



Atlantic Shores South Project Letter of Authorization

Atlantic Shores Offshore Wind Project 1, LLC (Project Company 1), and those persons it authorizes or funds to conduct activities on its behalf in the specified geographical region (see **Specified Geographical Region** section and Figure 1 below), are authorized to take marine mammals incidental to construction of the Atlantic Shores South Project (hereafter known as the “Project”), located in state and Federal waters offshore New Jersey, subject to the provisions of the Marine Mammal Protection Act (16 U.S.C. 1361 *et seq.*; MMPA) of 1972, as amended, and the applicable regulations (see 50 CFR §§ 217.300 - 217.309), provided they are in compliance with all terms, conditions, and requirements described herein.

Effective Dates

This Letter of Authorization (LOA) is effective for a period of five years, beginning on January 1, 2025 and expiring on December 31, 2029.

Specified Geographical Region

The specified geographical region is the Mid-Atlantic Bight¹, which includes, but is not limited to, the Bureau of Ocean Energy Management (BOEM) Lease Areas Outer Continental Shelf (OCS)-A 0499 and OCS-A-0570 Commercial Lease of Submerged Lands for Renewable Energy Development, two export cable routes, and two sea-to-shore transition points located in Sea Girt, New Jersey (the Monmouth landfall site) and in Atlantic City, New Jersey (the Atlantic City landfall site) (see Figure 1).

Specified Activities

The specified activities are impact pile driving of wind turbine generators (WTG) foundations (multi-legged jackets using pin piles and/or monopiles), offshore substations (OSS) foundations (multi-legged jacket foundations using pin piles), and a meteorological tower (Met Tower) foundation (monopile); vibratory pile driving (installation and subsequent removal) of cofferdams; fishery and ecological monitoring surveys; placement of scour protection; trenching, laying, and burial activities associated with the installation of the export cable from OSSs to shore-based converter stations and inter-array cables between turbines; high-resolution

¹ The Mid-Atlantic Bight extends between Cape Hatteras, North Carolina, and Martha's Vineyard, Massachusetts, extending westward into the Atlantic to the 100-meters (328-feet) isobath.

geophysical (hereafter, “HRG”) site characterization surveys; vessel transit within the specified geographical region to transport crew, supplies, and materials; and WTG operation.

1. Permissible Methods, Species, and Numbers of Take

Authorized incidental take is limited to the methods and species indicated below.

(a) Permissible methods of taking consist of:

- (1) Take by Level B harassment in the form of acoustic impacts resulting from impact pile driving of WTG, OSS, and Met Tower foundations, vibratory pile driving of temporary cofferdams (installation and removal), and HRG site characterization surveys; and
- (2) Take by Level A harassment in the form of auditory injury resulting from impact pile driving WTG, OSS, and Met Tower foundations.
- (3) Take by mortality (death) or serious injury of any marine mammal species is not authorized.

(b) The incidental taking of marine mammals by the specified activities described in paragraph (a) of this section is limited to the numbers associated with the species and stocks found in Table 1.

2. Prohibitions

Except for the takings described under **Permissible Methods of Taking**, it is unlawful for any person to do any of the following in connection with the specified activities described herein:

- (a) Violate or fail to comply with the terms, conditions, and requirements of this LOA or the regulations;
- (b) Take any marine mammal not specified in Table 1;
- (c) Take any marine mammal in Table 1) in any manner other than specified in the **Permissible Methods of Taking** section or number greater than those specified in Table 1; and
- (d) Take any marine mammal in Table 1 if NMFS should determine such takings would result in more than a negligible impact on the species or stocks.

Pursuant to 16 U.S.C. § 1371(a)(5)(B), NMFS shall withdraw or suspend this authorization to take marine mammals, if, after notice and opportunity for public comment², it finds that:

² If NMFS determines an emergency exists that poses a significant risk to the well-being of a species or stock, the notice and comment requirement is waived (see 16 U.S.C. 1371(a)(5)(C)(i)).

- (a) The methods of taking or the mitigation, monitoring, or reporting measures are not being substantially complied with, or
- (b) The taking authorized in this LOA is having, or may have, more than a negligible impact on an affected species or stock.

3. Mitigation Requirements

When conducting the specified activities in the specified geographic region, Project Company 1 must implement the following mitigation measures:

- (a) *General conditions.* Project Company 1 must comply with the following general measures:
 - (1) A copy of any issued LOA must be in the possession of Project Company 1 and its designees, all vessel operators, visual protected species observers (PSOs), passive acoustic monitoring (PAM) operators, pile driver operators, and any other relevant designees operating under the authority of the issued LOA;
 - (2) Project Company 1 must conduct training for construction, survey, vessel personnel, and the marine mammal monitoring team (PSO and PAM operators) prior to the start of all in-water activities in order to explain responsibilities, communication procedures, marine mammal detection and identification, mitigation, monitoring, and reporting requirements, safety and operational procedures, and authorities of the marine mammal monitoring team(s). This training must be repeated for new personnel who join the work during the Project. A description of the training program must be provided to NMFS at least 60 calendar days prior to the initial training before in-water activities begin. NMFS Office of Protected Resources will review, provide comments (if warranted) and approve the training program prior to on-water construction beginning. Confirmation of all required training must be documented on a training course log sheet and reported to NMFS Office of Protected Resources prior to initiating Project activities;
 - (3) Prior to and when conducting any in-water construction activities and vessel operations, Project Company 1 personnel and contractors (*e.g.*, vessel operators, PSOs) must use available sources of information on North Atlantic right whale presence in or near the Project Area including daily monitoring of the Right Whale Sightings Advisory System, NMFS' website (<https://www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-vessel-strikes-north-atlantic-right-whales>), and monitoring the U.S. Coast Guard's VHF Channel 16 throughout the day to receive notification of any sightings and/or information associated with any Slow Zones (*i.e.*, Dynamic Management Areas (DMAs) and/or acoustically-triggered Slow Zones) to provide situational awareness for both vessel operators and PSO(s) and PAM operator(s) teams. The marine mammal monitoring team must monitor these systems no less than every 4 hours;

- (4) Any marine mammal observed by project personnel must be immediately communicated to any on-duty PSO(s), PAM operator(s), and all vessel captains. Any large whale observation or acoustic detection by a PSO(s) or a PAM operator(s) must be conveyed to all vessel captains;
- (5) For North Atlantic right whales, any visual detection by a PSO or acoustic detection by a PAM operator at any distance (where applicable for the specified activities) within the PAM Clearance/Shutdown Zone must trigger a delay to the commencement of pile driving and HRG surveys;
- (6) In the event that a large whale is sighted or acoustically detected that cannot be confirmed as a non-North Atlantic right whale, it must be treated as if it were a North Atlantic right whale for purposes of mitigation;
- (7) Any PSO has the authority to call for a delay or shutdown of project activities. If a delay to commencing an activity is called for by a PSO, Project Company 1 must take the required mitigative action. If a shutdown of an activity is called for by a PSO, Project Company 1 must take the required mitigative action unless shutdown would result in imminent risk of injury or loss of life to an individual(s), pile refusal, or pile instability. Any disagreements between the Lead PSO and the activity operator or between the Lead PSO and the activity operator or between the Lead PSO and another PSO/PAM operator regarding delays or shutdowns must only be discussed after the mitigative action has occurred;
- (8) Pile driving or HRG surveys may not commence until any marine mammals observed within a clearance or shutdown have left (of their own volition);
- (9) If an individual from a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized take number has been met, is observed entering or within the relevant harassment zone prior to beginning a specified activity, the activity must be delayed. If an activity is ongoing and an individual from a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized take number has been met, is observed entering or within the relevant harassment zone, the activity must be shut down (*i.e.*, cease) immediately, unless shutdown would result in imminent risk of injury or loss of life to an individual(s), pile refusal, or pile instability. The activity must not commence or resume until the animal(s) has been confirmed to have left the harassment zones and is on a path away from the applicable zone or after 15 minutes with no further sightings for small odontocetes and pinnipeds or 30 minutes with no further sightings for all other species;
- (10) For in-water construction heavy machinery activities (see Specified Activities section), if a marine mammal is on a path towards or comes within 10 meters (m; 32.8 feet (ft)) of equipment, Project Company 1 must cease operations until the marine mammal has moved more than 10 m (32.8 ft) on a path away from the activity to avoid direct interaction with equipment;

- (11) All vessels must be equipped with a properly installed, operational Automatic Identification System (AIS) device and Project Company 1 must report all Maritime Mobile Service Identify (MMSI) numbers to NMFS Office of Protected Resources (*pr.itp.monitoringreports@noaa.gov*) prior to initial vessel transit;
 - (12) By accepting the LOA, Project Company 1 consents to on-site observation and inspections by Federal agency personnel (including NOAA personnel) during activities described in this subpart, for the purposes of evaluating the implementation and effectiveness of measures contained within the LOA and this subpart; and
 - (13) It is prohibited to assault, harm, harass (including sexually harass), oppose, impede, intimidate, impair, or in any way influence or interfere with a PSO, PAM operator, or vessel crew member acting as an observer, or attempt the same. This prohibition includes, but is not limited to, any action that interferes with an observer's responsibilities, or that creates an intimidating, hostile, or offensive environment. Personnel may report any violations to the NMFS Office of Law Enforcement.
- (b) *Vessel strike avoidance measures*³. Project Company 1 must comply with the following vessel strike avoidance measures while in the specific geographic region, unless a deviation is necessary to maintain safe maneuvering speed and justified because the vessel is in an area where oceanographic, hydrographic, and/or meteorological conditions severely restrict the maneuverability of the vessel; an emergency situation⁴ presents a threat to the health, safety, or life of a person(s); or when a vessel is actively engaged in emergency rescue or response duties, including vessel-in distress or environmental crisis response:
- (1) Prior to the start of the Project's activities involving vessels, all vessel personnel must receive a protected species training that covers, at a minimum, identification of marine mammals that have the potential to occur where vessels would be operating; detection and observation methods in both good weather conditions (*i.e.*, clear visibility, low winds, low sea states) and bad weather conditions (*i.e.*, fog, high winds, high sea states, with glare); sighting communication protocols; all vessel speed and approach limit mitigation requirements (*e.g.*, vessel strike avoidance measures); and information and resources available to the Project personnel regarding the applicability of Federal laws and regulations for protected species. This training must be repeated for any new vessel personnel who join the Project. Confirmation of the vessel personnel's training and understanding of the Incidental Take Authorization (ITA) requirements must be documented on a training course log sheet and reported to NMFS within 30 days of completion of training;

³ In the event that there is a conflict between the vessel strike measures in this LOA and other implementing vessel/marine mammal regulations (*e.g.*, 50 CFR 224.103, 50 CFR 224.105), Project Company 1 must follow the more protective measures.

⁴ An emergency situation is defined as a serious event that occurs without warning and requires immediate action to avert, control, or remedy harm. Speed over ground will be used to measure all vessel speeds.

- (2) All vessel operators, operating at any speed and regardless of their vessel's size, must slow down, stop their vessel, or alter course to avoid striking any marine mammal;
- (3) While in transit, all vessels, regardless of their size, must have a dedicated visual observer aboard and on duty at all times whose sole responsibility (*i.e.*, must not have duties other than observing) is to monitor for marine mammals within a 180 degree (°) direction of the forward path of the vessel (90° port to 90° starboard) located at an appropriate vantage point for ensuring vessels are maintaining appropriate separation distances. Visual observers must be equipped with alternative monitoring technology (*e.g.*, night vision devices, infrared cameras) for periods of low visibility (*e.g.*, darkness, rain, fog, *etc.*). The dedicated visual observer must receive prior training on protected species detection and identification, vessel strike minimization procedures, how and when to communicate with the vessel captain, and reporting requirements in this subpart. These visual observers may be third-party observers (*i.e.*, NMFS-approved PSOs; see section 4(a)) or trained crew members (see (b)(1) of this subsection);
- (4) At the onset of transiting and continuously thereafter, vessel operators must monitor the U.S. Coast Guard VHF Channel 16, over which North Atlantic right whale sightings are broadcasted. At the onset of transiting and at least once every 4 hours, vessel operators and/or trained crew member(s) must also monitor the project's Situational Awareness System (if applicable), WhaleAlert, NMFS' website (<https://www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-vessel-strikes-north-atlantic-right-whales>), and relevant NOAA information systems such as the Right Whale Sighting Advisory System (RWSAS) for the presence of North Atlantic right whales;
- (5) Any large whale sighting by any Project-personnel, including any Project Company 1 staff, contractors, or vessel crew, must be immediately communicated to all project-associated vessel operators, PSOs, and PAM operators for situational awareness. Conversely, any large whale observation or detection via a sighting network (*e.g.*, Mysticetus or similar software) by PSOs or PAM operators must be conveyed to vessel operator(s) and crew. An ongoing large whale sighting log sheet must be maintained on each vessel and retained for vessel operator(s) review each day prior to first day's transit for awareness of recent sightings;
- (6) All vessel operators must abide by existing applicable vessel speed regulations (*see* 50 CFR 224.105). Nothing in this subpart exempts vessels from any other applicable marine mammal speed or approach regulations;
- (7) Vessels must transit at 10 kn (11.5 miles per hour (mph)) or less within any active North Atlantic right whale Slow Zone (*i.e.*, DMAs) or acoustically-triggered slow zone);
- (8) All vessel operators, regardless of their vessel's size, must immediately reduce vessel speed to 10 kn (11.5 mph) or less for at least 24 hours when a North

Atlantic right whale is sighted at any distance by any Project-related personnel or acoustically detected by any Project-related PAM system. Each subsequent observation or acoustic detection in the Project area shall trigger an additional 24-hour period. If a North Atlantic right whale is reported by project personnel or via any of the monitoring systems (refer back to paragraph (b)(4) of this subsection) that vessel must operate at 10 kn (11.5 mph) or less for 24 hours following the reported detection;

- (9) All vessels, regardless of size, must immediately reduce speed to 10 kn (11.5 mph) or less when any large whale, mother/calf pairs, or large assemblages of cetaceans are observed within 500 m (1,640 ft miles (mi)) of an underway vessel;
- (10) If vessel(s) are traveling at speeds greater than 10 kn (11.5 mph) (*i.e.*, during periods where no other speed restrictions are enacted) in the transit corridor (defined as from a port to the Lease Area or return), in addition to the required dedicated visual observer, Project Company 1 must monitor the transit corridor in real-time with PAM prior to and during transits. If a North Atlantic right whale is detected via visual observation or PAM detection within or approaching the transit corridor, all vessels in the transit corridor must travel at 10 kn (11.5 mph) or less for 24 hours following the detection. Each subsequent detection shall trigger a 24-hour reset. A slowdown in the transit corridor expires when there has been no further visual or acoustic detection in the transit corridor in the past 24 hours;
- (11) All vessels must maintain a minimum separation distance of 500 m (1,640 ft) from North Atlantic right whales (see Table 2). If underway, all vessels must steer a course away from any sighted North Atlantic right whale at 10 kn (11.5 mph) or less such that the 500-m (1,640-ft) minimum separation distance requirement is not violated. If a North Atlantic right whale is sighted within 500 m (1,640 ft) of an underway vessel, that vessel operator must turn away from the whale(s), 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 (1,640 ft). If a whale is observed but cannot be confirmed as a species other than a North Atlantic right whale, the vessel operator must assume that it is a North Atlantic right whale and take the appropriate vessel strike avoidance measures;
- (12) All vessels must maintain a minimum separation distance of 500 m (1,640 ft) from all ESA-listed large whales (see Table 2). If an ESA-listed whale is sighted within 500 m (1,640 ft) of a transiting vessel, the vessel must shift the engine(s) to neutral. Engines must not be engaged until the whale has moved outside of the vessel's path and beyond 500 m (1,640 ft);
- (13) All vessels must maintain a minimum separation distance of 100 m (328 ft) from all non-ESA-listed large whales (see Table 2). If one of these species is sighted within 100 m (328 ft) of a transiting vessel, the vessel must shift the engine(s) to neutral. Engines must not be engaged until the whale has moved outside of the vessel's path and beyond 100 m (328 ft);

- (14) All vessels must maintain a minimum separation distance of 50 m (164 ft) from all delphinid cetaceans and pinnipeds with an exception made for those that approach the vessel (*i.e.*, bow-riding dolphins) (see Table 2). If a delphinid cetacean or pinniped is sighted within 50 m (164 ft) of a transiting vessel, the vessel must shift the engine to neutral, with an exception made for those that approach the vessel (*e.g.*, bow-riding dolphins). Engines must not be engaged until the animal(s) has moved outside of the vessel's path and beyond 50 m (164 ft);
 - (15) When a marine mammal(s) is sighted while the vessel(s) is transiting, the vessel must take action as necessary to avoid violating the relevant separation distances (*e.g.*, attempt to remain parallel to the animal's course, slow down, and avoid abrupt changes in direction until the animal has left the area of its own volition);
 - (16) All vessels underway must not divert or alter course to approach any marine mammal;
 - (17) Vessel operators must check, daily, for information regarding the establishment of mandatory or voluntary vessel strike avoidance areas (*i.e.*, DMAs, Seasonal Management Areas (SMAs), Slow Zones) and any information regarding North Atlantic right whale sighting locations; and
 - (18) Project Company 1 must submit a Vessel Strike Avoidance Plan to NMFS Office of Protected Resources for review and approval at least 180 days prior to the planned start of vessel activity. The plan must provide details on the vessel-based observer and PAM protocols for transiting vessels in the vessel transit corridor. If a plan is not submitted and approved by NMFS prior to vessel operations, all project vessels must travel at speeds of 10 kn (11.5 mph) or less. Project Company 1 must comply with any approved North Atlantic Right Whale Vessel Strike Avoidance Plan.
- (c) *WTG, OSS, and Met Tower foundation installation.* Project Company 1 must comply with the following WTG, OSS, and Met Tower foundation installation measures unless doing so could result in imminent risk of injury or loss of life to an individual or risk of damage to a vessel that creates risk of injury or loss of life for individuals, or the lead engineer determines there is risk of pile refusal or pile instability:
- (1) Foundation installation via impact pile driving must not occur January 1st through April 30th, annually. Foundation installation via impact pile driving must be avoided in December unless necessary to complete Project 1 or Project 2 in a given year and after receipt of prior approval by NMFS:
 - (i) Before any December pile driving may occur and for NMFS Office of Protected Resources to fully evaluate this request, Project Company 1 is required to provide a written request to NMFS by October 15th, which must include, but is not limited to, the following information: the installation schedule and types of piles to be installed, the maximum number of piles anticipated to be installed in December, and any planned

or additional practicable mitigative measures that could be implemented to further reduce activities to North Atlantic right whales and other marine mammal species.

- (2) Monopiles must be no larger than 15-m in diameter, representing the larger end of the planned monopile design. During all monopile installation, the minimum amount of hammer energy necessary to effectively and safely install and maintain the integrity of the piles must be used. Hammer energies must not exceed 4,400 kilojoules for monopile installation. No more than two monopiles may be installed per day;
- (3) Pin piles must be no larger than 5-m in diameter. During all pin pile installation, the minimum amount of hammer energy necessary to effectively and safely install and maintain the integrity of the piles must be used. Hammer energies must not exceed 2,500 kJ for pin pile installation. No more than four pin piles may be installed per day;
- (4) Project Company 1 must only perform foundation pile driving during daylight hours, defined as no earlier than 1 hour prior to civil sunset or later than 1.5 hours prior to civil sunrise, and may only continue pile driving into darkness if stopping operations represents a risk to human health, safety, and/or pile stability, unless the Project Company 1 submits, and NMFS approves, an Alternative Monitoring Plan, which would allow pile driving to begin after daylight hours have ended. Until this is submitted, reviewed, and approved by NMFS, Project Company 1 may not begin any new pile driving outside of the daylight hours previously defined in this subsection;
- (5) Soft-start⁵ must occur at the beginning of impact pile driving and at any time following a cessation of impact pile driving of 30 minutes or longer;
- (6) Monitoring of the clearance zones must begin 60 minutes immediately prior to initiation of pile driving (see Table 3). The shutdown zones must be monitored during all pile driving (see Table 3). If a marine mammal is detected within or about to enter the applicable clearance zones 30 minutes prior to the beginning of pile driving (including soft-start if impact pile driving) or during pile driving, pile driving must be delayed or shutdown until the animal has been visually observed exiting the clearance zone or until a specific time period has elapsed with no further sightings. The specific time periods are 15 minutes for small odontocetes and pinnipeds, and 30 minutes for all other species;
- (7) For North Atlantic right whales, any visual observation by a PSO on the pile-driving or dedicated PSO vessels or acoustic detection within the 10 km (6.21 mi) PAM Clearance zone must trigger a delay to the commencement of pile driving. Pile driving may only commence if no North Atlantic right whale visual or

⁵ The soft-start procedure will consist of Project Company 1 performing 4 to 6 strikes per minute at 10 to 20 percent of the maximum hammer energy, for a minimum of 20 minutes. Given the future availability of real-world information in Project Company 1's Project Area, NMFS maintains the ability to adjust this procedure after LOA issuance, in accordance with the adaptive management provisions set out in section 5(c) of this LOA.

acoustic detections have occurred within the clearance zones during the 60-minute monitoring period;

- (8) Project Company 1 must deploy at least two functional noise abatement systems during all foundation pile driving:
- (i) A single bubble curtain must not be used;
 - (ii) Any bubble curtain(s) must distribute air bubbles using an air flow rate of at least $0.5 \text{ m}^3/(\text{minute} \cdot \text{m})$. The bubble curtain(s) must surround 100 percent of the piling perimeter throughout the full depth of the water column. In the unforeseen event of a single compressor malfunction, the offshore personnel operating the bubble curtain(s) must adjust the air supply and operating pressure such that the maximum possible sound attenuation performance of the bubble curtain(s) is achieved;
 - (iii) The lowest bubble ring must be in contact with the seafloor for the full circumference of the ring, and the weights attached to the bottom ring must ensure 100-percent seafloor contact;
 - (iv) No parts of the ring or other objects may prevent full seafloor contact with a bubble curtain ring;
 - (v) A full maintenance check (*e.g.*, manually clearing holes) must occur prior to each pile being installed;
 - (vi) Project Company 1 must inspect and carry out appropriate maintenance on the noise attenuation system prior to every pile driving event and prepare and submit a Noise Attenuation System (NAS) inspection/performance report⁶;
 - (vii) Corrections to the bubble ring(s) to meet the performance standards in this paragraph (c)(8) must occur prior to pile driving of foundation piles; and
 - (viii) For any noise mitigation device in addition to the bubble curtain, Project Company 1 must inspect and carry out appropriate maintenance on the system and ensure the system is functioning properly prior to every pile driving event.
- (9) Project Company 1 must utilize PAM systems, as described in a NMFS-approved PAM Plan. The PAM system components (*i.e.*, acoustic buoys) must not be placed closer than 1 km (0.6 mi) to the pile being driven so that the activities do not mask the PAM system. Project Company 1 must demonstrate and prove the detection range of the system they plan to deploy while considering potential masking from pile-driving and vessel noise. The PAM system must be able to:

⁶ For piles for which thorough SFV is carried out, this report must be submitted as soon as it is available, but no later than when the interim SFV report is submitted for the respective pile. Performance reports for piles monitoring with abbreviated SFV must be submitted with the weekly pile driving reports.

- (i) Detect all marine mammals;
 - (ii) Maximize baleen whale detections; and
 - (iii) Must be capable of detecting North Atlantic right whales at 10 km (6.21 mi)⁷; and
- (10) Concurrently, Project Company 1 must utilize PSO(s) and PAM operator(s), as described in section 4(c). PAM operators must be deployed and monitoring for marine mammals in accordance with a NMFS-approved PAM Plan. If a marine mammal is detected (visually or acoustically) entering or within the respective shutdown zone after pile driving has begun, the PSO(s) must call for a shutdown of pile driving and Project Company 1 must stop pile driving immediately⁸. If pile driving is not shut down due to a safety or pile instability/refusal situation, Project Company 1 must reduce hammer energy to the lowest level practicable and the reason(s) for not shutting down must be documented and reported to NMFS Office of Protected Resources within the applicable monitoring reports (*e.g.*, weekly, monthly) (see section 4(g)).
- (11) A visual observation at any distance from a PSO on the pile-driving or dedicated PSO vessel(s) or an acoustic detection of a North Atlantic right whale within the 10 km (6.21 mi) PAM Shutdown Zone triggers pile driving shutdown. If pile driving has been shut down due to the presence of a North Atlantic right whale, pile driving may not restart until the North Atlantic right whale has neither been visually or acoustically detected for 30 minutes;
- (12) If pile driving has been shut down due to the presence of a marine mammal other than a North Atlantic right whale, pile driving must not restart until either the marine mammal(s) has voluntarily left the specific clearance zones and has been visually or acoustically confirmed beyond that clearance zone, or, when specific time periods have elapsed with no further sightings or acoustic detections have occurred. The specific time periods are 15 minutes for small odontocetes and pinnipeds, and 30 minutes for all other marine mammal species. In cases where these criteria are not met, pile driving may restart only if necessary to maintain pile stability or avoid refusal, during which time Project Company 1 must use the lowest hammer energy practicable;
- (13) Project Company 1 must conduct thorough sound field verification (SFV) measurements during pile driving activities associated with the installation of, at minimum, the first three monopile foundations installed each calendar year and the first three jacket foundations (inclusive of all pin piles installed for a given jacket foundation). For all thorough SFV, measurements must continue until at least three monopiles and three jacket foundations demonstrate distances to harassment thresholds are at or below those modeled, assuming 10 decibels

⁷ NMFS recognizes that other marine mammals (*e.g.*, harbor porpoises) may not be detected at 10 km (6.21 mi).

⁸ NMFS acknowledges that shutdown may not be practicable in every situation if it creates a situation where there is imminent risk of injury or loss of life to an individual, risk of damage to a vessel that creates risk of injury or loss of life for individuals, or the lead engineer determines there is risk of pile refusal or pile instability.

(hereafter, “dB”) of attenuation. Subsequent thorough SFV measurements are also required should larger piles be installed or if additional foundations are driven that may produce louder sound fields than those previously measured (*e.g.*, higher hammer energy, greater number of strikes, *etc.*). All thorough SFV measurements must be conducted as follows:

- (i) Measurements must be made at a minimum of four distances from the foundation(s) being driven, along a single transect, in the direction of lowest transmission loss, including, but not limited to, 750 m (2,460 ft) and three additional ranges, including, at least, the applicable modeled Level B harassment isopleth, assuming 10 dB attenuation. At least one additional measurement at an azimuth 90 degrees from the array at 750 m (2,460 ft) must be made. At each location, there must be a near bottom and mid-water column hydrophone;
- (ii) The recordings must be continuous throughout the duration of all pile driving of each pile for a given foundation;
- (iii) The SFV measurement systems must have a sensitivity appropriate for the expected sound levels from pile driving received at the nominal ranges throughout the installation of the pile(s). The frequency range of SFV measurement systems must cover the range of at least 20 hertz (hereafter, “Hz”) to 20 kilohertz (hereafter, “kHz”). The SFV measurement systems must be designed to have omnidirectional sensitivity so that the broadband received level of all pile driving exceeds the system noise floor by at least 10 dB. The dynamic range of the SFV measurement system must be sufficient such that, at each piling location, the signals must avoid poor signal-to-noise ratios for low amplitude signals and avoid clipping, nonlinearity, and saturation for high amplitude signals;
- (iv) All hydrophones used in SFV measurements systems are required to have undergone a full system, traceable laboratory calibration conforming to International Electrotechnical Commission (hereafter, “IEC”) 60565, or an equivalent standard procedure, from a factory or accredited source to ensure the hydrophone receives accurate sound levels, at a date not to exceed 2 years before deployment. Additional *in-situ* calibration checks using a pistonphone are required to be performed before and after each hydrophone deployment. If the measurement system employs filters via hardware or software (*e.g.*, high-pass, low-pass, *etc.*), which are not already accounted for by the calibration, the filter performance (*i.e.*, the filter's frequency response) must be known, reported, and the data corrected before analysis;
- (v) Project Company 1 must be prepared with additional equipment (*e.g.*, hydrophones, recording devices, hydrophone calibrators, cables, batteries, *etc.*), which exceeds the amount of equipment necessary to perform the measurements, such that technical issues can be mitigated before measurement; and

- (vi) Project Company 1 must submit interim thorough SFV reports within 48 hours after each foundation is measured (see section 4(g) for interim reporting requirements).
- (14) For thorough SFV on monopile and jacket foundations:
- (i) If any of the thorough SFV measurements from any foundation (monopile or jacket) indicate the distances to NMFS' marine mammal Level A harassment or Level B harassment thresholds, assuming 10-dB attenuation, are greater than those modeled, before the next foundation is installed, Project Company 1 must identify and propose for review and concurrence⁹: additional, modified, and/or alternative noise attenuation measures or operational changes¹⁰ that present a reasonable likelihood of reducing sound levels to the modeled distances on subsequent foundations; provide a written explanation to NMFS Office of Protected Resources supporting that determination and requesting concurrence to proceed; and, following NMFS Office of Protected Resource's concurrence, deploy those additional measure or modifications on any subsequent foundation that are installed¹¹;
 - (1) Project Company 1 must also increase clearance and shutdown zone sizes to those identified by NMFS Office of Protected Resources. For every 1,500 m (4,921.3 ft) that a marine mammal clearance or shutdown zone is expanded, additional PSOs must be deployed from additional platforms/vessels to ensure adequate and complete monitoring of the expanded shutdown and/or clearance zone;
 - (2) Following installation of the foundation with additional, alternative, or modified noise attenuation measures/operational changes, for which a thorough SFV must be conducted, SFV must also be conducted on two additional foundations. If the SFV results from all three of those foundations are within the distances to isopleths of concern modeled assuming 10 dB attenuation, Project Company 1 must continue to implement the approved additional, alternative, or modified sound attenuation measures/operational changes¹²; and

⁹ This step does not necessarily have to occur when the results are received but information related to this must be proposed in the SFV Plan for NMFS review and concurrence.

¹⁰ Such examples include if the pile was installed with a double bubble curtain without a near field sound attenuation device, add a nearfield noise attenuation device; adjust hammer operations; adjust noise attenuation system to improve performance.

¹¹ Such as if threshold distances are exceeded on pile 1, then additional measures must be deployed before installing pile 2.

¹² Per the Biological Opinion, Project Company 1 has the option to request concurrence from NMFS Greater Atlantic Regional Fisheries Office Protected Resources Division to return to the original clearance and shutdown zones or Project Company 1 can continue with the expanded clearance and shutdown zones and the additional PSOs.

- (3) If, after all practicable measures that could be taken to reduce noise levels have been successfully implemented and exhausted, thorough SFV measurements continue to indicate that the distances to the marine mammal harassment thresholds are greater than those modeled assuming 10 dB attenuation, Project Company 1 must consult with NMFS Office of Protected Resources to evaluate the circumstances before additional piles are installed.
 - (ii) If SFV measurements indicate that ranges to isopleths corresponding to the Level A harassment and/or Level B harassment thresholds are less than those predicted by modeling (assuming 10-dB attenuation), Project Company 1 may request a modification of the minimum visibility, clearance, and shutdown zones from NMFS Office of Protected Resources. For NMFS Office of Protected Resources to consider a modification request for reduced zone sizes, Project Company 1 must have conducted thorough SFV measurements on three foundations and ensure that subsequent foundations would be installed under conditions that are predicted to produce smaller harassment zones than those modeled assuming 10-dB of attenuation, provided Project Company 1 continue to implement the approved additional, alternative, or modified sound attenuation measures/operational changes.
- (15) Project Company 1 must conduct abbreviated SFV monitoring, consisting of a single acoustic recorder with a bottom and midwater hydrophone, placed at an appropriate distance from each pile driven foundation installations, on all foundations for which thorough SFV monitoring, as described in paragraph (15) of this subsection, is not performed. Results of abbreviated SFV monitoring must be included in the weekly pile driving reports:
 - (i) Abbreviated SFV monitoring duration and equipment must comply with the conditions specified in (14)(ii) through (14)(v) of this subsection; and
 - (ii) If the results of abbreviated SFV monitoring indicate that distances to the identified Level A and Level B harassment thresholds for marine mammals may have been exceeded during the pile driving event, Project Company 1 must notify NMFS Office of Protected Resources as soon as possible after receiving such results, and include an explanation of suspected or identified factors that contributed to the potential exceedance and corrective actions that were taken, or planned to be taken, to avoid potential exceedance on subsequent piles. Additional actions may include: adjustments or additions to the noise attenuation system or pile driving operations and/or additional thorough SFV monitoring.
- (16) Project Company 1 must conduct SFV measurements during turbine operations to estimate turbine operational source levels and transmission loss rates in accordance with a NMFS-approved SFV Plan;

- (17) Project Company 1 must submit a SFV Plan to NMFS Office of Protected Resources for review and approval at least 180 calendar days prior to planned start of foundation installation activities and abide by the Plan, if approved. Pile driving may not occur until NMFS approves the SFV Plan. At a minimum, the SFV Plan must:
- (i) Describe how thorough and abbreviated SFV would be conducted, and if the first three monopile foundation/first three entire jacket foundations (inclusive of all pin piles for a given jacket foundation) installation sites selected for thorough SFV measurements are representative of the remainder of the monopile and jacket foundation installation sites or include information in the SFV Plan on which additional sites/scenarios would be selected for thorough SFV measurements;
 - (ii) Describe approaches that Project Company 1 could take to adjust noise attenuation systems or add systems in the case that any SFV measurements obtained demonstrate that noise levels are above those modeled (assuming 10 dB of attenuation);
 - (iii) Describe, prior to operations for each Project, how operational noise would be monitored and how operational parameters (*e.g.*, direct drive information, turbine rotation rate), as well as sea state conditions and information on nearby anthropogenic activities (*e.g.*, vessels transiting or operating in the area), must be reported; and
 - (iv) Include methodology for collecting, analyzing, and preparing thorough and abbreviated SFV measurement data for submission to NMFS Office of Protected Resources and describe how the effectiveness of the sound attenuation methodology would be evaluated based on the results.
- (18) Project Company 1 must submit a Foundation Installation Pile Driving Marine Mammal Monitoring Plan to NMFS Office of Protected Resources for review and approval at least 180 calendar days prior to planned start of foundation pile driving and abide by the Plan, if approved. Project Company 1 must obtain both NMFS Office of Protected Resources and NMFS Greater Atlantic Regional Fisheries Office Protected Resources Division's concurrence with this Plan prior to the start of any pile driving. No foundation pile installation can occur without NMFS' approval of the Plan. The Plan must include, at a minimum:
- (i) A description of how all relevant mitigation and monitoring requirements will be implemented;
 - (ii) A pile driving installation summary and planned sequence of events;
 - (iii) A description of all training protocols for all project personnel (PSOs, PAM operators, trained crew lookouts, *etc.*);
 - (iv) A description of all monitoring equipment and evidence (*i.e.*, manufacturer's specifications, reports, testing) that it can be used to

effectively monitor and detect marine mammals in the identified clearance and shutdown zones (*i.e.*, field data demonstrating reliable and consistent ability to detect large cetaceans at the relevant distances in the conditions planned for use);

- (v) All communications and reporting details;
 - (vi) All PSO monitoring and mitigation protocols (including number and location of PSOs) for effective observation and documentation of marine mammals during all pile driving events;
 - (vii) Regarding sufficient PSO and PAM operator staffing (in accordance with watch shifts), the Plan must also include PSO and PAM operator schedules, and contingency plans for instances if additional PSOs and PAM operators are required;
 - (viii) Regarding sound attenuation, the Plan must detail all plans and procedures, including procedures for adjusting the noise attenuation system(s) and available contingency noise attenuation measures/systems if distances to modeled isopleths of concern are exceeded during SFV; and
 - (ix) Regarding take, the Plan must also describe how Project Company 1 would determine the number of marine mammals exposed to noise above the Level B harassment threshold during impact pile driving of foundations.
- (19) Project Company 1 must submit a Passive Acoustic Monitoring Plan (hereafter, “PAM Plan”) to NMFS Office of Protected Resources for review and approval at least 180 calendar days prior to the planned start of foundation installation activities and abide by the PAM Plan, if approved. No pile installation can occur if Project Company 1's PAM Plan does not receive approval from NMFS Office of Protected Resources and NMFS Greater Atlantic Regional Fisheries Office Protected Resources Division. The PAM Plan must include:
- (i) A description of all proposed PAM equipment and address how the proposed passive acoustic monitoring will follow standardized measurement, processing methods, reporting metrics, and metadata standards for offshore wind.
 - (ii) A description of all proposed PAM equipment, procedures, and protocols including proof that vocalizing North Atlantic right whales will be detected within the clearance and shutdown zones.
- (d) *Cofferdam installation and removal.* The following requirements apply to the installation and removal of cofferdams at the cable landfall construction sites:
- (1) Installation of cofferdams must not occur during nighttime hours (defined as the hours between 1.5 hours prior to civil sunset and 1 hour after civil sunrise);

- (2) Project Company 1 must establish and implement clearance zones for the installation and removal of cofferdams using visual monitoring (see Table 4). These zones must be measured using the radial distance from the cofferdam being installed and/or removed;
 - (3) Project Company 1 must utilize PSO(s), as described in section 4(d). At least two on-duty PSOs must monitor for marine mammals at least 30 minutes before, during, and 30 minutes after vibratory pile driving associated with cofferdam installation;
 - (4) If a marine mammal(s) is observed entering or is observed within the clearance zones, before vibratory pile driving has begun, the activity must not commence until the animal(s) has exited the zone or a specific amount of time has elapsed since the last sighting. The specific time periods are 15 minutes for small odontocetes and pinnipeds and 30 minutes for all other marine mammal species;
 - (5) If a marine mammal is observed entering or within the respective shutdown zone after vibratory pile driving has begun, the PSO must call for a shutdown of vibratory pile driving. Project Company 1 must stop pile driving immediately¹³. If pile driving is not shut down due to a safety situation, Project Company 1 must document the reason(s) for not shutting down and report the information to NMFS Office of Protected Resources in the annual report (as described in section 4(g)). In cases where shutdown is not feasible, pile driving may restart only if necessary to maintain pile stability at which time Project Company 1 must use the lowest energy practicable to maintain stability; and
 - (6) Vibratory pile driving must not restart until either the marine mammal(s) has voluntarily left the specific clearance zones and has been visually confirmed beyond that clearance zone, or, when specific time periods have elapsed with no further sightings or acoustic detections have occurred. The specific time periods are 15 minutes for small odontocetes and pinnipeds and 30 minutes for all other marine mammal species.
- (e) *HRG surveys*. The following requirements apply to HRG surveys operating sub-bottom profilers (hereafter, “acoustic sources”) (*i.e.*, sparkers and Compressed High Intensity Radiated Pulse (CHIRPs)):
- (1) Project Company 1 must establish and implement clearance and shutdown zones for HRG surveys using visual monitoring, as described in this section (see Table 5);
 - (2) Project Company 1 must utilize PSO(s), as described in section 4(e);
 - (3) Project Company 1 must abide by the relevant Project Design Criteria (PDCs 4, 5, and 7) of the programmatic consultation completed by NMFS’ Greater Atlantic

¹³ NMFS acknowledges that shutdown may not be practicable in every situation if it creates a situation where there is imminent risk of injury or loss of life to an individual or risk of damage to a vessel that creates risk of injury or loss of life for individuals, or the lead engineer determines there is risk of pile refusal or pile instability.

Regional Fisheries Office on June 29, 2021 (revised September 2021), pursuant to section 7 of the Endangered Species Act (ESA). To the extent that any relevant Best Management Practices (BMPs) described in these PDCs are more stringent than the requirements herein, those BMPs supersede these requirements and must be implemented;

- (4) Acoustic sources must be deactivated when not acquiring data or preparing to acquire data, except as necessary for testing. Acoustic sources must be used at the lowest practicable source level to meet the survey objective, when in use, and must be turned off when they are not necessary for the survey;
- (5) Prior to starting the survey and after receiving confirmation from the PSOs that the clearance zone is clear of any marine mammals, Project Company 1 is required to ramp-up acoustic sources to half power for 5 minutes prior to commencing full power, unless the equipment operates on a binary on/off switch (in which case ramp-up is not required). Project Company 1 must also ensure visual clearance zones are fully visible (*e.g.*, not obscured by darkness, rain, fog, *etc.*) and clear of marine mammals, as determined by the Lead PSO, for at least 30 minutes immediately prior to the initiation of survey activities using acoustic sources;
- (6) Ramp-up and activation must be delayed if a marine mammal(s) enters its respective shutdown zone. Ramp-up and activation may only be reinitiated if the animal(s) has been observed exiting its respective shutdown zone or until a specific amount of time has elapsed since the last sighting. The specific time periods are 15 minutes for small odontocetes and pinnipeds and 30 minutes for all other marine mammal species;
- (7) Prior to a ramp-up procedure starting or activating acoustic sources, the acoustic source operator (operator) must notify a designated PSO of the planned start of ramp-up as agreed upon with the Lead PSO. The notification time should not be less than 60 minutes prior to the planned ramp-up or activation in order to allow the PSOs time to monitor the clearance zone(s) for 30 minutes prior to the initiation of ramp-up or activation (pre-start clearance). During this 30-minute pre-start clearance period, the entire applicable clearance zones must be visible, except as indicated in paragraph (e)(12) of this section;
- (8) Ramp-ups must be scheduled so as to minimize the time spent with the source activated;
- (9) A PSO conducting pre-start clearance observations must be notified again immediately prior to reinitiating ramp-up procedures and the operator must receive confirmation from the PSO to proceed;
- (10) Project Company 1 must implement a 30-minute clearance period of the clearance zones immediately prior to the commencing of the survey or when there is more than a 30-minute break in survey activities or PSO monitoring. A clearance period is a period when no marine mammals are detected in the relevant zone;

- (11) If a marine mammal is observed within a clearance zone during the clearance period, ramp-up or acoustic surveys may not begin until the animal(s) has been observed voluntarily exiting its respective clearance zone or until a specific time period has elapsed with no further sighting. The specific time period is 15 minutes for small odontocetes and pinnipeds, and 30 minutes for all other species;
 - (12) In any case when the clearance process has begun in conditions with good visibility, including via the use of night vision equipment (infrared (IR)/thermal camera), and the Lead PSO has determined that the clearance zones are clear of marine mammals, survey operations may commence (*i.e.*, no delay is required) despite periods of inclement weather and/or loss of daylight. Ramp-up may occur at times of poor visibility, including nighttime, if appropriate visual monitoring has occurred, using supplemental night vision equipment, with no detections of marine mammals in the 30 minutes prior to beginning ramp-up;
 - (13) Once the survey has commenced, Project Company 1 must shut down acoustic sources if a marine mammal enters a respective shutdown zone, except in cases when the shutdown zones become obscured for brief periods due to inclement weather, survey operations may continue (*i.e.*, no shutdown is required) so long as no marine mammals have been detected. The shutdown requirement does not apply to small delphinids of the following genera: *Delphinus*, *Stenella*, *Lagenorhynchus*, and *Tursiops*. If there is uncertainty regarding the identification of a marine mammal species (*i.e.*, whether the observed marine mammal belongs to one of the delphinid genera for which shutdown is waived), the PSOs must use their best professional judgment in making the decision to call for a shutdown. Shutdown is required if a delphinid that belongs to a genus other than those specified in this paragraph is detected in the shutdown zone;
 - (14) If an acoustic source has been shut down due to the presence of a marine mammal, the use of an acoustic source may not commence or resume until the animal(s) has been confirmed to have left the Level B harassment zone or until a specific time period has elapsed with no further sighting. The specific time period is 15 minutes for small odontocetes and pinnipeds, and 30 minutes for all other species; and
 - (15) If an acoustic source is shut down for a period longer than 30 minutes, all clearance and ramp-up procedures must be initiated. If an acoustic source is shut down for reasons other than mitigation (*e.g.*, mechanical difficulty) for less than 30 minutes, acoustic sources may be activated again without ramp-up only if PSOs have maintained constant observation and no additional detections of any marine mammal occurred within the respective shutdown zones.
- (f) *Fisheries monitoring surveys.* The following requirements apply to fishery monitoring surveys:
- (1) All captains and crew conducting fishery surveys must be trained in marine mammal detection and identification. Marine mammal monitoring will be conducted by the captain and/or a member of the scientific crew within 1 nautical

mile (nmi) (1.85 km; 1.2 mi) and 15 minutes prior to deploying gear), during, and for 15 minutes after haul back;

- (2) Survey gear must be deployed as soon as possible once the vessel arrives on station. Gear must not be deployed if there is a risk of interaction with marine mammals. Gear may be deployed after 15 minutes of no marine mammal sightings within 1 nmi (1,852 m) of the sampling station;
- (3) Project Company 1 and/or its cooperating partners, contracted vessels, or commercially hired captains must implement the following “move-on” rule: if marine mammals are sighted within 1 nmi (1.2 mi) of the planned location and 15 minutes before gear deployment, then Project Company 1 and/or its cooperating partners, contracted vessels, or commercially hired captains, as appropriate, must move the vessel away from the marine mammal to a different section of the sampling area. If, after moving on, marine mammals are still visible from the vessel, Project Company 1 and its cooperating partners, contracted vessels, or commercially hired captains must move again or skip the station;
- (4) If a marine mammal is at risk of interacting with deployed gear, all gear must be immediately removed from the water. If marine mammals are sighted before the gear is fully removed from the water, Project Company 1 must take the most appropriate action to avoid marine mammal interaction and the vessel must slow its speed and maneuver the vessel away from the animals to minimize potential interactions with the observed animal;
- (5) Unless using ropeless gear, Project Company 1 must maintain visual marine mammal monitoring effort during the entire period of time that gear is in the water (*i.e.*, throughout gear deployment, fishing, and retrieval);
- (6) All fisheries monitoring gear must be fully cleaned and repaired (if damaged) before each use/deployment;
- (7) Project Company 1’s fixed gear must comply with the Atlantic Large Whale Take Reduction Plan regulations at § 50 CFR 229.32 during fisheries monitoring surveys;
- (8) Trawl tows must be limited to a maximum of a 20-minute trawl time at 3.0 kn (3.45 mph);
- (9) All gear must be emptied as close to the deck/sorting area and as quickly as possible after retrieval;
- (10) During trawl surveys, vessel crew must open the codend of the trawl net close to the deck in order to avoid injury to animals that may be caught in the gear;
- (11) All fishery survey-related lines must include the breaking strength of all lines being less than 1,700 pounds (lbs) (771 kilograms (kg)). This may be accomplished by using whole buoy line that has a breaking strength of 1,700 lbs

(771 kg); or buoy line with weak inserts that result in line having an overall breaking strength of 1,700 lbs (771 kg);

- (12) During any survey that uses vertical lines, buoy lines must be weighted and must not float at the surface of the water and all groundlines must be composed entirely of sinking lines. Buoy lines must utilize weak links. Weak links must break cleanly leaving behind the bitter end of the line. The bitter end of the line must be free of any knots when the weak link breaks. Splices are not considered to be knots. The attachment of buoys, toggles, or other floatation devices to groundlines is prohibited;
- (13) All in-water survey gear, including buoys, must be properly labeled with the scientific permit number or identification as Project Company 1's research gear. All labels and markings on the gear, buoys, and buoy lines must also be compliant with the applicable regulations, and all buoy markings must comply with instructions received by the NOAA Greater Atlantic Regional Fisheries Office Protected Resources Division;
- (14) All survey gear must be removed from the water whenever not in active survey use (*i.e.*, no wet storage);
- (15) All reasonable efforts, that do not compromise human safety, must be undertaken to recover gear; and
- (16) All lost gear associated with the fishery surveys must be reported to the NOAA Greater Atlantic Regional Fisheries Office Protected Resources Division (nmfs.gar.incidental-take@noaa.gov) within 24 hours of the documented time of missing or lost gear. This report must include information on any markings on the gear and any efforts undertaken or planned to recover the gear.

4. Monitoring and Reporting Requirements

When conducting the specified activities in the specified geographic region, Project Company 1 must implement the following monitoring and reporting measures:

- (a) *Protected species observer (PSO) and passive acoustic monitoring (PAM) operator qualifications.* Project Company 1 must implement the following measures applicable to PSOs and PAM operators:
 - (1) Project Company 1 must use independent, NMFS-approved PSOs and PAM operators, (*i.e.*, the PSOs and PAM operators must be employed by a third-party observer provider), must have no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant crew with regard to the presence of protected species and mitigation requirements;
 - (2) All PSOs and PAM operators must have successfully attained a bachelor's degree in one of the natural sciences. The educational requirements may be waived if the PSO or PAM operator has acquired the relevant skills through a suitable amount of alternate experience. Requests for such a waiver must be submitted to NMFS

Office of Protected Resources and must include written justification containing alternative experience¹⁴. All PSOs and PAM operators should demonstrate good standing and consistently good performance of all assigned duties;

- (3) All PSOs must have:
 - (i) Visual acuity in both eyes (with correction of vision being permissible) sufficient enough to discern moving targets on the water's surface with the ability to estimate the target size and distance (binocular use is allowable);
 - (ii) Ability to conduct field observations and collect data according to the assigned protocols;
 - (iii) Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
 - (iv) Writing skills sufficient to document observations, including but not limited to: the number and species of marine mammals observed, the dates and times of when in-water construction activities were conducted, the dates and time when in-water construction activities were suspended to avoid potential incidental take of marine mammals from construction noise within a defined shutdown zone, and marine mammal behavior; and
 - (v) Ability to communicate orally, by radio, or in-person, with project personnel to provide real-time information on marine mammals observed in the area.
- (4) All PSOs must be trained in northwestern Atlantic Ocean marine mammal identification and behaviors and must be able to conduct field observations and collect data according to assigned protocols. Additionally, PSOs must have the ability to work with all required and relevant software and equipment necessary during observations (as described in paragraphs (b)(5) and (b)(6) of this section);
- (5) All PSOs and PAM operators must successfully complete a relevant training course within the last 5 years, including obtaining a certificate of course completion;
- (6) PSOs are responsible for obtaining NMFS' approval. NMFS may approve PSOs as conditional or unconditional. A conditionally-approved PSO may be one who has completed training in the last 5 years but has not yet attained the requisite field experience. An unconditionally approved PSO is one who has completed training within the last 5 years and attained the necessary experience (*i.e.*, demonstrate experience with monitoring for marine mammals at clearance and shutdown zone sizes similar to those produced during the respective activity);

¹⁴ Alternate experience that may be considered includes, but is not limited to: previous work experience conducting academic, commercial, or government-sponsored marine mammal visual and/or acoustic surveys; or previous work experience as a PSO/PAM operator.

- (7) At least one on-duty PSO for each activity (*e.g.*, foundation installation, cable landfall construction, and HRG surveys) must be designated as the Lead PSO. The Lead PSO must meet the minimum requirements described in section 4(a)(2) through (5) and have a minimum of ninety days of at-sea experience visually monitoring marine mammals, including baleen whales, and no more than eighteen months may have elapsed since the conclusion of their last at-sea experience;
- (8) PSOs for cable landfall construction (*i.e.*, vibratory pile installation and removal) and HRG surveys may be unconditionally or conditionally approved. A conditionally approved PSO must be paired with an unconditionally approved PSO. PSOs for foundation installation must be unconditionally approved;
- (9) PAM operators are responsible for obtaining NMFS approval. To be approved as a PAM operator, the person must meet the following qualifications:
 - (i) Demonstrate that they have prior experience with relevant acoustic software and equipment and real-time acoustic detection systems and/or have completed specialized training for operating PAM systems and detecting and identifying Atlantic Ocean marine mammals sounds, in particular: North Atlantic right whale sounds, humpback whale sounds, and how to deconflict them from similar North Atlantic right whale sounds, and other co-occurring species' sounds in the area including sperm whales;
 - (ii) Distinguish between whether a marine mammal or other species sound is detected, possibly detected, or not detected;
 - (iii) Review and classify acoustic detections in real-time (prioritizing North Atlantic right whales and noting detection of other cetaceans) during the real-time monitoring periods where localization of sounds or deriving bearings and distance are possible and demonstrate experience in using this technique;
 - (iv) Have the qualifications and relevant experience/training to safely deploy and retrieve equipment and program the software, as necessary; and
 - (v) Test software and hardware functionality prior to operation.
- (10) Project Company 1 must submit NMFS previously approved PSOs and PAM operators to NMFS Office of Protected Resources for review and confirmation of their approval for specific roles at least 30 business days prior to commencement of the activities requiring PSOs and/or PAM operators or 15 business days prior to when new PSOs and/or PAM operators are required, after activities have commenced;
- (11) For prospective PSOs and PAM operators not previously approved, or for PSOs and PAM operators whose approval is not current, Project Company 1 must submit resumes for approval at least 60 business days prior to PSO and PAM operator use. Resumes must include information related to relevant education,

experience, and training, including dates, duration, location, and description of prior PSO or PAM operator experience. Resumes must be accompanied by relevant documentation of successful completion of necessary training;

- (12) PSOs may work as PAM operators and vice versa, pending NMFS-approval; however, they may only perform one role at any single time and must not exceed work time restrictions, which must be tallied cumulatively; and
- (13) All PSOs and PAM operators must complete a Permits and Environmental Compliance Plan training and a 2-day refresher session that must be held with the PSO/PAM operator provider and Project compliance representative(s) prior to the start of in-water project activities requiring PSOs and PAM operators.

(b) *General PSO and PAM operator requirements.* The following measures apply to PSOs and PAM operators and must be implemented by Project Company 1:

- (1) PSOs must monitor for marine mammals prior to, during, and following all impact pile driving, vibratory pile driving, and HRG surveys that use sub-bottom profilers (with specific monitoring durations and needs described in paragraphs (c) through (f) of this section, respectively). Monitoring must be done while free from distractions and in a consistent, systematic, and diligent manner;
- (2) All PSOs must be located at the best vantage point(s) on any platform, as determined by the Lead PSO. PAM operators may be located on a vessel or remotely on-shore, but must have the appropriate equipment (*i.e.*, computer station equipped with a data collection software system and acoustic data analysis software) available wherever they are stationed, and data or data products must be streamed in real-time or in near real-time;
- (3) All on-duty PSOs must remain in real-time contact with the on-duty PAM operator(s). PAM operator(s) must immediately communicate all acoustic detections of marine mammals to PSOs, including any determination regarding species identification, distance, and bearing (where relevant) relative to the pile being driven and the degree of confidence (*e.g.*, possible, probable detection) in the determination. All on-duty PSOs and PAM operator(s) must remain in contact with the on-duty construction personnel responsible for implementing mitigations (*e.g.*, delay to pile driving) to ensure communication on marine mammal observations can easily, quickly, and consistently occur between all on-duty PSOs, PAM operator(s), and on-water Project personnel;
- (4) The PAM operator must inform the Lead PSO(s) on duty of animal detections, including any determination regarding species identification, distance, bearing, and degree of confidence in the determinations, approaching or within applicable ranges of interest to the activity occurring via the data collection software system, (*e.g.*, *Mysticetus* or similar system) who must be responsible for requesting that the designated crewmember implement the necessary mitigation procedures (*i.e.*, delay);

- (5) PSOs must use high magnification (25x) binoculars, standard handheld (7x) binoculars, and the naked eye to search continuously for marine mammals. During foundation installation, at least two PSOs on the pile driving-dedicated PSO vessel(s) must be equipped with functional Big Eye binoculars (*e.g.*, 25 x 150; 2.7 view angle; individual ocular focus; height control); these must be pedestal mounted on the deck at the best vantage point that provides for optimal sea surface observation and PSO safety;
 - (6) During periods of low visibility (*e.g.*, darkness, rain, fog, poor weather conditions, *etc.*), PSOs must use alternative technology (*i.e.*, infrared or thermal cameras) to monitor the clearance and shutdown zones, as approved by NMFS;
 - (7) PSOs and PAM operators must not exceed 4 consecutive watch hours on duty at any time, must have a 2-hour (minimum) break between watches, and must not exceed a combined watch schedule of more than 12 hours in a 24-hour period. If the schedule includes PSOs and PAM operators on-duty for 2-hour shifts, a minimum 1-hour break between watches must be allowed; and
 - (8) During daylight hours when equipment is not operating, Project Company 1 must ensure that visual PSOs conduct, as rotation schedules allow, observations for comparison of sighting rates and behavior with and without use of the specified acoustic sources. Off-effort PSO monitoring must be reflected in the monthly PSO monitoring reports.
- (c) *PSO and PAM operator requirements during WTG, OSS, and Met Tower foundation installation.* The following measures apply to PSOs and PAM operators during WTG, OSS, and Met Tower foundation installation and must be implemented by Project Company 1:
- (1) At least three on-duty PSOs must be stationed and observing from the pile driving activity platform. Additionally, Project Company 1 must use two dedicated-PSO vessels and each vessel must have at least three PSOs on duty. Project Company 1 may request NMFS approval to use alternative technology *in lieu* of one or two of the dedicated PSO vessels that provide similar marine mammal detection capabilities. If NMFS approves the use of alternative technology *in lieu* of the additional PSO vessels, Project Company 1 must abide by any conditions of approved, as specified by NMFS;
 - (2) PAM operator(s) must be actively monitoring for marine mammals in accordance with a NMFS-approved PAM Plan;
 - (3) PSOs and PAM operator(s), using a NMFS-approved PAM system, must monitor for marine mammals 60 minutes prior to, during, and 30 minutes following all pile-driving. If PSOs cannot visually monitor the minimum visibility zone for the 60 minutes prior to and during pile driving, pile-driving operations must not commence or must shutdown if they are currently active; and

- (4) Project Company 1 must conduct PAM for at least 24 hours immediately prior to pile driving activities. The PAM operator must review all detections from the previous 24-hour period prior to pile driving.
- (d) *PSO requirements during cable landfall construction.* The following measures apply to PSOs during cofferdam installation and removal and must be implemented by Project Company 1:
 - (1) At least two PSOs must be on active duty during all activities related to the installation and removal of cofferdams; and
 - (2) PSOs must monitor the clearance zone for the presence of marine mammals for 30 minutes before, throughout the installation of the sheet piles, and for 30 minutes after all vibratory pile driving activities have ceased. Sheet pile installation must only commence when visual clearance zones are fully visible (*e.g.*, not obscured by darkness, rain, fog, *etc.*) and clear of marine mammals, as determined by the Lead PSO, for at least 30 minutes immediately prior to the initiation of vibratory pile driving.
- (e) *PSO requirements during HRG surveys.* The following measures apply to PSOs during HRG surveys using CHIRPs and sparkers and must be implemented by Project Company 1:
 - (1) Between four and six PSOs must be present on every 24-hour survey vessel and two to three PSOs must be present on every 12-hour survey vessel;
 - (2) At least one PSO must be on active duty monitoring during HRG surveys conducted during daylight (*i.e.*, from 30 minutes prior to civil sunrise through 30 minutes following civil sunset) and at least two PSOs must be on active duty monitoring 30 minutes before, during, and 30 minutes after HRG surveys conducted at night;
 - (3) PSOs on HRG vessels must begin monitoring 30 minutes prior to activating acoustic sources, during the use of these acoustic sources, and for 30 minutes after use of these acoustic sources has ceased;
 - (4) Any observations of marine mammals must be communicated to PSOs on all nearby survey vessels during concurrent HRG surveys; and
 - (5) During daylight hours when survey equipment is not operating, Project Company 1 must ensure that visual PSOs conduct, as rotation schedules allow, observations for comparison of sighting rates and behavior with and without use of the specified acoustic sources. Off-effort PSO monitoring must be reflected in the monthly PSO monitoring reports.
- (f) *Monitoring requirements during fisheries monitoring surveys.* The following measures apply during fisheries monitoring surveys and must be implemented by Project Company 1:

- (1) All captains and crew conducting fishery surveys must be trained in marine mammal detection and identification; and
- (2) Marine mammal monitoring must be conducted within 1 nmi from the planned survey location by the trained captain and/or a member of the scientific crew for 15 minutes prior to deploying gear, throughout gear deployment and use (unless using ropeless gear), and for 15 minutes after haul back.

(g) *Reporting.* Project Company 1 must comply with the following reporting measures:

- (1) Prior to initiation of any specified activities, Project Company 1 must demonstrate, in a report submitted to NMFS Office of Protected Resources, that all required training for Project Company 1 personnel (including the vessel crews, vessel captains, PSOs, and PAM operators) has been completed;
- (2) Project Company 1 must use a standardized reporting system during the effective period of the LOA. All data collected related to the Project must be recorded using industry-standard software that is installed on field laptops and/or tablets. Unless stated otherwise, all reports must be submitted to NMFS Office of Protected Resources (*PR.ITP.MonitoringReports@noaa.gov*), dates must be in MM/DD/YYYY format, and location information must be provided in Decimal Degrees with the coordinate system information (*e.g.*, North American Datum of 1983 (NAD83), World Geodetic System 1984 (WGS84), *etc.*);
- (3) For all visual monitoring efforts and marine mammal sightings, the following information must be collected and reported to NMFS Office of Protected Resources:
 - (i) The date and time that monitored activity begins or ends;
 - (ii) The construction activities occurring during each observation period;
 - (iii) The watch status (*i.e.*, sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);
 - (iv) The PSO who sighted the animal;
 - (v) The time of sighting; the weather parameters (*e.g.*, wind speed, percent cloud cover, visibility);
 - (vi) The water conditions (*e.g.*, Beaufort sea state, tide state, water depth);
 - (vii) All marine mammal sightings, regardless of distance from the activity;
 - (viii) The species (or lowest possible taxonomic level possible);
 - (ix) The pace of the animal(s);
 - (x) The estimated number of animals (minimum/maximum/high/low/best);

- (xi) The estimated number of animals by cohort (*e.g.*, adults, yearlings, juveniles, calves, group composition, *etc.*);
 - (xii) The description (*i.e.*, as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);
 - (xiii) The description of any marine mammal behavioral observations (*e.g.*, observed behaviors such as feeding or traveling) and observed changes in behavior, including an assessment of behavioral responses thought to have resulted from the specific activity;
 - (xiv) The animal's closest distance and bearing from the pile being driven or specified HRG equipment and estimated time entered or spent within the Level A harassment and/or Level B harassment zone(s);
 - (xv) The activity at time of sighting (*e.g.*, impact pile driving, vibratory pile driving, construction surveys);
 - (xvi) The use of any noise attenuation device(s); and specific phase of activity (*e.g.*, ramp-up of HRG equipment, HRG acoustic source on/off, soft-start for pile driving, active pile driving, *etc.*);
 - (xvii) The marine mammal occurrence in Level A harassment or Level B harassment zones;
 - (xviii) The description of any mitigation-related action implemented, or mitigation-related actions called for but not implemented, in response to the sighting (*e.g.*, delay, shutdown, *etc.*) and time and location of the action;
 - (xix) Any other human activity in the area; and
 - (xx) All other applicable information, as required in any LOA issued under Section 5 herein.
- (4) If a marine mammal is acoustically detected during PAM, the following information must be recorded and reported to NMFS:
- (i) Location of hydrophone (latitude and longitude; in decimal degrees) and site name;
 - (ii) Bottom depth and depth of recording unit (in meters);
 - (iii) Recorder (model & manufacturer) and platform type (*i.e.*, bottom-mounted, electric glider, *etc.*), and instrument ID of the hydrophone and recording platform (if applicable);

- (iv) Time zone for sound files and recorded date/times in data and metadata (in relation to Universal Coordinated Time (UTC); *i.e.*, Eastern Standard Time (EST) time zone is UTC-5);
 - (v) Duration of recordings (start/end dates and times; in International Organization for Standardization (ISO) 8601 format, yyyy-mm-ddTHH:MM:SS.sssZ);
 - (vi) Deployment/retrieval dates and times (in ISO 8601 format);
 - (vii) Recording schedule (must be continuous);
 - (viii) Hydrophone and recorder sensitivity (in dB re. 1 microPascal (μ Pa));
 - (ix) Calibration curve for each recorder;
 - (x) Bandwidth/sampling rate (in Hz);
 - (xi) Sample bit-rate of recordings; and
 - (xii) Detection range of equipment for relevant frequency bands (in meters) wherein, the following information must be noted:
 - (1) Species identification (if possible);
 - (2) Call type and number of calls (if known);
 - (3) Temporal aspects of vocalization (date, time, duration, *etc.*;
 - (4) Date times in ISO 8601 format);
 - (5) Confidence of detection (detected, or possibly detected);
 - (6) Comparison with any concurrent visual sightings;
 - (7) Location and/or directionality of call (if determined) relative to acoustic recorder or construction activities;
 - (8) Location of recorder and construction activities at time of call;
 - (9) Name and version of detection or sound analysis software used, with protocol reference;
 - (10) Minimum and maximum frequencies viewed/monitored/used in detection (in Hz); and
 - (11) Name of PAM operator(s) on duty.
- (5) Project Company 1 must compile and submit weekly reports during foundation installation to NMFS Office of Protected Resources that document: the daily start and stop of all pile driving associated with the Project; the start and stop of associated observation periods by PSOs and PAM operators; details on the

deployment of PSOs and PAM operators; a record of all observations/detections of marine mammals (acoustic and visual); any mitigation actions (or if mitigation actions could not be taken, provide reasons why); details on the noise attenuation system(s) used and its performance; and all abbreviated SFV results¹⁵, including any indications that distances to the identified Level A harassment and Level B harassment thresholds for marine mammals were exceeded and an explanation of factors that contributed to each exceedance (if found) and corrective actions that were taken to avoid exceedance on subsequent piles. The weekly report must also identify which turbines become operational and when (a map must be provided). Weekly reports are due on Wednesday for the previous week (Sunday through Saturday). Once all foundation pile installation is completed, weekly reports are no longer required by Project Company 1;

- (6) Project Company 1 must compile and submit monthly reports to NMFS Office of Protected Resources during foundation installation that include a summary of all information in the weekly reports, including Project activities carried out in the previous month, vessel transits (number, type of vessel, MMIS number, and route), number of piles installed, all detections of marine mammals, and any mitigative action taken. Monthly reports are due on the 15th of the month for the previous month. The monthly report must also identify which turbines became operational and when (a map must be provided). Once all foundation pile installation is completed, monthly reports are no longer required by Project Company 1;
- (7) Project Company 1 must submit a draft annual report to NMFS Office of Protected Resources 90 days following completion of activities each year. Project Company 1 must provide a final report within 30 calendar days following resolution of NMFS' comments on the draft report. The draft and final reports must detail the following: the total number of marine mammals of each species/stock detected and how many were within the designated Level A harassment and Level B harassment zone(s) with comparison to authorized take of marine mammals for the associated activity type; marine mammal detections and behavioral observations before, during, and after each activity; what mitigation measures were implemented (*i.e.*, number of shutdowns or clearance zone delays, *etc.*) or, if no mitigative actions were taken, why not; operational details (*i.e.*, days and duration of impact and vibratory pile driving, days and amount of HRG survey effort, *etc.*); any PAM systems used; the results, effectiveness, and which noise attenuation systems were used during relevant activities (*i.e.*, foundation impact pile driving); summarized information related to situational reporting; and any other important information relevant to the Project, including additional information that may be identified through the adaptive management process;
- (8) Project Company 1 must submit its draft 5-year report to NMFS Office of Protected Resources on all visual and acoustic monitoring conducted within 90 calendar days of the completion of activities occurring under the LOA. A 5-year

¹⁵ Per condition 3(c)(15), all abbreviated SFV reports are due alongside the weekly reports.

report must be prepared and submitted within 60 calendar days following receipt of any NMFS Office of Protected Resources comments on the draft report. The draft and final 5-year report must include, but is not limited to, the following: the total number (annually and across all 5 years) of marine mammals of each species/stock detected and how many were detected within the designated Level A harassment and Level B harassment zone(s) with comparison to authorized take of marine mammals for the associated activity; summary table(s) indicating the amount of each activity type (e.g., pile installation, HRG) completed in each of the 5 years and total; Environmental Systems Research Institute, Inc. (ESRI) vector Geographic Information System (GIS) shapefile(s) of the final location of all piles, cable routes, and other permanent structures including an indication of what year it was installed and began operating; ESRI vector GIS shapefile of all North Atlantic right whale sightings, including dates and group sizes; a 5-year summary and evaluation of all SFV data collected; a 5-year summary and evaluation of all PAM data collected; a 5-year summary and evaluation of marine mammal behavioral observations; a 5-year summary and evaluation of mitigation and monitoring implementation and effectiveness; and a list of recommendations to inform environmental compliance assessments for future offshore wind actions;

- (9) Project Company 1 must provide the initial results of the thorough SFV measurements (see subsection 4(15)) to NMFS Office of Protected Resources in an interim report after each foundation installation event as soon as they are available and prior to any subsequent foundation installation, but no later than 48 hours after each completed foundation installation event. The report must include, at minimum: hammer energies and schedule used during pile driving, including the total number of strikes and the maximum hammer energy; the model-estimated acoustic ranges ($R_{95\%}$) to compare with the real-world sound field measurements; peak sound pressure level (SPL_{pk}), root-mean-square sound pressure level that contains 90 percent of the acoustic energy (SPL_{rms}), and sound exposure level (SEL, in single strike for pile driving, SEL_{ss}), for each hydrophone, including at least the maximum, arithmetic mean, minimum, median (L_{50}) and L_5 (95 percent exceedance) statistics for each metric; estimated marine mammal Level A harassment and Level B harassment acoustic isopleths, calculated using the maximum-over-depth L_5 (95 percent exceedance level, maximum of both hydrophones) of the associated sound metric; comparison of modeled results assuming 10-dB attenuation against the measured marine mammal Level A harassment and Level B harassment acoustic isopleths; estimated transmission loss coefficients; pile identifier name, location of the pile and each hydrophone array in latitude/longitude; depths of each hydrophone; one-third-octave band single strike SEL spectra; if filtering is applied, full filter characteristics must be reported; and hydrophone specifications including the type, model, and sensitivity. Project Company 1 must also report any immediate observations which are suspected to have a significant impact on the results including but not limited to: observed noise mitigation system issues, obstructions along the measurement transect, and technical issues with hydrophones or recording devices. If any *in-situ* calibration checks for hydrophones reveal a calibration drift greater than 0.75 dB, pistonphone calibration checks are

inconclusive, or calibration checks are otherwise not effectively performed, Project Company 1 must indicate full details of the calibration procedure, results, and any associated issues in the 48-hour interim reports;

- (10) Project Company 1 must conduct abbreviated SFV for all foundation installations for which the thorough SFV monitoring is not carried out, whereas a single acoustic recorder must be placed at an appropriate distance from the pile. All results must be included in the weekly reports. Any indications that distances to the identified Level A harassment and Level B harassment thresholds for marine mammals were exceeded must be addressed by Project Company 1, including an explanation of factors that contributed to the exceedance and corrective actions that were taken to avoid exceedance on subsequent piles;
- (11) The final results of all SFV measurements from all foundation installations must be submitted by Project Company 1 no later than 90 calendar days following completion of all annual SFV measurements. The final reports must include all details included in the interim report and descriptions of any notable occurrences, explanations for results that were not anticipated, or actions taken during foundation installation. The final report must also include at least the maximum, mean, minimum, median (L_{50}) and L_5 (95 percent exceedance) statistics for each metric; the SEL and SPL power spectral density and/or one-third octave band levels (usually calculated as decade band levels) at the receiver locations should be reported; range of transmission loss coefficients; the local environmental conditions, such as wind speed, transmission loss data collected on-site (or the sound velocity profile); baseline pre-activity and post-activity ambient sound levels (broadband and/or within frequencies of concern); a description of depth and sediment type, as documented in the Construction and Operation Plan (COP), at the recording and foundation installation locations; the extents of the measured Level A harassment and Level B harassment zone(s); hammer energies required for pile installation and the number of strikes per pile; the hydrophone equipment and methods (*i.e.*, recording device, bandwidth/sampling rate; distance from the pile where recordings were made; the depth of recording device(s)); a description of the SFV measurement hardware and software, including software version used, calibration data, bandwidth capability and sensitivity of hydrophone(s), any filters used in hardware or software, any limitations with the equipment, and other relevant information; the spatial configuration of the noise attenuation device(s) relative to the pile; a description of the noise abatement system and operational parameters (*e.g.*, bubble flow rate, distance deployed from the pile, *etc.*), and any action taken to adjust the noise abatement system. A discussion which includes any observations which are suspected to have a significant impact on the results including but not limited to: observed noise mitigation system issues, obstructions along the measurement transect, and technical issues with hydrophones or recording devices;
- (12) If, at any time during the Project, Project Company 1 becomes aware of any issue or issues which may (to any reasonable subject-matter expert, including the

persons performing the measurements and analysis) call into question the validity of any measured Level A harassment or Level B harassment isopleths to a significant degree, which were previously transmitted or communicated to NMFS Office of Protected Resources, Project Company 1 must inform NMFS Office of Protected Resources within 1 business day of becoming aware of this issue or before the next pile is driven, whichever comes first;

- (13) Full PAM detection data, metadata, and location of recorders (or GPS tracks, if applicable) must be submitted by Project Company 1 within 90 calendar days following completion of foundation installation pile driving each season and every 90 calendar days for transit lane PAM using the International Organization for Standardization (ISO) standard metadata forms and instructions available on the NMFS Passive Acoustic Reporting System website (<https://www.fisheries.noaa.gov/resource/document/passive-acoustic-reporting-system-templates>). Concurrently, the full acoustic recordings from real-time systems must also be sent to the National Centers for Environmental Information (NCEI, <https://www.ncei.noaa.gov/products/passive-acoustic-data>) for archiving;
- (14) Inclusive of all instances wherein an exemption to a measure is taken (which must be reported to NMFS Office of Protected Resources within 24 hours), Project Company 1 must submit situational reports if the following circumstances occur, including but not limited to the following:
 - (i) If a North Atlantic right whale is sighted with no visible injuries or entanglement at any time by project PSOs or project personnel, Project Company 1 must, as soon as possible but within 24 hours, download and complete the *Real-Time North Atlantic Right Whale Reporting Template* spreadsheet found here: <https://www.fisheries.noaa.gov/resource/document/template-datasheet-real-time-north-atlantic-right-whale-acoustic-and-visual> and save the completed spreadsheet as a .csv file and email it to NMFS NEFSC-PSD (ne.rw.survey@noaa.gov), NMFS GARFO-PRD (nmfs.gar.incidental-take@noaa.gov), and NMFS OPR (pr.itp.monitoringreports@noaa.gov). If unable to report a sighting through the spreadsheet within 24 hours, call the relevant regional hotline (Greater Atlantic Region's (Maine to Virginia/North Carolina border) Hotline at 866-755-6622 or the Southeast Region's (North Carolina through the Gulf of Mexico) Hotline at 877-WHALE-HELP (877-942-5343). Report the following information: the time (note time format), date (MM/DD/YYYY), location (latitude/longitude in decimal degrees; coordinate system used) of the observation, number of whales, animal description/certainty of observation (follow up with photos/video if taken), reporter's contact information, and lease area number/project name, PSO/personnel name who made the observation, and PSO provider company (if applicable) (PAM detections are not reported to the Hotlines). If unable to report via the template or the regional hotline, enter the sighting via the WhaleAlert app (<http://www.whalealert.org/>). If this is not possible, report the sighting

to the U.S. Coast Guard via channel 16. The report to the Coast Guard must include the same information as would be reported to the Hotline;

- (ii) If a North Atlantic right whale is detected via real-time PAM, data must be submitted using the NMFS Passive Acoustic Reporting System Metadata and Detection data spreadsheets and instructions available at <https://www.fisheries.noaa.gov/resource/document/passive-acoustic-reporting-system-templates>, as soon as feasible but no longer than 24 hours after the detection;
- (iii) If a large whale other than a North Atlantic right whale is observed at any time by PSOs or Project personnel, Project Company 1 must report the sighting to the WhaleAlert app (<http://www.whalealert.org/>);
- (iv) In the event that personnel involved in the Project discover a stranded, entangled, injured, or dead marine mammal, Project Company 1 must immediately report the observation to NMFS. If in the Greater Atlantic Region (Maine through Virginia), call the NMFS Greater Atlantic Stranding Hotline (866-755-6622), and if in the Southeast Region (North Carolina through Florida), call the NMFS Southeast Stranding Hotline (877-WHALE-HELP (877-942-5343)). Separately, the Project Company 1 must report, within 24 hours, the incident to NMFS Office of Protected Resources (PR.ITP.MonitoringReports@noaa.gov) and, if in the Greater Atlantic Region, to the NMFS Greater Atlantic Regional Fisheries Office (GARFO; nmfs.gar.incidental-take@noaa.gov) or, if in the Southeast Region, to the NMFS Southeast Regional Office (SERO; secmammalreports@noaa.gov). The report must include contact (*e.g.*, name, phone number, *etc.*), time, date, and location (*i.e.*, specify coordinate system) 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); photographs or video footage of the animal(s) (if available); and general circumstances under which the animal was discovered; and
- (v) In the event of a suspected or confirmed vessel strike of a marine mammal by any vessel associated with the Project or other means by which Project activities caused a non-auditory injury or death of a marine mammal, Project Company 1 must immediately cease activities until the NMFS Office of Protected Resources is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of the LOA, and Project Company 1 must immediately report the incident to NMFS. If in the Greater Atlantic Region (Maine through Virginia), call the NMFS Greater Atlantic Stranding Hotline (866-755-6622), and if in the Southeast Region (North Carolina through Florida) call the NMFS Southeast Stranding Hotline (877-WHALE-HELP (877-942-5343)). Separately, Project Company 1

must immediately report the incident to NMFS Office of Protected Resources (*PR.ITP.MonitoringReports@noaa.gov*) and, if in the Greater Atlantic Region, to the NMFS Greater Atlantic Regional Fisheries Office (GARFO; *nmfs.gar.incidental-take@noaa.gov*) or, if in the Southeast Region, to the NMFS Southeast Regional Office (SERO; *secmammalreports@noaa.gov*). The report must include time, date, and location (*i.e.*, specify coordinate system) of the incident; species identification (if known) or description of the animal(s) involved (*i.e.*, identifiable features including animal color, presence of dorsal fin, body shape and size, *etc.*); vessel strike reported information (*e.g.*, name, affiliation, email for person completing the report); vessel strike witness (if different than the reporter) information (*e.g.*, name, affiliation, phone number, platform for person witnessing the event, *etc.*); vessel name and/or MMSI number; vessel size and motor configuration (inboard, outboard, jet propulsion); vessel's speed leading up to and during the incident; vessel's course/heading and what operations were being conducted (if applicable); part of vessel that struck marine mammal (if known); vessel damage notes; status of all sound sources in use at the time of the strike; if the marine mammal was seen before the strike event; description of behavior of the marine mammal before the strike event (if seen) and behavior immediately following the strike; 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 (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility, *etc.*) immediately preceding the strike; estimated (or actual, if known) size and length of marine mammal that was struck; if available, description of the presence and behavior of any other marine mammals immediately preceding the strike; other animal-specific details, if known (*e.g.*, length, sex, age class); behavior or estimated fate of the marine mammal post-strike (*e.g.*, dead, injured but alive, injured and moving, external visible wounds (linear wounds, propeller wounds, non-cutting blunt-force trauma wounds), blood or tissue observed in the water, status unknown, disappeared); to the extent practicable, any photographs or video footage of the marine mammal(s); and, any additional notes the witness may have from the interaction. For any numerical values provided (*i.e.*, location, animal length, vessel length, *etc.*), please provide if values are actual or estimated. NMFS Office of Protected Resources may impose additional measures to minimize the likelihood of further prohibited take and ensure MMPA compliance. Project Company 1 may not resume their activities until notified by NMFS Office of Protected Resources.

- (15) Any lost gear associated with the fishery surveys must be reported to the NOAA Greater Atlantic Regional Fisheries Office Protected Resources Division (*nmfs.gar.incidentaltake@noaa.gov*) as soon as possible or but no later than 24 hours of the documented time of missing or lost gear. This report must include information on any markings on the gear and any efforts undertaken or planned to

recover the gear. All reasonable efforts, that do not compromise human safety, must be undertaken to recover gear.

5. Modifications to Letter of Authorization

(a) This LOA may be modified, upon request by Project Company 1, provided that:

- (1) The specified activities and mitigation, monitoring, and reporting measures, as well as the anticipated impacts, are the same as those described and analyzed for promulgation of the regulations (see 50 CFR § 217.300 - 217.309 (excluding changes made pursuant to the adaptive management provision in paragraph (c) of this section); and
- (2) NMFS Office of Protected Resources determines that the mitigation, monitoring, and reporting measures required by the previous LOA were implemented successfully.

(b) Any LOA modification request by Project Company 1 that includes changes to the activity or the mitigation, monitoring, or reporting measures (excluding changes made pursuant to the adaptive management provision found in Section 5(c)), may be approved, provided that:

- (1) NMFS Office of Protected Resources determines that the changes to the activity or the mitigation, monitoring, or reporting do not change the findings made for the regulations in this subpart and do not result in more than a minor change in the maximum annual or five-year total estimated number of takes for any species; and
- (2) NMFS Office of Protected Resources may, if appropriate, publish a notice of proposed LOA in the *Federal Register*, including the associated analysis of the change, and solicit public comment before issuing the LOA.

(c) *Adaptive Management*: NMFS Office of Protected Resources may modify (including delete, modify, or add to) the existing mitigation, monitoring, or reporting measures (after consulting with Project Company 1 regarding the practicability of the modifications), if doing so creates a reasonable likelihood of more effectively accomplishing the goals of the mitigation and monitoring.

- (1) Possible sources of data that could contribute to the decision to modify the mitigation, monitoring, or reporting measures in an LOA include, but are not limited to:
 - (i) Results from Project Company 1's monitoring;
 - (ii) Results from other marine mammals and/or sound research or studies; and
 - (iii) Any information that reveals marine mammals may have been taken in a manner, extent, or number not authorized by the regulations in this subpart or subsequent LOA.

- (2) If the modifications to the mitigation, monitoring, or reporting measures are substantial, NMFS Office of Protected Resources shall publish a notice of proposed LOA in the Federal Register and solicit public comment.
- (3) If NMFS Office of Protected Resources determines that an emergency exists that poses a significant risk to the well-being of species or stocks of marine mammals in Table 1, this LOA may be modified without prior notice or opportunity for public comment. Notice would be published in the *Federal Register* within 30 days of the action.

Should you have questions regarding this LOA or the required conditions found herein, please contact NMFS Office of Protected Resources staff, Jaclyn Daly (jaclyn.daly@noaa.gov) and Kelsey Potlock (kelsey.potlock@noaa.gov).

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Kimberly Damon-Randall,
Director, Office of Protected Resources,
National Marine Fisheries Service.

10/24/2024

Date

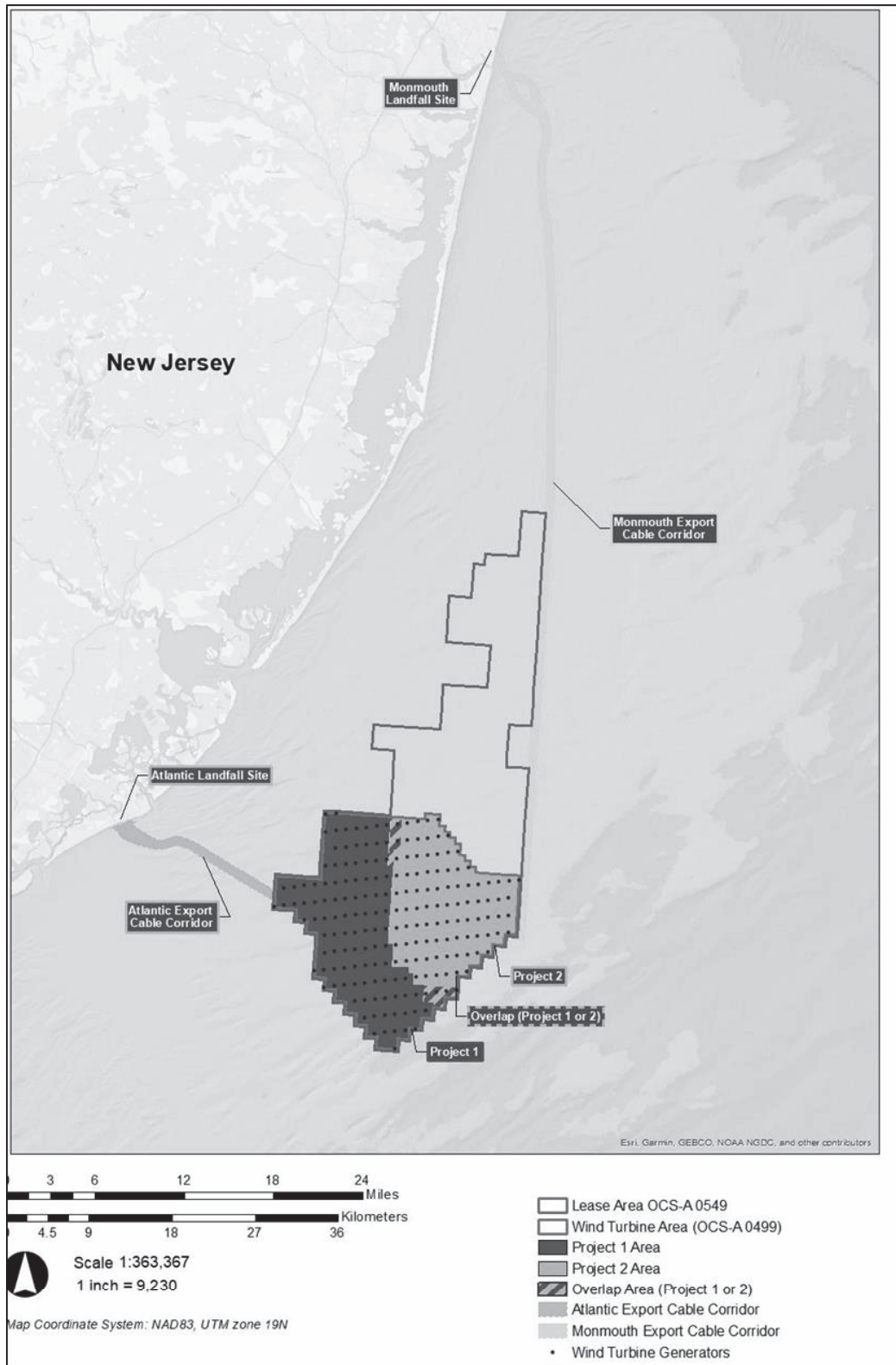


Figure 1 — Project Location

Table 1 – Maximum Annual and 5-year Total Take Authorized For the Atlantic Shores South Project, Incidental to All Specified Activities

Common Name	Scientific Name	Stock	Maximum Annual Take		5-year Total Take	
			Level A Harassment	Level B Harassment	Level A Harassment	Level B Harassment
Order Artiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Balaenidae						
North Atlantic right whale*	<i>Eubalaena glacialis</i>	Western Atlantic	0	13	0	25
Family Balaenopteridae (rorquals)						
Fin whale*	<i>Balaenoptera physalus</i>	Western North Atlantic	4	18	8	38
Humpback whale	<i>Megaptera novaeangliae</i>	Gulf of Maine	4	17	8	33
Minke whale	<i>Balaenoptera acutorostrata</i>	Canadian Eastern Coastal	17	161	29	321
Sei whale*	<i>Balaenoptera borealis</i>	Nova Scotia	2	11	3	25
Family Physeteridae						
Sperm whale*	<i>Physeter macrocephalus</i>	North Atlantic	0	7	0	15
Family Delphinidae						
Atlantic spotted dolphin	<i>Stenella frontalis</i>	Western North Atlantic	0	400	0	1,000

Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>	Western North Atlantic	1	207	2	413
Bottlenose dolphin	<i>Tursiops truncatus</i>	Western North Atlantic - Offshore	0	3,836	0	8,153
		Northern Migratory Coastal	0	1,949	0	3,087
Common dolphin	<i>Delphinus delphis</i>	Western North Atlantic	0	370	0	906
Long-finned pilot whale	<i>Globicephala melas</i>	Western North Atlantic	0	66	0	172
Short-finned pilot whale	<i>Globicephala macrorhynchus</i>	Western North Atlantic	0	20	0	52
Risso's dolphin	<i>Grampus griseus</i>	Western North Atlantic	2	110	3	280
<i>Family Phocoenidae (porpoises)</i>						
Harbor porpoise	<i>Phocoena phocoena</i>	Gulf of Maine/Bay of Fundy	13	191	21	338
<i>Order Carnivora – Superfamily Pinnipedia</i>						
<i>Family Phocidae (earless seals)</i>						
Gray seal	<i>Halichoerus grypus</i>	Western North Atlantic	2	323	4	696
Harbor seal	<i>Phoca vitulina</i>	Western North Atlantic	8	738	12	1,570

* Endangered Species Act-listed species

Table 2 – Vessel Separation Distances

Vessel Separation Distances (meters)	
North Atlantic right whale (and unidentifiable large whales)	500
Other ESA-listed large whale species	500
Other Non-ESA-listed large whale species	100
Other marine mammals ^a	50

a – The vessel separation requirement does not apply to small delphinids of the following genera: *Delphinus*, *Stenella*, *Lagenorhynchus*, and *Tursiops*.

Table 3 – Clearance, Shutdown, and Minimum Visibility Zones

Permanent Foundation Installation – Marine mammal species group-specific zone sizes (meters)			
Pile size and type	12-meter monopiles	15-meter monopiles	5-meter pin piles
Installation method	Impact pile driving		
North Atlantic right whale – visual clearance/shutdown zone	Sighting at any distance from PSOs on pile-driving or dedicated PSO vessels		
North Atlantic right whale – PAM clearance/shutdown zone ^a	10,000		
Other large whales ^{a, b}	Clearance: 2,300 ^c Shutdown: 1,900 ^d		
Delphinids ^a	Clearance: 100 ^c Shutdown: 100 ^d		
Harbor porpoises ^a	Clearance: 1,800 ^c Shutdown: 1,500 ^d		
Seals ^a	Clearance: 400 ^c Shutdown: 350 ^d		
Minimum visibility zone ^e	1,900		
Distance to Level B harassment threshold (Acoustic ranges (Flat R _{95%}))	Monopiles (12-m): 4,260 Monopiles (15-m): 4,310 Pin Piles (5-m; pre-piled): 2,470 Pin Piles (5-m; post-piled): 2,810		

a – The PAM system used during clearance and shutdown must be designed to detect marine mammal vocalizations, maximize baleen whale detections, and must be capable of detecting North Atlantic right whales at 10 kilometers (6.2 miles) for pin piles and monopile installations, respectively. NMFS recognizes that detectability of each species' vocalizations will vary based on vocalization characteristics (*e.g.*, frequency content, source level), acoustic propagation conditions, and competing noise sources), such that other marine mammal species (*e.g.*, harbor porpoise) may not be detected at 10 kilometers (6.2 miles).

b – This category is inclusive of all non-North Atlantic right whale ESA-listed species (*i.e.*, sperm whales, fin whales, and sei whales) as well as non-ESA listed large whales (*i.e.*, humpback whale and minke whales).

- c – The clearance zone is equal to the maximum Level A harassment distance for each species group, assuming 10 dB of attenuation, plus 20 percent or a minimum of 100 meters (328 feet) or anywhere within the double bubble curtain system, whichever is greater, and rounded up for PSO clarity. Any animal(s) detected visually or acoustically within the clearance zone triggers a delay to commencement of pile driving.
- d – The shutdown zone is equal to the maximum Level A harassment distance for each species group, assuming 10 dB of attenuation or a minimum of 100 meters (328 feet) or anywhere within the double bubble curtain system, whichever is greater, and rounded up for PSO clarity. Any animal(s) detected visually or acoustically within the shutdown zone triggers a shutdown of pile driving.
- e – PSOs must be able to visually monitor the entire minimum visibility zone during the 60-minutes pre-start clearance monitoring period and during pile driving. The minimum visibility zone is equal to the largest modeled exposure ranges ($ER_{95\%}$) distances to the Level A harassment threshold for low-frequency cetaceans (*i.e.*, fin whale (sei whale proxy) at 1.90 kilometers (1.18 miles)), assuming 10 dB of attenuation and rounded up for PSO clarity.

Table 4 – Distances To Thresholds and Mitigation Zones During Nearshore Cable Landfall Activities

Installation and Removal of Temporary Cofferdams								
Distances to Marine Mammal Thresholds (Meters)								
Marine Mammal Species Groups	Atlantic City Landfall Site				Monmouth Landfall Site			
	Level A Harassment (SEL _{cum})		Level B Harassment (SPL _{RMS})		Level A Harassment (SEL _{cum})		Level B Harassment (SPL _{RMS})	
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
Low-frequency cetaceans	65	65	–	–	45	60	–	–
Mid-frequency cetaceans	0	0	–	–	0	0	–	–
High-frequency cetaceans	490 ^a	540 ^a	–	–	425 ^a	450 ^a	–	–
Phocid Pinnipeds	30	30	–	–	20	20	–	–
All marine mammals	–	–	5,076	7,546	–	–	5,412	11,268
Mitigation Zones (Meters)								
Marine Mammals	Clearance Zone		Shutdown Zone		Clearance Zone		Shutdown Zone	

North Atlantic right whale – visual detection	100	100	100	100
All other Mysticetes and sperm whales	100	100	100	100
Delphinids and pilot whales	50	50	50	50
Harbor porpoises	540	540	540	540
Seals	60	60	60	60

Note: SEL_{cum} = cumulative sound exposure level; SPL_{RMS} = sound pressure level root-mean-square

Table 5 – Distances To The Level B Harassment Threshold For Different Types Of Acoustic Sources and Mitigation Zones During HRG Surveys

Marine mammal species	High-resolution Geophysical (HRG) Site Characterization and Assessment Surveys			
	Level B harassment distance (SPL _{RMS}) (Meters)		Specific zone distance (meters)	
	Sub-bottom Profilers		Clearance zone	Shutdown Zone
	Sparker	Compressed High Intensity Radiated Pulses (CHIRPs)		
North Atlantic right whale (and unidentifiable large whales)	141	56	500	500
Other ESA-listed large whale species			500	100
Other Non-ESA-listed large whale species			500	100
Other marine mammals ^a			100	100

Note: SPL_{RMS} = sound pressure level root-mean-square

a – These zones are applicable to all delphinid cetaceans, harbor porpoises, and pinnipeds, with the exception of delphinid(s) from the genera *Delphinus*, *Lagenorhynchus*, *Stenella* or *Tursiops*.