early and open process with federal and state agencies and interested parties to identify possible alternatives and the significant issues to be addressed in an environmental planning action.
Ship	Self-propelled Navy-owned or leased surface vessel with in-water hull configuration (i.e., not a hovercraft like the LCAC [landing craft, air cushion]) and surfaced submarines; may include craft operated by uniform personnel or civilians with a bridge crew including a captain and watch personnel; operations are conducted in accordance with Navy standard operating procedures, which maximize personnel and public safety and mission success.
Small boat	Self-propelled Navy-owned or leased surface craft with in-water hull configuration, short range and small capacity (e.g., rigid hull inflatable boats or commercially available boats used to support test operations); may include craft operated by uniform personnel or civilians with a pilot but not a designated bridge crew; operations are conducted in accordance with Navy standard operating procedures, which maximize personnel and public safety and mission success though procedures may be adapted for vessel size.

Term	Definition
Sound	<i>Sound</i> is an oscillation in pressure, particle displacement, and particle velocity, as well as the auditory sensation evoked by these oscillations, although not all sound waves evoke an auditory sensation (i.e., they are outside of an animal's hearing range) (American National Standards Institute 1994). ⁴
Sound navigation and ranging (sonar)	Any anthropogenic (man-made) or animal (e.g., bats, dolphins) system that uses transmitted acoustic signals or echo returns to navigate, communicate, or determine the position and bearing of a target. There are two broad types of anthropogenic sonar: active and passive.
Sound pressure level (SPL)	The relative loudness of sounds calculated by the ratio of the sound pressures. SPL is described by taking the logarithm of the ratio of the measured sound pressure to a reference pressure.
Sound source	A source of sound. Sound sources proposed for use in this Supplemental EIS/OEIS are grouped into "bins" or "classes," based on certain parameters such as source level, frequency, duty cycle, and beam patterns. Sounds can be generally categorized as impulse and non-impulse (see <i>impulse sound</i> and <i>non-impulse sound</i> definitions in this glossary).
Source level	The SPL of an underwater sound as measured 1 meter from the source.
Special Use Airspace	Airspace of defined dimensions where activities must be confined because of their nature or where limitations may be imposed upon aircraft operations that are not part of those activities (Federal Aviation Administration Order 7400.8 series).
Standard operating procedures	Standard practices employed by the Navy to provide for the safety of personnel and equipment, including vessels and aircraft, as well as the success of training and testing activities.
Submarine	Self-propelled manned vessel capable of operating when submerged; may include vessel operated by uniform personnel or civilians; when surfaced, the standard operating procedures of ships apply; when submerged, the standard operating procedures for submarines apply.
Substrate	Any object or material upon which an organism grows or to which an organism is attached.
Surface Danger Zone	A danger zone is a defined water area used for target practice, bombing, rocket firing, or other especially hazardous military activities. Danger zones are established pursuant to statutory authority of the Secretary of the Army and are administered by the Army Corps of Engineers. Danger zones may be closed to the public on a full-time or intermittent basis (33 C.F.R. §334).
Tactical Sonar	A category of sonar-emitting equipment mounted on the hulls of surface ships and submarines.
Take	Defined under the MMPA as "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect." Defined under the Endangered Species Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect."
Temporary threshold shift (TTS)	A short-term (temporary) change in the threshold of hearing due to stress of tissues within the auditory system from exposure to high-intensity sound. Recovery may occur within minutes, hours, or days. TTS is less than an injury and is classified as Level B harassment under the wording of the MMPA.
Threatened species	Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
Threshold shift	A diminution in ability of an animal to detect sounds within the normal hearing range. The effect may be temporary or permanent. A threshold shift may be caused by stress or damage to tissue of the auditory system, or by masking sounds normally received by the animal.

⁴ American National Standards Institute. (1994). ANSI S1.1-1994 (R 2004) American National Standard Acoustical Terminology (Vol. S1.1-1994 [R 2004]). New York, NY: Acoustical Society of America.

Term	Definition
Transmission loss	Energy losses that occur as the pressure wave, or sound, travels through a medium. The associated wave front diminishes due to the spreading of the sound over an increasingly larger volume and the absorption of some of the energy by the medium.
Unmanned device	Self-propelled devices which are remotely operated in, on, or over the water; devices may be small enough for a human to lift or as large as a rigid-hull inflatable boat, may be tethered or untethered.
Very high-frequency	As defined by the Navy, frequencies greater than 100 kHz.
Vessel	All manned self-propelled ships, submarines, and small boats, but not unmanned devices or craft without propulsion (e.g., barges).
Warning Area	Areas of defined dimensions, extending from 3 nm outward from the coast of the United States, which serve to warn nonparticipating aircraft of potential danger.

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