

**UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF OCEAN ENERGY MANAGEMENT
OFFICE OF RENEWABLE ENERGY PROGRAMS
ATLANTIC OCS REGION**

Project Design Criteria and Best Management Practices for Protected Species Associated
with Offshore Wind Data Collection
(Latest Revision: 11/22/2021)

The Bureau of Ocean Energy Management (BOEM) has completed a programmatic consultation with the National Marine Fisheries Service (NMFS) under section 7 of the Endangered Species Act (ESA). On June 29, 2021, NMFS issued a Letter of Concurrence under the ESA that covers site characterization (high resolution geophysical (HRG), geotechnical, and biological surveys) and site assessment/data collection (deployment, operation, and retrieval of meteorological and oceanographic data buoys) activities associated with Atlantic OCS leases.¹ As a result of this consultation, Project Design Criteria (PDCs) and Best Management Practices (BMPs) associated with the mitigation, monitoring, and reporting conditions have been developed for those data collection activities covered in the consultation.² These PDCs and BMPs collectively implement the ESA requirements for these offshore wind activities on the Atlantic Outer Continental Shelf as of June 29, 2021. Previous lease stipulations on existing leases issued prior to March 13, 2020 remain binding or the conditions in a lease may otherwise be amended. Similar to the requirements for threatened and endangered species and critical habitat under the ESA, BOEM has revised the mitigation, monitoring, and reporting conditions for all marine mammals as they pertain to leases.

Definitions

1. Definition of "Dynamic Management Area (DMA)": The term "DMA" refers to a temporary area designated by the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) based on visual sightings documenting the presence of three or more right whales within a discrete area.
2. Definition of "ESA-Listed Species": The term ESA-listed species means threatened or endangered species of marine mammal, sea turtle, fish, or coral listed under the Endangered Species Act.
3. Definition of "Geophysical Survey": The term geophysical survey means sub-bottom profiler devices including any boomers, sparkers, or bubble guns that produces noise to record geophysical data that to which the mitigation, monitoring, and reporting for operation of the sound source.

¹ <https://www.boem.gov/renewable-energy/final-nlaa-osw-programmatic>

² <https://www.boem.gov/renewable-energy/orep-data-collection-ba-final>

4. Definition of “Geotechnical Survey”: The term "geotechnical survey" is used to collectively refer to any physical testing or sampling of the surface or sub-surface of the seafloor.
5. Definition of “Large Whale”: The term “large whale” means baleen whales (North Atlantic right whales, fin whales, sei whales, blue whales, humpback whales, and minke whales); sperm whales; and any unidentified whale.
6. Definition of “Live Bottom Features”: The term “live bottom features” means all sensitive live bottom habitats including submerged aquatic vegetation and consolidated seabed features for this measure such as pavement, scarp walls, and deep/cold-water coral reefs, and shallow/mesophotic reefs as defined in the CMECS Geologic Substrate Classifications.
7. Definition of “Protected Species”: The term protected species” means all threatened and endangered marine species listed under the Endangered Species Act and all marine mammals.
8. Definition of "Ramp-up": The term "ramp-up" means the process of incrementally increasing the acoustic source level of the survey equipment when conducting HRG surveys until it reaches the operational setting.
9. Definition of “Small Cetacean”: The term small cetacean refers to any species of dolphin in the family *Delphinidae* and harbor porpoises in the family *Phocoenidae*.
10. Definition of “Slow Zone”: The term “Slow Zone” refers to announcements by NOAA Fisheries that North Atlantic right whales have been either acoustically detected or visually within a defined area. Slow Zones are inclusive of Dynamic Management Areas.

PDC 1. Avoid Live Bottom Features

BMP 1.1 All vessel anchoring and any seafloor-sampling activities are restricted from seafloor areas with consolidated seabed features including pavement, scarp walls, and deep/cold-water coral reefs and shallow/mesophotic reefs as defined in the Coastal and Marine Ecological Classification Standard for geologic substrate classifications. All vessel anchoring and seafloor sampling must also occur at least 150 m from any known locations of threatened or endangered coral species. All sensitive live bottom habitats (eelgrass, cold-water corals, etc.) should be avoided as practicable. All vessels in coastal waters will operate in a manner to minimize propeller wash and seafloor disturbance and transiting vessels should follow deep-water routes (e.g., marked channels), as practicable, to reduce disturbance to sturgeon and sawfish habitat.

PDC 2. Avoid Spawning and Developmental Habitat of Sturgeon

BMP 2.1 No geotechnical or bottom disturbing activities will take place during the spawning/rearing season within freshwater reaches of rivers where Atlantic or shortnose sturgeon spawning occurs. Any survey plan that includes geotechnical or other benthic sampling activities in freshwater reaches (salinity 0-0.5 ppt) of such rivers will identify a time of year restriction that will avoid such activities during the time of year when Atlantic sturgeon spawning and rearing of early life stages occurs in that river. Appropriate time of year restrictions include the following:

River	No Work Window	Area Affected
Hudson	April – July	Upstream of the Delaware Memorial Bridge
Delaware	April – July	Upstream of Newburgh, NY - Beacon Bridge/Rt 84

This table will be supplemented with additional rivers as may be necessary.

PDC 3: Marine Debris Awareness and Elimination

BMP 3.1 Marine Debris Awareness Training. The Lessee must ensure that vessel operators, employees, and contractors engaged in offshore activities pursuant to the approved COP complete marine trash and debris awareness training annually. The training consists of two parts: (1) viewing a marine trash and debris training video or slide show (described below); and (2) receiving an explanation from management personnel that emphasizes their commitment to the requirements. The marine trash and debris training videos, training slide packs, and other marine debris related educational material may be obtained at <https://www.bsee.gov/debris> or by contacting BSEE. The training videos, slides, and related material may be downloaded directly from the website. Operators engaged in marine survey activities must continue to develop and use a marine trash and debris awareness training and certification process that reasonably assures that their employees and contractors are in fact trained. The training process must include the following elements:

- Viewing of either a video or slide show by the personnel specified above;
- An explanation from management personnel that emphasizes their commitment to the requirements;
- Attendance measures (initial and annual); and
- Recordkeeping and the availability of records for inspection by DOI.

BMP 3.2 Training Compliance Report. By January 31 of each year, the Lessee must submit to DOI an annual report that describes its marine trash and debris awareness training process and certifies that the training process has been followed for the previous calendar year. The Lessee must send the reports via email to BOEM (at renewable_reporting@boem.gov) and to BSEE (at marinedebris@bsee.gov).

BMP 3.3 Marking. Materials, equipment, tools, containers, and other items used in

OCS activities, which are of such shape or configuration that they are likely to snag or damage fishing devices, and could be lost or discarded overboard, must be clearly marked with the vessel or facility identification and properly secured to prevent loss overboard. All markings must clearly identify the owner and must be durable enough to resist the effects of the environmental conditions to which they may be exposed.

BMP 3.4 Recovery and Prevention. The Lessee must recover marine trash and debris that is lost or discarded in the marine environment while performing OCS activities when such incident is likely to: (a) cause undue harm or damage to natural resources, including their physical, atmospheric, and biological components, with particular attention to marine trash or debris that could entangle or be ingested by marine protected species; or (b) significantly interfere with OCS uses (e.g., because the marine trash or debris is likely to snag or damage fishing equipment, or presents a hazard to navigation). The Lessee must notify DOI within 48 hours when recovery activities are: (i) not possible because conditions are unsafe; or (ii) not practicable because the marine trash and debris released is not likely to result in any of the conditions listed in (a) or (b) above. Notwithstanding this notification, DOI may still order the Lessee to recover the lost or discarded marine trash and debris if DOI finds the reasons provided by the Lessee in the notification unpersuasive. If the marine trash and debris is located within the boundaries of a potential archaeological resource/avoidance area, or a sensitive ecological/benthic resource area, the Lessee must contact DOI for approval before conducting any recovery efforts.

Recovery of the marine trash and debris should be completed as soon as practicable, but no later than 30 calendar days from the date on which the incident occurred. If the Lessee is not able to recover the marine trash or debris within 48 hours, the Lessee must submit a recovery plan to DOI explaining the recovery activities to recover the marine trash or debris (Recovery Plan). The Lessee must submit the Recovery Plan no later than 10 calendar days from the date on which the incident occurred. Unless DOI objects within 48 hours of the filing of the Recovery Plan, the Lessee can proceed with the activities described in the Recovery Plan. The Lessee must request and obtain approval of a time extension if recovery activities cannot be completed within 30 calendar days from the date on which the incident occurred. The Lessee must enact steps to prevent similar incidents and must submit a description of these actions to BOEM and BSEE within 30 calendar days from the date on which the incident occurred.

BMP 3.5 Reporting. The Lessee must report to DOI (using the email address listed on DOI's most recent incident reporting guidance) all lost or discarded marine trash and debris. This report must be made monthly and submitted no later than the fifth day of the following month. The Lessee is not required to submit a report for those months in which no marine trash and debris was lost or discarded. The report must include the following:

- Project identification and contact information for the Lessee,
- operator, and/or contractor;
- The date and time of the incident;
- The lease number, OCS area and block, and coordinates of the object's location (latitude and longitude in decimal degrees);

- A detailed description of the dropped object, including dimensions (approximate length, width, height, and weight) and composition (e.g., plastic, aluminum, steel, wood, paper, hazardous substances, or defined pollutants);
- Pictures, data imagery, data streams, and/or a schematic/illustration of the object, if available;
- An indication of whether the lost or discarded item could be: a magnetic anomaly of greater than 50 nanoTesla; a seafloor target of greater than 1.6 feet (0.5 meters); or a sub-bottom anomaly of greater than 1.6 feet (0.5 meters) when operating a magnetometer or gradiometer, side scan sonar, or sub-bottom profile in accordance with DOI's most recent, applicable guidance;
- An explanation of how the object was lost; and
- A description of immediate recovery efforts and results.

In addition to the foregoing, the Lessee must submit a report within 48 hours of the incident (48-hour Report) if the marine trash or debris could: (a) cause undue harm or damage to natural resources, including their physical, atmospheric, and biological components, with particular attention to marine trash or debris that could entangle, or be ingested by, marine protected species; or (b) significantly interfere with OCS uses (e.g., because the marine trash or debris is likely to snag or damage fishing equipment, or presents a hazard to navigation). The information in the 48-hour Report must be the same as that listed for the monthly report, but only for the incident that triggered the 48-hour Report. The Lessee must report to DOI if the object is recovered and, as applicable, describe any substantial variance from the activities described in the Recovery Plan that were required during the recovery efforts. The Lessee must include and address information on unrecovered marine trash and debris in the description of the site clearance activities provided in the decommissioning application required under 30 C.F.R. § 585.906.

PDC 4: Minimize Interactions with Protected Species during Geophysical Survey Operations

Per conditions of the existing ESA Section 7 consultation, the Lessee must implement the following measures for all vessels towing boomer, sparker, or bubble gun categories of equipment. Shutdown, pre-start clearance, and ramp-up procedures are not required during HRG survey operations using only other sources (e.g., ultra short baselines, fathometers, parametric shallow penetration sub-bottom profilers, hull-mounted non-parametric sub-bottom profiler/CHIRP systems, side-scan sonars, pingers, acoustic releases, echosounders, and instruments attached to submersible vehicles (HOV/AUV/ROVs)).

BMP 4.1 For situational awareness a Monitoring Zone (500 m in all directions) for ESA-listed species must be monitored around all vessels operating boomer, sparkers, or bubble gun equipment.

- 4.1.1 The Monitoring Zone must be monitored by approved third-party PSOs at all times and any observed listed species must be recorded (see reporting requirements below).

- 4.1.2 Any observations of ESA-listed species by crew members aboard any vessel associated with the survey must be relayed to the PSO on duty.
- 4.1.3 For monitoring around the autonomous surface vessel (ASV) where remote PSO monitoring must occur from the mother vessel, a dual thermal/HD camera must be installed on the mother vessel facing forward and angled in a direction so as to provide a field of view ahead of the vessel and around the ASV. PSOs must be able to monitor the real-time output of the camera on hand-held computer tablets. Images from the cameras must be able to be captured and reviewed to assist in verifying species identification. A monitor must also be installed in the bridge displaying the real-time images from the thermal/HD camera installed on the front of the ASV itself, providing a further forward view of the craft. In addition, night-vision goggles with thermal clip-ons and a handheld spotlight must be provided and used such that PSOs can focus observations in any direction around the mother vessel and/or the ASV.

BMP 4.2 To minimize exposure to noise that could be disturbing, a 500 m Shutdown Zone for North Atlantic right whales and unidentified whales, and a 100 m Shutdown Zone for all other ESA-listed whales visible at the surface must be established around each vessel operating boomer, sparker, or bubble gun equipment.

- 4.2.1 The Shutdown Zone(s) must be monitored by third-party PSOs at all times when boomer, sparker, or bubble gun categories of equipment is being operated and all observed ESA-listed species must be recorded (see reporting requirements below).
- 4.2.2 If an ESA-listed whale is detected within or entering the respective Shutdown Zone, any boomer, sparker, or bubble gun categories of equipment that requires PSOs must be shut off until the minimum separation distance is re-established and the measures in (4.3) are carried out (500 m for North Atlantic right whales and 100 m for other ESA-listed whales).
- 4.2.3 A PSO must notify the survey crew that a shutdown of all active boomer, sparker, and bubble gun acoustic sources is immediately required. The vessel operator and crew must comply immediately with any call for a shutdown by the PSO. Any disagreement or discussion must occur only after shutdown.

BMP 4.3 For non-ESA-listed marine mammals, the Lessee must comply with NMFS permit conditions of any applicable Incidental Take Authorization (ITA) received under the Marine Mammal Protection Act. If an ITA is not required, the Lessee must adhere to the following measures for non-ESA-listed marine mammals for which incidental take has not been authorized.

- 4.3.1 Prior to powering up survey equipment, a 328-foot (100-meter) clearance zone must be clear of all small cetaceans and seals for 15 minutes; and humpback whales, minke whales, Kogia, and beaked whales for 30 minutes.

- 4.3.2 If any non-ESA-listed marine mammal is observed within the clearance zone during the monitoring period, the clock must be paused for 15 or 30 minutes depending on the species sighted. If the PSO confirms that the animal has exited the shutdown zone and is headed away from the survey vessel, the clock that was paused may resume.
- 4.3.3 The clock will reset to respective clearance time if the marine mammal dives and is not resighted by the PSO.
- 4.3.4 A shutdown zone of 100 meters must be established around the survey vessel. For non-ESA-listed marine mammals, a shutdown of impulsive acoustic sources is required upon observation of a species entering the shutdown zone.
- 4.3.5 If delphinids from the genera *Delphinus*, *Lagenorhynchus*, *Stenella*, or *Tursiops* and seals are visually detected approaching the vessel or towed acoustic sources, shutdown is not required. If there is uncertainty regarding identification of a marine mammal species (i.e., whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived), PSOs must use best professional judgment in making the decision to call for a shutdown.
- 4.3.6 If the Shutdown Zone(s) cannot be adequately monitored for protected species (i.e., a PSO determines conditions, including at night or other low-visibility conditions, are such that animals cannot be reliably sighted within the Shutdown Zone(s), the survey must be stopped until such time that the Shutdown Zone(s) can be reliably monitored.

BMP 4.4 Before any noise-producing survey equipment is deployed, the Monitoring Zones (500 meters for all ESA-listed species and 200 meters for non-ESA-listed marine mammals) must be monitored for 30 minutes of pre-clearance observation.

4.4.1 If any protected species is observed within the respective Monitoring Zone during the 30-minute pre-clearance period, the 30-minute clock must be paused. If the PSO confirms the animal has exited the zone and headed away from the survey vessel, the 30-minute clock that was paused may resume. The pre-clearance clock will reset to 30 minutes if the animal dives or visual contact is otherwise lost.

BMP 4.5 A “ramp up” of the boomer, sparker, or bubble gun survey equipment must occur at the start or re-start of geophysical survey activities when technically feasible. A ramp up must begin with the power for the geophysical survey ramped up half power for 5 minutes, and then to full power.

BMP 4.6 Following a shutdown for any reason, ramp up of the equipment may begin immediately only if: (a) the shutdown is less than 30 minutes, (b) visual monitoring of the Shutdown Zone(s) continued throughout the shutdown, (c) the animal(s) causing the shutdown was visually followed and confirmed by PSOs to be outside of the Shutdown Zone(s) and heading away from the vessel, and (d) the Shutdown Zone(s) remains clear of all ESA-listed species. If all the conditions above are not met, the Monitoring Zone (500

m for all ESA-listed species) must be monitored for 30 minutes of pre-clearance observation before noise-producing equipment can be turned back on.

BMP 4.7 In order for geophysical surveys to be conducted at night or during low-visibility conditions, PSOs must be able to effectively monitor the Clearance and Shutdown Zone(s). No surveys may occur if the Clearance and Shutdown Zone(s) cannot be reliably monitored for the presence of ESA-listed species.

- 4.7.1 An Alternative Monitoring Plan (AMP) must be submitted to BOEM detailing the monitoring methodology that will be used during nighttime and low-visibility conditions and an explanation of how it will be effective at ensuring that the Shutdown Zone(s) can be maintained during nighttime and low-visibility survey operations. The plan must be submitted 60 days before survey operations are set to begin.
- 4.7.2 The plan must include technologies that have the technical feasibility to detect ESA-listed species in the Clearance and Shutdown Zones. Night-vision equipment (i.e., night-vision goggles and/or infrared technology) must be available for use during nighttime monitoring.
- 4.7.3 PSOs should be trained and experienced with any AMP technology used.
- 4.7.4 The AMP must describe how calibration will be performed, for example, by including observations of known objects at set distances and under various lighting conditions. This calibration could be performed during mobilization and periodically throughout the survey operation.
- 4.7.5 PSOs shall make nighttime observations from a platform with no visual barriers, due to the potential for the reflectivity from bridge windows or other structures to interfere with the use of the night vision optics.

BMP 4.8 To minimize risk to North Atlantic right whales, no surveys may occur in Cape Cod Bay from January 1 - May 15 of any year (in an area beginning at 42°04'56.5" N-070°12'00.0" W; thence north to 42°12'00.0" N-070°12'00.0" W; thence due west to charted mean high water line; thence along charted mean high water within Cape Cod Bay back to beginning point).

BMP 4.9 Boomer, sparker, or bubble gun sound sources used within the Southeast Right Whale Critical Habitat Unit 2 during the calving and nursing season (December-March) shall not operate at frequencies between 7 kHz and 35 kHz at night or poor visibility (i.e., anytime AMP methods are required).

BMP 4.10 At times when multiple survey vessels using boomer, sparker, or bubble gun categories of equipment are operating within a lease, adjacent lease areas, or exploratory cable routes, a minimum separation distance must be maintained between survey vessels to ensure that sound sources do not overlap.

BMP 4.11 To minimize disturbance to the Northwest Atlantic Ocean Distinct Population Segment of loggerhead sea turtles, a voluntary pause in sparker operation should be

implemented for all vessels operating in nearshore critical habitat for loggerhead sea turtles. These conditions apply to critical habitat boundaries for nearshore reproductive habitats LOGG N-3 through LOGG N-16 (79 FR 39855) from April 1 to September 30. Following pre-clearance procedures in 4.1, if any loggerhead or other unidentified sea turtles is observed within a 100-meter monitoring zone during a survey, sparker operation should be paused by turning off the sparker until the sea turtle is beyond 100-meters of the survey vessel. If the animal dives or visual contact is otherwise lost, sparker operation may resume after a minimum 2-minute pause following the last sighting of the animal.

BMP 4.12 Any visual observations of listed species by crew or project personnel must be communicated to PSOs on-duty.

BMP 4.13 During good conditions (e.g., daylight hours; Beaufort scale 3 or less) when survey equipment is not operating, to the maximum extent practicable, PSOs must conduct observations for listed species for comparison of sighting rates and behavior with and without use of active geophysical survey equipment. Any observed listed species must be recorded regardless of any mitigation actions required.

PDC 5. Minimize Vessel Interactions with Protected Species

The Lessee must ensure all vessels associated with survey activities (transiting or actively surveying) must comply with the vessel strike avoidance measures specified below. The only exception is when the safety of the vessel or crew necessitates deviation from these requirements. If any such incidents occur, they must be reported as outlined below.

BMP 5.1 Vessel captain and crew must maintain a vigilant watch for all protected species and reduce speed, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any listed species. The presence of a single individual at the surface may indicate the presence of submerged animals in the vicinity; therefore, precautionary measures should always be exercised. If pinnipeds or small delphinids of the following genera: *Delphinus*, *Lagenorhynchus*, *Stenella*, and *Tursiops* are visually detected approaching the vessel (i.e., to bow ride) or towed equipment, vessel speed reduction, course alteration, and shutdown are not required.

BMP 5.2 Anytime a survey vessel is underway (transiting or surveying), the vessel must maintain a 500 m minimum separation distance from ESA-listed species and a PSO must monitor a Vessel Strike Avoidance Zone (500 m or greater from any sighted ESA-listed species or other unidentified large marine mammal visible at the surface) to ensure detection of that animal in time to take necessary measures to avoid striking the animal. If the survey vessel does not require a PSO for the type of survey equipment used, a trained crew lookout may be used as required in 5.3. For monitoring around the autonomous surface vessels, regardless of the equipment it may be operating, a dual thermal/HD camera must be installed on the mother vessel facing forward and angled in a direction so as to provide a field of view ahead of the vessel and around the ASV. A dedicated operator must be able to monitor the real-time output of the camera on hand-held computer tablets. Images from the cameras must be able to be captured and reviewed to assist in verifying

species identification. A monitor must also be installed in the bridge displaying the real-time images from the thermal/HD camera installed on the front of the ASV itself, providing a further forward view of the craft.

- 5.2.1 Survey plans must include identification of vessel strike avoidance measures, including procedures for equipment shut down and retrieval, communication between PSOs/crew lookouts, equipment operators, and the captain, and other measures necessary to avoid vessel strikes while maintaining vessel and crew safety. If any circumstances are anticipated that may preclude the implementation of this PDC, they must be clearly identified in the survey plan and alternative procedures outlined in the plan to ensure minimum distances are maintained and vessel strikes can be avoided.
- 5.2.2 All vessel crew members must be briefed in the identification of protected species that may occur in the survey area and in regulations and best practices for avoiding vessel collisions. Reference materials must be available aboard all project vessels for identification of listed species. The expectation and process for reporting of protected species sighted during surveys must be clearly communicated and posted in highly visible locations aboard all project vessels, so that there is an expectation for reporting to the designated vessel contact (such as the lookout or the vessel captain), as well as a communication channel and process for crew members to do so.
- 5.2.3 A minimum separation distance of 500 m from all ESA-listed whales (including unidentified large whales) must be maintained around all surface vessels at all times.
- 5.2.4 If an ESA-listed whale or large unidentified whale is observed within 500 m of the forward path of any vessel, the vessel operator must steer a course away from the whale at 10 knots (18.5 km/hr) or less until the 500 m minimum separation distance has been established. Vessels may also shift to idle if feasible.
- 5.2.5 If a large whale is sighted within 200 m of the forward path of a vessel, the vessel operator must reduce speed and shift the engine to neutral. Engines must not be engaged until the whale has moved outside of the vessel's path and beyond 500 m. If stationary, the vessel must not engage engines until the large whale has moved beyond 500 m.
- 5.2.6 If a sea turtle or manta ray is sighted at any distance within the operating vessel's forward path, the vessel operator must slow down to 4 knots and steer away (unless unsafe to do so). The vessel may resume normal vessel operations once the vessel has passed the individual.
- 5.2.7 During times of year when sea turtles are known to occur in the survey area, vessels must avoid transiting through areas of visible jellyfish aggregations or floating vegetation (e.g., sargassum lines or mats). In the event that operational safety prevents avoidance of such areas, vessels must slow to 4 knots while transiting through such areas.

- 5.2.8 Vessels operating in water depths with less than four feet of clearance between the vessel and the bottom should maintain speeds no greater than 4 kts to minimize risk of vessel strikes on sturgeon and sawfish.

BMP 5.3 The Lessee must ensure a PSO or crew lookout is posted during all times to avoid interactions with ESA-listed species when a vessel is underway (transiting or surveying) by monitoring in all direction.

- 5.3.1 Visual observers monitoring the vessel separation distances from ESA-listed species can be either PSOs or crew members (if PSOs are not required). If the trained lookout is a vessel crew member, this must be their designated role and primary responsibility while the vessel is transiting. Any designated crew lookouts must receive training on protected species identification, vessel strike minimization procedures, how and when to communicate with the vessel captain, and reporting requirements. All observations must be recorded per reporting requirements in 8.
- 5.3.2 Regardless of monitoring duties, all crew members responsible for navigation duties must receive site-specific training on ESA-listed species sighting/reporting and vessel strike avoidance measures.
- 5.3.3 Vessels underway must not divert their course to approach any ESA-listed species and marine mammals.

BMP 5.4 Regardless of vessel size, vessel operators must reduce vessel speed to 10 knots (18.5 mph) or less while operating in any Seasonal Management Area (SMA) and Dynamic Management Area (DMA) or Slow Zone triggered by visual detections of North Atlantic right whales. An exception to this requirement is for vessels operating in areas within a portions of a visually designated DMA or Slow Zone where it is not reasonable to expect the presence of North Atlantic right whales (e.g., Long Island Sound, shallow harbors).

BMP 5.5 BOEM encourages increased vigilance through the required best management practices to minimize vessel interactions with protected species, by reducing speeds to 10 knots or less when operating within an acoustically triggered slow zone, and when feasible, avoid Slow Zones.

BMP 5.6 The Lessee must ensure all vessel operators check for information regarding mandatory or voluntary ship strike avoidance (SMAs and DMAs (or Slow Zones that are also designated as DMAs) and daily information regarding North Atlantic right whale sighting locations. These media may include, but are not limited to: NOAA weather radio, U.S. Coast Guard NAVTEX and channel 16 broadcasts, Notices to Mariners, the Whale Alert app, or WhaleMap website.

- 5.6.1 North Atlantic right whale Sighting Advisory System info can be accessed at: <https://apps-nefsc.fisheries.noaa.gov/psb/surveys/MapperiframeWithText.html>
- 5.6.2 Information about active SMAs, DMAs, and Slow Zones can be accessed at: <https://www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-vessel-strikes-north-atlantic-right-whales>

PDC 6: Minimize Risk During Buoy Deployment, Operations, and Retrieval

The Lessee must ensure any mooring systems used during survey activities must be designed to prevent potential entanglement or entrainment of listed species, and in the unlikely event that entanglement does occur, ensure proper reporting of entanglement events according to the measures specified below.

BMP 6.1 The Lessee must ensure that any buoys attached to the seafloor use the best available mooring systems. Buoys, lines (chains, cables, or coated rope systems), swivels, shackles, and anchor designs must prevent any potential entanglement of listed species while ensuring the safety and integrity of the structure or device.

BMP 6.2 All mooring lines and ancillary attachment lines must use one or more of the following measures to reduce entanglement risk: shortest practicable line length, rubber sleeves, weak-links, chains, cables, or similar equipment types that prevent lines from looping, wrapping, or entrapping protected species.

BMP 6.3 Any equipment must be attached by a line within a rubber sleeve for rigidity. The length of the line must be as short as necessary to meet its intended purpose.

BMP 6.4 During all buoy deployment and retrieval operations, buoys should be lowered and raised slowly to minimize risk to listed species and benthic habitat. Additionally, PSOs or trained project personnel (if PSOs are not required) should monitor for listed species in the area prior to and during deployment and retrieval and work should be stopped if listed species are observed within 500 meters of the vessel to minimize entanglement risk.

BMP 6.5 If a live or dead marine protected species becomes entangled, operators must immediately contact the applicable stranding network coordinator using the reporting contact details (see Reporting Requirements section) and provide any on-water assistance requested.

BMP 6.6 All buoys must be properly labeled with owner and contact information.

PDC 7: Protected Species Observers

The Lessee must use qualified third-party PSOs to observe Clearance and Shutdown Zones for boomer, sparker, or bubble gun categories of acoustic sources with the exception of parametric subbottom profilers or ultra short baseline equipment.

BMP 7.1 All PSOs must have completed a BOEM-approved PSO training program and have received NMFS approval to act as a PSO for geophysical surveys. The Lessee must provide to BOEM upon request, documentation of NMFS approval as PSOs for geophysical activities in the Atlantic and copies of the most recent training certificates of individual PSOs' successful completion of a commercial PSO training course with an overall examination score of 80% or greater. Instructions and application requirements to become a NMFS-approved PSO can be found at: <https://www.fisheries.noaa.gov/national/endangered-species-conservation/protected-species-observers>.

BMP 7.2 Crew members serving as lookouts when PSOs are not required must receive training on protected species identification, vessel strike minimization procedures, how and when to communicate with the vessel captain, and reporting requirements.

BMP 7.3 PSOs deployed for geophysical survey activities must be employed by a third-party observer provider. While the vessel is underway, they must have no other tasks than to conduct observational effort, record data, and communicate with and instruct relevant vessel crew to the presence of listed species and associated mitigation requirements. PSOs on duty must be clearly listed on daily data logs for each shift.

7.3.1 Non-third-party observers may be approved by NMFS on a case-by-case basis for limited, specific duties in support of approved, third-party PSOs.

BMP 7.4 A minimum of one PSO (assuming PDC 5 is met) must be observing for listed species at all times that boomer, sparker, or bubble gun equipment is operating, or a minimum of one PSO or one Trained Lookout when the survey vessel is actively transiting during daylight hours (30 minutes prior to civil sunrise and through 30 minutes following civil sunset). The Lessee must include a PSO schedule showing that the number of PSOs used is sufficient to effectively monitor the affected area for the project (e.g., surveys) and record the required data. PSOs must not be on watch for more than 4 consecutive hours, with at least a 1-hour break after a 4-hour watch. PSOs must not work for more than 12 hours in any 24-hour period.

BMP 7.5 Visual monitoring must occur from the most appropriate vantage point on the associated operational platform that allows for 360-degree visual coverage around the vessel. If 360-degree visual coverage is not possible from a single vantage point, multiple PSOs must be on watch to ensure such coverage.

BMP 7.6 The Lessee must ensure that suitable equipment is available to each PSO to adequately observe the full extent of the Monitoring and Shutdown Zones during all vessel operations and meet all reporting requirements. The following equipment must be available:

- 7.6.1 Visual observations must be conducted using binoculars and the naked eye while free from distractions and in a consistent, systematic, and diligent manner.
- 7.6.2 Rangefinders (at least one per PSO, plus backups) or reticle binoculars (e.g., 7 x 50) of appropriate quality (at least one per PSO, plus backups) to estimate distances to listed species located in proximity to the vessel and Monitoring and Shutdown Zone(s).
- 7.6.3 Digital cameras with a telephoto lens that is at least 300 mm or equivalent on a full-frame single lens reflex (SLR). The camera or lens should also have an image stabilization system. Cameras should be used to record sightings and verify species identification whenever possible.
- 7.6.4 An laptop or tablet to collect and record data electronically.
- 7.6.5 Global Positioning Units (GPS) if data collection/reporting software does not have built-in positioning functionality.

- 7.6.6 PSO data must be collected in accordance with standard data reporting, software tools, and electronic data submission standards approved by BOEM for the particular activity.
- 7.6.7 Any other tools deemed necessary to adequately perform PSO tasks.

PDC 8: Reporting Requirements. The Lessee must ensure that monthly reporting of survey activities is submitted to BOEM (at renewable_reporting@boem.gov) by the PSO provider on the 15th of each month for each vessel conducting survey work. Any editing, review, and quality assurance checks must be completed only by the PSO provider prior to submission to BOEM. The PSOs may record data electronically, but the data fields listed below must be recorded and exported to an Excel file. Alternatively, BOEM has developed an Excel spreadsheet with all the necessary data fields that is available upon request. The Lessee must submit final monthly reports to BOEM in coordination with PSO Providers within 90 calendar days following completion of a survey. Final monthly reports must contain vessel departure and return ports, PSO names and training certifications, the PSO provider contact information, dates of the survey, a vessel track, a summary of all PSO documented sightings of protected species, survey equipment shutdowns that occurred, any vessel strike-avoidance measures taken, takes of protected species that occurred, and any observed injured or dead protected species. PSOs must be approved by NMFS prior to the start of a survey, and the Lessee must submit documentation of NMFS' approval upon request to BOEM (at renewable_reporting@boem.gov). Application requirements to become a NMFS-approved PSO for geological and geophysical surveys can be obtained by sending an inquiry to nmfs.psoreview@noaa.gov. DOI will work with the Lessee to ensure that DOI does not release confidential business information found in the monitoring reports.

BMP 8.1 Instructions for HRG Survey Reports. The following data fields for PSO reports of geological and geophysical surveys must be reported in Excel format (.xml file):

Survey Information:

- Project name
- Lease number
- State Coastal Zones
- Survey Contractor
- Survey Type
- Reporting start and end dates
- Visual monitoring equipment used;
- Distance finding method used
- PSO names (last, first), training certification, and affiliation
- PSO location and observation height above sea surface

Operations Information:

- Vessel name(s)
- Sound sources including equipment type, power levels, and frequencies used
- Greatest RMS source level

- Dates of departures and returns to port with port name;

Monitoring Effort Information:

- Date (YYYY-MM-DD)
- Source status at time of observation (on/off)
- Number of PSOs on duty
- Start time of observations for each shift in UTC (HH:MM)
- End time of observations for each shift in UTC (HH:MM)
- Duration of visual observations of protected species
- Wind speed (knots), from direction
- Swell (meters)
- Water depth (meters)
- Visibility (km)
- Glare severity
- Block name and number
- Location: Latitude and Longitude
- Time pre-clearance visual monitoring began in UTC (HH:MM)
- Time pre-clearance monitoring ended in UTC (HH:MM)
- Duration of pre-clearance visual monitoring
- Time of day of pre clearance (day/night)
- Time power-up/ramp-up began
- Time equipment full power was reached
- Duration of power-up/ramp-up (if conducted)
- Time survey activity began (equipment on)
- Time survey activity ended (equipment off)
- Survey Duration
- Did a shutdown/power-down occur?
 - Time shutdown was called for (UTC)
 - Time equipment was shut down (UTC)
- Vessel location (latitude/longitude, decimal degrees) when survey effort begins and ends; vessel location at beginning and end of visual PSO duty shifts; recorded at :30 intervals if obtainable from data collection software
- Habitat or prey observations
- Marine debris sighted

Detection Information (in addition to the Survey, Operation, and Monitoring fields)

- Date (YYYY-MM-DD)
- Sighting ID (multiple sightings of the same animal or group should use the same ID)
- Time at first detection in UTC (YY-MMDDT HH:MM)
- Time at last detection in UTC (YY-MM-DDT HH:MM)
- PSO name(s) (Last, First) on duty
- Effort (ON=Hammer On; OFF=Hammer Off)
- Start time of observations

- End time of observations
- Compass heading of vessel (degrees)
- Beaufort scale
- Precipitation
- Cloud coverage (%)
- Sightings including common name and scientific name
- Certainty of identification
- Number of adults
- Number of juveniles
- Total number of animals or estimated group size
- Bearing to animal(s) when first detected (ship heading + clock face)
- Distance determination method
- Distance from vessel (e.g., reticle distance in meters)
- Description of unidentified animals (include features such as overall size; shape of head; color and pattern; size, shape, and position of dorsal fin; height, direction, and shape of blow, etc.)
- Detection narrative (note behavior, especially changes in relation to survey activity and distance from source vessel)
- Direction of travel/first approach (relative to vessel)
- Behaviors observed: indicate behaviors and behavioral changes observed in sequential order (use behavioral codes)
- If any bow-riding behavior observed, record total duration during detection (HH:MM)
- Initial heading of animal(s) (degrees)
- Final heading of animal(s) (degrees)
- Shutdown zone size during detection (meters)
- Was the animal inside the shutdown zone? (Y/N)
- Closest distance to vessel (reticle distance in meters)
- Time at closest approach (UTC HH:MM)
- Time animal entered shutdown zone (UTC HH:MM)
- Time animal left shutdown zone (UTC HH:MM)
- If observed/detected during ramp-up/power-up: first distance (reticle distance in meters), closest distance (reticle distance in meters), last distance (reticle distance in meters), behavior at final detection
- Did a shutdown/power-down occur? (Y/N)
- Time shutdown was called for (UTC)
- Time equipment was shut down (UTC)
- Detections with PAM

BMP 8.2 The Lessee must submit a final monitoring report to BOEM (renewable_reporting@boem.gov) and NMFS (nmfs.gar.incidental-take@noaa.gov) within 90 days after completion of yearly survey activities. The report must fully document the methods and monitoring protocols, summarize the data recorded during monitoring, estimate the number of listed species that may have been taken during survey activities, describe, assess and compare the effectiveness of mitigation and monitoring measures. Any

photos or videos taken by PSOs must be included in the report. Factors that may be contributing to impaired observations during active surveys, such as environmental conditions or equipment malfunctions, must be described. PSO raw sightings and trackline data must also be provided with the final monitoring report.

BMP 8.3 Reporting sightings of North Atlantic right whales:

- 8.4.1 If a North Atlantic right whale is observed at any time by a PSO or project personnel during surveys or vessel transit, the Lessee or PSO must report sighting within two hours of occurrence when practicable and no later than 24 hours after occurrence. In the event of a sighting of a right whale that is dead, injured, or entangled, efforts must be made to make such reports as quickly as possible to the appropriate regional NOAA stranding hotline (from Maine-Virginia report sightings to 866-755-6622, and from North Carolina-Florida to 877-942-5343). Right whale sightings in any location may also be reported to the U.S. Coast Guard via channel 16 and through the WhaleAlert App (<http://www.whalealert.org/>).
- 8.4.2 Further information on reporting a right whale sighting can be found at: https://apps-nefsc.fisheries.noaa.gov/psb/surveys/documents/20120919_Report_a_Right_Whale.pdf

BMP 8.4 In the event of a vessel strike of a protected species by any survey vessel, the Lessee must immediately report the incident to BOEM (renewable_reporting@boem.gov) and NMFS (nmfs.gar.incidental-take@noaa.gov) and the NOAA stranding hotline: From Maine-Virginia, report sightings to 866-755-6622, and from North Carolina-Florida to 877-942-5343. The report must include the following information:

- Name, telephone, and email of the person providing the report;
- The vessel name;
- The Lease Number;
- Time, date, and location (latitude/longitude) of the incident;
- Species identification (if known) or description of the animal(s) involved;
- Vessel's speed during and leading up to the incident;
- Vessel's course/heading and what operations were being conducted (if applicable); Status of all sound sources in use;
- Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;
- Environmental conditions (wave height, wind speed, light, cloud cover, weather, water depth);
- Estimated size and length of animal that was struck;
- Description of the behavior of the species immediately preceding and following the strike;
- If available, description of the presence and behavior of any other protected species immediately preceding the strike;
- Disposition of the animal (e.g., dead, injured but alive, injured and moving, blood or tissue observed in the water, last sighted direction of travel, status unknown, disappeared); and

- To the extent practicable, photographs or video footage of the animal(s).

BMP 8.5 Detected or Impacted Protected Species Reporting. The Lessee is responsible for reporting dead or injured protected species, regardless of whether they were observed during operations or due to Lessee activities. The Lessee must report any potential take, strikes, or dead/injured protected species caused by Project vessels to the NMFS Protected Resources Division (nmfs.gar.incidental-take@noaa.gov), NOAA Fisheries 24-hour Stranding Hotline number (866-755-6622), BOEM (at renewable_reporting@boem.gov), and BSEE (at protectedspecies@bsee.gov) as soon as practicable, but no later than 24 hours from the time the incident took place (Detected or Impacted Protected Species Report). In the event that an injured or dead marine mammal or sea turtle is sighted, regardless of the cause, the Lessee must report the incident to the NMFS Protected Resources Division (nmfs.gar.incidental-take@noaa.gov), NMFS 24-hour Stranding Hotline number (866-755-6622), BOEM (at renewable_reporting@boem.gov), and BSEE (at protectedspecies@bsee.gov) as soon as practicable (taking into account crew and vessel safety), but no later than 24 hours from the sighting (Protected Species Incident Report). Staff responding to the hotline call will provide any instructions for the handling or disposing of any injured or dead protected species by individuals authorized to collect, possess, and transport sea turtles.

8.5.1 The Protected Species Incident Report must include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.