

# **SOUTHCOAST WIND 2023 LEASE AREA GEOPHYSICAL SURVEY FINAL PROTECTED SPECIES OBSERVER REPORT**

**Final**



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25 September, 2023

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## Acronyms and Abbreviations

BOEM – Bureau of Ocean Energy Management  
COP – Construction and Operations Plan  
CPA – Closest Point of Approach  
DMA - Dynamic Management Areas  
DSLR – Digital Single Lens Reflex  
EMP – Environmental Monitoring Plan  
ESA – Endangered Species Act  
EOL – End of Line  
HRG – High Resolution Geophysical  
IHA – Incidental Harassment Authorization  
LF – Low Frequency  
MBES – Multibeam Echo Sounder  
MMPA – Marine Mammal Protection Act  
MZ – Monitoring zone  
NARW – North Atlantic right whale  
NMFS – National Marine Fisheries Service  
OCS – Outer Continental Shelf  
PSO – Protected Species Observer  
QC – Quality Control  
RPS- PSO Provider company name (not an acronym)  
SBP – Sub-bottom Profiler  
SMA – Seasonal Management Areas  
SOL – Start of Line  
SZ – Shutdown zone  
TVG – Transverse Gradiometer  
USBL – Ultra Short Baseline  
UTC – Coordinated Universal Time  
VSA – Vessel strike avoidance

# 1 EXECUTIVE SUMMARY

This is the Protected Species Report for the SouthCoast Wind Energy LLC (SouthCoast Wind) high resolution geophysical (HRG) site characterization survey completed under: the SouthCoast Wind 2023 Incidental Harassment Authorization (IHA); the SouthCoast Wind 2023 Marine Geophysical and Geotechnical Survey Plan, including addendums and modifications approved by the Bureau for Ocean Energy Management (BOEM), and stipulations in the Commercial Lease for Renewable Energy Development in Outer Continental Shelf (OCS) lease area OCS-A 0521 (Lease), as modified by waivers approved by BOEM.

The SouthCoast Wind 2023 Lease Area HRG survey was conducted by Alpine within federal waters in the SouthCoast Wind Offshore Project Area. The report covers the protected species mitigation and monitoring efforts undertaken by Protected Species Observers (PSOs) that were provided by RPS and deployed on the HRG survey vessel.

Alpine conducted HRG operations using the *Minerva Uno* from 18 May until 10 July 2023. This survey was conducted under the approved BOEM permit for lease OCS-A 0521 (Appendix A). The National Marine Fisheries Service (NMFS) signed the 2023 IHA on 11 May 2023 (Appendix B). The 2023 HRG Survey Environment Monitoring Plan (EMP) is included as Appendix C.

Four PSOs were deployed to the *Minerva Uno* to undertake 24-hour visual monitoring and implement mitigation during survey operations. Mitigation protocols for the survey included: establishment of monitoring zones (MZ) and shutdown zones (SZ) for marine mammals and other protected species including sea turtles; visual monitoring; and vessel strike avoidance (VSA) mitigation measures.

Visual observations were conducted by PSOs for a total of 629 hours and 19 minutes.

A total of 116 visual detection events of marine mammals were made during the survey, consisting of four whale species, two delphinid species, and two seal species. Whale species observed included fin whales (*Balaenoptera physalus*), humpback whales (*Megaptera novaeangliae*), minke whales (*Balaenoptera acutorostrata*), and sei whales (*Balaenoptera borealis*). Delphinids observed included common dolphins (*Delphinus delphis*) and bottlenose dolphins (*Tursiops truncatus*). Seal sightings consisted of gray seals (*Halichoerus grypus*) and harbor seals (*Phoca vitulina*). There were also additional unidentified whales and unidentified delphinids.

There were four sightings of sea turtles that included a Kemp's Ridley sea turtle (*Lepidochelys kempii*), loggerhead sea turtles (*Caretta caretta*), and an unidentified sea turtle.

There were no sightings of dead, injured or entangled marine mammals or sea turtles during this survey. There were also not any sightings of North Atlantic right whales during this survey.

In accordance with stipulations set forth in the BOEM Lease and the NMFS 2021 IHA conditions, a total of 14 mitigation actions were implemented for the HRG sound sources including shutdowns of the sound sources (13 times) and delays to activation of the acoustic sources (one time). There were 50 instances where the vessel executed strike avoidance maneuvers during protected species detections, due to the animal within the separation distance or because of the heading of the animal.

The 2023 IHA authorized 2727 Level B takes for 15 species of marine mammals, including six whale species, six delphinids, two pinniped species and one species of porpoise. The IHA did not include authorization for unidentified whales, dolphins, or seals. No Level A takes were authorized for any species.

A total of 88 individual marine mammals from six species were observed within the predicted 160 decibel radius (where there is a potential for a behavioral response) while an HRG source was active, constituting potential Level B takes. Potential Level B takes included three fin whales, one minke whale, one humpback whale, 42 bottlenose dolphins, 40 common dolphins and one harbor seal.

## 2 INTRODUCTION

Alpine Ocean Seismic Survey (Alpine) was contracted to SouthCoast Wind Energy LLC (SouthCoast Wind) to conduct a high resolution geophysical (HRG) survey off the coast of Massachusetts (MA) and Rhode Island (RI) within the SouthCoast Wind Lease Area OCS-A 0521 (Figure 1). The purpose of the HRG survey was to acquire data for inclusion in the SouthCoast Wind Construction and Operations Plan (COP). The survey vessel used by Alpine is described in Section 3.1 and HRG instrumentation used is described in Section 3.2 of this report.

Alpine contracted with RPS to provide Protected Species Observers (PSOs) to conduct monitoring and mitigation for protected species, including marine mammals, sea turtles, Atlantic sturgeon, and giant manta rays, during survey activities. Monitoring and mitigation procedures that were implemented during the 2023 surveys are described in Section 4 of this report.

HRG surveys were conducted in accordance with the SouthCoast Wind 2023 Incidental Harassment Authorization (IHA) signed by the National Marine Fisheries Service (NMFS) on 11 May 2023, and the BOEM-approved SouthCoast Wind 2023 Geophysical & Geotechnical Survey Plan (2023 Survey Plan). SouthCoast Wind received a “No Objection” from BOEM regarding the 2023 Survey Plan on 27 February 2023; SouthCoast Wind received a “No Objection” for a revised version of the 2023 Survey Plan on 19 April 2023.

On 19 January 2023, SouthCoast Wind submitted a waiver request to BOEM proposing to replace Sections 4.1 General Requirements, 4.3 Geological and Geophysical Survey Requirements, and 4.4 Reporting Requirements of the SouthCoast Wind Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (the BOEM Lease) with the applicable PDCs and BMPs found in BOEM’s notice, last revised on 22 November 2021 and, at the Lessee’s discretion, any subsequent updates. On 27 February 2023, BOEM approved the waiver request, stating that for the 2023 G&G Survey Plan, the BMPs [and PDCs] replace the previous protected species mitigation measures found in the lease stipulations. As such, HRG surveys were also conducted in accordance with the BOEM and NMFS Project Design Criteria (PDCs) and Best Management Practices (BMPs) for Protected Species Associated with Offshore Wind Data Collection (2021).

NMFS and BOEM have advised that sound-producing survey equipment operating in the hearing range of marine species (i.e. <180 kilohertz [kHz]) has the potential to cause acoustic harassment, in particular to marine mammals. Protected species monitoring was conducted in accordance with BOEM and NMFS standards.

### 2.1 BOEM and NMFS Reporting Requirements

This report includes the information listed in Table 1, as required by the SouthCoast Wind Lease, the IHA issued by NMFS, and the PDCs and BMPs.

As mentioned previously, protected species monitoring was conducted in accordance with BOEM and NMFS standards and the IHA signed by NMFS on 11 May 2023. Considerations were also made utilizing the PDCs and BMPs for protected species associated with offshore wind data collection issued under a revision on 22 November 2021. SouthCoast Wind received a waiver on 27 February 2023 to align the reporting requirements in the BOEM lease with the updated PDCs and BMPs. The table below reflects those changes.

**Table 1: BOEM Reporting Requirements per BOEM PDCs and BMPs and NMFS IHA reporting requirements and location within this technical report.**

Required Content	Source Reference	Location Addressed in Technical Report
<p>The Lessee must ensure that monthly reporting of survey activities is submitted to BOEM (at <a href="mailto:renewable_reporting@boem.gov">renewable_reporting@boem.gov</a>) by the PSO provider on the 15th of each month for each vessel conducting survey work. Any editing, review, and quality assurance checks must be completed only by the PSO provider prior to submission to BOEM.</p>	<p>PDC 8: Reporting Requirements</p>	<p>Submitted separately each month as an excel document</p>
<p>The Lessee must submit final monthly reports to BOEM in coordination with PSO Providers within 90 calendar days following completion of a survey. Final monthly reports must contain vessel departure and return ports, PSO names and training certifications, the PSO provider contact information, dates of the survey, a vessel track, a summary of all PSO documented sightings of protected species, survey equipment shutdowns that occurred, any vessel strike-avoidance measures taken, takes of protected species that occurred, and any observed injured or dead protected species. PSOs must be approved by NMFS prior to the start of a survey, and the Lessee must submit documentation of NMFS' approval upon request to BOEM (at <a href="mailto:renewable_reporting@boem.gov">renewable_reporting@boem.gov</a>).</p>	<p>PDC 8: Reporting Requirements</p>	<p>Final monthly report submitted separately as an excel document</p>
<p>The following data fields for PSO reports of geological and geophysical surveys must be reported in Excel format (.xml file): Survey Information, Operations Information, Monitoring Effort Information, and Detection Information (in addition to the Survey, Operations, and Monitoring fields),</p>	<p>PDC 8: BMP 8.1</p>	<p>Appendix H: Excel Data Sheets of Monitoring Effort, Source Operations and Detections of Projected Species During the Survey</p>
<p>The Lessee must submit a final monitoring report to BOEM (<a href="mailto:renewable_reporting@boem.gov">renewable_reporting@boem.gov</a>) and NMFS (<a href="mailto:nmfs.gar.incidental-take@noaa.gov">nmfs.gar.incidental-take@noaa.gov</a>) within 90 days after completion of yearly survey activities. The report must fully document the methods and monitoring protocols, summarize the data recorded during monitoring, estimate the number of listed species that may have been taken during survey activities, describe, assess and compare the effectiveness of mitigation and monitoring measures. Any photos or videos taken by PSOs must be included in the report. Factors that may be contributing to impaired observations during active surveys, such as environmental conditions or equipment malfunctions, must be described.</p>	<p>PDC 8: BMP 8.2</p>	<p>Section 4: Monitoring and Mitigation Program, Section 5: Data Records and Analysis Methods, Section 6.4.2: IHA Level B Exposures, Section 7: Summary, and Appendix I: Photographs</p>
<p>Reporting sightings of North Atlantic right whales. If a North Atlantic right whale is observed at any time by a PSO or project personnel during surveys or vessel transit, the Lessee or PSO must report sighting within two hours of occurrence when practicable and no</p>	<p>PDC 8: BMP 8.3, 8.4.1</p>	<p>Section 4.5.2 and Section 6.4.3</p>



Required Content	Source Reference	Location Addressed in Technical Report
<p>later than 24 hours after occurrence. In the event of a sighting of a right whale that is dead, injured, or entangled, efforts must be made to make such reports as quickly as possible to the appropriate regional NOAA stranding hotline (from Maine-Virginia report sightings to 866-755-6622, and from North Carolina-Florida to 877-942-5343). Right whale sightings in any location may also be reported to the U.S. Coast Guard via channel 16 and through the WhaleAlert App (<a href="http://www.whalealert.org/">http://www.whalealert.org/</a>).</p>		
<p>In the event of a vessel strike of a protected species by any survey vessel, the Lessee must immediately report the incident to BOEM (<a href="mailto:renewable_reporting@boem.gov">renewable_reporting@boem.gov</a>) and NMFS (<a href="mailto:nmfs.gar.incidental-take@noaa.gov">nmfs.gar.incidental-take@noaa.gov</a>) and the NOAA stranding hotline: From Maine-Virginia, report sightings to 866-755-6622, and from North Carolina-Florida to 877-942-5343.</p>	PDC 8: BMP 8.4	Section 4.5.3 and Section 6.4.4
<p>Detected or Impacted Protected Species Reporting. The Lessee is responsible for reporting dead or injured protected species, regardless of whether they were observed during operations or due to Lessee activities. The Lessee must report any potential take, strikes, or dead/injured protected species caused by Project vessels to the NMFS Protected Resources Division (<a href="mailto:nmfs.gar.incidental-take@noaa.gov">nmfs.gar.incidental-take@noaa.gov</a>), NOAA Fisheries 24-hour Stranding Hotline number (866-755-6622), BOEM (at <a href="mailto:renewable_reporting@boem.gov">renewable_reporting@boem.gov</a>), and BSEE (at <a href="mailto:protectedspecies@bsee.gov">protectedspecies@bsee.gov</a>) as soon as practicable, but no later than 24 hours from the time the incident took place (Detected or Impacted Protected Species Report). In the event that an injured or dead marine mammal or sea turtle is sighted, regardless of the cause, the Lessee must report the incident to the NMFS Protected Resources Division (<a href="mailto:nmfs.gar.incidental-take@noaa.gov">nmfs.gar.incidental-take@noaa.gov</a>), NMFS 24-hour Stranding Hotline number (866-755-6622), BOEM (at <a href="mailto:renewable_reporting@boem.gov">renewable_reporting@boem.gov</a>), and BSEE (at <a href="mailto:protectedspecies@bsee.gov">protectedspecies@bsee.gov</a>) as soon as practicable (taking into account crew and vessel safety), but no later than 24 hours from the sighting (Protected Species Incident Report). Staff responding to the hotline call will provide any instructions for the handling or disposing of any injured or dead protected species by individuals authorized to collect, possess, and transport sea turtles.</p>	PDC 8: BMP 8.5	Section 4.5.1 and Section 6.4.4
<p>The Holder must submit a summary report to NMFS on all activities and monitoring results within 90 days of the completion of the survey or expiration of the IHA, whichever comes sooner, and must include all information described below under section 6(c) of this IHA.</p>	IHA 6 (a)	This technical report
<p>The report must describe all activities conducted and sightings of marine mammals, must provide full documentation of methods, results, and interpretation pertaining to all monitoring, and must summarize the dates and locations of survey operations and all</p>	IHA 6 (b)	This technical report

Required Content	Source Reference	Location Addressed in Technical Report
<p>marine mammals sightings (dates, times, locations, activities, associated survey activities).</p>		
<p>The draft report shall also include georeferenced, time-stamped vessel tracklines for all time periods during which acoustic sources were operating. Tracklines should include points recording any change in acoustic source status (e.g., when the sources began operating, when they were turned off, or when they changed operational status). GIS files shall be provided in ESRI shapefile format and include the UTC date and time, latitude in decimal degrees, and longitude in decimal degrees. All coordinates shall be referenced to the WGS84 geographic coordinate system.</p>	IHA 6 (b)	<p>Provided as a separate file in the appropriate GIS format</p>
<p>All raw observational data shall be made available.</p>	IHA 6 (b)	<p>Appendix H, provided as a separate excel file with this report</p>
<p>PSOs must use standardized electronic data forms to record data. PSOs shall record detailed information about any implementation of mitigation requirements, including the distance of marine mammal to the acoustic source and description of specific actions that ensued, the behavior of the animal(s), any observed changes in behavior before and after implementation of mitigation, and if shutdown was implemented, the length of time before any subsequent ramp-up of the acoustic source.</p>	IHA 6 (c)	<p>Appendix H, provided as a separate excel file with this report and the summary included in this technical report</p>
<p>If a North Atlantic right whale is observed at any time by PSOs or personnel on a survey vessel, during surveys or during vessel transit, the Holder must report the sighting information to the NMFS North Atlantic Right Whale Sighting Advisory System (866-755-6622) within two hours of occurrence, when practicable, or no later than 24 hours after occurrence. North Atlantic right whale sightings in any location may also be reported to the U.S. Coast Guard via channel 16 and through the WhaleAlert app (<a href="http://www.whalealert.org">www.whalealert.org</a>).</p>	IHA 6 (d)	<p>Section 4.5.2 and Section 6.4.3</p>
<p>Sightings of any injured or dead marine mammal must be reported to NMFS, regardless of the cause of injury or death. In the event that personnel involved in the survey activities discover an injured or dead marine mammal, the Holder must report the incident to NMFS as soon as feasible by phone (866-755-6622) and by email (<a href="mailto:nmfs.gar.incidental-take@noaa.gov">nmfs.gar.incidental-take@noaa.gov</a> and <a href="mailto:PR.ITP.MonitoringReports@noaa.gov">PR.ITP.MonitoringReports@noaa.gov</a>) as soon as feasible.</p>	IHA 6 (e)(i)	<p>Section 4.5.1 and Section 6.4.4</p>
<p>In the event of a ship strike of a marine mammal by any vessel involved in the survey activities, the Holder must report the incident to NMFS by phone (866-755-6622) and by email (<a href="mailto:nmfs.gar.incidental-take@noaa.gov">nmfs.gar.incidental-take@noaa.gov</a> and <a href="mailto:PR.ITP.MonitoringReports@noaa.gov">PR.ITP.MonitoringReports@noaa.gov</a>) as soon as feasible.</p>	IHA 5 (e)(ii)	<p>Section 4.5.3 and Section 6.4.4</p>

### 3 PROJECT OVERVIEW

The objectives of this HRG survey were to collect data to support: site characterization, development of a ground model, ensure the seabed is clear of obstructions, and identification of buried archaeological features in compliance with BOEM regulations and guidelines for the COP.

The vessel port of call location and dates of the HRG operations are summarized in Table 2. A high-level overview of survey events for the vessel is outlined in Table 3.

**Table 2: Summary of the SouthCoast Wind 2023 Lease Area HRG survey vessel and dates under 2023 Survey Plan.**

Vessel Name	Port of Call	Dates on Project
<i>Minerva Uno</i>	North Kingstown, Rhode Island	18 May – 10 July 2023

**Table 3: Summary of key survey events for the vessel on the SouthCoast Wind 2023 Lease Area HRG Survey.**

Event	<i>Minerva Uno</i>
PSO team mobilizes	18 May 2023
Kick-off meetings	19 May 2023
Vessel departs dock. PSO effort begins.	29 May 2023
Data acquisition complete. PSO monitoring complete	10 July 2023

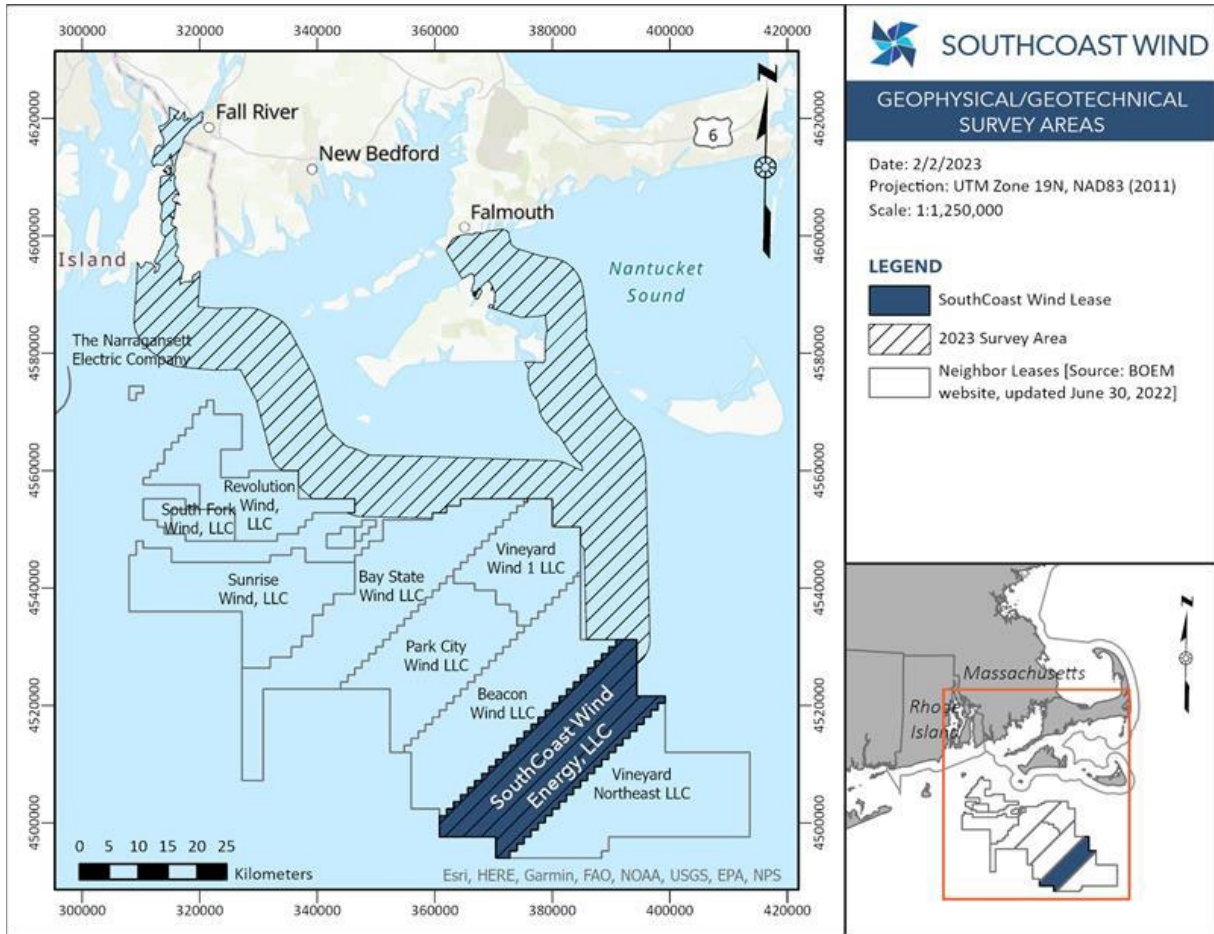


Figure 1: SouthCoast Wind Survey Area of Interest

### 3.1 Vessel Summary

The SouthCoast Wind 2023 Lease Area HRG survey from 18 May to 10 July 2023 was completed by the *Minerva Uno*. Specifications of the vessel are provided in Table 4, and a photo of the vessel is included in Appendix D.

Table 4: Vessel specifications

Vessel Name	Length	Speed	Vessel Configuration description
<i>Minerva Uno</i>	46.6 m	Less than 10 kts (Transit) 3-5 kts (Survey)	Multi-role survey vessel for coastal and offshore survey areas

### 3.2 Summary of Geophysical Survey Equipment Used

The survey equipment operated on each vessel is summarized in Table 5. Low-frequency sources (operating below 180 kHz) for which monitoring and mitigation were conducted to minimize potential impacts to protected species are hereafter referred to as the regulated sound sources. Other equipment operated by the survey vessel that either did not produce sound or produced sound outside the hearing range of protected species (and is, therefore, not regulated by BOEM or NMFS) is not considered further in this technical report.

On the *Minerva Uno*, two pieces of survey equipment were operated below 180 kHz: Sub-Bottom Profiler (SBP) and the sparker.

**Table 5: HRG survey equipment operated by the survey vessel**

<b>Minerva Uno</b>	
<b>Energy Source</b>	<b>Frequency/Energy Specifications</b>
Multibeam Echo Sounder (MBES)*	170 – 450 kHz
Side Scan Sonar (SSS)	300 - 900 kHz
USBL	21 - 31 kHz
High Resolution Sub-Bottom Profiler (SBP)	8 – 10 kHz
Medium Penetrating Dual Seismic Sparker	1 Hz - 10 kHz

\*The MBES was not operated below 200 kHz

## 4 MONITORING AND MITIGATION PROGRAM

This section describes the protected species monitoring and mitigation measures established to meet the requirements of the PDCs and BMPs, the BOEM Lease, and the NMFS 2023 IHA. Survey mitigation measures were designed to minimize potential impacts of the survey activities on marine mammals, sea turtles, and other protected species of interest.

The following monitoring protocols were implemented to meet these objectives, and each are described in detail in a sub-section below:

- Visual observations were conducted day and night to provide real-time sighting data, allowing for the implementation of mitigation procedures as necessary.
- Species-specific monitoring zones (MZs) and shutdown zones (SZs) were established around the regulated HRG sound sources where delays to initiation and shutdowns of active sources were implemented when protected species were detected inside.
- Vessel Strike Avoidance (VSA) maneuvers were also implemented as necessary under the separation distance requirements for species specific protected animals.

### 4.1 Monitoring: Protected Species Observers

Trained and experienced PSOs were on board the survey vessel during survey activities to:

- conduct protected species monitoring,
- record and report detections, and
- request mitigation actions in accordance with the established regulatory requirements and monitoring plan.

The PSO contractor was responsible for ensuring each deployed PSO met the minimum requirements set forth in the PDCs and BMPs and 2023 IHA. BOEM and NMFS PSO requirements include training in protected species identification and behavior, in addition to field experience in protected species observation in the Atlantic Ocean.

The PSO contractor was responsible for providing the PSOs with vessel-specific and survey contractor-specific training. Environmental mitigation and monitoring protocols specific to SouthCoast Wind were provided by RPS, Alpine and SouthCoast Wind during project kick-off meetings, conducted prior to the start of survey operations and prior to scheduled crew changes.

All certified PSOs who were deployed during the SouthCoast Wind 2023 Lease Area HRG survey operations are listed in Appendix E.

### 4.2 Visual Monitoring: Protocols and Methods

A team of four PSOs were deployed on the survey vessel to meet the monitoring requirements as outlined in Table 6. PSOs monitored while the vessel was in transit and prior to and during all Low



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Frequency (LF), less than 180 kHz, sound source operations conducted by the vessel. PSOs also conducted visual monitoring during all periods between LF sound source activities to collect additional protected species data. One PSO monitored during daylight hours and two PSOs monitored during night-time hours to support 24-hour operations. PSOs rotated monitoring shifts as needed to maximize concentration and to meet the watch requirements of the PDCs and BMPs and 2023 IHA (watch periods not to exceed four hours without a minimum one-hour break, and a maximum duration of 12 hours in a 24-hour period).

Visual monitoring locations on the vessel were selected such that they:

1. Afford PSOs a 360-degree viewpoint around the vessel and acoustic sources, such that the MZs around the sound sources and the strike avoidance separation distances could be simultaneously monitored,
2. Provide the highest vantage point possible to allow monitoring out to the greatest distances ahead and around the vessel,
3. Provide shelter from inclement weather, as needed,
4. Provide real-time communication with vessel and LF HRG equipment operators.

PSOs conducted visual monitoring by actively scanning with the naked eye out to the furthest observation points visible, methodically sweeping areas closer to the vessel and focusing on the SZs and ahead of the vessel. PSOs conducted regular sweeps of the surrounding areas using magnification devices as described in Table 6. PSOs monitored for cues that might indicate the presence of protected species including but not limited to splashing, footprints, blows, and presence of other marine species (diving seabirds, fish feeding activity).

**Table 6: Visual monitoring methodology on the survey vessel**

<i>Minerva Uno</i>	
Total Number of PSOs	4
Number of PSOs on Watch - Day	1
Visual monitoring equipment- Day	Reticle binoculars 10x50 & 7x50 magnification
Visual monitoring conducted at night	Yes, 2 PSOs on watch
Visual monitoring equipment- Night	Night Vision Devices and Thermal IR clip-ons
Range Estimation Method for Detections	Calibrated Reticle Binoculars
Primary Monitoring Location	Bridge wings Bridge

Displays inside the bridge showed operational information about the vessel (e.g. position, speed, heading, etc.), sea conditions (e.g. water depth, sea temperature, etc.), and weather (e.g. wind speed and direction, air temperature, etc.). Environmental conditions, along with vessel and acoustic source activity, were recorded at least once an hour, or every time there was a change of one or more variables.

### 4.2.1 Daylight Visual

The PSOs on board were equipped with 7x50 reticle binoculars and 10x50 reticle binoculars, as well as DSLR cameras with 200mm and 300mm zoom lens to aid in visual monitoring watches conducted during the day. PSO teams used field notebooks to record data while on watch and laptops to enter data.

Range estimates were made by comparison to an object of known distance, as well as with reticle binoculars. Reticle binoculars were calibrated whenever possible to ensure accuracy of distance data. These reticle calibration tables are provided in Appendix F.

### 4.2.2 Nighttime and Reduced Visibility Visual Observations

The Alternative Monitoring Plan was implemented while transiting under low visibility conditions (including night-time and daytime). PSOs conducting nighttime monitoring watches were equipped with infrared LED handheld spotlights and night vision goggles with head mounts and thermal clip-ons. Specifications for the night monitoring equipment can be found in Appendix G.

As stated in the Alternative Monitoring Plan, during geophysical operations utilizing mitigatable equipment, the shutdown zone was required to be visible. During low-visibility conditions such that animals could not be reliably sighted within the SZ, the survey was required to be stopped. Non-mitigatable equipment could continue to be used as long as it was safe to transit in low-visibility conditions, as described below.

During transit in low-visibility (less than 500m) conditions, the transit could continue as long it was navigationally safe to do so, and with input from the PSO. In these instances, the PSOs and the vessel crew provided their best judgement regarding safety of navigation and visibility during transit. The decision to continue transit was made with input from the PSO. During transit, the PSOs continued to use their professional judgement regarding reduced visibility determination and their impacted view of the monitoring zones. The PSOs considered current visibility around the distances expected to be monitored for the various species groups and real-time sighting data.

## 4.3 Monitoring: Data Collection

During or immediately after each sighting event, the PSOs recorded detection details in a standardized detection datasheet provided to them by RPS. Excel data forms included tabs for project data, monitoring effort data, geophysical operations data, and protected species detection data. RPS supplied a set of standardized variables for specific data fields that were to be implemented on the data form provided to their PSOs.

Each sighting event was linked to an entry on an effort datasheet where specific environmental conditions and vessel activity were logged.

Species identifications were made whenever the distance of the animal(s), length of the sighting, and visual observation conditions allowed. Whenever possible during detections, photographs were taken with DSLR cameras with telephoto lenses. Marine mammal identification manuals were consulted, and photos were examined during observation breaks to confirm identifications.

### 4.3.1 Data Collection Requirements & Methods

Data was collected to meet the BOEM and NMFS requirements as summarized previously in Table 1.

PSOs collected data in handwritten notepads or on portable / tablet devices during watches. During watch breaks and at the end of daylight hours, data was compiled in proprietary data forms on laptop computers and backed up on portable hard drives.

### 4.3.2 Methods of Cross-Vessel Detection Coordination

Where possible during concurrent program operations, protected species detections were communicated to other ships on the project by email and by portable device messenger applications (WhatsApp). RPS project managers coordinated these communications between vessel teams and monitored them in real time throughout the project, assisting in disseminating the information when necessary.

### 4.3.3 North Atlantic Right Whale External Sighting Monitoring Protocol

PSOs monitored for Dynamic Management Areas (DMA) in their permitted survey area and surrounding areas regularly:

1. Lead PSOs checked the NMFS website for new DMAs at the start of each day
2. PSOs used mobile devices to check the web application Whale Alert
3. RPS project managers were subscribed to receive automatic notifications of DMAs and NARW sightings throughout survey operations.

## 4.4 Mitigation Measures

The following mitigation protocols were implemented during the SouthCoast Wind 2023 Lease Area HRG survey. All protocols were implemented as described.

- Vessel Strike Avoidance (VSA) separation distances

Vessel speed was restricted to 10 knots or less inside the Northeast Seasonal Management Areas (SMAs). Vessel speed was restricted to 10 knots or less inside any established DMA. Vessel speed will be restricted to 10 knots or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel.

  - All survey vessels maintained or enacted actions to maintain a separation distance of 500 meters or greater from any sighted NARW.
  - All survey vessels maintained or enacted actions to maintain a separation distance of 500 meters or greater from any ESA-listed species or other unidentified large marine mammal visible at the surface.
  - All vessels maintained or enacted actions to maintain a separation distance of 500 meters or greater from any sighted non-ESA listed baleen whales, including humpback whales and minke whales.
  - All vessels maintained or enacted actions to maintain a separation distance of 500 meters or greater from any sighted sea turtles or manta rays.
  - All vessels maintained or enacted actions to maintain a separation distance of 50 meters or greater from any sighted small cetacean (dolphin and porpoise) or pinniped.
- Establishment of Monitoring Zones (MZ)

Prior to the initiation of sound sources operating below 180 kHz from silence, a clearance search period of 30 minutes was completed. The 500-meter MZ for ESA-listed species and 200-meter MZ for non-ESA-listed marine mammals was monitored. Note that visual observations for all marine protected species was extended to the furthest observable distances even though the MZs and SZs around the sound sources will apply.
- Establishment of Shutdown Zones (SZ)

During use of sources with the potential to result in marine mammal harassment (i.e., anytime the acoustic source is active, including ramp-up), occurrences of marine mammals within the SZ was communicated to the vessel operator to prepare for potential shutdown of the acoustic source.

- 500 meters: North Atlantic right whales
- 100 meters: All other ESA-listed species and marine mammals with the exception of voluntarily approaching delphinids.
- 100 meters: Sea turtles
- 141 m: Level B harassment zone for marine mammals. (Shutdowns are required at this distance for marine mammals where take has not been granted or where the authorized takes have been met.)
- Following a detection of a protected species within its respective MZ required delays to initiation of sound sources operating below 180 kHz. The delays were implemented until:
  - All marine protected species that were observed inside the MZ were confirmed to have left their relevant MZ  
OR
  - An additional time period has lapsed with no further sightings within the relevant MZ
    - 15 minutes for small cetaceans (porpoises and dolphins), pinnipeds, and giant manta rays
    - 30 minutes for all large whales including NARW
    - 30 minutes for sea turtles
- A shutdown of sound sources operating below 180 kHz was implemented when protected species entered their respective SZ. Shutdown of SBP and Sparker were implemented for NARW and sea turtles, while only the Sparker was shutdown for all other marine mammals.
- An exception was applied to shutdown procedures for some delphinid species and some pinniped species that are observed voluntarily approaching the vessel where the following requirements apply:
  - The exception applies only to delphinids in the genera *Steno*, *Delphinus*, *Lagenorhynchus*, *Stenella* or *Tursiops*.
  - The exception applies only to gray seals or harbor seals.
  - If there is uncertainty regarding identification of a marine mammal species (i.e., whether the observed marine mammal(s) belongs to one of the genera for which shutdown is waived), PSOs used their best professional judgment in making the decision to call for a shutdown.
  - If delphinids from the shut-down exempt genera are observed within or entering the SZ but do not voluntarily approach the vessel or towed survey equipment, shutdown would be required and implemented.
  - The determination of whether the animal has “voluntarily” approached was made by the PSO on watch.
  - Shutdowns are required for marine mammals where take has not been granted or where the authorized takes have been met even if those species fall into the exemption genera.

## 4.5 Reporting

Reporting requirements of the PDCs/BMPs and the IHA were outlined in Table 1. Both agencies require a final survey report be prepared detailing operations, PSO effort, and detection of protected species.

### 4.5.1 Injured or Dead Protected Species

Any injured or dead marine mammal or sea turtle observed either by a PSO on watch or by a crew member was required to be reported to BOEM and NMFS, as described in Table 1. Reporting requirements included a phone notification to the NMFS Regional Stranding hotline as soon as practicably possible, made by either the Lead PSO or RPS project manager, as communications permitted from the vessel.

The Lead PSO would also prepare a written report in accordance with NMFS standard reporting guidelines and PDCs and BMPs, which would be submitted to the agencies.

### 4.5.2 NARW Sightings

Reporting of NARW sightings to external monitoring resources was a requirement of the IHA.

PSOs were to use the following applications to report any NARW sightings made during survey operations:

1. To their PSO Project Manager who would then inform SouthCoast Wind.
2. PSOs would then prepare a sighting report including a description of the detection event including date, time, distance to vessel, vessel and geophysical equipment activity, observed behaviors and any photographs or screenshots taken during the sighting.
3. RPS would make the notification to the NARW Sightings Hotline.

There were no NARW sightings during the 2023 Lease Area HRG survey.

### 4.5.3 Vessel Strike of a Protected Species

In the event of a ship strike of a marine mammal or other protected species by any vessel involved in survey activities are required to be reported under the IHA. Reporting requirements included a phone notification to the NMFS Regional Stranding hotline and by email as soon as feasible. These notifications would be completed by the RPS project manager. The Lead PSO would prepare a written report in accordance with NMFS standard reporting guidelines in the IHA.

## 5 DATA RECORDS AND ANALYSIS METHODS

### 5.1 Operation Activity

PSOs collected the regulated HRG equipment's operational status each day that they were deployed on the vessel.

The vessel recorded the start of line (SOL) times and the end of line (EOL) times for the equipment during acquisition. The vessel also recorded the status of the equipment while acquisition occurred by noting full power or shutdowns due to mitigation actions. These entries were made for each regulated source or for combinations of regulated sources (for example, Sub-Bottom profiler and sparker).

### 5.2 Monitoring Effort

PSOs recorded monitoring effort by entering start of watch and end of watch times into data sheets where the vessel position and environmental data was also documented for that duration.

Total monitoring effort was calculated by summing the durations of each watch period. Where the monitoring effort entry did not also indicate the source status for that monitoring period, source data was cross referenced during analysis to calculate the duration of monitoring conducted while regulated sources were on and off.



Visual monitoring while the acoustic source was off included monitoring conducted during transit to survey sites and any other recorded silent periods (mitigation action, equipment downtime, or weather standby time).

### 5.2.1 Summary of Environmental Conditions

Each PSO monitoring effort data form included environmental conditions present during that watch period. Environmental variables were recorded every 60 minutes or when conditions changed.

Beaufort Sea state was recorded for each monitoring period using the accepted scale (Table 7):

**Table 7: Beaufort Sea state scale**

Beaufort number	Description	Wave height	Sea conditions
0	Calm	0 m	Sea like a mirror
1	Light air	0–0.3 m	Ripples with appearance of scales are formed, without foam crests
2	Light breeze	0.3–0.6 m	Small wavelets still short but more pronounced; crests have a glassy appearance but do not break
3	Gentle breeze	0.6–1.2 m	Large wavelets: crests begin to break; foam of glassy appearance; perhaps scattered white horses
4	Moderate breeze	1–2 m	Small waves becoming longer; fairly frequent white horses
5	Fresh breeze	2–3 m	Moderate waves taking a more pronounced long form; many white horses are formed; chance of some spray
6	Strong breeze	3–4 m	Large waves begin to form; the white foam crests are more extensive everywhere; probably some spray
7	High wind,	4–5.5 m	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind; spindrift begins to be seen
8	Gale	5.5–7.5 m	Moderately high waves of greater length; edges of crests break into spindrift; foam is blown in well-marked streaks along the direction of the wind
9	Severe gale	7–10 m	High waves; dense streaks of foam along the direction of the wind; sea begins to roll; spray affects visibility
10	Storm	9–12.5 m	Very high waves with long overhanging crests; resulting foam in great patches is blown in dense white streaks along the direction of the wind; on the whole the surface of the sea takes on a white appearance; rolling of the sea becomes heavy; visibility affected
11	Violent storm	11.5–16 m	Exceptionally high waves; small- and medium-sized ships might be for a long time lost to view behind the waves; sea is covered with long white patches of foam; everywhere the edges of the wave crests are blown into foam; visibility affected
12	Hurricane force	>14 m	The air is filled with foam and spray; sea is completely white with driving spray; visibility very seriously affected

Swell heights in meters were recorded by the vessel PSO team. The swell heights were either provided as the actual estimated height in meters or categorized (< 2 m, 2 – 4 m, and > 4 m). To calculate the overall monitoring effort across vessels for each swell height, the data was assigned to the appropriate swell height category.

PSOs categorized visibility during monitoring effort in kilometers and/or meters where values were selected from categories.

## 5.3 Visual Sightings of Protected Species

PSOs used standardized reporting forms provided by RPS to record all detections of marine mammals and sea turtles made during survey operations. These records were completed any time a sighting was made, regardless of distance, not just for detections where mitigation was implemented.

Sighting ID or detection event numbers were assigned chronologically for all protected species observed on the vessel throughout the vessel's survey activity. A new detection number was assigned for a new species sighting or when enough time had passed between observations of animals of the same species such that PSOs could not be certain that they were observing the same animals previously documented. A standard duration of time was to be applied between observations: 15 minutes for delphinid and pinniped detections and 30 minutes for large whales. If there were multiple species in a single detection, the same sighting ID or detection event was used.

Protected species movement relative to the vessel, pace, and initial and subsequent behavior states were recorded for each protected species sighting where standardized categories for each were provided as controlled fields in the provided data form.

### 5.3.1 Closest point of approach

All PSOs recorded closest point of approach (CPA) and the source status at the closest point of approach.

### 5.3.2 Detection rate

Detection rate was calculated using the number of protected species events per hour of monitoring effort for all vessels. wherein cases with more than one PSO was on watch simultaneously, effort was not duplicated: one hour of monitoring effort by two PSOs consisted of one hour of effort for the purpose of detection rate calculations.

## 5.4 Level B Take / Exposure Estimation

BOEM defines take as "having the same meaning as the term "take" as defined in 16 U.S.C. § 1532(19)" where take is defined as "means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

The MMPA definition of harassment refers to acts that have the potential to disturb (but not injure) a marine mammal or marine mammal stock in the wild by disrupting behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

NMFS considers marine mammals that have been exposed to received sound levels of 160 dB (rms) to have potentially been disturbed and, therefore, classified as a Level B take.

The IHA issued to SouthCoast Wind by NMFS defines the Level B harassment zone as marine mammals observed within 141 meters of active geophysical survey in section 4 (d).

## 5.5 Mitigation Measures Implemented

Mitigation measures were implemented on each survey vessel as previously described. The onboard PSO team communicated requested mitigation in real time to survey operators who operated the regulated sound sources or to the vessel crew operating the vessel, depending on the action required. Communications were conducted over handheld radios or in person.

Implemented mitigation actions were recorded on PSO data sheets in the detection data form and also in the operations activity logs.

For each mitigation action, the mitigation downtime associated with that action was calculated. Mitigation downtime was the duration of the break in regulated source operations as required by the regulatory

protocols: the duration of time that an animal was observed inside an exclusion zone and any additional clearance time required before regulated sources could be activated. Mitigation downtime did not include any additional downtime that a survey operator needed to resume acquisition, which may include additional vessel maneuvering time, time to deploy or calibrate equipment etc. Some detections included this additional downtime as a different field, production loss, but this variable was not recorded for every mitigation action taken.

## 5.6 Data Quality Control

The RPS data analysts reviewed all the PSO data sets received from the vessel and conducted Quality Control (QC) as described in Table 8.

**Table 8: Quality control editing performed by RPS on PSO datasets by data field**

Data type	Data field	Corrections made
Monitoring effort	Start of watch / End of watch	<ul style="list-style-type: none"> <li>Times were corrected or added where error was evident, typically by inconsistency with adjacent times.</li> </ul>
	Day time vs. Nighttime	<ul style="list-style-type: none"> <li>Failures to adjust time to Coordinated Universal Time (UTC) were corrected.</li> <li>Times were corrected when end of effort overlapped with start of subsequent effort.</li> </ul>
Source operations	Testing	<ul style="list-style-type: none"> <li>Testing status was not used as a separate category. Based on the survey days and monitoring effort times, testing was either added to the “on” status or not added to operations totals at all.</li> </ul>
Protected species detections	Position	<ul style="list-style-type: none"> <li>Positions that plotted out of place were corrected using effort positions of corresponding times, where available</li> <li>When positions could not be corrected and position was on land, detection was removed from detection plots.</li> </ul>
	Combining Unidentified categories	<ul style="list-style-type: none"> <li>Unidentified baleen whale was combined with the Unidentified whale category for data analysis.</li> </ul>

## 6 RESULTS

This section of the report details LF sound source operations, protected species monitoring effort, environmental conditions during monitoring effort and distribution, and sighting data inside and outside the Lease Area during source operation and source silence.

The monitoring effort, source operations and protected species detections for each vessel are provided as an Excel dataset in Appendix H.

### 6.1 Operation Activity

HRG survey operations began with the vessel conducting source calibrations in the survey area before proceeding to acquisition, according to the survey plan. Survey operations were briefly suspended when necessary for weather, equipment maintenance, or port calls for provisions and crew change.

The dates of operation, total days of survey activity and hours of regulated source operations by survey vessel are provided in Table 9.

**Table 9: Summary of regulated sound source operations on the survey vessel**

Vessel	Dates of Operation	Total Survey Days	Total Hours of Regulated Source Operations (HH.HH)
<i>Minerva Uno</i>	18 May 2023 – 10 July 2023	55	357.95

\*HH.HH is time in decimal hours

## 6.2 Monitoring Effort

Visual and monitoring effort for all survey vessels during the SouthCoast Wind 2023 HRG Survey is summarized in Table 10 and Table 11, shown by activity of the regulated HRG sources and by monitoring conducted during day and night.

**Table 10: Summary of visual monitoring effort by source activity status (HH.HH)**

Monitoring Effort (HH.HH)	<i>Minerva Uno</i>
Source active	357.95
Source not active	271.37
<b>Total</b>	<b>629.32</b>

**Table 11: Summary of visual monitoring effort conducted during daytime and night-time (HH.HH)**

Monitoring Effort (HH.HH)	<i>Minerva Uno</i>
Daytime	406.32
Night-time	223.00
<b>Total</b>	<b>629.32</b>

## 6.3 Environmental Conditions

Visibility was classified as ‘excellent’ if it extended to five kilometers or greater, ‘moderate’ if it was between two to four kilometers, and ‘poor’ if it was less than two kilometers. Visibility conditions were excellent for 29% of the overall visual monitoring effort for the survey. Visibility conditions were moderate for 20% of the overall visual monitoring effort. Poor visibility conditions occurred for 51% of the overall visual monitoring effort. Poor visibility consisted of periods of rain or fog, and some night-vision monitoring.

**Table 12: Summary of visibility during visual monitoring effort**

Visibility	Duration (HH.HH)	% of Overall Monitoring Effort
<0.05 km	09.85	2%
0.05 km – 0.1 km	27.55	4%
0.1 km – 0.3 km	36.38	6%
0.3 km – 0.5 km	18.04	3%
0.5 km – 1 km	204.13	32%
1 km – 2 km	27.62	4%
2 km – 5 km	124.15	20%
>5 km	181.60	29%

Monitoring effort was conducted in Beaufort Sea states ranging from Level 0 through Level 8, but the majority was accumulated at sea states at or below Level 4, which is generally considered to be favorable monitoring conditions for most marine mammal species. Visual observations at Level 4 Beaufort Sea states or below accounted for 99% of the total visual monitoring effort.

**Table 13: Summary of Beaufort Sea state during visual monitoring during the survey**

Beaufort Sea State	Duration (HH.HH)*	% of Overall Monitoring Effort
B0	14.00	2%
B1	120.43	20%
B2	240.72	38%
B3	198.43	32%
B4	45.00	7%
B5	09.73	1%
B6	01.00	<1%
B7	00.00	0%
B8	00.00	0%

\*Rounded to the nearest two decimal place

Swell heights during visual observations were generally low, with less than two-meter swells recorded for the entire duration of visual monitoring effort (Table 14).

**Table 14: Summary of Swell Height during visual monitoring during the survey**

Swell Height	Duration (HH.HH)	% of Overall Monitoring Effort
Less than 2 meters	629.32	100%
2 to 4 meters	00.00	0%
Greater than 4 meters	00.00	0%



Wind speeds during visual observations were generally low, with less than 15 knots for 88% duration of visual monitoring effort (Table 15).

**Table 15: Summary of Wind Speed during visual monitoring during the survey**

Wind Speeds	Duration (HH.HH)	% of Overall Monitoring Effort
<10 knots	367.28	58%
10 – 15 knots	191.83	30%
16 – 20 knots	56.40	9%
21 – 25 knots	09.22	3%
26 – 30 knots	01.82	<1%
>30 knots	02.77	<1%

Glare during visual observations was as follows. Forty-nine percent of monitoring effort occurred during periods with no glare; however, 32% of monitoring occurred under severe glare conditions (Table 16).

**Table 16: Summary of the Glare during visual monitoring during the survey**

Glare	Duration (HH.HH)	% of Overall Monitoring Effort
None	310.52	49%
Mild	49.55	8%
Moderate	66.57	11%
Severe	202.68	32%

Precipitation during visual observations varied between clear, rain, fog and haze during monitoring effort. Visibility conditions were clear of precipitation for 38% of the monitoring effort, 4% were conditions with rain, and fog was present for 39% during the survey (Table 16).

**Table 17: Summary of Precipitation during visual monitoring during the survey**

Precipitation	Duration (HH.HH)	% of Overall Monitoring Effort
Clear	239.75	38%
Heavy Rain	00.75	<1%
Light Rain	23.27	4%
Heavy Fog	97.25	15%
Thin Fog	149.88	24%
Haze	118.42	19%

## 6.4 Visual Sightings

This section of the report summarizes visual sightings of protected species (marine mammals and sea turtles) during the SouthCoast Wind 2023 HRG survey. There were a total 120 protected species detections both inside and outside the Lease Area: 73 whale detections, 21 delphinid detections, and two pinniped detections. There were also 15 unidentified whale detections and five unidentified dolphins. Detections consisted of eight different marine mammal species (four whale species, two delphinid species, two pinniped species). There were four sea turtle sightings consisting of two sea turtle species and an unidentified species. No manta rays were sighted during any of the survey activities.

Of the 120 detections, 83% (99 detections) were animals that were identified to the species level while the remaining animals (21 detections) were identified to family level or a higher taxonomic level (classified as unidentified whales, unidentified delphinids, and unidentified sea turtles).

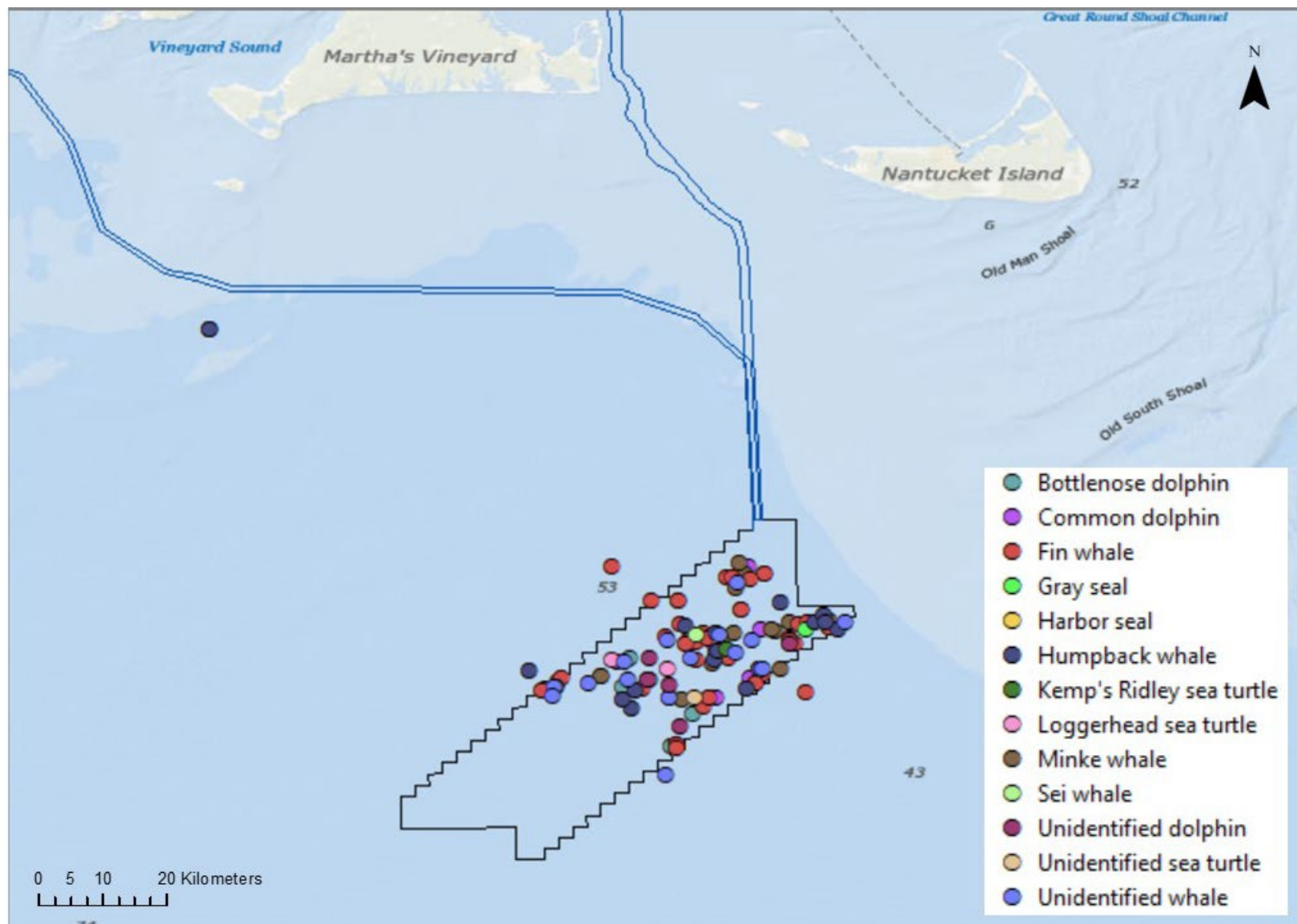
A table of all protected species detections is provided as part of an Excel datasheet attachment in Appendix H. Photographs of the identified protected species visually detected during the survey are provided in Appendix I.

The distribution of protected species detections both inside and outside the Lease Area are provided in Figure 2 through Figure 6 below.

Table 18 shows the total number of detection records and the number of individuals detected for each protected species during the survey program.

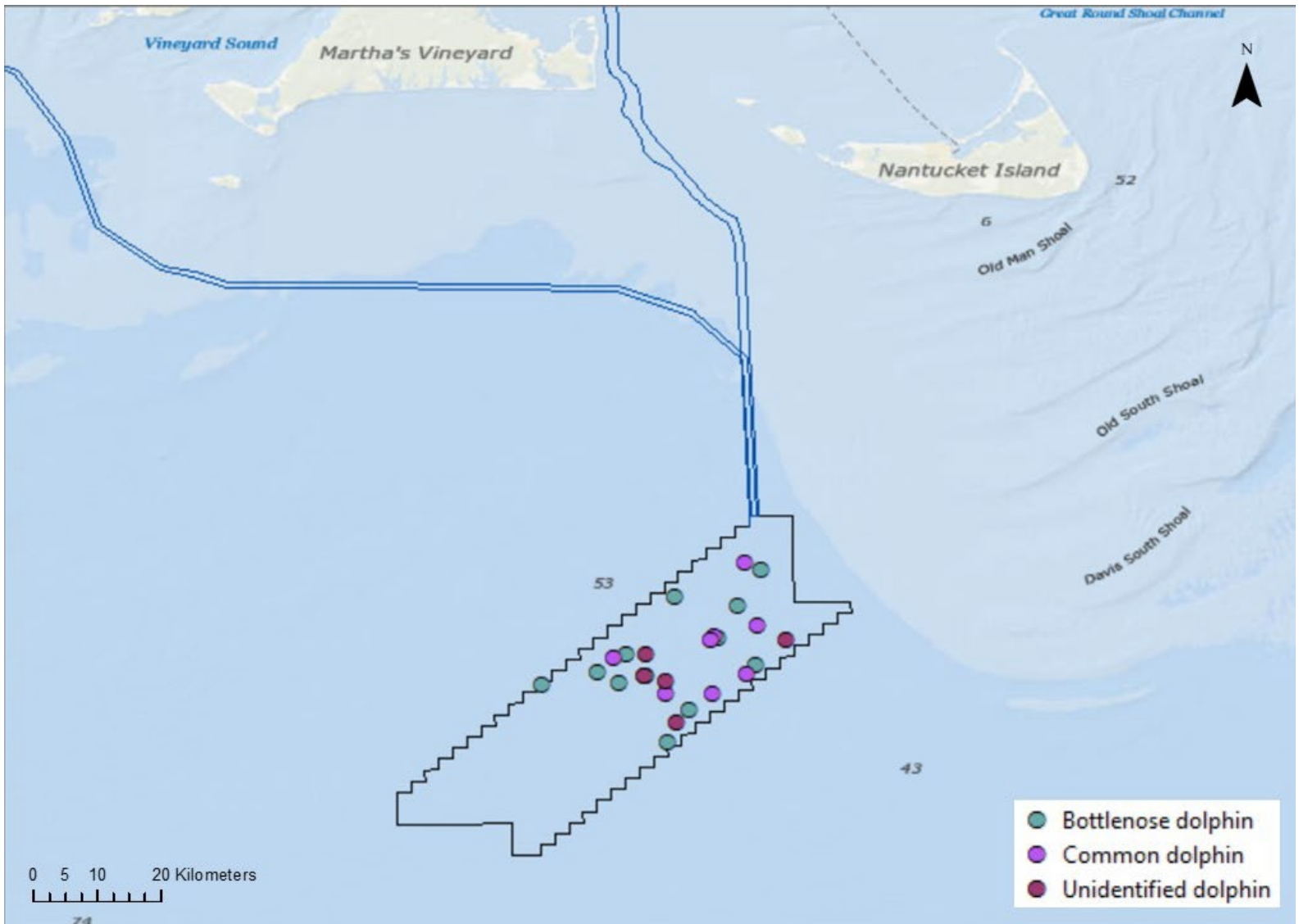
**Table 18: Detection records collected for each protected species detected during the survey**

Species	Total Number of Detection Records	Total Number of Animals
<b>Dolphins</b>		
Bottlenose dolphin	13	251
Common dolphin	8	276
Unidentified dolphins	5	25
<b>Whales</b>		
Fin whale	39	66
Humpback whale	18	45
Minke whale	15	19
Sei whales	1	1
Unidentified whales	15	19
<b>Pinnipeds</b>		
Gray seal	1	1
Harbor seal	1	1
<b>Sea turtles</b>		
Kemp's Ridley sea turtle	1	1
Loggerhead sea turtle	2	2
Unidentified sea turtle	1	1
<b>Total</b>	<b>120</b>	<b>708</b>



**Figure 2: Distribution of all protected species detections during SouthCoast Wind 2023 geophysical survey.**

\*Map includes detections outside of the survey area from transits.



**Figure 3: Distribution of delphinid detections during SouthCoast Wind 2023 geophysical survey.**

\*Map includes detections outside of the survey area from transits.

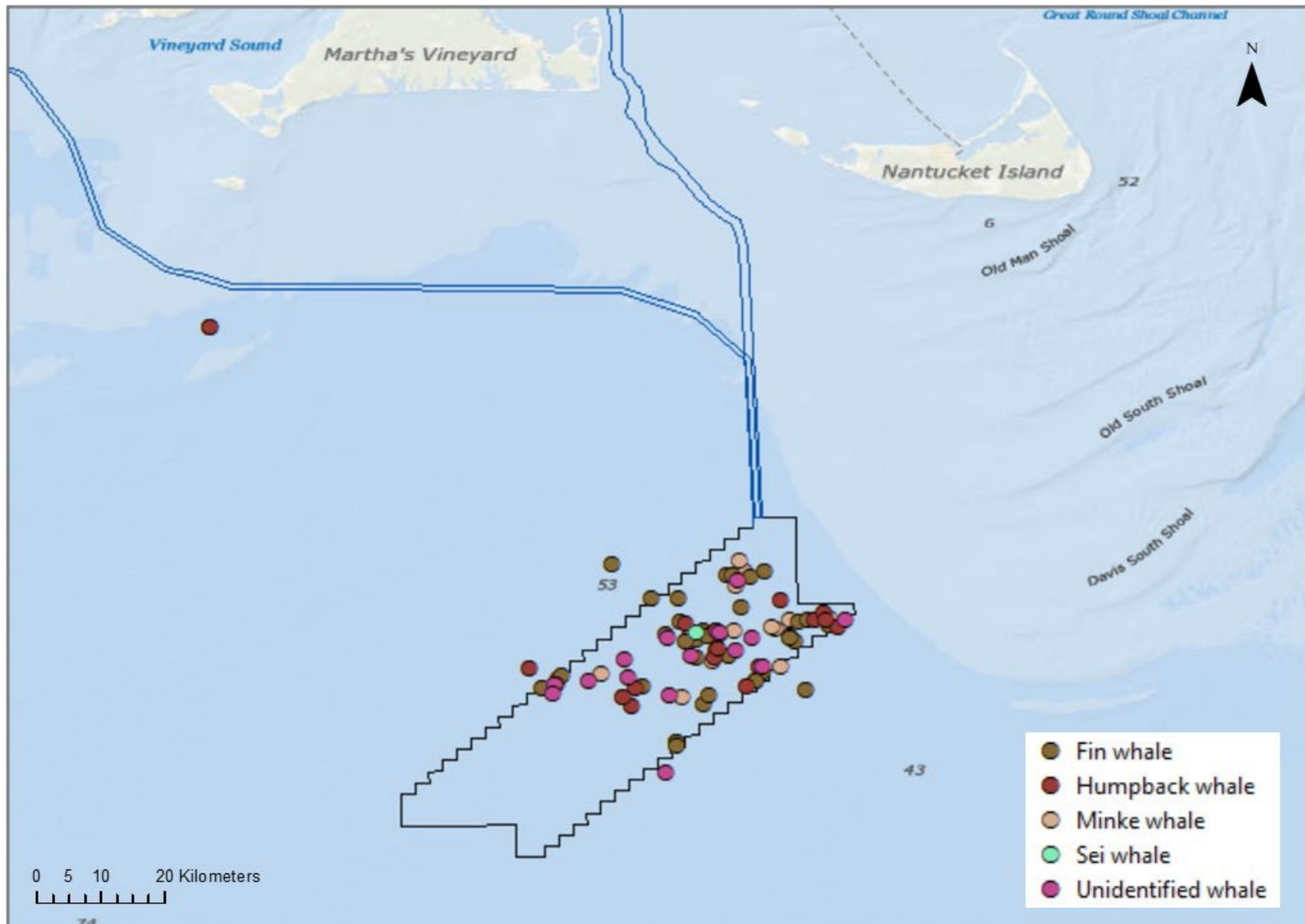
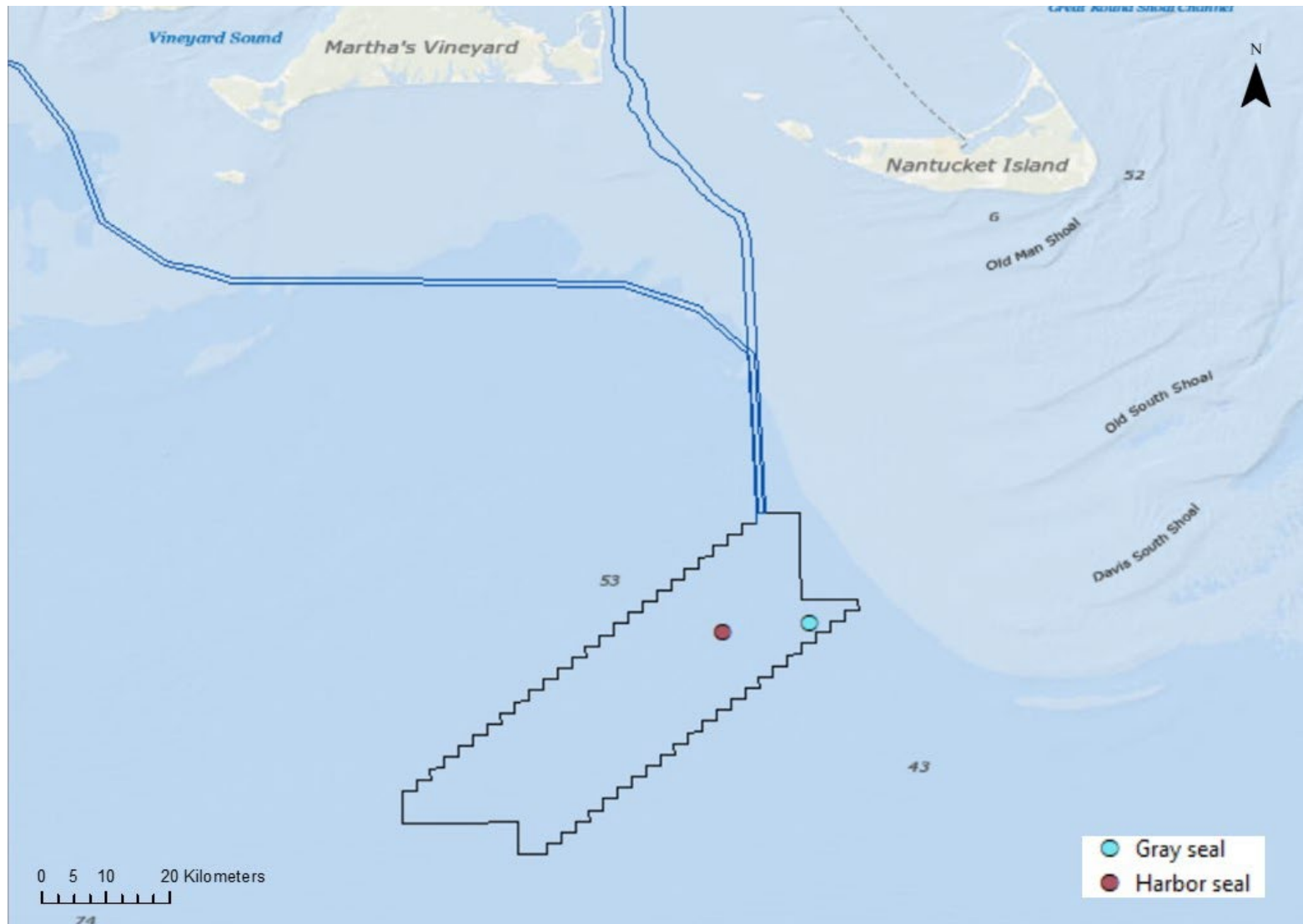


Figure 4: Distribution of whale detections during SouthCoast Wind 2023 geophysical survey.

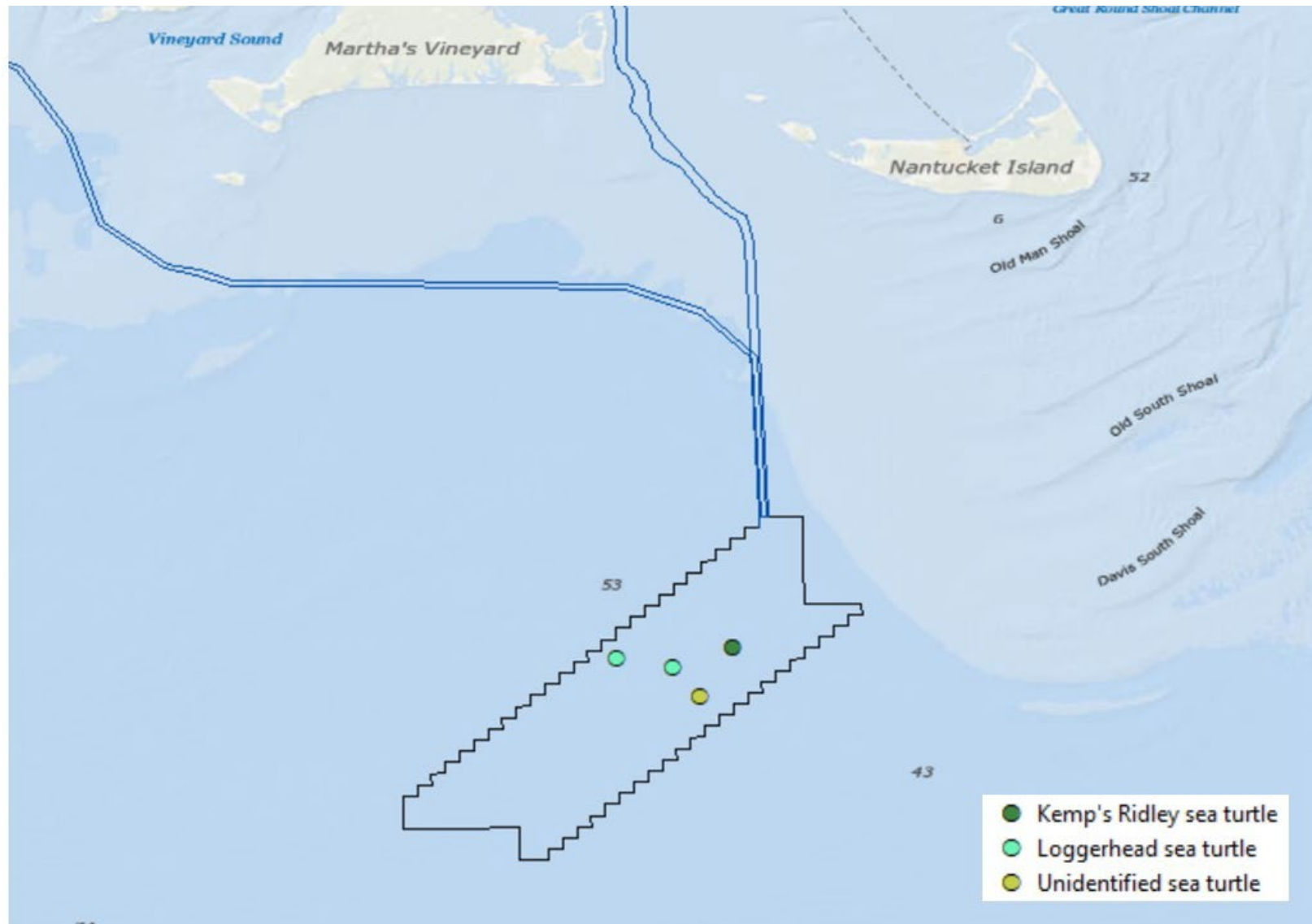
\*Map includes detections outside of the survey area from transits.



**Figure 5: Distribution of pinniped detections during SouthCoast Wind 2023 geophysical survey.**

\*Map includes detections outside of the survey area from transits.





**Figure 6: Distribution of sea turtle detections during SouthCoast Wind 2023 geophysical survey.**

\*Map includes detections outside of the survey area from transits.

### 6.4.1 Detection and Distance Summaries

Common dolphins had a larger mean group size than any other species ( $n=34.50$ ) followed by the bottlenose dolphins ( $n=19.31$ ). Bottlenose dolphins were the most frequently sighted dolphin species during the survey ( $n=13$ ) and were observed much more often than the next most observed identified species, bottlenose dolphins ( $n=8$ ) (Table 19).

Bottlenose dolphin detections had the closest mean detection distance at 927 meters, followed by common dolphins at 950 meters. The unidentified dolphins had the greatest mean distance at first detection at 1020 meters.

**Table 19: Detection summary of dolphins**

Dolphins	Bottlenose dolphin	Common dolphin	Unidentified dolphin
# of Detection Records	13	8	5
Estimated # of individuals detected	251	276	25
Mean Group Size	19.31	34.50	5
Mean Distance (m) at first detection	927	950	1020
Detection rate	0.021	0.013	0.008

Humpback whales had a larger mean group size than any other species ( $n=2.5$ ) (Table 20), while fin whales had the highest number of detection records ( $n=39$ ) and detected individuals ( $n=66$ ). Minke whales had the closest mean distance at 472 meters. There was only one sei whale detection, and it had the next closest mean distance at 789 meters. Unidentified whales had the greatest mean distance at 1407 meters.

**Table 20: Detection summary for whales**

Whales	Fin whale	Humpback whale	Minke whale	Sei whales	Unidentified whale
# of Detection Records	39	18	15	1	15
Estimated # of individuals detected	66	45	19	1	19
Mean Group Size	1.70	2.5	1.3	1	1.3
Mean Distance (m) at first detection	878	1184	472	789	1407
Detection rate	0.062	0.029	0.024	0.0016	0.024

Gray seals and harbor seals had the same number of detections and individuals detected (n=1). However, the gray seal detection had a greater mean distance at 350 meters with the harbor seal only sighted at 150 meters (Table 21).

**Table 21: Visual detection summary for pinnipeds**

Pinnipeds	Gray seal	Harbor seal
# of Detection Records	1	1
Estimated # of individuals detected	1	1
Mean Group Size	1	1
Mean Distance (m) at first detection	350	150
Detection rate	0.0016	0.0016

Sea turtle detections commonly consist of one animal, and mean detection distances are typically small with sightings occurring quite close to the vessel, both trends of which can be seen in the sea turtle sighting data collected during this survey (Table 22).

**Table 22: Visual detection summary for turtles**

Turtles	Kemp’s Ridley sea turtle	Loggerhead sea turtle	Unidentified sea turtle
# of Detection Records	1	2	1
Estimated # of individuals detected	1	2	1
Mean Group Size	1	1	1
Mean distance (m) at first detection	40	215	30
Detection rate	0.0016	0.003	0.0016

The mean closest approach to the active and inactive HRG sources was calculated for all species groups (Table 23). If the equipment was not deployed, then no closest approach to the source was recorded. These closest approaches are for deployed equipment only and reflects the source status at the time of the detection. All marine mammal groups had closer mean closest approaches when the HRG sources were not active with the exception of the humpback whale, unidentified whale and unidentified seal. This trend could be explained by the fewer number of detections while the equipment was active for the fin whale and gray seal detections. Sea turtle closest approach data is not generally considered to be relevant as sea turtles cannot sustain swimming speeds equivalent to a vessel’s survey speed.

**Table 23: Average closest observed approach of protected species to regulated sources while active and inactive**

Species Detected	Regulated Source Active		Regulated Source Inactive	
	Number of detections	Mean closest observed approach to source (meters)	Number of detections	Mean closest observed approach to source (meters)
Bottlenose dolphin	10	552	3	50
Common dolphin	4	358	4	800
Unidentified dolphin	3	1512	2	250
<b>All dolphin species</b>	<b>17</b>	<b>675.76</b>	<b>9</b>	<b>427.78</b>
Fin whale	22	465	17	592
Humpback whale	11	682	7	Equipment not deployed
Minke whale	8	479	7	185
Sei whale	1	800	0	N/A
Unidentified whale	9	965	6	2233
<b>All whale species</b>	<b>51</b>	<b>608.80</b>	<b>37</b>	<b>825.23</b>
Gray seal	0	N/A	1	350
Harbor seal	1	100	0	N/A
<b>All pinniped species</b>	<b>1</b>	<b>100</b>	<b>1</b>	<b>350</b>
Kemp's Ridley sea turtle	1	70	0	N/A
Loggerhead sea turtle	1	70	1	400
Unidentified sea turtle	1	45	0	N/A
<b>All turtle Species</b>	<b>3</b>	<b>61.67</b>	<b>1</b>	<b>400</b>

### 6.4.2 Incidental Harassment Authorization (IHA) Level B Exposures

NMFS issued an IHA for the SouthCoast Wind Lease Area HRG survey on 11 May 2023. A total of 2727 takes were authorized for 14 species/species groups under the NMFS IHA. Over the course of the survey, 88 marine mammals from six species/species groups were observed within 141 meters of the active LF sound sources (Table 24).

**Table 24: IHA authorized Level B takes and total project takes**

Species common name	IHA Authorized Level B Takes	Total Number of Animals Observed Inside the IHA-defined Level B Harassment Zone
North Atlantic right whale	6	0
Fin whale	7	3
Sei whale	2	0
Minke whale	13	1
Humpback whale	55	1
Sperm whale	2	0
Atlantic white-sided dolphin	28	0
Atlantic spotted dolphin	29	0
Bottlenose dolphin	152	42
Long-finned pilot whale	8	0
Risso's dolphin	7	0
Common dolphin	2094	40
Harbor porpoise	83	0
Gray seal	167	0
Harbor seal	74	1
Unidentified whale	N/A	0
Unidentified dolphin	N/A	0
Unidentified seal	N/A	0

### 6.4.3 NARW sightings reporting

There were no observations of NARWs made during SouthCoast Wind 2023 survey activities. As a result, there were no observations to report.

### 6.4.4 Protected species incident reporting

There were no observations of dead, injured or entangled protected species made during SouthCoast Wind 2023 survey activities. There were also no protected species incidents to report during the survey.

### 6.4.5 Summary of Dynamic Management Areas (DMAs)

There were no Dynamic Management Areas (DMAs) established in the region of the SouthCoast Wind Lease during the survey period.

## 6.5 Summary of Mitigation Measures Implemented

Mitigation was implemented as described in the previous sections of this report and conducted over the course of the SouthCoast Wind geophysical survey to prevent adverse impacts to protected species from physical interactions with vessels and / or towed equipment (strike avoidance mitigation), or from exposure to potentially harmful levels and frequencies of sound.

During the survey operations, mitigation from regulated sound sources was implemented during 14 detections: activation of regulated HRG sources was delayed on one occasion and regulated HRG sources were shut down as a result of incursions into exclusion zones by protected species on 13 occasions.

Mitigation actions were implemented for whale detections more often than any other species group, both delays to initiating the source and shut downs of the active regulated sources (n=1 and n=10, respectively), followed by actions implemented for sea turtles (n=3 shut downs), which were implemented next most frequently (Table 25). These were the only two species groups that source mitigation actions were required to be conducted during the survey.

**Table 25: Summary of mitigation actions implemented during the SouthCoast Wind 2023 Lease Area HRG survey**

Mitigation Action	Dolphins		Whales		Sea turtles		Pinnipeds		All Species	
	No.	Mitigation Downtime	No.	Mitigation Downtime	No.	Mitigation Downtime	No.	Mitigation Downtime	No.	Mitigation Downtime
Delay of Initiation of Operation	0	00:00	1	00:20	0	00:00	0	00:00	1	00:20
Shutdown of Operation	0	00:00	10	04:20	3	01:05	0	00:00	13	05:25
<b>Total Mitigation</b>	<b>0</b>	<b>00:00</b>	<b>11</b>	<b>04:40</b>	<b>3</b>	<b>01:05</b>	<b>0</b>	<b>00:00</b>	<b>14</b>	<b>05:45</b>

There were 50 instances where the vessel executed strike avoidance maneuvers during protected species detections, due to the animal being within the separation distance. The strike avoidance maneuvers consisted of a reduction in speed and altering course to maintain separation distances. Strike avoidance maneuvers were conducted 42 times for whale detections, four times for dolphin detections, and four times for sea turtles. Each strike avoidance maneuver undertaken is described in the collected data forms provided in Appendix H

## 7 SUMMARY

### 7.1 Interpretation of the Results

All the marine mammal and sea turtle species detected during the SouthCoast Wind Lease Area HRG Survey were species that occur commonly in the region and that are regularly observed by PSOs during HRG and other types of survey operations. Each species detected was observed within its predicted range with no species encounters occurring outside that species' normal range.

For all species, the mean distance at initial detection and at CPA was greater when the regulated sound sources were active, but there was insufficient data present to determine whether there were behavior changes observed during most of the marine mammal encounters. No behaviors were documented that suggested adverse impacts had occurred to any protected species encountered as a result of the survey activities undertaken.

Behavior states, like bow-riding and swimming toward the vessel, that are less subjective and are easily determined in the field by PSOs were exhibited in the expected species like common dolphins and



bottlenose dolphins. Whales were sighted exhibiting similarly expected behaviors like blowing and diving. The pinniped behaviors were what was expected of the species as was the behaviors of the sea turtles sighted.

## 7.2 Effectiveness of Monitoring and Mitigation

To minimize the potential impacts to marine mammals and sea turtles, PSOs onboard all the survey vessels were prepared to implement mitigation measures whenever protected species were detected approaching, entering, or within the designated shutdown zones. Mitigation actions for regulated sound sources were implemented successfully during 14 detections. PSOs searched the monitoring zones prior to activation of regulated sound sources and survey crew confirmed that applicable zones were clear prior to activating the regulated sound sources, which was then done gradually in ramp-up form wherever possible.

Strike avoidance maneuvering was conducted 50 times to prevent potential physical interactions between the survey vessels and marine mammals. In each case the maneuvers were executed as necessary- PSOs detected the animals in sufficient time to alert the vessel of the need for maneuvering, and maneuvering was carried out successfully to avoid physical impacts to the animals. The implemented actions were maintained vessel course and vessel speed, vessel speed reduction, and altered vessel course to maintain separation distances.

There were no sightings of injured, entangled, or dead protected species during the SouthCoast Wind 2023 Lease Area geophysical surveys. There were also no sightings of species of concern, specifically NARWs or giant manta rays.

Visual observations yielded a total 120 protected species detections both inside and outside the Lease Area and included marine mammals and sea turtles. However, visibility was poor for 51% of the survey due to limitation on distance the PSOs could see. Operations were delayed until visibility improved so that the MZ and SZs were visible for the PSOs on watch. The vessel remained in standby during those conditions inside the lease area.

For the SouthCoast Wind 2023 Lease Area HRG survey program, a total of 2727 takes were authorized for 14 species/species groups were authorized for takes in the IHA. During the survey program, a total of 88 individual protected species were observed within the predicted Level B harassment radius. This total represents 3% of the authorized Level B takes.

PSOs likely did not detect all animals present; however, it is highly unlikely that the total animals left undetected during survey operations would have exceeded the remaining fully authorized levels for all species given the conservative mitigation zones and SouthCoast Wind's, Alpine's, and the PSO's proactive approach to shutdowns and take reduction strategy. The monitoring and mitigation measures required by the IHA and PDCs and BMPs appear to have been an effective means to protect the marine species encountered during survey operations.

## 8 LITERATURE CITED

Bureau of Ocean Energy Management (BOEM) Lease OCS-A 0521

Bureau of Ocean Energy Management (BOEM) Office of Renewable Energy Programs Atlantic Outer Continental Shelf (OCS), Project Design Criteria and Best Management Practices for Protected Species Associated with Offshore Wind Data Collection, Latest Revision: 11/22/2021.

SouthCoast Wind 2023 Marine Geophysical and Geotechnical Survey Plan (November 28, 2022; Updated January 18, 2023; Updated April 5, 2023; Updated May 15, 2023)

National Marine Fisheries Service (NMFS) Incidental Harassment Authorization 2023 effective 12 May 2023 through 11 May 2024

United States Fish and Wildlife Service (USFWS). 2019. Marine Mammal Protection Act (MMPA). 16 U.S.C.

## Appendix A: BOEM OCS-A 0521 Lease

<p style="text-align: center;">UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF OCEAN ENERGY MANAGEMENT</p> <p style="text-align: center;"><b>COMMERCIAL LEASE OF SUBMERGED LANDS FOR RENEWABLE ENERGY DEVELOPMENT ON THE OUTER CONTINENTAL SHELF</b></p> <p><i>Paperwork Reduction Act of 1995 statement: This form does not constitute an information collection as defined by 44 U.S.C. § 3501 et seq. and therefore does not require approval by the Office of Management and Budget.</i></p>	Office	Renewable Energy Lease Number
	Sterling, VA	OCS-A 0521
	Cash Bonus and/or Acquisition Fee	Resource Type
	\$135,000,000.00	Wind
	Effective Date	Block Number(s)
		See Addendum A

This lease, which includes any addenda hereto, is hereby entered into by and between the United States of America, ("Lessor"), acting through the Bureau of Ocean Energy Management ("BOEM"), its authorized officer, and

Lessee	Interest Held
Mayflower Wind Energy LLC	100%

("Lessee"). This lease is effective on the date written above ("Effective Date") and will continue in effect until the lease terminates as set forth in Addendum "B." In consideration of any cash payment heretofore made by the Lessee to the Lessor and in consideration of the promises, terms, conditions, covenants, and stipulations contained herein and attached hereto, the Lessee and the Lessor agree as follows:

**Section 1: Statutes and Regulations.**

This lease is issued pursuant to subsection 8(p) of the Outer Continental Shelf Lands Act ("the Act"), 43 U.S.C. §§ 1331 *et seq.* This lease is subject to the Act and regulations promulgated pursuant to the Act, including but not limited to, offshore renewable energy and alternate use regulations at 30 CFR Part 585 as well as other applicable statutes and regulations in existence on the Effective Date of this lease. This lease is also subject to those statutes enacted (including amendments to the Act or other statutes) and regulations promulgated thereafter, except to the extent that they explicitly conflict with an express provision of this lease. It is expressly understood that amendments to existing statutes, including but not limited to the Act, and regulations may be made, and/or new statutes may be enacted or new regulations promulgated, which do not explicitly conflict with an express provision of this lease, and that the Lessee bears the risk that such amendments, regulations, and statutes may increase or decrease the Lessee's obligations under the lease.

## **Section 2: Rights of the Lessee.**

- (a) The Lessor hereby grants and leases to the Lessee the exclusive right and privilege, subject to the terms and conditions of this lease and applicable regulations, to: (1) submit to the Lessor for approval a Site Assessment Plan (SAP) and Construction and Operations Plan (COP) for the project identified in Addendum "A" of this lease; and (2) conduct activities in the area identified in Addendum "A" of this lease ("leased area") and/or Addendum "D" of this lease ("project easement(s)"), that are described in a SAP or COP that has been approved by the Lessor. This lease does not, by itself, authorize any activity within the leased area.
- (b) The rights granted to the Lessee herein are limited to those activities described in any SAP or COP approved by the Lessor. The rights granted to the Lessee are limited by the lease-specific terms, conditions, and stipulations required by the Lessor per Addendum "C."
- (c) This lease does not authorize the Lessee to conduct activities on the Outer Continental Shelf (OCS) relating to or associated with the exploration for, or development or production of, oil, gas, other seabed minerals, or renewable energy resources other than those renewable energy resources identified in Addendum "A."

## **Section 3: Reservations to the Lessor.**

- (a) All rights in the leased area and project easement(s) not expressly granted to the Lessee by the Act, applicable regulations, this lease, or any approved SAP or COP, are hereby reserved to the Lessor.
- (b) The Lessor will decide whether to approve a SAP or COP in accordance with the applicable regulations in 30 CFR Part 585. The Lessor retains the right to disapprove a SAP or COP based on the Lessor's determination that the proposed activities would have unacceptable environmental consequences, would conflict with one or more of the requirements set forth in subsection 8(p)(4) of the Act (43 U.S.C. § 1337(p)(4)), or for other reasons provided by the Lessor pursuant to 30 CFR 585.613(e)(2) or 30 CFR 585.628(f)(2). Disapproval of plans will not subject the Lessor to liability under the lease. The Lessor also retains the right to approve with modifications a SAP or COP, as provided in applicable regulations.
- (c) The Lessor reserves the right to suspend the Lessee's operations in accordance with the national security and defense provisions of Section 12 of the Act and applicable regulations.
- (d) The Lessor reserves the right to authorize other uses within the leased area and project easements(s) that will not unreasonably interfere with activities described in an approved SAP and/or COP, pursuant to this lease.

#### **Section 4: Payments.**

- (a) The Lessee must make all rent payments to the Lessor in accordance with applicable regulations in 30 CFR Part 585, unless otherwise specified in Addendum "B."
- (b) The Lessee must make all operating fee payments to the Lessor in accordance with applicable regulations in 30 CFR Part 585, as specified in Addendum "B."

#### **Section 5: Plans.**

The Lessee may conduct those activities described in Addendum "A" only in accordance with a SAP or COP approved by the Lessor. The Lessee may not deviate from an approved SAP or COP except as provided in applicable regulations in 30 CFR Part 585.

#### **Section 6: Associated Project Easement(s).**

Pursuant to 30 CFR 585.200(b), the Lessee has the right to one or more project easement(s), without further competition, for the purpose of installing gathering, transmission, and distribution cables, pipelines, and appurtenances on the OCS, as necessary for the full enjoyment of the lease, and under applicable regulations in 30 CFR Part 585. As part of submitting a COP for approval, the Lessee may request that one or more easement(s) be granted by the Lessor. If the Lessee requests that one or more easement(s) be granted when submitting a COP for approval, such project easements will be granted by the Lessor in accordance with the Act and applicable regulations in 30 CFR Part 585 upon approval of the COP in which the Lessee has demonstrated a need for such easements. Such easements must be in a location acceptable to the Lessor, and will be subject to such conditions as the Lessor may require. The project easement(s) that would be issued in conjunction with an approved COP under this lease will be described in Addendum "D" to this lease, which will be updated as necessary.

#### **Section 7: Conduct of Activities.**

The Lessee must conduct, and agrees to conduct, all activities in the leased area and project easement(s) in accordance with an approved SAP or COP, and with all applicable laws and regulations.

The Lessee further agrees that no activities authorized by this lease will be carried out in a manner that:

- (a) could unreasonably interfere with or endanger activities or operations carried out under any lease or grant issued or maintained pursuant to the Act, or under any other license or approval from any Federal agency;
- (b) could cause any undue harm or damage to the environment;
- (c) could create hazardous or unsafe conditions; or



- (d) could adversely affect sites, structures, or objects of historical, cultural, or archaeological significance, without notice to and direction from the Lessor on how to proceed.

### **Section 8: Violations, Suspensions, Cancellations, and Remedies.**

If the Lessee fails to comply with (1) any of the applicable provisions of the Act or regulations, (2) the approved SAP or COP, or (3) the terms of this lease, including associated Addenda, the Lessor may exercise any of the remedies that are provided under the Act and applicable regulations, including, without limitation, issuance of cessation of operations orders, suspension or cancellation of the lease, and/or the imposition of penalties, in accordance with the Act and applicable regulations.

The Lessor may also cancel this lease for reasons set forth in subsection 5(a)(2) of the Act (43 U.S.C. § 1334(a)(2)), or for other reasons provided by the Lessor pursuant to 30 CFR 585.437.

Non-enforcement by the Lessor of a remedy for any particular violation of the applicable provisions of the Act or regulations, or the terms of this lease, will not prevent the Lessor from exercising any remedy, including cancellation of this lease, for any other violation or for the same violation occurring at any other time.

### **Section 9: Indemnification.**

The Lessee hereby agrees to indemnify the Lessor for, and hold the Lessor harmless from, any claim caused by or resulting from any of the Lessee's operations or activities on the leased area or project easement(s) or arising out of any activities conducted by or on behalf of the Lessee or its employees, contractors (including Operator, if applicable), subcontractors, or their employees, under this lease, including claims for:

- a. loss or damage to natural resources,
- b. the release of any petroleum or any Hazardous Materials,
- c. other environmental injury of any kind,
- d. damage to property,
- e. injury to persons, and/or
- f. costs or expenses incurred by the Lessor.

Except as provided in any addenda to this lease, the Lessee will not be liable for any losses or damages proximately caused by the activities of the Lessor or the Lessor's employees, contractors, subcontractors, or their employees. The Lessee must pay the Lessor for damage, cost, or expense due and pursuant to this Section within 90 days after written demand by the Lessor. Nothing in this lease will be construed to waive any liability or relieve the Lessee from any penalties, sanctions, or claims that would otherwise apply by statute, regulation,

operation of law, or could be imposed by the Lessor or other government agency acting under such laws.

“Hazardous Material” means

1. Any substance or material defined as hazardous, a pollutant, or a contaminant under the *Comprehensive Environmental Response, Compensation, and Liability Act* at 42 U.S.C. §§ 9601(14) and (33);
2. Any regulated substance as defined by the Resource Conservation and Recovery Act (“RCRA”) at 42 U.S.C. § 6991 (7), whether or not contained in or released from underground storage tanks, and any hazardous waste regulated under RCRA pursuant to 42 U.S.C. §§ 6921 *et seq.*;
3. Oil, as defined by the Clean Water Act at 33 U.S.C. § 1321(a)(1) and the Oil Pollution Act at 33 U.S.C. § 2701(23); or
4. Other substances that applicable Federal, state, tribal, or local laws define and regulate as “hazardous.”

#### **Section 10: Financial Assurance.**

The Lessee must provide and maintain at all times a surety bond(s) or other form(s) of financial assurance approved by the Lessor in the amount specified in Addendum “B.” As required by the applicable regulations in 30 CFR Part 585, if, at any time during the term of this lease, the Lessor requires additional financial assurance, then the Lessee must furnish the additional financial assurance required by the Lessor in a form acceptable to the Lessor within 90 days after receipt of the Lessor’s notice of such adjustment.

#### **Section 11: Assignment or Transfer of Lease.**

This lease may not be assigned or transferred in whole or in part without written approval of the Lessor. The Lessor reserves the right, in its sole discretion, to deny approval of the Lessee’s application to transfer or assign all or part of this lease. Any assignment will be effective on the date the Lessor approves the Lessee’s application. Any assignment made in contravention of this section is void.

#### **Section 12: Relinquishment of Lease.**

The Lessee may relinquish this entire lease or any officially designated subdivision thereof by filing with the appropriate office of the Lessor a written relinquishment application, in accordance with applicable regulations in 30 CFR Part 585. No relinquishment of this lease or any portion thereof will relieve the Lessee or its surety of the obligations accrued hereunder, including but not limited to, the responsibility to remove property and restore the leased area and project easement(s) pursuant to section 13 of this lease and applicable regulations.

**Section 13: Removal of Property and Restoration of the Leased Area and Project Easement(s) on Termination of Lease.**

Unless otherwise authorized by the Lessor, pursuant to the applicable regulations in 30 CFR Part 585, the Lessee must remove or decommission all facilities, projects, cables, pipelines, and obstructions and clear the seafloor of all obstructions created by activities on the leased area and project easement(s) within two years following lease termination, whether by expiration, cancellation, contraction, or relinquishment, in accordance with any approved SAP, COP, or approved Decommissioning Application, and applicable regulations in 30 CFR Part 585.

**Section 14: Safety Requirements.**

The Lessee must:

- a. maintain all places of employment for activities authorized under this lease in compliance with occupational safety and health standards and, in addition, free from recognized hazards to employees of the Lessee or of any contractor or subcontractor operating under this lease;
- b. maintain all operations within the leased area and project easement(s) in compliance with regulations in 30 CFR Part 585 and orders from the Lessor and other Federal agencies with jurisdiction, intended to protect persons, property and the environment on the OCS; and
- c. provide any requested documents and records, which are pertinent to occupational or public health, safety, or environmental protection, and allow prompt access, at the site of any operation or activity conducted under this lease, to any inspector authorized by the Lessor or other Federal agency with jurisdiction.

**Section 15: Debarment Compliance.**

The Lessee must comply with the Department of the Interior's non-procurement debarment and suspension regulations set forth in 2 CFR Parts 180 and 1400 and must communicate the requirement to comply with these regulations to persons with whom it does business related to this lease by including this requirement in all relevant contracts and transactions.

**Section 16: Equal Opportunity Clause.**

During the performance of this lease, the Lessee must fully comply with paragraphs (1) through (7) of Section 202 of Executive Order 11246, as amended (reprinted in 41 CFR 60-1.4(a)), and the implementing regulations, which are for the purpose of preventing employment discrimination against persons on the basis of race, color, religion, sex, or national origin. Paragraphs (1) through (7) of Section 202 of Executive Order 11246, as amended, are incorporated in this lease by reference.

### **Section 17: Certification of Nonsegregated Facilities.**

By entering into this lease, the Lessee certifies, as specified in 41 CFR 60-1.8, that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. As used in this certification, the term "facilities" means, but is not limited to, any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees. Segregated facilities include those that are segregated by explicit directive or those that are in fact segregated on the basis of race, color, religion, sex, or national origin, because of habit, local custom, or otherwise; provided, that separate or single-user restrooms and necessary dressing or sleeping areas must be provided to assure privacy as appropriate. The Lessee further agrees that it will obtain identical certifications from proposed contractors and subcontractors prior to awarding contracts or subcontracts unless they are exempt under 41CFR 60-1.5.

### **Section 18: Notices.**

All notices or reports provided from one party to the other under the terms of this lease must be in writing, except as provided herein and in the applicable regulations in 30 CFR Part 585. Written notices and reports must be delivered to the Lessee's or Lessor's Lease Representative, as specifically listed in Addendum "A," either electronically, by hand, by facsimile, or by United States first class mail, adequate postage prepaid. Each party must, as soon as practicable, notify the other of a change to their Lessee's or Lessor's Contact Information listed in Addendum "A" by a written notice signed by a duly authorized signatory and delivered by hand or United States first class mail, adequate postage prepaid. Until such notice is delivered as provided in this section, the last recorded contact information for either party will be deemed current for service of all notices and reports required under this lease. For all operational matters, notices and reports must be provided to the party's Operations Representative, as specifically listed in Addendum "A," as well as the Lease Representative.

### **Section 19: Severability Clause.**

If any provision of this lease is held unenforceable, all remaining provisions of this lease will remain in full force and effect.

**Section 20: Modification.**

Unless otherwise authorized by the applicable regulations in 30 CFR Part 585, this lease may be modified or amended only by mutual agreement of the Lessor and the Lessee. No such modification or amendment will be binding unless it is in writing and signed by duly authorized signatories of the Lessor and the Lessee.

Mayflower Wind Energy LLC	The United States of America
_____ Lessee	_____ Lessor
_____ (Signature of Authorized Officer)	_____ (Signature of Authorized Officer)
_____ (Name of Signatory)	_____ (Name of Signatory)
_____ (Title)	_____ (Title)
_____ (Date)	_____ (Date)

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**ADDENDUM "A"**

DESCRIPTION OF LEASED AREA AND LEASE ACTIVITIES

Lease Number OCS-A 0521

I. Lessor and Lessee Contact Information

Lessee Company Number: 15082

(a) Lessor's Contact Information

	<b>Lease Representative</b>	<b>Operations Representative</b>
Title	Program Manager	Same as Lease Representative.
Address	U.S. Department of the Interior Bureau of Ocean Energy Management 45600 Woodland Road Sterling, Virginia 20166	
Phone	(703) 787-1300	
Fax	(703) 787-1708	
Email	renewableenergy@boem.gov	

(b) Lessee's Contact Information

	<b>Lease Representative</b>	<b>Operations Representative</b>
Name		
Title		
Address		
Phone		
Fax		
Email		

II. Description of Leased Area

The total acreage of the leased area is approximately 127,388 acres.

This area is subject to later adjustment, in accordance with applicable regulations (*e.g.*, contraction, relinquishment).

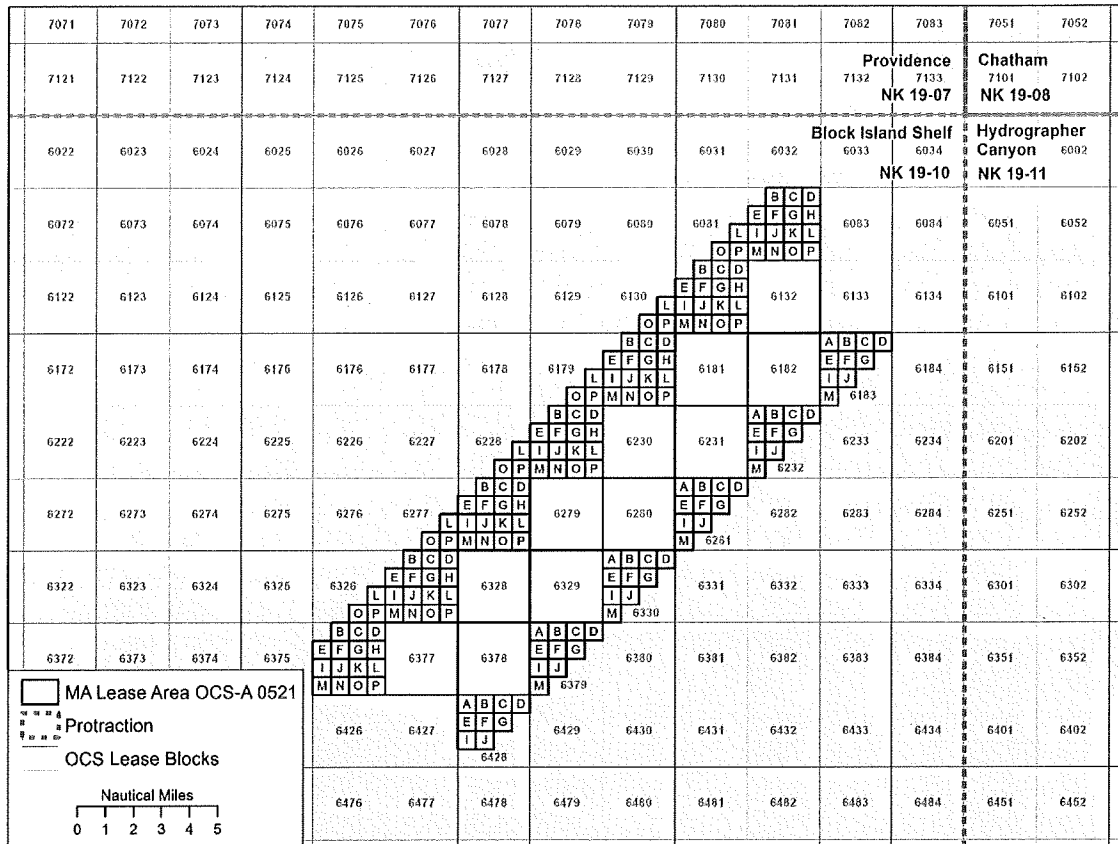
**Lease OCS-A 0521**



The following Blocks or portions of Blocks lying within Official Protraction Diagram Block Island Shelf NK19-10, are depicted on the map below and comprise 127,388 acres, more or less.

- 1) Block 6081, NE1/4 of SE1/4, S1/2 of SE1/4
- 2) Block 6082, E1/2, NE1/4 of NW1/4, S1/2 of NW1/4, SW1/4
- 3) Block 6130, NE1/4 of SE1/4, S1/2 of SE1/4
- 4) Block 6131, E1/2, NE1/4 of NW1/4, S1/2 of NW1/4, SW1/4
- 5) Block 6132, All of Block
- 6) Block 6179, NE1/4 of SE1/4, S1/2 of SE1/4
- 7) Block 6180, E1/2, NE1/4 of NW1/4, S1/2 of NW1/4, SW1/4
- 8) Block 6181, All of Block
- 9) Block 6182, All of Block
- 10) Block 6183, NE1/4 of NE1/4, W1/2 of NE1/4, NW1/4, N1/2 of SW1/4, SW1/4 of SW1/4
- 11) Block 6228, NE1/4 of SE1/4, S1/2 of SE1/4
- 12) Block 6229, E1/2, NE1/4 of NW1/4, S1/2 of NW1/4, SW1/4
- 13) Block 6230, All of Block
- 14) Block 6231, All of Block
- 15) Block 6232, NE1/4 of NE1/4, W1/2 of NE1/4, NW1/4, N1/2 of SW1/4, SW1/4 of SW1/4
- 16) Block 6277, NE1/4 of SE1/4, S1/2 of SE1/4
- 17) Block 6278, E1/2, NE1/4 of NW1/4, S1/2 of NW1/4, SW1/4
- 18) Block 6279, All of Block
- 19) Block 6280, All of Block
- 20) Block 6281, NE1/4 of NE1/4, W1/2 of NE1/4, NW1/4, N1/2 of SW1/4, SW1/4 of SW1/4
- 21) Block 6326, NE1/4 of SE1/4, S1/2 of SE1/4
- 22) Block 6327, E1/2, NE1/4 of NW1/4, S1/2 of NW1/4, SW1/4
- 23) Block 6328, All of Block
- 24) Block 6329, All of Block
- 25) Block 6330, NE1/4 of NE1/4, W1/2 of NE1/4, NW1/4, N1/2 of SW1/4, SW1/4 of SW1/4
- 26) Block 6376, E1/2, NE1/4 of NW1/4, S1/2 of NW1/4, SW1/4
- 27) Block 6377, All of Block
- 28) Block 6378, All of Block
- 29) Block 6379, NE1/4 of NE1/4, W1/2 of NE1/4, NW1/4, N1/2 of SW1/4, SW1/4 of SW1/4
- 30) Block 6428, NE1/4 of NE1/4, W1/2 of NE1/4, NW1/4, N1/2 of SW1/4

For the purposes of these calculations, a full Block is 2,304 hectares. The acreage of a hectare is 2.471043930.



Map ID: ERB-2018-1007

### III. Renewable Energy Resource

Wind

### IV. Description of the Project

A project to generate energy using wind turbine generators and any associated resource assessment activities, located on the Outer Continental Shelf in the leased area, as well as associated offshore substation platforms, inner array cables, and subsea export cables.

### V. Description of Project Easement(s)

Once approved, the Lessor will incorporate Lessee's project easement(s) in this lease as ADDENDUM "D."

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**ADDENDUM "B"**

LEASE TERM AND FINANCIAL SCHEDULE

Lease Number OCS-A 0521

I. Lease Term

The duration of each term of the lease is described below. The terms may be extended or otherwise modified in accordance with applicable regulations in 30 C.F.R. Part 585.

<b>Lease Term</b>	<b>Duration</b>
Preliminary Term	1 year
Site Assessment Term	5 years
Operations Term	33 years

Schedule: Addendum "C" includes a schedule and reporting requirements for conducting site characterization activities.

Renewal: The Lessee may request renewal of the operations term of this lease, in accordance with applicable regulations in 30 CFR Part 585. The Lessor, at its discretion, may approve a renewal request to conduct substantially similar activities as were originally authorized under this lease or in an approved plan. The Lessor will not approve a renewal request that involves development of a type of renewable energy not originally authorized in the lease. The Lessor may revise or adjust payment terms of the original lease as a condition of lease renewal.

II. Definitions

"Lease Issuance Date" refers to the date on which this lease has been signed by *both* the Lessee and the Lessor.

"Effective Date" has the same meaning as "effective date" in the Bureau of Ocean Energy Management (BOEM) regulations provided in 30 CFR 585.237.

"Lease Anniversary" refers to the anniversary of the Effective Date of the lease.

"End Date" refers to the earlier of a) the last calendar day of the last month of the Operations Term; or b) the date on which the lease terminates in the event of a lease termination.

“Commercial Operations” means the generation of electricity or other energy product for commercial use, sale, or distribution.

“Commercial Operation Date,” or “COD,” refers to the date on which the Lessee first begins Commercial Operations on the lease.

“Delivery Point” is the meter identified in the COP where the Lessee’s facility interconnects with the electric grid to deliver electricity for sale.

An individual wind generation turbine is said to be “available for Commercial Operations” on or after the first day that it engages in Commercial Operations on the lease; and to be no longer available for Commercial Operations on or after the day when it is permanently decommissioned. These dates are determined by the Construction and Operations Plan (COP).

### III. Payments

Unless otherwise authorized by the Lessor in accordance with the applicable regulations in 30 CFR Part 585, the Lessee must make payments as described below.

(a) **Rent.** The Lessee must pay rent as described below:

Rent payments prior to the COD, or prior to the lease End Date in the event that the lease terminates prior to the COD, are calculated by multiplying the acres in the leased area times the rental rate per acre as follows:

Lease OCS-A 0521

- Acres in Leased Area: 127,388
- Annual Rental Rate: \$3.00 per acre or fraction thereof
- Rental Fee for Entire Leased Area: \$3.00 x 127,388 = \$382,164

The first year’s rent payment of \$382,164 is due within 45 days of the date that the lease is received by the Lessee for execution. Rent for the entire leased area for the next year and for each subsequent year is due on or before each Lease Anniversary through the year in which the COD occurs. The rent for each year subsequent to the COD on the imputed portion of the lease not authorized for Commercial Operations is due on or before each Lease Anniversary. The imputed portion of the lease that is not authorized for Commercial Operations at each Lease Anniversary in year  $t$ ,  $S_t$ , and the corresponding Adjusted Annual Rent Payment will be determined as follows:

$$(A) S_t = \left( 1 - \frac{M_t^i}{\text{MAX}(M_t^i: \text{for all } t \geq 2)} \right)$$

(B) *Adjusted Annual Rent Payment* =  $S_t * \text{Rental Fee for Entire Leased Area}$

Where:

$S_t$  = Portion of the lease not authorized for Commercial Operations in year  $t$  based on the definition of  $t$  in Section III (b) (4) below.

$M'_t$  = Actual Nameplate capacity expressed in megawatts (MW) rounded to the nearest second decimal in year  $t$  of Commercial Operations on the lease as defined in Section III (b) (4) below, prior to any adjustments as specified in the most recent approved COP for turbine maintenance, replacements, repowering, or decommissioning. For our purposes nameplate capacity is the maximum rated electric output the turbines of the wind farm facility under commercial operations can produce at their rated wind speed designated by the turbine's manufacturer.

$MAX(M'_t)$  = Highest value of  $M'_t$  projected in the most recent approved version of the COP to be achieved in any year of Commercial Operations on the lease.

The Adjusted Annual Rent Payment calculated in Equation (A) herein, will be rounded up to the nearest dollar. The annual rent payments will be set forth in Addendum "E" when the COP is initially approved or subsequently revised.

Consider an example of a 1,000 MW project on a lease with an Effective Date of January 1, 2014 and a COD of January 1, 2022 on a lease area consisting of 100,000 acres as follows:

Payment (Jan. 1 <sup>st</sup> )	$M'_t$ (MW)	$MAX(M'_t)$ (MW)	$\left(1 - \frac{M'_t}{MAX(M'_t)}\right)$	Rental Fee for Entire Area	Payment Amount	
2014	0	1,000	1.0	\$300,000	\$300,000	
...	...		...		...	...
2021	0		1.0		\$300,000	
2022	500		0.5		\$150,000	
2023	500		0.5		\$150,000	
2024	500		0.5		\$150,000	
2025	800		0.2		\$60,000	
2026	800		0.2		\$60,000	
2027	800		0.2		\$60,000	
2028	1,000		0.0		\$0	

In the event a revised COP is approved by BOEM that identifies an alternative installation schedule that differs from the previously-approved COP, the Lessee must make subsequent payments based on the revised installation schedule. In addition, the Lessee must make a payment equal to the sum of any incremental annual rent payments that would have been due at the Lease Anniversary of prior years based on the differences between the Initial Installation Schedules specified in the previously-approved COP and the revised COP, plus interest on the annual balances, in accordance with 30 CFR 1218.54.

Consider an example whereby the initial COP specified an installation schedule with all 1,000 MW online at the COD, i.e.,  $M'_t$  is 1,000 MW at COD. The following table demonstrates how the back rent payments would be calculated if the project was initially scheduled as a

single phase, but then later determined to be the three-phase project as shown in the previous example in a revised COP approved prior to the payment due on January 1, 2023.

Payment (Jan. 1 <sup>st</sup> )	Initial $M'_t$ (MW)	Revised $M'_t$ (MW)	Single-Phase Payment Amount	Three-Phase Payment Amount	Back Rent Payment Amount	Subsequent Rent Payment Amount
2014	0	0	\$300,000	\$300,000	\$0	\$0
...	...	...	...	...	...	...
2021	0	0	\$300,000	\$300,000	\$0	\$0
2022	1,000	500	\$0	\$150,000	\$150,000	\$0
2023	1,000	500	\$0	\$150,000	\$0	\$150,000
2024	1,000	500	\$0	\$150,000	\$0	\$150,000
2025	1,000	800	\$0	\$60,000	\$0	\$60,000
2026	1,000	800	\$0	\$60,000	\$0	\$60,000
2027	1,000	800	\$0	\$60,000	\$0	\$60,000
2028	1,000	1,000	\$0	0	\$0	\$0

The last rent payment prior to Commercial Operations being authorized on the entire lease area, i.e., the year in which the value of  $S_t$  is equal to zero, or prior to the lease End Date, in the event that the lease terminates prior to Commercial Operations being authorized on the entire lease area, will represent the final rent payment, unless a revised COP identifying an alternative maximum initial capacity is approved by BOEM. All rent payments, including the last rent payment, are payable for the full year and will not be prorated to the COD or other installation milestones. The COD is equivalent to the authorization date for the first phase of development on the lease, to be updated based on the initial or revised approved COP documentation. The schedule of rent payments on the lease is defined in Addendum "E". All rent payments, except for the first 6-month rent payment, must be made as required in 30 CFR 1218.51. Late rent payments will be charged interest in accordance with 30 CFR 1218.54.

**(1) Project Easement.**

Rent for any project easement(s) is described in ADDENDUM "D".

**(2) Relinquishment.**

If the Lessee submits an application for relinquishment of a portion of the leased area within the first 45 calendar days following the date that the lease is received by the Lessee for execution, and the Lessor approves that application, no rent payment will be due on that relinquished portion of the leased area. Later relinquishments of any leased area will reduce the Lessee's rent payments due the year following the Lessor's approval of the relinquishment, through a reduction in the Acres in Leased Area and the corresponding Rental Fee for the Entire Leased Area and any related Adjusted Annual Rent Payments.

(b) **Operating Fee.** The Lessee must pay an operating fee as described below:

**(1) Initial Operating Fee Payment.**

The Lessee must pay an initial prorated operating fee within 45 calendar days after the COD. The initial operating fee payment covers the first year of Commercial Operations on the lease and will be calculated in accordance with subsection (4) below, using an operating fee rate of 0.02 and a capacity factor of 0.4.

**(2) Annual Operating Fee Payments.**

The Lessee must pay the operating fee for each subsequent year of Commercial Operations on or before each Lease Anniversary following the formula in subsection (4) below. The Lessee must calculate each operating fee annually subsequent to the initial operating fee payment using an operating fee rate of 0.02 through the thirty-three year operations term of the lease. The capacity factor of 0.4 will remain in effect until the Lease Anniversary of the year in which the Lessor adjusts the capacity factor.

**(3) Final Operating Fee Payment.**

The final operating fee payment is due on the Lease Anniversary prior to the End Date. The final operating fee payment covers the last year of Commercial Operations on the lease and will be calculated in accordance with the formula in subsection (4) below.

**(4) The formula for calculating the operating fee in year *t*.**

$F_t$	=	$M_t$	*	$H$	*	$C_p$	*	$P_t$	*	$r_t$
(annual operating fee)		(nameplate capacity)		(hours per year)		(capacity factor)		(power price)		(operating fee rate)

Where:

$t =$	the year of Commercial Operations on the lease starting from each Lease Anniversary, where $t$ equals 1 represents the year beginning on the Lease Anniversary prior to, or on, the COD.
$F_t =$	the dollar amount of the annual operating fee in year $t$ .
$M_t =$	the nameplate capacity expressed in megawatts (MW) rounded to the nearest second decimal place in year $t$ of Commercial Operations on the lease.  The value of $M_t$ , reflecting the availability of turbines, will be determined based on the COP. This value will be adjusted to reflect any modifications to the COP approved by BOEM as of the date each operating fee payment is due, in accordance with the calculation in Equation 1, for each year of Commercial Operations on the lease.



$$(1) M_t = \sum_{w=1}^{W_t} \left( N_w * \left[ \frac{\left( \sum_{d=1}^D E_{w,t,d} \right)}{D} \right] \right)$$

Where:

$W_t$  = Number of individual wind generation turbines,  $w$ , that will be available for Commercial Operations during any day of the year,  $t$ , per the COP.

$N_w$  = Nameplate capacity of individual wind generation turbine,  $w$ , per the COP expressed in MW.

$E_{w,t,d}$  = Indicates whether individual wind generation turbine,  $w$ , will be available for Commercial Operations on day  $d$  of year  $t$ . The value is set to 1 for any day in year  $t$  for which the condition is true, i.e., the wind turbine will be available for Commercial Operations, and zero for any day in year  $t$  for which the condition is false, i.e., the wind turbine will not be available for Commercial Operations. The month of February is always assumed to have 28 days for purposes of this calculation, where March 1<sup>st</sup> will be counted as the first day of Commercial Operations if Commercial Operations commence on February 29<sup>th</sup> of a leap year.

$D$  = Days in the year set equal to 365 in all years for purposes of this calculation.

$M_t$  may be reduced only in the event that installed capacity is permanently decommissioned per the COP.  $M_t$  will not be changed in response to routine or unplanned maintenance of units, including the temporary removal of a nacelle for off-site repair or replacement with a similar unit.

**EXAMPLE:** Assume that the Lease Anniversary is January 1<sup>st</sup>, the COD is July 1, 2018, that the facility will ultimately have 100 individual wind generation turbines with a nameplate capacity of 5.0 MW each, and that the COP specifies the following, cumulative installation schedule for wind turbines to become available for Commercial Operations:

- July 1, 2018 (COD): 20 turbines (20 new units);
- October 1, 2018: 45 turbines (25 new units);
- January 1, 2019: 50 turbines (5 new units);
- July 1, 2019: 65 turbines (15 new units);
- January 1, 2020: 95 turbines (30 new units);
- February 29, 2020: 100 turbines (5 new units).

Further assume that the COP calls for 50 of the turbines to be decommissioned after September 30, 2039 ( $t = 22$ ), and that the remaining turbines are decommissioned at the End Date of March 15, 2040 ( $t = 23$ ).

The value of  $M_t$  would be estimated as demonstrated in Table 1a for each year of Commercial Operations on the lease in this example.

**Table 1a: Example of  $M_t$  Calculations for Installation and Decommissioning**

$t$	Turbines	MW	Commercial Operations Period	Comm. Ops. Days	Days in Year	Share of Days	MW	$M_t$	
1	20	100	Jul. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	184	365	50.41%	50.41	81.92	
	25	125	Oct. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	92		25.21%	31.51		
2	50	250	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	250.00	287.81	
	15	75	Jul. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	184		50.41%	37.81		
3	95	475	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	475.00	495.96	
	5	25	Mar. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	306		83.84%	20.96		
4	100	500	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	500.00	500.00	
...	...	...	...	...		...	...	...	...
21	100	500	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	500.00	500.00	
22	50	250	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	250.00	436.98	
	50	250	Jan. 1 <sup>st</sup> to Sep. 30 <sup>th</sup>	273	74.79%	186.98			
23	50	250	Jan. 1 <sup>st</sup> to Mar. 15 <sup>th</sup>	74	20.27%	50.68	50.68		

To illustrate the impact of decommissioning a portion of the individual wind generation turbines and replacing them with units of greater capacity on the calculation of  $M_t$ , assume that at the end of March 31, 2022, 10 units are to be made unavailable due to decommissioning, and that the incremental units have a capacity of 7.0 MW and are expected to be made available for Commercial Operations on September 15, 2022. The impact on  $M_t$  in 2022 and in subsequent years starting in 2023 and continuing until decommissioning is illustrated in Table 1b.

**Table 1b: Example of  $M_t$  Calculations for Repowering**

$t$	Turbines	MW	Commercial Operations Period	Comm. Ops. Days	Days in Year	Share of Days	MW	$M_t$
5	90 (5.0)	450	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365	365	100.00%	450.00	483.04
	10 (5.0)	50	Jan. 1 <sup>st</sup> to Mar. 31 <sup>st</sup>	90		24.66%	12.33	
	10 (7.0)	70	Sep. 15 <sup>th</sup> to Dec. 31 <sup>st</sup>	108		29.59%	20.71	
6	90 (5.0)	450	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	450.00	520.00
	10 (7.0)	70	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	70.00	

H = the number of hours in the year for billing purposes which is equal to 8,760 for all years of Commercial Operations on the lease.

$c_p$  = the "Capacity Factor" in Performance Period p, which represents the share of anticipated generation of the facility that is delivered to where the Lessee's facility interconnects with the electric grid (i.e. the Delivery Point) relative to its generation at

continuous full power operation at the nameplate capacity, expressed as a decimal between zero and one.

The initial Capacity Factor ( $C_0$ ) will be set to 0.4.

The Capacity Factor will be subject to adjustment at the end of each Performance Period. After the sixth year of Commercial Operations on the lease has concluded, the Lessee will utilize data gathered from years two through six of Commercial Operations on the lease and propose a revised Capacity Factor to be used to calculate subsequent annual payments, as provided for in Table 2 below. A similar process will be conducted at the conclusion of each five-year Performance Period, thereafter.

**Table 2: Definition of Performance Periods**

Performance Period ( $p$ )	Commercial Operation Years ( $t$ )	Payments Affected by Adjustment	Capacity Factor ( $C$ )	Date End Year ( $n$ )
0 (COD)	Not Applicable	Payments 1 to 7	$C_0=0.4$	--
1	$t = 2$ to 6	Payments 8 to 12	$C_1$	$n_1=6$
2	$t = 7$ to 11	Payments 13 to 17	$C_2$	$n_2=11$
3	$t = 12$ to 16	Payments 18 to 22	$C_3$	$n_3=16$
4	$t = 17$ to 21	Payments 23 to 27	$C_4$	$n_4=21$
5	$t = 22$ to 26	Payments 28 to 32	$C_5$	$n_5=26$
6	$t = 27$ to 31	Payment 33	$C_6$	$n_6=31$

**Adjustments to the Capacity Factor**

The Actual 5-year Average Capacity Factor ( $X_p$ ) is calculated for each Performance Period after COD ( $p > 0$ ) per Equation 2 below.  $X_p$  represents the sum of actual, metered electricity generation in megawatt-hours (MWh) at the Delivery Point to the electric grid ( $A_t$ ) divided by the amount of electricity generation in MWh that would have been produced if the facility operated continuously at its full, stated capacity ( $M_t$ ) in all of the hours ( $h_t$ ) in each year,  $t$ , of the corresponding five-year period.

$$(2) X_p = \left( \frac{\sum_{t=n-4}^n A_t}{\sum_{t=n-4}^n M_t * h_t} \right)$$

Where:

$M_t$  = Nameplate Capacity as defined above.

$n$  = "Date End Year" value for the Performance Period,  $p$ , as defined in Table 2.

$p$  = Performance Period as defined in Table 2.

$A_t$  = Actual generation in MWh associated with each year of Commercial Operations,  $t$ , on the lease that is transferred at the Delivery Point; Delivery Point meter data

	<p>supporting the values submitted for annual actual generation must be recorded, preserved, and timely provided to the Lessor upon request. In the event the Lessor requires the assistance of the Lessee in obtaining information useful in verifying such information, for example by waiving confidentiality with respect to data held by a third party, such assistance must be timely provided.</p> <p><math>h_t</math> = Hours in the year on which the Actual Generation associated with each year of Commercial Operations, <math>t</math>, on the lease is based; this definition of "hours in the year" differs from the definition of H in the operating fee equation above. The hours in the year for purposes of calculating the capacity factor must take into account the actual number of hours, including those in leap years.</p> <p>The value of the Capacity Factor at the outset of Commercial Operations (<math>p = 0</math>) is set to 0.4 as stated in equation 3:</p> <p><b>(3)</b> <math>c_0 = 0.4</math></p> <p>The value of the Capacity Factor corresponding to each Performance Period (<math>c_p</math>) is set according to equations 4A, 4B, and 4C as follows for each value of <math>p</math> greater than zero. The Capacity Factor is set equal to the Actual 5-Year Average Capacity Factor provided that the value falls within a range of plus or minus 10 percent of the previous Performance Period's capacity factor.</p> <p><b>(4A)</b> <math>c_p = X_p</math> for <math>c_{p-1} * 0.90 \leq X_p \leq c_{p-1} * 1.10</math></p> <p><b>(4B)</b> <math>c_p = c_{p-1} * 0.90</math> for <math>X_p &lt; c_{p-1} * 0.90</math></p> <p><b>(4C)</b> <math>c_p = c_{p-1} * 1.10</math> for <math>X_p &gt; c_{p-1} * 1.10</math></p> <p>All values for <math>c_p</math> must be rounded to the nearest third decimal place.</p>
<p><math>P_t =</math></p>	<p>a measure of the annual average wholesale electric power price expressed in dollars per MW hour.</p> <p>The Lessee must calculate <math>P_t</math> at the time each operating fee payment is due, subject to approval by the Lessor. The Base Price (<math>P_b</math>) must equal the weighted average of the peak and off-peak spot price indices for the Northeast – Massachusetts Hub power market for the most recent year of data available as reported by the Federal Energy Regulatory Commission (FERC). If FERC stops publishing this data or the specified location of the data changes over time, the Lessor must specify an alternate source of data and methodology that is approximately equivalent.</p> <p>The peak and off-peak price indices must be weighted 52.0% and 48.0%, respectively, for purposes of estimating the weighted index value for the Base Price. For example, in the March 12, 2012 State of the Markets Report the peak price index for 2011 was</p>

\$51.99/MWh and the corresponding off-peak price index for 2011 was \$33.94/MWh, resulting in a weighted index value for the Base Price for 2011 ( $P_{2011}$ ) of \$43.33/MWh ( $=52.0\% * \$51.99 / \text{MWh} + 48.0\% * \$33.94 / \text{MWh}$ ). The calculation of  $P_b$  must be rounded up to the nearest, second decimal place.

The Base Price must be adjusted for inflation from the year associated with the published spot prices to the year in which the operating fee is to be paid as shown in equations (5A) and (5B):

$$(5A) P_t = P_b * \left( \frac{GDP_g}{GDP_{g-1}} \right)^{y-g} * \left( \frac{GDP_g}{GDP_b} \right) \text{ for } g \geq b$$

$$(5B) P_t = P_b * \left( \frac{GDP_g}{GDP_{g-1}} \right)^{y-b} \text{ for } g < b$$

Where:

$GDP$  = Annual Implicit Price Deflators for Gross Domestic Product (GDP deflator index) published by the U.S. Bureau of Economic Analysis (BEA) for the specified period.

If BEA stops publishing the data required for this calculation, or the specified location of the data changes over time, the Lessor will specify an alternative source of data and methodology that it considers approximately equivalent.

$b$  = The most recent year for which FERC reports the appropriate electricity spot price data expressed as the year, e.g., 2009, as in the illustrative example below.

$g$  = The most recent year for which GDP deflator indices are available from BEA expressed as the year, e.g., 2011, as in the illustrative example below.

$y$  = The year the annual payment is due expressed as the year corresponding to the value of  $t$  described above, e.g., 2013, as in the illustrative example below.

The second term on the right-hand side of equation (5A) represents a projected annual change in the index of inflation employing the last year of data available from BEA, while the third term represents the cumulative change in the index of inflation up to the previous year.

**Example:**

The following hypothetical example is provided to illustrate the methodology using Equation (5A) and the illustrative values provided for  $b$ ,  $g$ , and  $y$  above, applied to historical GDP deflator data. If the actual FERC price indices are based on 2009 data and the GDP deflator indices are available for 2011, the inflation-adjusted price index value would be determined from equation (5A) as follows for a payment occurring in  $y = 2013$ :

	$P_{t(2013)} = P_{2009} * \left( \frac{GDP_{2011}}{GDP_{2010}} \right)^{2013-2011} * \left( \frac{GDP_{2011}}{GDP_{2009}} \right) = \frac{\$38.40}{\text{MWh}} * \left( \frac{113.361}{110.992} \right)^2 * \left( \frac{113.361}{109.729} \right) = \frac{\$41.38}{\text{MWh}}$ <p>Note: The current GDP deflator index is 113.361 for 2011, 110.992 for 2010, and 109.729 for 2009 (last revised by BEA on April 27, 2012); the FERC index price for the year 2009 is \$38.40/MWh (On-peak: \$44.60/MWh; Off-peak: \$31.68/MWh; last revised March 12, 2012). Although 2011 FERC prices are available, the 2009 prices are used in the example to illustrate the concept.</p> <p>The Lessor and the Lessee will use the latest FERC price indices and revised BEA GDP deflator index values at the time the pricing adjustments are made. The source of data used in the calculations must be noted in the Lessee's documentation supporting their estimate of the value of <math>P_t</math> each year for review and approval by the Lessor.</p>
r <sub>t</sub> =	the operating fee rate of 0.02 (2%).

**(c) Reporting, Validation, Audits, and Late Payments.**

The Lessee must submit the values used in the operating fee formula to the Lessor at the time the annual payment based on these values is made. Submission of this and other reporting, validation, audit and late payment information as requested by the Lessor must be sent to the Lessor using the contact information indicated in Addendum "A", unless the Lessor directs otherwise. Failure to submit the estimated values and the associated documentation on time to the Lessor may result in penalties as specified in applicable regulations.

Within 60 days of the submission by the Lessee of the annual payment, the Lessor will review the data submitted and validate that the operating fee formula was applied correctly. If the Lessor validation results in a different operating fee amount, the amount of the annual operating fee payment will be revised to the amount determined by the Lessor.

The Lessor also reserves the right to audit the meter data upon which the Actual 5-year Average Capacity Factor is based at any time during the lease term. If, as a result of such audit, the Lessor determines that any annual operating fee payment was calculated incorrectly, the Lessor has the right to correct any errors and collect the correct annual operating fee payment amount.

If the annual operating fee is revised downward as a result of the Lessee's calculations, as validated by the Lessor, or an audit of meter data conducted by the Lessee or Lessor, the Lessee will be refunded the difference between the amount of the payment received and the amount of the revised annual operating fee, without interest. Similarly, if the payment amount is revised upward, the Lessee is required to pay the difference between the amount

of the payment received and the amount of the revised annual operating fee, plus interest on the balance, in accordance with 30 CFR § 1218.54.

Late operating fee payments will be charged interest in accordance with 30 CFR § 1218.54.

#### IV. Financial Assurance

The Lessor will base the determination for the amounts of all Site Assessment Plan (SAP), COP, and decommissioning financial assurance requirements on estimates of the cost to meet all accrued lease obligations. The Lessor determines the amount of supplemental and decommissioning financial assurance requirements on a case-by-case basis. The amount of financial assurance required to meet all lease obligations includes:

- (a) **Initial Financial Assurance.** Prior to the Lease Issuance date, the Lessee must provide an initial lease-specific bond, or other approved means of meeting the Lessor's initial financial assurance requirements in an amount equal to \$100,000.
- (b) **Additional Financial Assurance.** In addition to the initial lease-specific financial assurance discussed above, the Lessee is also required to provide additional supplemental bonds associated with the SAP and COP, or other form of financial assurances and a decommissioning bond or other approved means of meeting the Lessee's decommissioning obligations.
  - (1) Prior to the Lessor's approval of a SAP, the Lessor will require an additional supplemental bond or other form of financial assurance in an amount determined by the Lessor based on the complexity, number, and location of all facilities involved in the site assessment activities planned in the SAP, and estimates of the costs to meet all accrued obligations, in accordance with applicable BOEM regulations (30 CFR 585.515-537). The supplemental financial assurance requirement is in addition to the initial lease-specific financial assurance in the amount of \$100,000. The Lessee may meet these obligations by providing a new bond or other acceptable form of financial assurance, or increasing the amount of its existing bond or other form of financial assurance.
  - (2) Prior to the Lessor's approval of a COP, the Lessor may require an additional supplemental bond or other form of financial assurance in an amount determined by the Lessor based on the complexity, number, location of all facilities, activities and Commercial Operations planned in the COP, and estimates of the costs to meet all accrued obligations, in accordance with applicable BOEM regulations (30 CFR 585.515-537). The supplemental financial assurance requirement is in addition to the initial lease-specific financial assurance in the amount of \$100,000 and an additional supplemental bond or other form of financial assurance required with the SAP. The Lessee may meet this obligation by providing a new bond or other acceptable form of financial

assurance, or increasing the amount of its existing bond or other form of financial assurance.

- (3) The Lessor will require a decommissioning bond or other form of financial assurance based on the anticipated decommissioning costs in accordance with applicable BOEM regulations (30 CFR 585.515-537). The decommissioning obligation must be guaranteed through an acceptable form of financial assurance and will be due according to the schedule beginning before commencement of the installation of commercial facilities on a date or dates to be determined by the Lessor.

- (c) **Adjustments to Financial Assurance Amounts.** The Lessor reserves the right to adjust the amount of any financial assurance requirement (initial, supplemental, or decommissioning) associated with this lease and/or reassess the Lessee's cumulative lease obligations, including decommissioning obligations, at any time. If the Lessee's cumulative lease obligations and/or liabilities increase or decrease, the Lessor will notify the Lessee of any intended adjustment to the financial assurance requirements and provide the Lessee an opportunity to comment in accordance with applicable BOEM regulations.



U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT

**ADDENDUM "C"**

LEASE-SPECIFIC TERMS, CONDITIONS, AND STIPULATIONS

Lease Number OCS-A 0521

The Lessee's rights to conduct activities on the leased area are subject to the following terms, conditions, and stipulations. The Lessor reserves the right to impose additional terms and conditions incident to the future approval or approval with modifications of plans, such as a Site Assessment Plan (SAP) or Construction and Operations Plan (COP).

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## 1 DEFINITIONS

- 1.1 Definition of "Archaeological Resource": The term "archaeological resource" has the same meaning as "archaeological resource" in the Bureau of Ocean Energy Management (BOEM) regulations provided in 30 CFR 585.112.
- 1.2 Definition of "Dynamic Management Area (DMA)": The term "DMA" refers to a temporary area designated by the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) and consisting of a circle around a confirmed North Atlantic right whale sighting. The radius of this circle expands incrementally with the number of whales sighted, and a buffer is included beyond the core area to allow for whale movement. Mandatory or voluntary speed restrictions may be applied by NOAA NMFS within DMAs. Information regarding the location and status of applicable DMAs is available from the NMFS Office of Protected Resources.
- 1.3 Definition of "Effective Date": The term "Effective Date" has the same meaning as "effective date" in BOEM regulations provided in 30 CFR 585.237.
- 1.4 Definition of "Geological and Geophysical Survey (G&G Survey)": The term "G&G Survey" serves as a collective term for surveys that collect data on the geology of the seafloor and landforms below the seafloor. High resolution geophysical surveys and geotechnical (sub-bottom) exploration are components of G&G surveys.
- 1.5 Definition of "Geotechnical Exploration": The term "Geotechnical Exploration," also referred to as "Sub-bottom Sampling," or "Geotechnical Testing," is used to collectively refer to site specific sediment and underlying geologic data acquired from the seafloor and the sub-bottom and includes geotechnical surveys utilizing deep borings, vibracores, and cone penetration tests.
- 1.6 Definition of "High Resolution Geophysical Survey (HRG Survey)": The term "HRG Survey" means a marine remote-sensing survey using, but not limited to, such equipment as side-scan sonar, magnetometer, shallow and medium (Seismic) penetration sub-bottom profiler systems, narrow beam or multibeam echo sounder, or other such equipment employed for the purposes of providing data on geological conditions, identifying shallow hazards, identifying archaeological resources, charting bathymetry, and gathering other site characterization information.
- 1.7 Definition of "Protected Species": The term "protected species" includes marine mammals (those protected under the Endangered Species Act and those protected under the Marine Mammal Protection Act), sea turtles, sturgeon, and giant manta ray.
- 1.8 Definition of "Protected-Species Observer": The term "protected-species observer," or "PSO," means an individual who is trained in the shipboard identification and behavior of protected species.

- 1.9 Definition of "Ramp-up": The term "ramp-up" means the process of incrementally increasing the acoustic source level of the survey equipment when conducting HRG surveys until it reaches the operational setting.
- 1.10 Definition of "Site Assessment Activities": The term "site assessment activities" or "site assessment," has the same meaning as "site assessment activities" in 30 CFR 585.112.
- 1.11 Definition of "Qualified Marine Archaeologist": The term "qualified marine archaeologist" means a person retained by the Lessee who meets the Secretary of the Interior's Professional Qualifications Standards for Archaeology (48 FR 44738-44739), and has experience analyzing marine geophysical data.

## **2 SCHEDULE**

### **2.1 Site Characterization**

- 2.1.1 Survey Plan(s). Prior to conducting survey activities in support of the submission of a plan, the Lessee must submit to the Lessor at least one complete survey plan. Each distinct survey effort (e.g., mobilization) must be addressed by a survey plan, although a single survey plan may cover more than one effort. Each survey plan must include details and timelines of the surveys to be conducted on this lease necessary to support the submission of a plan (i.e., necessary to satisfy the information requirements in the applicable regulations, including but not limited to 30 CFR 585.606, 610, 611, 621, 626, 627). Each survey plan must include a description of historic property identification surveys that will be conducted to gather the information required by BOEM to complete review of a plan under the National Historic Preservation Act (e.g., offshore and onshore archaeological surveys and surveys within the viewshed of proposed renewable energy structures). Each survey plan must be consistent with the Lessee's Fisheries Communication Plan (see 4.1.3) and include a description of the Lessee's intentions to coordinate with the U.S. Coast Guard to prepare a Notice to Mariners for the specific survey activities described in the survey plan.

The Lessee must submit each survey plan to the Lessor at least 30 calendar days prior to the date of the required pre-survey meeting with the Lessor (See 2.1.2). Prior to the commencement of any survey activities described in the survey plan, the Lessee must modify each survey plan to address any comments the Lessor submits to the Lessee on the contents of the survey plan in a manner deemed satisfactory by the Lessor.

2.1.2 Pre-Survey Meeting(s) with the Lessor. At least 60 days prior to the initiation of survey activities in support of the submission of a plan (i.e., SAP and/or COP), the Lessee must hold a pre-survey meeting with the Lessor to discuss the applicable proposed survey plan and timelines. The Lessee must ensure the presence at this meeting of a Qualified Marine Archaeologist and any other relevant subject matter experts (e.g., terrestrial archaeologist, architectural historians) related to the proposed historic property identification surveys described in the survey plan unless otherwise authorized by the Lessor. The Lessor may request the presence of other relevant subject matter experts at this meeting.

## 2.2 **Progress Reporting**

2.2.1 Semi-Annual Progress Report. The Lessee must submit to the Lessor a semi-annual (i.e., every six months) progress report through the duration of the site assessment term that includes a brief narrative of the overall progress since the last progress report, or – in the case of the first report – since the Effective Date. The progress report must include an update regarding progress in executing the activities included in the survey plan(s), and include as an enclosure an updated survey plan(s) accounting for any modifications in schedule.

## 3 **NATIONAL SECURITY AND MILITARY OPERATIONS**

The Lessee must comply with the requirements specified in stipulations 3.1, 3.2 and 3.3 when conducting site characterization activities in support of plan (i.e., SAP and/or COP) submittal.

### 3.1 **Hold and Save Harmless**

Whether compensation for such damage or injury might be due under a theory of strict or absolute liability or otherwise, the Lessee assumes all risks of damage or injury to persons or property, which occur in, on, or above the Outer Continental Shelf (OCS), to any persons or to any property of any person or persons in connection with any activities being performed by the Lessee in, on, or above the OCS, if such injury or damage to such person or property occurs by reason of the activities of any agency of the United States Government, its contractors, or subcontractors, or any of its officers, agents or employees, being conducted as a part of, or in connection with, the programs or activities of the individual military command headquarters (hereinafter “the appropriate command headquarters”) listed in the contact information provided as an enclosure to this lease.

Notwithstanding any limitation of the Lessee's liability in Section 9 of the lease, the Lessee assumes this risk whether such injury or damage is caused in whole or in part by any act or omission, regardless of negligence or fault, of the United States, its contractors or subcontractors, or any of its officers, agents, or employees. The Lessee further agrees to indemnify and save harmless the United States against all claims for loss, damage, or injury in connection with the programs or activities of the command headquarters, whether the same be caused in whole or in part by the negligence or fault of the United States, its contractors, or subcontractors, or any of its officers, agents, or employees and whether such claims might be sustained under a theory of strict or absolute liability or otherwise.

### **3.2 Evacuation or Suspension of Activities**

- 3.2.1 General. The Lessee hereby recognizes and agrees that the United States reserves and has the right to temporarily suspend operations and/or require evacuation on this lease in the interest of national security pursuant to Section 3(c) of this lease.
- 3.2.2 Notification. Every effort will be made by the appropriate military agency to provide as much advance notice as possible of the need to suspend operations and/or evacuate. Advance notice will normally be given before requiring a suspension or evacuation. Temporary suspension of operations may include, but is not limited to the evacuation of personnel and appropriate sheltering of personnel not evacuated. "Appropriate sheltering" means the protection of all Lessee personnel for the entire duration of any Department of Defense activity from flying or falling objects or substances and will be implemented by an order (oral and/or written) from the BOEM Office of Renewable Energy Programs (OREP) Program Manager, after consultation with the appropriate command headquarters or other appropriate military agency, or higher Federal authority. The appropriate command headquarters, military agency, or higher authority will provide information to allow the Lessee to assess the degree of risk to, and provide sufficient protection for, the Lessee's personnel and property.
- 3.2.3 Duration. Suspensions or evacuations for national security reasons will not generally exceed seventy-two (72) hours; however, any such suspension may be extended by order of the OREP Program Manager. During such periods, equipment may remain in place, but all operations, if any, must cease for the duration of the temporary suspension if so directed by the OREP Program Manager. Upon cessation of any temporary suspension, the OREP Program Manager will immediately notify the Lessee such suspension has terminated and operations on the leased area can resume.
- 3.2.4 Lessee Point-of-Contact for Evacuation/Suspension Notifications. The Lessee must inform the Lessor of the persons/offices to be notified to implement the terms of 3.2.2 and 3.2.3.

3.2.5 Coordination with Command Headquarters. The Lessee must establish and maintain early contact and coordination with the appropriate command headquarters, in order to avoid or minimize the potential to conflict with and minimize the potential effects of conflicts with military operations.

3.2.6 Reimbursement. The Lessee is not entitled to reimbursement for any costs or expenses associated with the suspension of operations or activities or the evacuation of property or personnel in fulfillment of the military mission in accordance with 3.2.1 through 3.2.5 above.

### 3.3 **Electromagnetic Emissions**

The Lessee, prior to entry into any designated defense operating area, warning area, or water test area, for the purpose of commencing survey activities undertaken to support SAP or COP submittal must enter into an agreement with the commander of the appropriate command headquarters to coordinate the electromagnetic emissions associated with such survey activities. The Lessee must ensure that all electromagnetic emissions associated with such survey activities are controlled as directed by the commander of the appropriate command headquarters.

## 4 **STANDARD OPERATING CONDITIONS**

### 4.1 **General**

4.1.1 Vessel Strike Avoidance Measures. The Lessee must ensure that all vessels conducting activities in support of plan (i.e., SAP and COP) submittal, including those transiting to and from local ports and the lease area, comply with the vessel-strike avoidance measures specified in stipulations 4.1.1.1 through 4.1.1.8.3, except under extraordinary circumstances when complying with these requirements would put the safety of the vessel or crew at risk.

4.1.1.1 The Lessee must ensure that vessel operators and crews maintain a vigilant watch for marine mammals (whales, dolphins, porpoises, seals), sea turtles, and giant manta rays, and slow down or stop their vessel to avoid striking these protected species.

4.1.1.2 The Lessee must ensure that vessels 19.8 meters (m) (65 feet [ft]) in length or greater that operate between November 1 through July 31, operate at speeds of 10 knots (11.5 mph) or less.

4.1.1.3 The Lessee must ensure that vessel operators monitor NMFS North Atlantic Right Whale reporting systems (e.g., the Early Warning System, Sighting Advisory System, and Mandatory Ship Reporting System) from November 1 through July 31 and whenever a DMA is established within any area vessels operate.

4.1.1.4 The Lessee must ensure that all vessel operators comply with 10 knot (18.5 kilometers per hour [km/hr]) speed restrictions in any DMA.

4.1.1.5 The Lessee must ensure that all vessel operators reduce vessel speed to 10 knots or less when mother/calf pairs, pods, or large assemblages of marine mammals are observed near an underway vessel.

4.1.1.6 North Atlantic Right Whales.

4.1.1.6.1 The Lessee must ensure all vessels maintain a separation distance of 500 m (1,640 ft) or greater from any sighted North Atlantic right whale or unidentified large marine mammal.

4.1.1.6.2 The Lessee must ensure that the following avoidance measures are taken if a vessel comes within 500 m (1,640 ft) of any North Atlantic right whale:

4.1.1.6.2.1 If underway, any vessel must steer a course away from any North Atlantic right whale at 10 knots ( 18.5 km/h) or less until the 500 m (1,640 ft) minimum separation distance has been established (except as provided in 4.1.1.6.2.2).

4.1.1.6.2.2 If a North Atlantic right whale is sighted within 100 m (328 ft) to an underway vessel, the vessel operator must immediately reduce speed and promptly shift the engine to neutral. The vessel operator must not engage the engines until the North Atlantic right whale has moved beyond 100 m (328 ft), at which point the Lessee must comply with 4.1.1.6.2.1.

4.1.1.6.2.3 If a vessel is stationary, the vessel must not engage engines until the North Atlantic right whale has moved beyond 100 m (328 ft), at which point the Lessee must comply with 4.1.1.6.2.1.

4.1.1.7 Large Whales other than the North Atlantic Right Whale.

4.1.1.7.1 The Lessee must ensure all vessels maintain a separation distance of 100 m (328 ft) or greater from any sighted Endangered Species Act (ESA)-listed whales or humpback whales.

4.1.1.7.2 The Lessee must ensure that the following avoidance measures are taken if a vessel comes within 100 m (328 ft) of whale:

4.1.1.7.2.1 If underway, the vessel must reduce speed and shift the engine to neutral, and must not engage the engines until the whale has moved beyond 100 m (328 ft).

4.1.1.7.2.2 If stationary, the vessel must not engage engines until the whale has moved beyond 100 m (328 ft).

4.1.1.8 Small Cetaceans (Dolphins and Porpoises), Seals, Giant Manta Rays, and Sea Turtles.

4.1.1.8.1 The Lessee must ensure that all vessels underway do not divert to approach any small cetacean, seal, sea turtle, or giant manta ray.

- 4.1.1.8.2 The Lessee must ensure that all vessels maintain a separation distance of 50 meters (164 ft) or greater from any sighted small cetacean, seal, sea turtles, or giant manta ray, except when a small cetacean or seal approaches the vessel, in which case, the Lessee must follow 4.1.1.8.3 below.
- 4.1.1.8.3 If a small cetacean or seal approaches any vessel underway, the vessel underway must avoid excessive speed or abrupt changes in direction to avoid injury to the animal.
- 4.1.1.9 Vessel Operator Briefing. The Lessee must ensure that all vessel operators are briefed to ensure they are familiar with the requirements specified in 4.1.1.
- 4.1.2 Marine Trash and Debris Prevention. The Lessee must ensure that vessel operators, employees, and contractors actively engaged in activity in support of a plan (i.e., SAP and COP) submittal are briefed on marine trash and debris awareness and elimination, as described in the BSEE NTL No. 2015-G03 ("Marine Trash and Debris Awareness and Elimination") or any NTL that supersedes this NTL, except that the Lessor will not require the Lessee to post placards. The Lessee must ensure that these vessel operator employees and contractors receive training on the environmental and socioeconomic impacts associated with marine trash and debris and their responsibilities for ensuring that trash and debris are not intentionally or accidentally discharged into the marine environment. Briefing materials on marine debris awareness, elimination, and protected species are available at <http://oocmain.theooc.us/page41.html>.
- 4.1.3 Fisheries Communications Plan (FCP) and Fisheries Liaison. The Lessee must develop a publicly available FCP that describes the strategies that the Lessee intends to use for communicating with fisheries stakeholders prior to and during activities in support of the submission of a plan. The FCP must include the contact information for an individual retained by the Lessee as its primary point of contact with fisheries stakeholders (i.e., Fisheries Liaison). If the Lessee does not develop a project website, the FCP must be made available to the Lessor and the public upon request.
- 4.1.4 Entanglement Avoidance.
- 4.1.4.1 The Lessee must ensure that any structures or devices attached to the seafloor for continuous periods greater than 24 hours use the best available mooring systems for minimizing the risk of entanglement or entrainment of marine mammals, manta rays and sea turtles, while still ensuring the safety and integrity of the structure or device. The best available mooring system may include, but is not limited to, vertical and float lines (chains, cables, or coated rope systems), swivels, shackles, and anchor designs.
- 4.1.4.2 All mooring lines and ancillary attachment lines must use one or more of the following measures to reduce entanglement risk: shortest practicable line length, rubber sleeves,



weak-links, chains, cables or similar equipment types that prevent lines from looping or wrapping around animals, or entrapping protected species.

- 4.1.4.3 Any equipment must be attached by a line within a rubber sleeve for rigidity. The length of the line must be as short as necessary to meet its intended purpose.
- 4.1.4.4 If an entangled live or dead marine protected species is reported, the Lessee must provide any assistance to authorized stranding response personnel as requested by BOEM or NMFS.

## 4.2 Archaeological Survey Requirements

- 4.2.1 Archaeological Survey Required. The Lessee must provide the results of an archaeological survey with its plans.
- 4.2.2 Qualified Marine Archaeologist. The Lessee must ensure that the analysis of archaeological survey data collected in support of plan (e.g., SAP and/or COP) submittal and the preparation of archaeological reports in support of plan submittal are conducted by a Qualified Marine Archaeologist.
- 4.2.3 Tribal Pre-Survey Meeting. The Lessee must invite by certified mail the Narragansett Indian Tribe, the Mashpee Wampanoag Tribe, and the Wampanoag Tribe of Gay Head (Aquinnah) to a tribal pre-survey meeting. The purpose of this meeting will be for the Lessee and the Lessee's Qualified Marine Archaeologist to discuss the Lessee's Survey Plan and consider requests to monitor portions of the archaeological survey and the geotechnical exploration activities, including the visual logging and analysis of geotechnical samples (e.g., cores, etc.). The meeting must be held subsequent to the pre-survey meeting with the Lessor (see 2.1.2). Invitation to the tribal pre-survey meeting must be made at least 15 calendar days prior to the date of the proposed tribal pre-survey meeting. The meeting must be scheduled for a date at least 30 calendar days prior to commencement of survey activities performed in support of plan submittal and at a location and time that affords the participants a reasonable opportunity to participate. The anticipated date for the meeting must be identified in the timeline of activities described in the applicable survey plan (see 2.1.1).
- 4.2.4 Geotechnical Exploration. The Lessee may only conduct geotechnical exploration activities performed in support of plan (i.e., SAP and/or COP) submittal in locations where an analysis of the results of geophysical surveys has been completed. This analysis must include a determination by a Qualified Marine Archaeologist as to whether any potential archaeological resources are present in the area. Except as allowed by the Lessor under 4.2.6, the geotechnical exploration activities must avoid potential archaeological resources by a minimum of 50 m (164 ft), and the avoidance distance must be calculated from the maximum discernible extent of the archaeological resource. A Qualified Marine Archaeologist must certify, in the

Lessee's archaeological reports, that geotechnical exploration activities did not impact potential historic properties identified as a result of the HRG surveys performed in support of plan submittal, except as follows: in the event that the geotechnical exploration activities did impact potential historic properties identified in the archaeological surveys without the Lessor's prior approval, the Lessee and the Qualified Marine Archaeologist who prepared the report must instead provide a statement documenting the extent of these impacts.

- 4.2.5 Monitoring and Avoidance. The Lessee must inform the Qualified Marine Archaeologist that he or she may be present during HRG surveys and bottom-disturbing activities performed in support of plan (i.e., SAP and/or COP) submittal to ensure avoidance of potential archaeological resources, as determined by the Qualified Marine Archaeologist (including bathymetric, seismic, and magnetic anomalies; side scan sonar contacts; and other seafloor or sub-surface features that exhibit potential to represent or contain potential archaeological sites or other historic properties). In the event that this Qualified Marine Archaeologist indicates that he or she wishes to be present, the Lessee must facilitate the Qualified Marine Archaeologist's presence, as requested by the Qualified Marine Archaeologist, and provide the Qualified Marine Archaeologist the opportunity to inspect data quality.
- 4.2.6 No Impact without Approval. In no case may the Lessee knowingly impact a potential archaeological resource without the Lessor's prior approval.
- 4.2.7 Post-Review Discovery Clauses. If the Lessee, while conducting geotechnical exploration or any other bottom-disturbing site characterization activities in support of plan (i.e., SAP and COP) submittal and after review of the location by a Qualified Marine Archaeologist under 4.2.4, discovers an unanticipated potential archaeological resource, such as the presence of a shipwreck (e.g., a sonar image or visual confirmation of an iron, steel, or wooden hull, wooden timbers, anchors, concentrations of historic objects, piles of ballast rock) or evidence of a pre-contact archaeological site (e.g. stone tools, pottery or other pre-contact artifacts) within the project area, the Lessee must:
- 4.2.7.1 Immediately halt seafloor/bottom-disturbing activities within the area of discovery;
  - 4.2.7.2 Notify the Lessor within 24 hours of discovery;
  - 4.2.7.3 Notify the Lessor in writing via report to the Lessor within 72 hours of its discovery;
  - 4.2.7.4 Keep the location of the discovery confidential and take no action that may adversely affect the archaeological resource until the Lessor has made an evaluation and instructs the applicant on how to proceed; and
  - 4.2.7.5 Conduct any additional investigations as directed by the Lessor to determine if the resource is eligible for listing in the National Register of Historic Places

(30 CFR 585.802(b)). The Lessor will do this if: (1) the site has been impacted by the Lessee's project activities; or (2) impacts to the site or to the area of potential effect cannot be avoided. If investigations indicate that the resource is potentially eligible for listing in the National Register of Historic Places, the Lessor will tell the Lessee how to protect the resource or how to mitigate adverse effects to the site. If the Lessor incurs costs in protecting the resource, under Section 110(g) of the National Historic Preservation Act, the Lessor may charge the Lessee reasonable costs for carrying out preservation responsibilities under the OCS Lands Act (30 CFR 585.802(c-d)).

#### **4.3 Geological and Geophysical (G&G) Survey Requirements**

- 4.3.1 **General.** The Lessee must ensure that all vessels conducting activity in support of a plan (i.e., SAP and COP) submittal comply with the geological and geophysical survey requirements specified in 4.3 except under extraordinary circumstances when complying with these requirements would put the safety of the vessel or crew at risk.
- 4.3.2 **Visibility.** The Lessee must not conduct G&G surveys in support of plan (i.e., SAP and COP) submittal at night or if any observation conditions (e.g., darkness, rain, fog, and sea state) prevent visual monitoring of the HRG survey exclusion zone (see 4.3.6.1) or the geotechnical exploration exclusion zone (see 4.3.7.1), except as allowed under 4.3.3.
- 4.3.3 **Nighttime Survey Requirements.** If the Lessee intends to conduct G&G survey operations in support of plan submittal at night or when visual observation is otherwise impaired, the Lessee must use PSOs supplemented with night vision technology and a passive acoustic monitoring system to monitor the exclusion zone. The Lessee must submit to the Lessor an alternative monitoring plan detailing the monitoring methodology (e.g., active or passive acoustic monitoring technologies). No nighttime surveys may begin until the Lessor determines that the alternative monitoring plan is adequate to monitor for protected species.
- 4.3.4 **Protected-Species Observer.** The Lessee must ensure that the exclusion zone for all G&G surveys performed in support of plan (i.e., SAP and COP) submittal is monitored by NMFS-approved protected-species observers.
- 4.3.4.1 The Lessor must ensure all PSOs and Passive Acoustic Monitoring (PAM) Operators have completed a PSO and/or PAM training program, as appropriate. PSOs must be approved by NMFS prior to the start of a survey. Instructions and application requirements to become a NMFS-approved PSO can be found at: <https://www.greateratlantic.fisheries.noaa.gov/protected/esaobserver/index.html>.
- 4.3.4.2 No later than 7 calendar days prior to the scheduled start of survey activities that require PSOs, the Lessee must provide to the Lessor a list of PSOs that will implement best management practices (BMPs) during survey work. The Lessee must provide the Lessor a current approval from NMFS that indicates the PSOs

are currently qualified to work on survey, and documentation or certificate of individual PSOs' successful completion of a commercial PSO training course and/or PAM operator course with an overall examination score of 80% or greater (Baker et. al 2013 available at <https://www.fisheries.noaa.gov/resource/document/national-standards-protected-species-observer-and-data-management-program>).

- 4.3.4.3 The Lessee must submit a PSO/PAM Operator schedule showing the number of PSOs/PAM Operators used is sufficient to effectively monitor the affected area identified for each project (e.g., surveys or pile driving) according to the following: a) PSOs/PAM must not be on watch for more than 4 consecutive hours, with at least a 2-hour break after a 4-hour watch, unless otherwise accepted by the Lessor; b) PSOs/PAM must not work for more than 12 hours in any 24-hour period (Baker et al. 2013).
- 4.3.4.4 The Lessee must ensure PSO data is collected in accordance with standard reporting forms, software tools, and electronic data forms approved by BOEM for the particular activity.
- 4.3.5 Observation Location and Optical Device Availability. The Lessee must ensure that monitoring occurs from the highest available vantage point on the associated operational platform, allowing for 360-degree scanning. The Lessee must ensure that reticle binoculars and other suitable equipment are available to each observer to adequately perceive and monitor protected marine species within the exclusion zone during surveys conducted in support of plan (i.e., SAP and COP) submittal.
- 4.3.6 High-Resolution Geophysical Surveys. Stipulations specific to HRG surveys conducted in support of plan (i.e., SAP and COP) submittal where one or more acoustic sound sources is operating at frequencies below 200 kHz are provided in 4.3.6.1 through 4.3.6.9.
- 4.3.6.1 Establishment of Default Exclusion Zone. The Lessee must ensure a 200-meter radius exclusion zone around the sound source for ESA-listed whales and sea turtles. In the case of the North Atlantic right whale, the Lessee must observe a minimum separation distance of 500 m (1,640 ft), as required under 4.1.1.6.1. Exclusion zones for non-listed marine mammals will be determined through project-specific mitigation and monitoring requirements of Incidental Take Authorizations (ITAs) provided by the National Marine Fisheries Service. If an ITA is not required, default exclusion zones of 100 m (328 ft) for harbor porpoises and humpback whales, and 50 m (164 ft) for all other non-listed marine mammals must be established around each vessel conducting HRG survey activities.
- 4.3.6.2 High Resolution Geophysical Sound Source Verification. No later than 45 calendar days prior to the commencement of survey activities, the Lessee must submit the results of sound source verification for any active acoustic devices that may be used. The Lessee must submit sound source verification results containing the frequencies, source

level (dB re 1 $\mu$ Pa), and modeled distances to most current guidance specified by the Lessor for ear injury and behavioral disturbance in the survey area. If existing data is available, the analysis must provide an explanation why the existing data is expected to be representative for the equipment in the area to be surveyed. This explanation must include a discussion of any differences between the equipment tested and the equipment to be used, a discussion of any differences in propagation characteristics conditions (depth, water temperature and bottom conditions), and an explanation for how those differences would affect sound propagation and injury and behavioral disturbance distances. No surveys may begin until the Lessor determines that the sound source verification use of existing information is acceptable.

- 4.3.6.3 If the existing SSV information is not acceptable, the Lessee must submit to the Lessor a sound source verification plan for field measurements of any HRG equipment that will be used, no later than 30 calendar days prior to the commencement of survey activities. Acoustic measurements must be sufficient to establish the following: frequencies, source level (Peak, SEL, and RMS sound pressure levels re 1  $\mu$ Pa at 1 m), and the sound exposure distance for ear injury and behavioral harassment thresholds for marine mammal hearing groups, sea turtles, and fish specified by the Lessor. The Lessee must take these sound measurements from at least three reference distances at two depths (i.e., a depth at mid-water and a depth at approximately 1 m above the seafloor). The results of the field measurements must be provided to the Lessor for review at least 24 hours in advance of commencing a survey.
- 4.3.6.3.1 If the Lessor determines that the exclusion zone does not encompass the sound-exposure threshold for ear injury to protected species, the Lessor will consult with NMFS and may impose additional requirements on the Lessee.
- 4.3.6.4 Modification of Exclusion Zone per Lessee Request. The Lessee may use the field verification results to request modification of the exclusion zone for the specific HRG survey equipment under consideration. Any new exclusion zone radius proposed by the Lessee must be based on the most conservative field measurements of the largest exclusion zone and diving behavior of the protected species in the survey area. The Lessee may periodically reevaluate the modified zone using the field verification procedures described in 4.3.6.3. The Lessee must obtain Lessor approval of any new exclusion zone before it is implemented.
- 4.3.6.5 Clearance of Exclusion Zone. The Lessee must ensure that active acoustic sound sources will not be activated until the PSO has reported the exclusion zone clear of all marine mammals and sea turtles for 60 minutes.
- 4.3.6.6 Electromechanical Survey Equipment Ramp-Up. The Lessee must ensure that, when technically feasible, a “ramp-up” of the electromechanical survey

equipment occurs at the start or re-start of HRG survey activities. A ramp-up would begin with the power of the smallest acoustic equipment for the HRG survey at its lowest power output. The power output would be gradually turned up and other acoustic sources added in a way such that the source level would increase in steps not exceeding 6 dB per 5-minute period.

4.3.6.7 Shut Down for Protected Species. The Lessee must ensure that anytime a protected species is sighted within the exclusion zone defined in 4.3.6.1, the PSO must notify the Resident Engineer or other authorized individual, and call for an immediate shutdown of the electromechanical survey equipment. HRG survey equipment may be allowed to continue operating if marine mammals voluntarily approach the vessel (e.g., to bow ride) when the sound sources are at full operating power. The vessel operator must comply immediately with such a call by the PSO. Any disagreement or discussion must occur only after shut-down. Subsequent restart of the electromechanical survey equipment may only occur following clearance of the exclusion zone (see 4.3.6.5) and implementation of ramp-up procedures (see 4.3.6.6).

4.3.6.8 Pauses in Electromechanical Survey Sound Source. The Lessee must ensure that, if the electromechanical sound source shuts down for reasons other than encroachment into the exclusion zone by a whale or sea turtle, including reasons such as, but not limited to, mechanical or electronic failure, resulting in the cessation of the sound source for a period greater than 20 minutes, restart of the electromechanical survey equipment commences only after clearance of the exclusion zone (see 4.3.6.5) and implementation of ramp-up procedures (see 4.3.6.6). If the pause is less than 20 minutes the equipment may be restarted as soon as practicable at its operational level as long as visual surveys were continued diligently throughout the silent period and the exclusion zone remained clear of marine mammals and sea turtles. If visual surveys were not continued diligently during the pause of 20-minutes or less, the Lessee must clear the exclusion zone, as described in 9.3.6.5, and implement ramp-up procedures, as described in 4.3.6.6, prior to restarting the electromechanical survey equipment.

4.3.7 Geotechnical Exploration. Stipulations specific to geotechnical exploration limited to borings and vibracores and conducted in support of plan (i.e., SAP and COP) submittal are provided in 4.3.7.1 through 4.3.7.6.

4.3.7.1 Establishment of Default Exclusion Zones. A default exclusion zone distance of 500 m (1,640 ft) for North Atlantic right whales and other listed species must be monitored around each vessel conducting geotechnical survey activities where North Atlantic right whales are expected to occur. If surveys are conducted in an area where North Atlantic right whales are not expected to occur, a default exclusion zone of 200 m (656 ft) for other large whales and sea turtles must be

established around each vessel conducting HRG survey activities. Exclusion zones for non-listed marine mammals will be determined through project-specific mitigation and monitoring requirements of ITAs provided by the NMFS. If an ITA is not required, default exclusion zones of 100 m (328 ft) for harbor porpoises and humpback whales, and 50 m (164 ft) for all other non-listed marine mammals must be established around each vessel conducting HRG survey activities.

- 4.3.7.2 Geotechnical Sound Source Verification. No later than 45 calendar days prior to the commencement of any surveys with any geotechnical survey equipment producing underwater sound levels, the Lessee must submit existing information on the sound levels produced by the equipment. If adequate information on the equipment is not available, the Lessor may require the Lessee to submit a plan to the Lessor for field verification of the sound source levels and of any geotechnical survey equipment operating at frequencies below 200 kHz. The Lessor must approve this verification plan prior to the commencement of the survey. The Lessor may require the Lessee to modify the plan in a manner deemed satisfactory by the Lessor.
- 4.3.7.2.1 If the Lessor determines that the exclusion zone is not effective to minimize impacts to protected species, the Lessor may impose additional requirements on the Lessee, including, but not limited to, required expansion of this exclusion zone.
- 4.3.7.3 Clearance of Exclusion Zone. The Lessee must ensure that the geotechnical sound source is not activated until the PSO has reported the exclusion zone clear of all marine mammals and sea turtles for 60 minutes.
- 4.3.7.4 Modification of Exclusion Zone per Lessee Request. If the Lessee wishes to modify the default exclusion zone for specific geotechnical exploration equipment, the Lessee must submit a plan for verifying the sound source levels of the specific geotechnical exploration equipment to the Lessor. The plan must demonstrate how the field verification activities will comply with the requirements of 4.3.7.2. The Lessor may require that the Lessee modify the plan to address any comments the Lessor submits to the Lessee on the contents of the plan in a manner deemed satisfactory to the Lessor prior to the commencement of field verification activities. Any new exclusion zone radius proposed by the Lessee must be based on the sound exposure distance for ear injury or behavioral harassment thresholds for marine mammal hearing groups, sea turtles, and fish as defined by the Lessor. The Lessee must use this modified zone for all subsequent use of field-verified equipment. The Lessee may periodically reevaluate the modified zone using the field verification procedures described in 4.3.7.2. The Lessee must obtain Lessor approval of any new exclusion zone before it is implemented.

- 4.3.7.5 Shut Down for Whales and Sea Turtles. If any whales or sea turtles are sighted at or within the exclusion zone, an immediate shut-down of the geotechnical survey equipment is required. The vessel operator must comply immediately with such a call by the PSO. Any disagreement or discussion must occur only after shut-down. Subsequent restart of the geotechnical survey equipment may only occur following clearance of the exclusion zone (see 4.3.7.3).
- 4.3.7.6 Pauses in Geotechnical Survey Sound Source. The Lessee must ensure that, if the geotechnical sound source shuts down for reasons other than encroachment into the exclusion zone by a whale or sea turtle, including reasons such as, but not limited to, mechanical or electronic failure, resulting in the cessation of the sound source for a period greater than 20 minutes, restart of the geotechnical survey equipment commences only following clearance of the exclusion zone (see 4.3.7.3). If the pause is less than 20 minutes, the equipment may be restarted as soon as practicable as long as visual surveys were continued diligently throughout the silent period and the exclusion zone remained clear of marine mammals and sea turtles. If visual surveys were not continued diligently during the pause of 20 minutes or less, the Lessee must clear the exclusion zone, as described in 4.3.7.3, prior to restarting the geotechnical survey equipment.

#### 4.4 **Reporting Requirements**

- 4.4.1 The Lessee must ensure compliance with the following reporting requirements for site characterization activities performed in support of plan (i.e., SAP and COP) submittal and must use the contact information provided as an enclosure to this lease, or updated contact information as provided by the Lessor, to fulfill these requirements:
- 4.4.2 Field Verification of Exclusion Zone Preliminary Report. The Lessee must report the results of any required sound source verification of the exclusion zone for G&G survey equipment operating below 200 kHz to the Lessor and NMFS prior to using the equipment during survey activities conducted in support of plan submittal. The Lessee must include in its report a preliminary interpretation of the results for all sound sources, which will include details of the operating frequencies, sound pressure levels (SPLs) (measured in Peak, SEL, and RMS), the distance to the ear injury and behavior thresholds, frequency bands measured, as well as associated latitude/longitude positions, ranges, depths and bearings between sound sources and receivers.
- 4.4.3 Reports of Survey Activities and Observations. The Lessee must provide the Lessor with reports every 90 calendar days following the completion of HRG or geotechnical exploration activities, and a final report at the conclusion of the HRG or geotechnical exploration activities. Each report must include a summary of survey activities, all PSO and incident reports (See Appendices A and B), and an estimate of the number of listed marine mammals, sea turtles, and sturgeon observed and/or taken during these survey activities. The final report must contain a detailed



analysis and interpretation of the sound source verification data, if such data was collected by the Lessee.

- 4.4.4 Reporting Injured or Dead Protected Species. The Lessee must ensure that sightings of any injured or dead protected species (e.g., marine mammals, sea turtles, giant manta ray or sturgeon) are reported to the Lessor, NMFS, and the NMFS Greater Atlantic (Northeast) Region's Stranding Hotline (866-755-6622 or current) within 24 hours of sighting, regardless of whether the injury or death is caused by a vessel. In addition, if the injury or death was caused by a collision with a project-related vessel, the Lessee must ensure that the Lessor is notified of the incident within 24 hours. The Lessee must use the form provided in Appendix A to ADDENDUM "C" to report the sighting or incident. If the Lessee's activity is responsible for the injury or death, the Lessee must ensure that the vessel assist in any salvage effort as requested by NMFS.
- 4.4.5 Reporting Observed Impacts to Protected Species.
- 4.4.5.1 The Lessee must report any observed takes of listed marine mammals, sea turtles sturgeon, or giant manta ray resulting in injury or mortality within 24 hours to the Lessor and NMFS.
- 4.4.5.2 The Lessee must record any observed injuries or mortalities using the form provided in Appendix A to ADDENDUM "C".
- 4.4.6 Protected Species Observer Reports. The Lessee must ensure that the PSOs record all observations of protected species using standard marine mammal observer data collection protocols. The list of required data elements for these reports is provided in Appendix B to ADDENDUM "C".
- 4.4.7 Marine Mammal Protection Act Authorization(s). If the Lessee is required to obtain an authorization pursuant to section 101(a)(5) of the Marine Mammal Protection Act prior to conducting survey activities in support of plan submittal, the Lessee must provide to the Lessor a copy of the authorization prior to commencing these activities.

## **5 SITING CONDITIONS**

- 5.1 **Vessel Transit Corridors.** In its COP project design, Lessee must extend any BOEM-approved vessel transit corridors in adjacent lease areas, unless BOEM determines that such corridors are not necessary or can be modified. Lessee may not construct any surface structures in such vessel transit corridors.
- 5.2 **Surface Structure Setback.** In its COP project design, the Lessee must incorporate a 750 m setback from any shared lease boundary within which the Lessee may not construct any surface structures, unless the Lessee and the adjacent lessee agree to a smaller setback, the Lessee submits such agreement to BOEM, and BOEM approves it.

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**APPENDIX A TO ADDENDUM "C"**

Lease Number OCS-A 0521

**Incident Report: Protected Species Injury or Mortality**

*Photographs/Video should be taken of all injured or dead animals.*

Observer's full name: \_\_\_\_\_

Reporter's full name: \_\_\_\_\_

Species Identification: \_\_\_\_\_

Name and type of platform: \_\_\_\_\_

Date animal observed: \_\_\_\_\_ Time animal observed: \_\_\_\_\_

Date animal collected: \_\_\_\_\_ Time animal collected: \_\_\_\_\_

Environmental conditions at time of observation (i.e. tidal stage, Beaufort Sea State, weather):  
\_\_\_\_\_  
\_\_\_\_\_

Water temperature (°C) and depth (m/ft) at site: \_\_\_\_\_

Describe location of animal and events 24 hours leading up to, including and after, the incident (incl. vessel speeds, vessel activity and status of all sound source use):  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Photograph/Video taken: YES / NO    If Yes, was the data provided to NMFS? YES / NO  
(Please label *species, date, geographic site* and *vessel name* when transmitting photo and/or video)

Date and Time reported to NMFS Stranding Hotline: \_\_\_\_\_

**Sturgeon Information:** *(please designate cm/m or inches and kg or lbs)*

Species: \_\_\_\_\_

Fork length (or total length): \_\_\_\_\_ Weight: \_\_\_\_\_

Condition of specimen/description of animal: \_\_\_\_\_

Fish Decomposed: NO SLIGHTLY MODERATELY SEVERELY

Fish tagged: YES / NO If Yes, please record all tag numbers.

Tag #(s): \_\_\_\_\_

Genetic samples collected: YES / NO

Genetics samples transmitted to: \_\_\_\_\_ on \_\_\_\_/\_\_\_\_/20\_\_

**Sea Turtle Species Information:** *(please designate cm/m or inches)*

Species: \_\_\_\_\_ Weight (kg or lbs): \_\_\_\_\_

Sex: Male Female Unknown

How was sex determined?: \_\_\_\_\_

Straight carapace length: \_\_\_\_\_ Straight carapace width: \_\_\_\_\_

Curved carapace length: \_\_\_\_\_ Curved carapace width: \_\_\_\_\_

Plastron length: \_\_\_\_\_ Plastron width: \_\_\_\_\_

Tail length: \_\_\_\_\_ Head width: \_\_\_\_\_

Condition of specimen/description of animal: \_\_\_\_\_

**Existing Flipper Tag Information**

Left: \_\_\_\_\_ Right: \_\_\_\_\_

PIT Tag#: \_\_\_\_\_

**Miscellaneous:**

Genetic biopsy collected: YES NO Photographs taken: YES NO

**Turtle Release Information:**

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

State: \_\_\_\_\_ County: \_\_\_\_\_

**Remarks:** (note if turtle was involved with tar or oil, gear or debris entanglement, wounds, or mutilations, propeller damage, papillomas, old tag locations, etc.) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Marine Mammal information:** (please designate cm/m or ft/inches)

Length of marine mammal (note direct or estimated): \_\_\_\_\_

Weight (if possible, kg or lbs): \_\_\_\_\_

Sex of marine mammal (if possible): \_\_\_\_\_

How was sex determined?: \_\_\_\_\_

Confidence of Species Identification:                      SURE                      UNSURE                      BEST GUESS

Description of Identification characteristics of marine mammal: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Genetic samples collected:                      YES / NO

Genetic samples transmitted to: \_\_\_\_\_ on \_\_\_\_/\_\_\_\_/20\_\_

Fate of marine mammal: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Description of Injuries Observed: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Other Remarks/Drawings: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

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**APPENDIX B TO ADDENDUM "C"**

Lease Number OCS-A 0521

**REQUIRED DATA ELEMENTS FOR PROTECTED SPECIES OBSERVER REPORTS**

The Lessee must ensure that the PSO record all observations of protected species using standard marine mammal observer data collection protocols. The list of required data elements for these reports is provided below:

1. Vessel name;
2. PSOs' names and affiliations;
3. Date;
4. Time and latitude/longitude when daily visual survey began;
5. Time and latitude/longitude when daily visual survey ended; and
6. Average environmental conditions during visual surveys including:
  - a. Wind speed and direction;
  - b. Sea state (glassy, slight, choppy, rough, or Beaufort scale);
  - c. Swell (low, medium, high, or swell height in meters); and
  - d. Overall visibility (poor, moderate, good).
7. Species (or identification to lowest possible taxonomic level);
8. Certainty of identification (sure, most likely, best guess);
9. Total number of animals;
10. Number of juveniles;
11. Description (as many distinguishing features as possible of each individual seen, including length, shape, color and pattern, scars or marks, shape and size of dorsal fin, shape of head, and blow characteristics);
12. Direction of animal's travel relative to the vessel (preferably accompanied by a drawing);
13. Behavior (as explicit and detailed as possible, noting any observed changes in behavior);
14. Activity of vessel when sighting occurred.

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**ADDENDUM "D"**

PROJECT EASEMENT

Lease Number OCS-A 0521

This section includes a description of the Project Easement(s), if any, associated with this lease, and the financial terms associated with it. This section will be updated as necessary.

I. Rent

The Lessee must begin submitting rent payments for any project easement associated with this lease commencing on the date that BOEM approves the Construction and Operations Plan (COP) or modification of the COP describing the project easement. Annual rent for a project easement 200 feet wide, centered on the transmission cable, is \$70.00 per statute mile. For any additional acreage required, the Lessee must also pay the greater of \$5.00 per acre per year or \$450.00 per year.

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**ADDENDUM "E"**

RENT SCHEDULE

Lease Number OCS-A 0521

This section includes a description of the schedule for rent payments that will be determined after the Construction and Operations Plan has been approved or approved with modifications. This section will be updated as necessary.

Unless otherwise authorized by the Lessor in accordance with the applicable regulations in 30 CFR Part 585, the Lessee must make rent payments as described below.

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Lease Number OCS-A 0521

**CONTACT INFORMATION FOR REPORTING REQUIREMENTS**

The following contact information must be used for the reporting and coordination requirements specified in ADDENDUM "C", Stipulation 3:

**United States Fleet Forces (USFF) N46**  
**1562 Mitscher Ave, Suite 250**  
**Norfolk, VA 23551**  
**(757) 836-6206**

The following contact information must be used for the reporting requirements in ADDENDUM C, Stipulation 4.4:

**Reporting Injured or Dead Protected Species**

National Oceanic and Atmospheric Administration  
Fisheries Northeast Region's Stranding Hotline  
800-900-3622

**All other reporting requirements in Stipulation 4.4**

Bureau of Ocean Energy Management  
Environment Branch for Renewable Energy  
Phone: 703-787-1340  
Email: [renewable\\_reporting@boem.gov](mailto:renewable_reporting@boem.gov)

National Marine Fisheries Service  
Northeast Regional Office, Protected Resources Division  
Section 7 Coordinator  
Phone: 978-281-9328  
Email: [incidental.take@noaa.gov](mailto:incidental.take@noaa.gov)

Vessel operators may send a blank email to [ne.rw.sightings@noaa.gov](mailto:ne.rw.sightings@noaa.gov) for an automatic response listing all current dynamic management areas.

**ENCLOSURE**



## Appendix B: NMFS 2023 IHA



## INCIDENTAL HARASSMENT AUTHORIZATION

SouthCoast Wind Energy, LLC (SouthCoast Wind) and its designees are hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371(a)(5)(D)) to incidentally harass marine mammals, under the following conditions:

1. This incidental harassment authorization (IHA) is valid from May 12, 2023 through May 11, 2024.
2. This IHA authorizes take incidental to marine site characterization surveys in coastal waters off Massachusetts, as specified in SouthCoast Wind's IHA application, in the Bureau of Ocean Energy Management (BOEM) Lease Area OCS-A-0521.
3. General Conditions
  - (a) A copy of this IHA must be in the possession of SouthCoast Wind, the vessel operator, other relevant personnel, the lead marine mammal observer (PSO) (see description below), and any other relevant designees operating under the authority of the IHA.
  - (b) The species and/or stocks authorized for taking are listed in Table 1. Authorized take, by Level B harassment only, is limited to the species and numbers listed in Table 1.
  - (c) The taking by injury, serious injury or death of any of the species listed in Table 1 or any taking of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA. Any taking exceeding the authorized amounts listed in Table 1 is prohibited and may result in the modification, suspension, or revocation of this IHA.
  - (d) The Holder must instruct relevant vessel personnel with regard to the authority of the protected species monitoring team, and must ensure that relevant vessel personnel and the PSO team participate in a joint onboard briefing, led by the vessel operator and lead PSO, prior to beginning work to ensure that responsibilities, communication procedures, protected species monitoring protocols, safety and operational procedures, and IHA requirements are clearly understood. The briefing must be repeated when relevant new personnel join the survey operations before work involving those personnel commences.
  - (e) The acoustic source must be deactivated when not acquiring data or preparing to acquire data, except as necessary for testing. Unnecessary use of the acoustic source shall be avoided.
  - (f) The Holder must abide by the relevant Project Design Criteria (PDCs 4, 5 and 7) of the programmatic consultation completed by NMFS' Greater Atlantic Regional Fisheries Office on June 29, 2021 (revised September 2021), pursuant to section 7 of the Endangered Species Act (ESA).
4. Mitigation Requirements



- (a) The Holder must use independent, dedicated, qualified protected species observers (PSOs), meaning that the PSOs must be employed by a third-party observer provided, must have no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of protected species and mitigation requirements (including brief alerts regarding maritime hazards), and must be qualified pursuant to section 5(a) of this IHA.
- (b) The operator must establish and maintain clear lines of communication directly between PSOs on duty and crew controlling the acoustic source to ensure that mitigation commends are conveyed swiftly while allowing PSOs to maintain watch.
- (c) During survey operations involving use of the sparker (*e.g.*, any day on which use of the sparker source is planned to occur, and whenever the sparker source is in the water, whether activated or not), a minimum of one PSO must be on duty and conducting visual observations at all times during daylight hours (*i.e.*, from 30 minutes prior to sunrise through 30 minutes following sunset), and a minimum of two PSOs must be on duty and conducting visual observations at all times during nighttime hours.
- (d) Visual monitoring must begin no less than 30 minutes prior to ramp-up and must continue until one hour after use of the acoustic source ceases.
- (e) Visual PSOs shall conduct visual observations from the most appropriate observation posts using appropriate equipment and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. When two PSOs are required, the PSOs must coordinate to ensure 360° visual coverage around the vessel.
- (f) Any observations of marine mammals by crew members aboard any vessel associated with the survey must be relayed to the PSO team.
- (g) PSOs may be on watch for a maximum of four consecutive hours followed by a break of at least one hour between watches and may conduct a maximum of 12 hours of observations per 24-hour period.
- (h) PSOs shall establish and monitor applicable shutdown zones during use of the sparker source (see below). These zones shall be based upon the radial distance from the acoustic source (rather than being based around the vessel itself).
- (i) Shutdown zones must be as follows:
  - (i) A 500-meter (m) shutdown zone for North Atlantic right whales (NARWs).
  - (ii) A 100-m shutdown zone for all other marine mammals (excluding NARWs).
- (j) Pre-start clearance and ramp up – A ramp-up procedure, involving a gradual increase in source level output, is required at all times as part of the activation of the acoustic source when technically feasible. Operators should ramp up sources to half power for 5 minutes and then proceed to full power. A 30-minute pre-start clearance observation period of the shutdown zones must occur prior to the start of ramp-up. All operators must adhere to the following pre-start clearance and ramp-up requirements:

- (i) The 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 in order to allow the PSOs time to monitor the shutdown zones for 30 minutes prior to the initiation of ramp-up (pre-start clearance). During this 30 minute pre-start clearance period the entire shutdown zone must be visible, except as indicated below.
- (ii) Ramp-ups shall be scheduled so as to minimize the time spent with the source activated.
- (iii) A visual PSO conducting pre-start clearance observations must be notified again immediately prior to initiating ramp-up procedures and the operator must receive confirmation from the PSO to proceed.
- (iv) Any PSO on duty has the authority to delay the start of survey operations if a marine mammal is detected within the applicable pre-start clearance zone.
- (v) Ramp-up may not be initiated if any marine mammal to which the prestart clearance requirement applies is within the shutdown zone. If a marine mammal is observed within the shutdown zone during the 30 minute pre-start clearance period, ramp-up may not begin until the animal(s) has been observed exiting the zones or until an additional time period has elapsed with no further sightings (30 minutes for all baleen whale species and sperm whales and 15 minutes for all other species).
  - (A) The pre-start clearance requirement is waived for small delphinids (individuals belonging to the following genera of the Family Delphinidae: *Steno*, *Delphinus*, *Lagenorhynchus*, *Stenella*, and *Tursiops*) and pinnipeds. Detection of a small delphinid or pinniped within the shutdown zone does not preclude beginning of ramp-up, unless the PSO confirms the individual to be of a genus other than those listed, in which case normal pre-clearance requirements apply.
  - (B) If there is uncertainty regarding identification of a marine mammal species (*i.e.*, whether the observed marine mammal(s) belongs to one of the delphinid genera for which the pre-clearance requirement is waived), PSOs must use best professional judgment in making the decision to call for a shutdown.
- (vi) PSOs must monitor the shutdown zones 30 minutes before and during ramp-up, and ramp-up must cease and the source must be shut down upon observation of a marine mammal within the applicable shutdown zone.
- (vii) Ramp-up may occur at times of poor visibility, including nighttime, if appropriate visual monitoring has occurred with no detections of marine mammals in the 30 minutes prior to beginning ramp-up. Sparker activation may only occur at night where operational planning cannot reasonably avoid such circumstances.

- (viii) If the acoustic source is shut down for brief periods (i.e., less than 30 minutes) for reasons other than implementation of prescribed mitigation (e.g., mechanical difficulty), it may be activated again without ramp-up if PSOs have maintained constant visual observation and no detections of marine mammals have occurred within the applicable shutdown zone. For any longer shutdown, pre-start clearance observation and ramp-up are required.
- (k) Shutdown requirements:
  - (i) Any PSO on duty has the authority to call for a shutdown of the sparker source if a marine mammal is detected within the applicable shutdown zone.
  - (ii) When the sparker source is active and a marine mammal appears within or enters the applicable shutdown zone, the source must be shut down. When shutdown is instructed by a PSO, the source must be immediately deactivated and any dispute resolved only following deactivation.
  - (iii) The shutdown requirement is waived for small delphinids (individual belonging to the following genera of the Family Delphinidae: *Steno*, *Delphinus*, *Lagenorhynchus*, *Stenella*, and *Tursiops*) and pinnipeds. If a small delphinid or pinniped is visually detected within the shutdown zone, no shutdown is required unless the PSO confirms the individual to be of a genus other than those listed, in which case a shutdown is required
    - (A) If there is uncertainty regarding identification of a marine mammal species (i.e., whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived or one of the species with a larger shutdown zone), PSOs must use best professional judgment in making the decision to call for a shutdown.
  - (iv) Upon implementation of shutdown, the source may be reactivated after the marine mammal has been observed exiting the applicable shutdown zone or following a clearance period (30 minutes for all baleen whale species and sperm whales and 15 minutes for all other species) with no further detection of the marine mammal.
  - (v) If a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized number of takes have been met, approaches or is observed within the Level B harassment zone, shutdown must occur.
- (l) Vessel Strike – Vessel operators must comply with the below measures except under extraordinary circumstances when the safety of the vessel or crew is in doubt or the safety of life at sea is in question. These requirements do not apply in any case where compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.
  - (i) Vessel operators and crews must maintain a vigilant watch for all marine mammals and slow down, stop their vessel, or alter course, as appropriate and

regardless of vessel size, to avoid striking any marine mammal. A single marine mammal at the surface may indicate the presence of submerged animals in the vicinity of the vessel; therefore, precautionary measures should always be exercised. A visual observer aboard the vessel must monitor a vessel strike avoidance zone around the vessel (species-specific distances detailed below). Visual observers monitoring the vessel strike avoidance zone may be third-party observers (*i.e.*, PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to (1) distinguish marine mammal from other phenomena and (2) broadly to identify a marine mammal as a right whale, other whale (defined in this context as sperm whales or baleen whales other than right whales), or other marine mammals.

- (ii) All vessels, regardless of size, must observe a 10-knot speed restriction in specific areas designated by NMFS for the protection of North Atlantic right whales from vessel strikes. These include all Seasonal Management Areas (SMA) (when in effect), any dynamic management areas (DMA) (when in effect), and Slow Zones. See [www.fisheries.noaa.gov/national/endangered-speciesconservation/reducing-ship-strikes-north-atlantic-right-whales](http://www.fisheries.noaa.gov/national/endangered-speciesconservation/reducing-ship-strikes-north-atlantic-right-whales) for specific detail regarding these areas. It is SouthCoast Wind's responsibility to maintain awareness of the establishment and location of any such areas and to abide by these requirements accordingly.
- (iii) Vessel speeds must also be reduced to 10 knots or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel.
- (iv) All vessels must maintain a minimum separation distance of 500 m from right whales. If a right whale is sighted within the relevant separation distance, the vessel must steer a course away at 10 knots or less until the 500-m separation distance has been established. If a whale is observed but cannot be confirmed as a species other than a right whale, the vessel operator must assume that it is a right whale and take appropriate action.
- (v) All vessels must maintain a minimum separation distance of 100 m from sperm whales and all other baleen whales.
- (vi) All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel).
- (vii) When marine mammals are sighted while a vessel is underway, the vessel shall take action as necessary to avoid violating the relevant separation distance (*e.g.*, attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area, reduce speed and shift the engine to neutral). This does not apply to any vessel towing gear or any vessel that is navigationally constrained.

## 5. Monitoring Requirements

- (a) The Holder must submit PSO resumes for NMFS review and approval prior to commencement of the survey. Resumes should include dates of training and any prior NMFS approval, as well as dates and description of last experience, and must be accompanied by information documenting successful completion of an acceptable training course.
- (b) At least one PSO aboard each acoustic source vessel must have a minimum of 90 days at-sea experience working in the role, with no more than eighteen months elapsed since the conclusion of the at-sea experience. One PSO with such experience must be designated as the lead for the entire PSO team. The lead must coordinate duty schedules and roles for the PSO team and serve as the primary point of contact for the vessel operator. (Note that the responsibility of coordinating duty schedules and roles may instead be assigned to a shore-based, third-party monitoring coordinator.) To the maximum extent practicable, the lead PSO must devise the duty schedule such that experienced PSOs are on duty with those PSOs with appropriate training but who have not yet gained relevant experience.
- (c) PSO qualifications:
  - (i) PSOs must successfully complete relevant training, including completion of all required coursework and passing (80 percent or greater) a written and/or oral examination developed for the training program.
  - (ii) PSOs must have successfully attained a bachelor's degree from an accredited college or university with a major in one of the natural sciences, a minimum of 30 semester hours or equivalent in the biological sciences, and at least one undergraduate course in math or statistics. The educational requirements may be waived if the PSO has acquired the relevant skills through alternate experience. Requests for such a waiver shall be submitted to NMFS and must include written justification. Alternate experience that may be considered includes, but is not limited to: Secondary education and/or experience comparable to PSO duties; Previous work experience conducting academic, commercial, or government-sponsored marine mammal surveys; or previous work experience as a PSO; the PSO should demonstrate good standing and consistently good performance of PSO duties.
- (d) *Equipment.* The Holder is required to work with the selected third-party PSO provider to ensure PSOs have all equipment (including backup equipment) needed to adequately perform necessary tasks, including accurate determination of distance and bearing to observed marine mammals, and to ensure that PSOs are capable of calibrating equipment as necessary for accurate distance estimates and species identification. Such equipment, at a minimum, shall include:
  - (i) At least one thermal (infrared) image device suited for the marine environment;
  - (ii) Reticle binoculars (*e.g.*, 7 x 50) of appropriate quality (at least one per PSO, plus backups);
  - (iii) Global Positioning Unit (GPS) (plus backup);

- (iv) Digital camera with a telephoto lens (the camera or lens should also have an image stabilization system) that is at least 300 mm or equivalent on a full-frame single lens reflex (SLR) (plus backup);
  - (v) Compass (plus backup);
  - (vi) Means of communication among vessel crew and PSOs; and,
  - (vii) Any other tools deemed necessary to adequately and effectively perform PSO tasks.
- (e) Equipment specified in (i) through (vii) above may be provided by an individual PSO, the third-party PSO provider, or the operator, but SouthCoast Wind is responsible for ensuring PSOs have the proper equipment required to perform the duties specified in this IHA.
  - (f) During good conditions (*e.g.*, daylight hours; Beaufort sea state (BSS) 3 or less), PSOs must conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without use of the acoustic source and between acquisition periods, to the maximum extent practicable.
  - (g) Members of the PSO team shall consult NMFS' North Atlantic right whale reporting system and Whale Alert, daily and as able, for the presence of North Atlantic right whales throughout survey operations

## 6. Reporting Requirements

- (a) The Holder must submit a summary report to NMFS on all activities and monitoring results within 90 days of the completion of the survey or expiration of the IHA, whichever comes sooner, and must include all information described below under section 6(c) of this IHA.
- (b) The report must describe all activities conducted and sightings of marine mammals, must provide full documentation of methods, results, and interpretation pertaining to all monitoring, and must summarize the dates and locations of survey operations and all marine mammals sightings (dates, times, locations, activities, associated survey activities). The draft report shall also include georeferenced, time-stamped vessel tracklines for all time periods during which acoustic sources were operating. Tracklines should include points recording any change in acoustic source status (*e.g.*, when the sources began operating, when they were turned off, or when they changed operational status). GIS files shall be provided in ESRI shapefile format and include the UTC date and time, latitude in decimal degrees, and longitude in decimal degrees. All coordinates shall be referenced to the WGS84 geographic coordinate system. In addition to the report, all raw observational data shall be made available.
- (c) PSOs must use standardized electronic data forms to record data. PSOs shall record detailed information about any implementation of mitigation requirements, including the distance of marine mammal to the acoustic source and description of specific actions that ensued, the behavior of the animal(s), any observed changes in behavior before and after implementation of mitigation, and if shutdown was implemented, the length of time before any subsequent ramp-up of the acoustic source. If required mitigation was not



implemented, PSOs should record a description of the circumstances. At a minimum, the following information must be recorded:

- (i) Vessel name (source vessel and other vessels associated with survey), vessel size and type, maximum speed capability of vessel;
- (ii) Dates of departures and returns to port with port name;
- (iii) PSO names and affiliations;
- (iv) Date and participants of PSO briefings;
- (v) Visual monitoring equipment used;
- (vi) PSO location on vessel and height of observation location above water surface;
- (vii) Dates and times (Greenwich Mean Time) of survey on/off effort and times corresponding with PSO on/off effort;
- (viii) Vessel location (decimal degrees) when survey effort begins and ends and vessel location at beginning and end of visual PSO duty shifts;
- (ix) Vessel location at 30-second intervals if obtainable from data collection software, otherwise at practical regular interval;
- (x) Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any change;
- (xi) Water depth (if obtainable from data collection software);
- (xii) Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including BSS and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon;
- (xiii) Factors that may contribute to impaired observations during each PSO shift change or as needed as environmental conditions change (*e.g.*, vessel traffic, equipment malfunctions); and
- (xiv) Survey activity information (and changes thereof), such as acoustic source power output while in operation, number and volume of airguns operating in an array, tow depth of an acoustic source, and any other notes of significance (*i.e.*, pre-start clearance, ramp-up, shutdown, testing, shooting, ramp-up completion, end of operations, streamers, etc.).
- (xv) Upon visual observation of any marine mammal, the following information must be recorded:
  - A. Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);

- B. Vessel/survey activity at time of sighting (*e.g.*, deploying, recovering, testing, shooting, data acquisition, other);
- C. PSO who sighted the animal;
- D. Time of sighting;
- E. Initial detection method;
- F. Sightings cue;
- G. Vessel location at time of sighting (decimal degrees);
- H. Direction of vessel's travel (compass direction);
- I. Speed of the vessel(s) from which the observation was made;
- J. Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level or unidentified); also note the composition of the group if there is a mix of species;
- K. Species reliability (an indicator of confidence in identification);
- L. Estimated distance to the animal and method of estimating distance;
- M. Estimated number of animals (high/low/best);
- N. Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);
- O. Description (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);
- P. Detailed behavior observations (*e.g.*, number of blows/ breaths, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior before and after point of closest approach);
- Q. Mitigation actions; description of any actions implemented in response to the sighting (*e.g.*, delays, shutdowns, ramp-up, speed or course alteration, etc.) and time and location of the action;
- R. Equipment operating during sighting;
- S. Animal's closest point of approach and/or closest distance from the center point of the acoustic source; and,
- T. Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up) and time and location of the action.

- (d) If a North Atlantic right whale is observed at any time by PSOs or personnel on a survey vessel, during surveys or during vessel transit, the Holder must report the sighting information to the NMFS North Atlantic Right Whale Sighting Advisory System (866-755-6622) within two hours of occurrence, when practicable, or no later than 24 hours after occurrence. North Atlantic right whale sightings in any location may also be reported to the U.S. Coast Guard via channel 16 and through the WhaleAlert app ([www.whalealert.org](http://www.whalealert.org)).
- (e) Reporting injured or dead marine mammals:
  - (i) Sightings of any injured or dead marine mammal must be reported to NMFS, regardless of the cause of injury or death. In the event that personnel involved in the survey activities discover an injured or dead marine mammal, the Holder must report the incident to NMFS as soon as feasible by phone (866-755-6622) and by email ([nmfs.gar.incidental-take@noaa.gov](mailto:nmfs.gar.incidental-take@noaa.gov) and [PR.ITP.MonitoringReports@noaa.gov](mailto:PR.ITP.MonitoringReports@noaa.gov)) as soon as feasible. The report must include the following information:
    - (A) Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
    - (B) Species identification (if known) or description of the animal(s) involved;
    - (C) Condition of the animal(s) (including carcass condition if the animal is dead);
    - (D) Observed behaviors of the animal(s), if alive;
    - (E) If available, photographs or video footage of the animal(s); and,
    - (F) General circumstances under which the animal was discovered.
  - (ii) In the event of a ship strike of a marine mammal by any vessel involved in the survey activities, the Holder must report the incident to NMFS by phone (866-755-6622) and by email ([nmfs.gar.incidental-take@noaa.gov](mailto:nmfs.gar.incidental-take@noaa.gov) and [PR.ITP.MonitoringReports@noaa.gov](mailto:PR.ITP.MonitoringReports@noaa.gov)) as soon as feasible. The report must include the following information:
    - (A) Time, date, and location (latitude/longitude) of the incident;
    - (B) Species identification (if known) or description of the animal(s) involved;
    - (C) Vessel's speed during and leading up to the incident;
    - (D) Vessel's course/heading and what operations were being conducted (if applicable);

- (E) Status of all sound sources in use;
- (F) 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;
- (G) Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;
- (H) Estimated size and length of animal that was struck;
- (I) Description of the behavior of the marine mammal immediately preceding and/or following the strike;
- (J) If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;
- (K) Estimated fate of the animal (*e.g.*, dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and
- (L) To the extent practicable, photographs or video footage of the animal(s).

7. This Authorization may be modified, suspended or revoked if the holder fails to abide by the conditions prescribed herein (including, but not limited to, failure to comply with monitoring or reporting requirements), or if NMFS determines: (1) the authorized taking is having or is likely to have more than a negligible impact on the species or stocks of affected marine mammals, or (2) the prescribed measures are likely not or are not effecting the least practicable adverse impact on the affected species or stocks and their habitat.

8. Renewals – On a case-by-case basis, NMFS may issue a one-time, one-year Renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical, or nearly identical, activities are planned or (2) the specified activities would not be completed by the time this IHA expires and a Renewal would allow for completion of the activities, provided all of the following conditions are met:

- (a) A request for Renewal is received no later than 60 days prior to the needed Renewal IHA effective date (the Renewal IHA expiration date cannot extend beyond one year from expiration of this IHA).
- (b) The request for Renewal must include the following:
  - (i) An explanation that the activities to be conducted under the requested Renewal IHA are identical to the activities analyzed for this IHA, are a subset of the activities, or include changes so minor that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).

- (ii) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.
  
- (c) Upon review of the request for Renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings made in support of this IHA remain valid.

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

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Date

**Table 1—Authorized Incidental Take by Level B Harassment**

<b>Taxonomic group</b>	<b>Common name</b>	<b>Scientific name</b>	<b>Stock</b>	<b>ESA-listed?</b>	<b>Marine mammal category as it applies to mitigation requirements in the IHA</b>	<b>Level B harassment takes</b>
Cetacean (Mysticete)	North Atlantic right whale	<i>Eubalaena glacialis</i>	Western Atlantic	Yes	North Atlantic right whale	6
	Fin whale	<i>Balaenoptera physalus</i>	Western North Atlantic	Yes	Large whale	7
	Sei whale	<i>Balaenoptera borealis</i>	Nova Scotia	Yes	Large whale	2
	Minke whale	<i>Balaenoptera acutorostrata</i>	Canadian East Coastal	No	Large whale	13
	Humpback whale	<i>Megaptera novaeangliae</i>	West Indies DPS	No	Large whale	55
Cetacean (Odontocete)	Sperm whale	<i>Physeter macrocephalus</i>	North Atlantic	Yes	Large whale	2
	Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>	Western North Atlantic	No	Small odontocete	28
	Atlantic spotted dolphin	<i>Stenella frontalis</i>	Western North Atlantic	No	Small odontocete	29
	Common bottlenose dolphin	<i>Tursiops truncatus</i>	Western North Atlantic - Offshore	No	Small odontocete	152
	Long-finned Pilot whale	<i>Globicephala melas</i>	Western North Atlantic	No	Large odontocete	8
	Risso's dolphin	<i>Grampus griseus</i>	Western North Atlantic	No	Large odontocete	7
	Common dolphin	<i>Delphinus delphis</i>	Western North Atlantic	No	Small odontocete	2,094
	Harbor porpoise	<i>Phocoena</i>	Western North Atlantic	No	Small odontocete	83
Pinniped (Phocid)	Gray seal	<i>Halichoerus grypus</i>	Western North Atlantic	No	Seal	167
	Harbor seal	<i>Phoca vitulina</i>	Western North Atlantic	No	Seal	74

**Table 2—Level B Harassment Zones**

Authorized marine mammal species	Level B harassment zone during sparker use	Level B harassment zone during non-parametric sub-bottom profiler use
North Atlantic right whale	141 meters	57 meters
Fin whale		
Sei whale		
Humpback whale		
Sperm whale		
Minke whale		
Atlantic white-sided dolphin		
Atlantic spotted dolphin		
Common bottlenose dolphin		
(Long-finned) Pilot whale		
Risso’s dolphin		
(Short-beaked) Common dolphin		
Harbor porpoise		
Gray seal		
Harbor seal		

**Table 3—Distances/Times for Clearance, Shutdown/Exclusion, Vessel Separation Zones**

Authorized marine mammal species	ESA-listed?	Pre-clearance zone		Vessel separation zone	Exclusion/shutdown zone	
		Distance (meters)	Duration (minutes)	Distance (meters)	Distance (meters)	Duration (minutes)
North Atlantic right whale	Yes	500	30	500	500	30
Fin whale						
Sei whale						
Sperm whale						
Humpback whale	No	100	30	100	100	15
Minke whale						
(Long-finned) Pilot whale						
Risso’s dolphin						
Harbor porpoise						
Gray seal						
Harbor seal						
Atlantic white-sided dolphin						
Atlantic spotted dolphin						
Common bottlenose dolphin (offshore stock)						
(Short-beaked) Common dolphin						
					Not required. See conditions 4(j)(v)(A) and 4(k)(iii) in this IHA	

## Appendix C: 2023 Survey Environmental Management Plan



## **SOUTHCOAST WIND OCS-A 0521**

**Environmental Management Plan  
2023 Geophysical Surveys**



Version 1  
15 May 2023

# SOUTHCOAST WIND OCS-A 0521

## Geophysical Environmental Management Plan

With reference to BOEM Lease OCS-A 0521, NMFS-issued Incidental Harassment Authorization (IHA) and NMFS Project Design Criteria (PDCs) and Best Management Practices (BMPs) for Offshore Wind.

Revision		
Date	Version	Revision made
15 May 2023	1	Submitted to BOEM

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## List of Acronyms

BMPs – Best Management Practices  
BOEM – Bureau of Ocean Energy Management  
BZ – Buffer zone  
DMA – Dynamic Management Area  
DSLR – Digital Single Lens Reflex  
EMP- Environmental Management Plan  
ESA - Endangered Species Act  
G&G – Geophysical and geotechnical  
HRG - High resolution geophysical  
IHA - Incidental Harassment Authorization  
IR - Infrared  
kHz - Kilohertz  
km - Kilometer  
LF – Low Frequency  
MBES – Multibeam Echo Sounder  
MMPA – Marine Mammal Protection Act  
MZ – Monitoring Zone  
NARW – North Atlantic Right Whale  
m - Meter  
NMFS - National Marine Fisheries Service  
NOAA - National Oceanic and Atmospheric Administration  
NVD - Night-vision device  
OCS – Outer Continental Shelf  
PDCs – Project Design Criteria  
PSO – Protected Species Observer  
SBP – Sub Bottom Profiler  
SSS – Side Scan Sonar  
SZ – Shutdown Zone  
USBL – Ultra Short Baseline

# 1 INTRODUCTION

Alpine Ocean Seismic Survey, Inc. (Alpine) has been contracted by SouthCoast Wind Energy LLC (SouthCoast) to conduct high resolution geophysical (HRG) surveys within Lease Area OCS-A 0521. The details of the survey activities to be executed by Alpine are provided in the Survey Plan.

The National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries) and the Bureau of Ocean Energy Management (BOEM) have advised that sound-producing survey equipment operating below 180 kilohertz (kHz) has the potential to cause acoustic harassment to marine species, in particular marine mammals. NOAA Fisheries and BOEM have also acknowledged vessel strike as a potential risk to marine species. As the proposed survey activities on behalf of SouthCoast will be conducted 24-hours per day and include the use of equipment operating below 180 kHz, Alpine has contracted with RPS to develop and execute an Environmental Management Plan (EMP) for Protected Species to ensure that marine mammals, sea turtles, and other protected marine species are not adversely affected by equipment noise or vessels.

## 1.1 Applicable Regulatory Documents and Permits

BOEM Lease OCS-A 0521 and the NOAA Fisheries Greater Atlantic Regional Fisheries Office (GARFO) Programmatic Consultation pursuant to Section 7 of the Endangered Species Act Letter of Concurrence Project Design Criteria (PDCs) and Best Management Practices (BMPs) for Protected Species Associated with Offshore Wind Data Collection contains monitoring and mitigation requirements that apply to marine mammals, marine turtles, and other protected marine species.

NOAA authorized an Incidental Harassment Authorization (IHA) pursuant to Section 101(a)(5) of the MMPA and 50 CFR § 216 Subpart I on May 11, 2023 (which began May 12, 2023 and expires May 11, 2024). In accordance with the PDCs and BOEM-approved waiver request, Passive Acoustic Monitoring (PAM) is not required for geophysical or geotechnical operations.

# 2 MARINE PROTECTED SPECIES

Marine protected species or protected species refers to any marine species for which dedicated monitoring and mitigation procedures will be implemented, including:

- All marine mammals (whales, dolphins, seals, porpoise)
- Endangered Species Act (ESA)-listed species to include sea turtles, Atlantic sturgeon, and giant manta rays

# 3 PROTECTED SPECIES OBSERVERS FOR GEOPHYSICAL SURVEY OPERATIONS

## 3.1 Staffing Plan

A team of four Protected Species Observers (PSOs) supplied by RPS will be on board each vessel that will be conducting 24-hour survey operations to undertake visual watches, implement mitigation, and conduct data collection and reporting in accordance with the SouthCoast Survey Plan, the NMFS IHA requirements, the BOEM and NMFS PDCs and BMPs, and BOEM Waiver Modifications.

## 3.2 Roles and Responsibilities

### Lead PSO

- Coordinate and oversee PSO operations and ensure compliance with monitoring requirements
- Visually monitor, detect, and identify protected species and determine distance to source
- Record and report protected species sightings, survey activities, and environmental conditions according to the survey plan
- Monitor and advise on sound source and vessel operations for compliance with the environmental requirements for the survey plan
- Communicate with the crew to implement mitigation actions as required by environmental protocols (including delays to initiation of survey equipment operating below 180 kHz)
- Participate in daily meetings and drills with crew when appropriate

### PSO

- Visually monitor, detect, and identify protected species and determine distance to source
- Record and report protected species sightings, survey activities, and environmental conditions according to the survey plan
- Monitor and advise on sound source and vessel operations for compliance with the environmental requirements for the survey plan
- Communicate with the crew to implement mitigation actions as required by environmental protocols (including delays to initiation of survey equipment operating below 180 kHz)
- Participate in daily meetings and drills with crew when appropriate

## 3.3 PSO Requirements

All PSOs will have completed a BOEM/NMFS-approved protected species observer training program. PSOs will have relevant observation experience in the Atlantic. The CVs, PSO training certifications, and NMFS approvals of all proposed PSOs will be submitted to Alpine and SouthCoast such that they can be submitted to BOEM upon request.

## 4 MONITORING EQUIPMENT

### 4.1 Visual Monitoring Equipment

#### 4.1.1 Day-time monitoring equipment

During daylight work, the PSO on duty will monitor for marine protected species using the naked eye and hand-held reticle binoculars. Digital single-lens reflex (DSLR) camera equipment will be provided to record sightings and verify species identification. Sightings and information will be recorded in notebooks and transferred to a digital form at the earliest break. Additional equipment listed in Section 5.2 Alternative Monitoring Plan, will also be used when appropriate.

#### 4.1.2 Night-time monitoring equipment

During night-time work, the PSO(s) on duty will monitor for marine protected species using Morovision PVS-7 Gen 3 PINNACLE night vision goggles (NVDs) with a forward-looking infrared (IR) monacle, so the PSO can focus observations in any direction (Appendix A).

RPS has used this equipment on multiple wind projects and has successfully collected data meeting the 500 meter (m) zones.

Note that this equipment will only be utilized on the vessels conducting 24-hour operations. The night vision equipment can provide full mitigation zone coverage. However, the effective distance can be impacted by



environmental conditions (white caps, moon light) as well as background lighting from the vessel, other vessels in the area, and any onshore lights. These are known impacts and will be monitored as necessary.

#### 4.1.3 Distance estimation and calibration of visual monitoring equipment

Reticle binoculars have the capability to find the distance from the vessel to detected animals. Reticle binoculars will be calibrated, when possible, throughout the duration of the survey using the vessel radar, by comparing estimated distances to known distances. Calibration will be conducted during varying sea states and both at night and during the day. Calibration requires a clear view of the horizon and cannot be calibrated if the vessel is surrounded by land or reduced visibility.

At night, if reticles cannot be used to localize a detection, distance to detected animals will be determined using range finder sticks or by comparing the location of the animal to known distances, such as the length of the vessel.

## 5 VISUAL MONITORING PROCEDURES

### 5.1 Visual Monitoring Watches

PSOs will conduct visual watches during operations, as described below.

24-Hour Operations Vessels:

- One PSO will be on watch at all times during transit.
- One PSO will be on watch at all times during daylight source operations.
- Two PSOs will be on watch at all times during nighttime operations.

The following guidelines will apply to these watch periods:

- Other than brief alerts to bridge personnel of maritime hazards and the collection of ancillary wildlife data, no additional duties should be assigned to the PSO during his/her visual observation watch
- No PSO will be allowed more than four consecutive hours on watch as a visual observer before being allocated a two-hour break from visual monitoring
- No PSO will be assigned a combined watch schedule of more than 12 hours in a 24-hour period

The PSOs will stand watch in a suitable location that will not interfere with the navigation or operation of the vessel and affords an optimal view of the sea surface. PSOs will maintain 360° coverage surrounding the monitoring zones (MZ) of the vessel.

If a protected species is observed, the PSO will first take care of any necessary recommended actions, or if no actions are required, they will note and monitor the position (including latitude/longitude of the vessel and relative bearing and estimated range to the animal) until the animal dives or moves out of visual range of the observer.

## 5.2 Alternative Monitoring Plan

### 5.2.1 Monitoring During Reduced Visibility

The Alternative Monitoring Plan will be implemented while transiting under low visibility conditions (including night-time and day-time). Monitoring equipment (NVDs and thermal IR add-on equipment clip-on or monacle) will be available to use to augment monitoring. No additional PSOs will be deployed to augment monitoring.

During geophysical operations utilizing mitigatable equipment, the shutdown zone must be visible. During low visibility conditions such that animals cannot be reliably sighted within the shutdown zone, the survey must be stopped. Non-mitigatable equipment can continue to be used as long as it is still safe to transit in low-visibility conditions, as described below.

During transit in low-visibility (less than 500m) conditions, the transit will continue as long it is navigationally safe to do so, and with input from the PSO. The vessel will be implementing the alternative monitoring program. The PSOs and the vessel crew will provide their best judgement around safety of navigation and visibility during transit. The decision will be made with input from the PSO or Trained Crew tasked with protected species monitoring. The PSOs will continue to use their professional judgement on reduced visibility determination and their impacted view of the monitoring zones. The PSOs will consider current visibility around the distances that are expected to be monitored for the various species groups and real-time sighting data.

## 6 MITIGATION PROCEDURES: STRIKE AVOIDANCE

### 6.1 Vessel Speed Restriction

PSOs will monitor the following NMFS' NARW (North Atlantic Right Whale) reporting systems daily for the presence of NARWs and for the establishment of Dynamic Management Areas (DMAs):

- Whale Alert
- NOAA  
<https://www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-ship-strikes-north-atlantic-right-whales>  
<https://www.fisheries.noaa.gov/resource/map/north-atlantic-right-whale-sightings>

### 6.2 General Vessel Speed Restrictions

The following requirements apply to all vessels regardless of their length:

- Vessel speed will be restricted to 10 knots or less inside the Northeast Seasonal Management Areas (SMAs).
- Vessel speed will be restricted to 10 knots or less inside any established DMA.

Vessel speed will be restricted to 10 knots or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel.

### 6.3 Separation Distances

#### 6.3.1 North Atlantic Right Whale

**All survey vessels will maintain a separation distance of 500 meters or greater from any sighted NARW.**

- If underway, steer a course away from any sighted NARW at 10 knots or less until the 500-meter separation distance is achieved.
- If sighted within 500 meters of underway vessel, reduce speed and steer a course away from the whale at 10 knots or less until the 500-meter separation distance has been established. Vessel may also shift to idle if feasible.



### 6.3.2 Any Sighted ESA-listed Whale (to include Sperm whales) or unidentified large marine mammal visible at the surface

All survey vessels will maintain a separation distance of 500 meters or greater from any ESA-listed species or other unidentified large marine mammal visible at the surface.

- If sighted within 500 meters of the forward path of the vessel, steer a course away from the animal at 10 knots (18.5 km/hr) or less until the 500 m minimum separation distance has been established. May also shift to idle if feasible.

### 6.3.3 Non-ESA-listed Baleen Whales

All vessels will maintain a separation distance of 100 meters or greater from any sighted non-ESA-listed baleen whales, including humpback whales and minke whales.

- If sighted within 200 meters of the forward path of the vessel, reduce speed and shift the engine to neutral until the animal has moved beyond 500 meters

### 6.3.4 Sea Turtles and Manta Rays

All vessels will maintain a separation distance of 500 meters or greater from any sighted sea turtle or manta ray.

- If sighted in forward travel of the vessel, reduce speed to 4 knots, and steer away until the vessel has passed the animal.

### 6.3.5 Small Cetaceans (Dolphins and Porpoises) and Seals

All vessels will maintain a separation distance of 50 meters or greater from any sighted small cetacean (dolphin and porpoise) or pinniped

- Underway vessel will remain parallel to a sighted delphinoid cetacean's or pinniped's course whenever possible, avoiding speed or direction changes until the animal has moved beyond 50 meters
- Do not make abrupt changes to vessel course or speed

## 7 MITIGATION PROCEDURES: SOUND SOURCES

### 7.1 Survey Equipment Subject to Monitoring and Mitigation Procedures

All survey equipment that produces sound below 180 kHz is subject to the following monitoring and mitigation protocols with the exception of the USBL, which is considered a navigational device and not a survey sound source for the purpose of mitigation.

Equipment	Frequency Range	Subject to monitoring and mitigation requirements
Shallow Penetration Subbottom Profiler (SBP) – Innomar Parametric SBP	8 – 10 kHz	Only for Sea turtles
Medium Penetrating Dual Seismic Sparker (Sparker)	1 Hz – 10 kHz	Marine Mammals and Sea Turtles
USBL	21 – 31 kHz	No
Side Scan Sonar (SSS)	300 – 900 kHz	No
Multibeam Echo Sounder (MBES)	170 – 450 kHz	*No

\*The MBES will not be operated below 200 kHz.

## 7.2 Sound Source Shutdown Zones

The following SZs apply to SouthCoast survey equipment operating below 180 kHz.

Note that SZs for the purposes of sound exposure mitigation are established around the survey equipment and not around the vessel itself:

- **500 meters:** North-Atlantic right whales
- **100 meters:** All other ESA-listed species and marine mammals with the exception of voluntarily approaching delphinids as described in Section 8.7.
- **100 meters:** Sea turtles

Although mitigation will be applied for animals detected in the SZs, observations will extend to the furthest observable distances.

## 7.3 Visual Search Periods

To activate any equipment operating below 180 kHz from silent, a minimum of a 30-minute search period must be conducted. The search must be conducted visually by the PSO on watch for both daytime and nighttime operations.

**As detailed in BMP 4.4, the 500-meter MZ for ESA-listed species and 200-meter MZ for non-ESA-listed marine mammals will be monitored. Note that visual observations for all marine protected species will extend to the furthest observable distances even though the above MZs and SZs around the sound sources will apply.**

## 7.4 Delays to Initiation of the < 180 kHz Sound Sources

If any marine mammal or sea turtle is detected visually inside its respective MZ during the 30-minute search period, initiation of the sound sources operating below 180kHz must be delayed until:

- **All** marine protected species that were observed inside the relevant MZ have been confirmed by the visual observer to have been exiting the relevant MZ  
**OR**
- when a marine protected species has not been observed exiting the MZ, an additional time period has elapsed with no further sightings of the animal within the relevant MZ:
  - **15 minutes** for small cetaceans (porpoises and dolphins) and pinnipeds and giant manta rays
  - **30 minutes** for large whales including NARW
  - **30 minutes** for sea turtles

Both the 30-minute pre-clearance search period and the mandatory delay for animals not seen exiting the shutdown zone must be completed before source initiation.

If at any point during the 30-minute search period, the full SZs are not completely visible, then initiation of the source must be delayed until the full SZ has been visible for a full 30-minute clearance search. Ramp-up may occur at times of poor visibility, including nighttime, if appropriate visual monitoring has occurred with no detections of marine mammals or sea turtles in the 30 minutes prior to beginning ramp-up. Note that sparker activation will only occur at night where operational planning cannot reasonably avoid such circumstances.

## 7.5 Ramp Up (Soft Start) Procedure

Ramp-up of the sparker will be conducted, when technically feasible, by gradually increasing the operating level from the smallest setting to the operating level. During the ramp-up procedure, equipment will be run at half power for five minutes, then at full power.

## 7.6 Short Breaks in Source Operations

In recognition of occasional short periods of silence for a variety of reasons other than for mitigation, the <180kHz sound sources may be silenced for periods of time not exceeding 30 minutes in duration and may be restarted for operations if:

1. Visual monitoring by PSO is continued diligently through the silent period (during visual surveys, the SZ must remain visible throughout the silent period)

**AND**

2. No marine protected species are observed in the SZ.

## 7.7 Shutdown Procedures

If any marine protected species is sighted at or within its SZ, an immediate shutdown of the survey equipment operating below 180kHz is required.

### **EXCEPT**

If delphinids (of the following genera: *Steno*, *Delphinus*, *Lagenorhynchus*, *Stenella*, and *Tursiops*) or pinnipeds are detected within the SZ or voluntarily approach the vessel (e.g., to bow ride) when the sound sources are at full operating power, those sources can continue to operate; a shutdown is not required. The determination of whether the animal has “voluntarily” approached will be made by the PSO on watch.

The vessel operator must comply immediately with any shut-down request made by a PSO. Any discussion can occur only after the shutdown has been implemented.

**Subsequent restart of the survey equipment may only occur following clearance of the SZ of all marine protected species under the following conditions:**

- When all marine protected species have been confirmed by the visual observer to have been seen exiting the relevant SZ

**OR**

- When an animal was not observed exiting the SZ, and additional time period has elapsed with no further sightings of the animal within the relevant SZ:
  - **15 minutes** for small cetaceans (porpoises and dolphins) and pinnipeds
  - **30 minutes** for ESA-species, including NARW and sea turtles, and all baleen whales

## 7.8 Mitigation Communication Flowcharts

The mitigation procedures described in this section of the EMP have been summarized in flowchart form and are provided in Appendix B.

## 8 REPORTING

### 8.1 Data Forms

RPS can provide standardized data forms that have been provided to, and approved by, BOEM and NMFS. These forms will contain, at minimum, all of the data elements listed below, and data will be recorded in the field daily by PSOs.

- Vessel name, vessel size and type, maximum speed capability;
- Date of departures and returns to port with port name;
- Observers' names and affiliations;
- Date and participants of PSO briefings;
- Visual monitoring equipment used;
- PSO location on vessel and height of observation location above water surface;
- Date and location of survey operations;
- Time and latitude/longitude when daily visual survey began;
- Time and latitude/longitude when daily visual survey ended;
- Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any change;
- Water depth;
- Average environmental conditions during visual surveys, including
  - Wind speed and direction;
  - Sea state (glassy, slight, choppy, rough, or Beaufort scale, tidal state);
  - Swell (low, medium, high, or swell height in meters); and
  - Weather conditions (i.e., percent cloud cover, visibility, percent glare); and
  - Overall visibility (poor, moderate, good);
- Factors that may contribute to impaired observations during each PSO shift change or as needed as environmental conditions change;
- Species (or identification to lowest possible taxonomic level, sex, age, classification [if known], numbers);
- Certainty of identification (sure, most likely, best guess);
- Total number of animals;
- Number of juveniles;
- Time and location (i.e., distance from vessel and distance from deployed sound source) of observation;
- Description (as many distinguishing features as possible of each individual seen, including length, shape, color and pattern, scars or marks, shape and size of dorsal fin, shape of head, and blow characteristics);
- Direction of animal's travel – related to the vessel (drawing preferably);
- Reaction of the animal(s) to relevant vessel activity and sound source (if any) and behavior - as explicit and detailed as possible; note any observed changes in behavior (e.g., avoidance, approach) including bearing and direction of travel; and
- Activity of vessel when sighting occurred;
- Mitigation actions.

## 8.2 Reporting Observed Impacts to Protected Species

It will be the responsibility of the PSO on duty to report any impacts to an ESA-listed species to NMFS, BOEM and the RPS Project Manager as soon as practicably possible but no more than 48 hours after any observations concerning impacts to ESA-listed species and no more than 24 hours after the take of any ESA-listed species.

The RPS Project Manager will send reports to:

**On-board:**

- Alpine Onboard Party Chief
- Client Representative

**On-shore:**

- Alpine Project Manager
- SouthCoast Wind Marine Science Permitting Manager
- SouthCoast Wind G&G Project Manager

## 8.3 Reporting Sighting of North Atlantic right whales

If a North Atlantic right whale is observed at any time by a PSO or project personnel during surveys or vessel transit, sightings must be reported within two hours of occurrence when practicable and no later than 24 hours after occurrence. In the event of a sighting of a right whale that is dead, injured, or entangled, efforts must be made to make such reports as quickly as possible to the appropriate regional NOAA stranding hotline (from Maine-Virginia report sightings to 866-755-6622). Right whale sightings in any location may also be reported to the U.S. Coast Guard via channel 16 and through the WhaleAlert App (<http://www.whalealert.org/>).

Further information on reporting a right whale sighting can be found at:

[https://appsnefsc.fisheries.noaa.gov/psb/surveys/documents/20120919\\_Report\\_a\\_Right\\_Whale.pdf](https://appsnefsc.fisheries.noaa.gov/psb/surveys/documents/20120919_Report_a_Right_Whale.pdf)

The RPS Project Manager will send reports to:

**On-board:**

- Alpine Onboard Party Chief
- Client Representative

**On-shore:**

- Alpine Project Manager
- SouthCoast Wind Marine Science Permitting Manager
- SouthCoast Wind G&G Project Manager

## 8.4 Injured or Dead Protected Species Reporting

The PSO on watch will report the sightings of a dead and/or injured marine species to the RPS project manager, on board client representative and Alpine Party Chief.

The PSO will report any observed injury or mortality in accordance with NMFS standard reporting guidelines, as well as to the stranding hotline for BOEM and NMFS coordination of proper response. The RPS office will also assist as necessary to contact the stranding hotline. This will occur as soon as practicably possible but no more than 24 hours after the detection.

A report will be sent to RPS on the first break following the observation.

The RPS office will submit the report, which will include details of the BOEM and NMFS notifications, to the following distribution list within 12 hours of the detection:

**On-board:**

- Alpine Onboard Party Chief
- Client Representative

**On-shore:**

- Alpine Project Manager
- SouthCoast Wind Marine Science Permitting Manager
- SouthCoast Wind G&G Project Manager

It will be the responsibility of the RPS project manager to provide the report to NOAA and BOEM after SouthCoast Wind review.

Unless otherwise directed by BOEM, NOAA Fisheries, or NOAA, the dead or injured marine mammal or sea turtle SHOULD NOT be touched! Dead and injured marine mammals and sea turtles are still protected by the ESA and the MMPA (Marine Mammal Protection Act) and touching the animals in any manner is considered harassment and is punishable by law.

## **8.5 Daily Progress Report**

A daily report will be completed and submitted to the Alpine Party chief, onboard client representative, RPS project manager, SouthCoast Wind G&G Project Manager and SouthCoast Wind Marine Science Permitting Manager. This will include an effort and detection summary. If there were no detections that day, the Lead PSO will email the distribution list noting that there were no detections on that day.

## **8.6 Monthly Data Report for Geophysical Operations**

A monthly report of survey activities will be submitted to BOEM by RPS on the 15<sup>th</sup> of each month for each vessel conducting survey work. These reports will be submitted via email to ([renewable\\_reporting@boem.gov](mailto:renewable_reporting@boem.gov)) after editing, review and quality assurance checks are completed RPS prior to submission.

## **8.7 Final Report**

The PSO team will develop a final report summarizing the HRG survey activities and all PSO observations. The RPS Project Manager will provide the finalized report to the Alpine Project Manager, SouthCoast Wind G&G Project Manager, and the SouthCoast Wind Marine Science Permitting Manager within 30 days of project completion for review. This will include a written report and the complete data forms.

The SouthCoast Wind Marine Science Permitting Manager will submit the final detection summaries to BOEM.

## Appendix A: Night Monitoring Equipment Specifications

Night monitoring watches will be conducted using night vision goggles with a hand-held FLIR monocular. Regular night vision binoculars work by enhancing the disponsible light to allow a brighter image with the use of phosphor screen. The night vision goggles withstand water immersion and run on two AA batteries for more than 40 hours. Three pairs of batteries and a battery charger will be provided with the equipment.

### Night Vision Goggle Technical Specifications

- Generation: 3 U.S.
- Resolution: 64 lp/mm (Min)
- Film: Thin-filmed
- Magnification: 1x
- Field of View: 40°
- Objective Lens: 25mm f/1.2
- Eyepiece Lens EFL: 26 mm
- Diopter Adjustment: +2 to -6
- Interpupillary Adjustment: 55 to 71 mm
- Range of Focus: 20cm to infinity
- Battery Type: Two (2) AA batteries
- Weight w/batteries: 24 oz / 680 grams
- Dimensions: 6 3/8"(L) x 6"(W) x 3"(H)
- Operating Temperature: -51°C to +52° C
- Weather Resistant: Yes
- IR Illuminator: Yes (built in)

### FLIR Breach Monocular

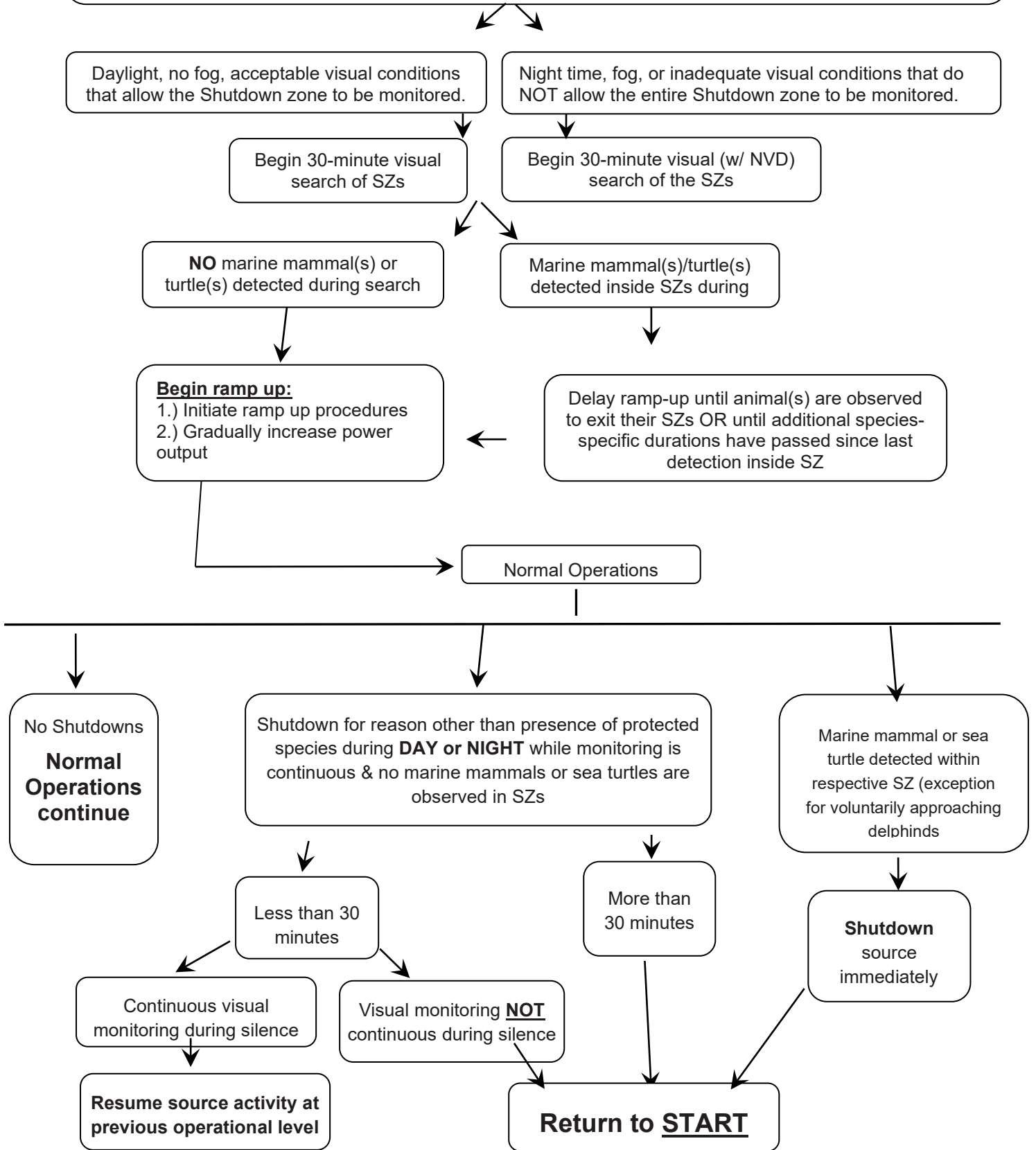
- Detector type: 320 x 256 VOx Microbolometer
- Refresh Rate: 60 Hz
- Start Up: < 1.5 seconds
- Image Processing: FLIR Proprietary Digital Detail Enhancement™
- Lens System: 9.1 mm; F/1.04
- Optical Magnification: 1×
- Field of View (H x V): 24° x 19°
- Digital e-Zoom: 1× - 4× continuous
- Diopter Adjustment Range: -5 to +5 dpt
- Focusing Range: 0.25 m to infinity
- Eye Relief: 16 mm
- Display: Quad-VGA (1280 x 960) FLCOS
- Video Output: Digital Video
- Internal Memory: Up to 1,000 images and 2.5 hours of video on internal memory
- Temperature Imaging Modes (Image Palettes): White Hot, Black Hot, Rainbow HC, Ironbow, Sepia, Arctic, Outdoor Alert

## Appendix B: Communication Flowcharts for Geophysical Operations



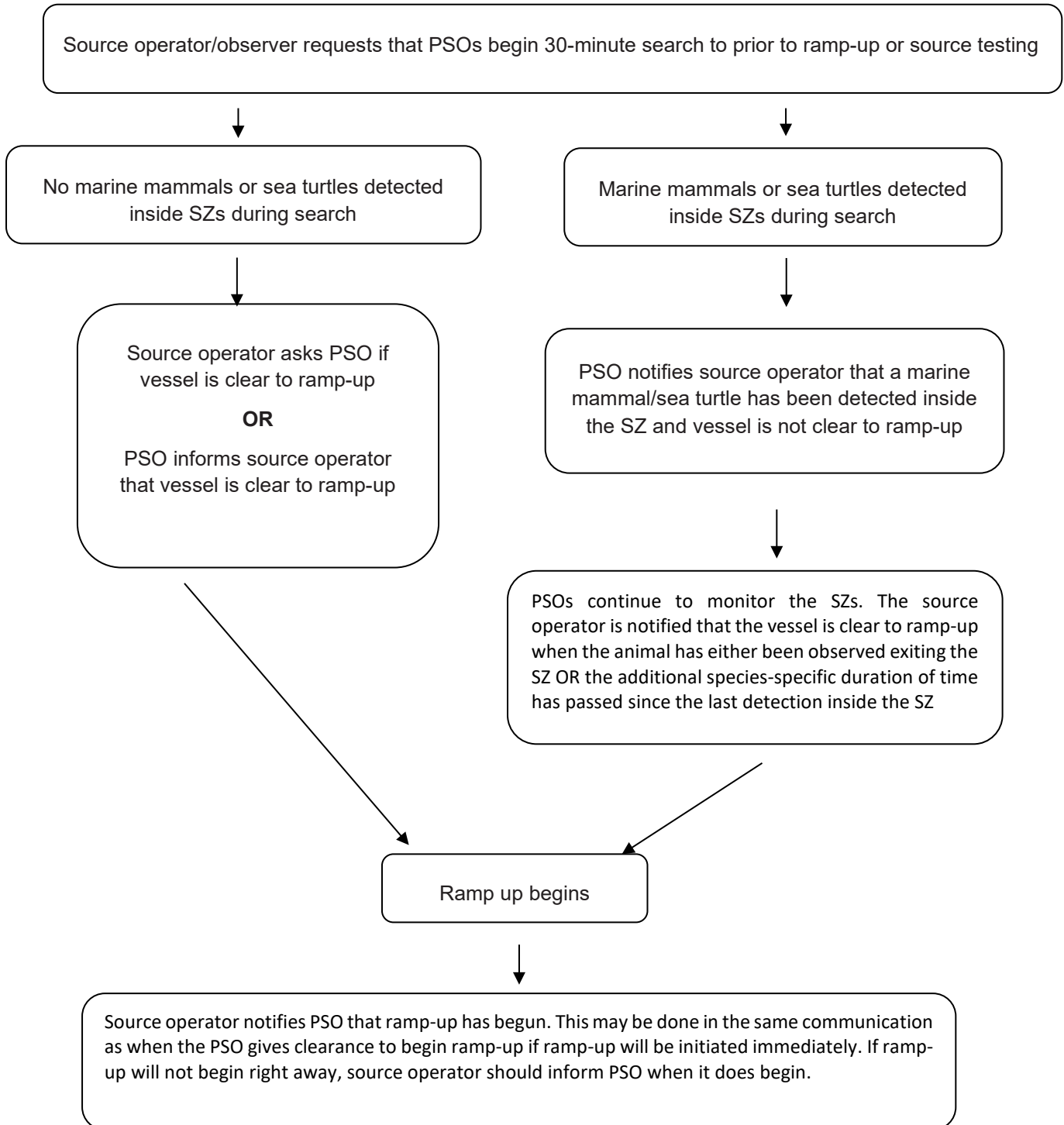
## Mitigation Decision Flowchart for Geophysical Operations

**START:** One certified, approved PSO must be on watch during all daylight hours. Two certified, approved PSOs must be on watch during all hours of reduced visibility. PSOs must be able to monitor the full **Shutdown zone** around the LF sources. PSOs may conduct an active watch for 4 hours and then must have a 2-hour break before returning to watch.



## Ramp-up Communication Procedure for PSOs

The source operator / observer on duty notifies by phone the PSOs (day) on watch in person, via VHF radio or by phone that the vessel would like to activate the source for ramp-up or source testing at least 30 minutes prior to the intended time of the initiation of the source. *(The operator may notify the PSO more than 60 minutes in advance of the intended source operations, if the initiation time is uncertain (i.e. source testing following array deployment) but **a 30-minute search must be completed** prior to activation of the source.)* After 30 minutes have passed, the source operator / observer calls or radios the PSO on watch to ask if the vessel is clear to initiate ramp-up **OR** after 30 minutes have passed, the PSO informs the source operator / observer via radio that the vessel is clear to initiate ramp-up. Ramp-up begins. Source operator / observer informs PSO that ramp-up has begun.



## Appendix D: Survey Vessel Photos



**Figure 1: *Minerva Uno***

## Appendix E: Protected Species Observers



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**Minerva Uno**

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**Marah Garcia**

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**Elsy Olivares**

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**Rafael Ley**

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**Axel Maldonado**

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## Appendix F: Reticle Binocular Calibration Table

Date	Observer Name	Reticle Binocular Estimated Distance (m)	True Distance from Radar (m)	Sea State (Beaufort)	Wind Force (knots)	Swell (m)
2023-05-31	Marah Garcia Vital	789	831	2	8	<2
2023-05-31	Axel Maldonado	804	831	2	8	<2
2023-05-31	Rafael Escalante	2040	2400	6	29	<2
2023-06-16	Elsy Olivares	560	630	2	10	<2
2023-06-16	Rafael Escalante	1630	1770	2	12	<2
2023-06-16	Marah Garcia Vital	1578	1800	2	10	<2
2023-06-19	Marah Garcia Vital	1578	1666	3	16	<2
2023-06-20	Elsy Olivares	592	700	2	10	<2
2023-06-20	Rafael Escalante	544	700	2	10	<2
2023-07-07	Marah Garcia Vital	2400	2000	3	9	<2



## Appendix G: Night Monitoring Equipment Specifications

## Night Monitoring Equipment Specifications

Night monitoring watches will be conducted with night vision goggles with head mounts and thermal clip-ons. Regular night vision binoculars work by enhancing the disponsible light to allow a brighter image with the use of phosphor screen. The PVS-7D night vision goggles (Figure 1) withstand water immersion and runs on two AA batteries for more than 40 hours. Also provided were three pairs of batteries and a batteries charger with the equipment.



**Figure 1: Night vision goggles with thermal clip.**

The thermal clip on the night vision binocular enabled the capture of infrared light, which provided thermal imaging. The handheld forward-looking infrared (FLIR) system may also be provided (Figure 2). This allows a bit more flexibility with the IR detached from the headpiece.



**Figure 2: Handheld thermal FLIR**

# Night Monitoring Equipment Specifications

## Night Vision Goggle Technical Specifications

- Generation: 3 U.S.
- Resolution: 64 lp/mm (Min)
- Film: Thin-filmed
- Magnification: 1x
- Field of View: 40°
- Objective Lens: 25mm f/1.2
- Eyepiece Lens EFL: 26 mm
- Diopter Adjustment: +2 to -6
- Interpupillary Adjustment: 55 to 71 mm
- Range of Focus: 20cm to infinity
- Battery Type: Two (2) AA batteries
- Weight w/batteries: 24 oz / 680 grams
- Dimensions: 6 3/8"(L) x 6"(W) x 3"(H)
- Operating Temperature: -51°C to +52° C
- Weather Resistant: Yes
- IR Illuminator: Yes (built in)

## Thermal Acquisition Clip-On Technical Specifications

- Field of View: 20° circular (centered)
- Magnification: 1X, optical unity
- Sensor: 320 x 240 Vox uncooled LWIR microbolometer
- Display Brightness: Adjustable
- Polarity: White hot/black hot
- Calibration: Manual
- Range: Detection – 300m, Recognition – 260m
- Compatibility: PVS-7
- Interface: Standard quick connect
- Battery Type: CR123, 3V lithium
- Battery Life: >3.0 hours (23°C), 2.5 hours (0°C)
- Dimensions: 38 x 64 x 89 mm (W x H x L)
- Weight: 166g with battery

## Forward-looking Infrared (FLIR) Monocular Technical Specifications

- Dimensions: 5.5"(L) x 2.7"(W) x 1.9"(H)
- Weight: 0.46 pounds
- Detector Type: 320 x 256 V0x Microbolometer
- FOV: 24° x 19° (NTSC)
- Refresh Rate: 60 Hz
- Video Output: Digital Video
- Optical Magnification: 1x
- Display: Quad-VGA (1280 x 960) FLCOS
- Battery Type: One CR123A 3V Lithium Battery
- USB Power: 5 VDC

## **Appendix H: Excel Data Sheets of Monitoring Effort, Source Operations and Detections of Protected Species During the Survey**

## **Appendix I: Photographs of Identified Protected Species Visually Detected During the Survey**



**Figure 1: Visual Detection 04 - Fin whale – 30 May 2023.**



**Figure 2: Visual Detection 05 - Fin whale – 30 May 2023.**



**Figure 3: Visual Detection 06 – Unidentified whale – 30 May 2023.**



**Figure 4: Visual Detection 14 - Sei whale – 31 May 2023.**





**Figure 5: Visual Detection 15 – Sei whale – 31 May 2023.**



**Figure 6: Visual Detection 16 – Bottlenose dolphins – 31 May 2023.**





**Figure 7: Visual Detection 17 – Minke whale – 01 June 2023.**



**Figure 8: Visual Detection 18 – Fin whale – 01 June 2023.**



**Figure 9: Visual Detection 19 - Common dolphins – 01 June 2023.**



**Figure 10: Visual Detection 20 – Fin whale – 01 June 2023.**



**Figure 11: Visual Detection 24 – Humpback whale – 01 June 2023.**



**Figure 12: Visual Detection 25 – Humpback whale – 01 June 2023.**





**Figure 13: Visual Detection 26 – Humpback whale – 01 June 2023.**



**Figure 14: Visual Detection 34 – Minke whale – 02 June 2023.**



**Figure 15: Visual Detection 35 – Fin whale – 02 June 2023.**



**Figure 16: Visual Detection 36 – Fin whale – 02 June 2023.**



**Figure 17: Visual Detection 38 – Fin whale – 06 June 2023.**



**Figure 18: Visual Detection 40 – Fin whale – 06 June 2023.**





**Figure 19: Visual Detection 42 – Fin whale – 07 June 2023.**



**Figure 20: Visual Detection 43 – Fin whale – 07 June 2023.**



**Figure 21: Visual Detection 44 – Fin whale – 07 June 2023.**



**Figure 22: Visual Detection 45 – Unidentified whale – 07 June 2023.**





**Figure 23: Visual Detection 47 – Unidentified whale – 07 June 2023.**



**Figure 24: Visual Detection 48 – Fin whale – 07 June 2023.**



**Figure 25: Visual Detection 54 – Fin whale – 08 June 2023.**



**Figure 26: Visual Detection 57 – Fin whale – 08 June 2023.**



**Figure 27: Visual Detection 59 – Minke whale – 08 June 2023.**



**Figure 28: Visual Detection 67 – Humpback whale – 09 June 2023.**



**Figure 29: Visual Detection 70 – Harbor seal – 09 June 2023.**



**Figure 30: Visual Detection 73 – Fin whale – 09 June 2023.**





**Figure 31: Visual Detection 74 - Minke whale – 09 June 2023.**



**Figure 32: Visual Detection 75 – Fin whale – 09 June 2023.**



**Figure 33: Visual Detection 78 – Unidentified baleen whale (Not a NARW) – 10 June 2023.**



**Figure 34: Visual Detection 79 – Common dolphin – 10 June 2023.**



**Figure 35: Visual Detection 81 - Fin whale – 10 June 2023.**





**Figure 36: Visual Detection 82 - Humpback whale – 10 June 2023.**



**Figure 37: Visual Detection 84 – Humpback whale – 11 June 2023.**



**Figure 38: Visual Detection 87 – Bottlenose dolphin – 11 June 2023.**



**Figure 39: Visual Detection 89 – Minke whale – 11 June 2023.**





**Figure 40: Visual Detection 93 – Fin whales – 16 June 2023.**



**Figure 41: Visual Detection 94 – Humpback whales – 16 June 2023.**



**Figure 42: Visual Detection 95 – Fin whales – 17 June 2023.**



**Figure 43: Visual Detection 96 – Bottlenose dolphins – 17 June 2023.**



**Figure 44: Visual Detection 98 – Fin whales – 17 June 2023.**



**Figure 45: Visual Detection 99 – Fin whales – 17 June 2023.**



**Figure 46: Visual Detection 100 - Fin whale - 19 June 2023.**





**Figure 47: Visual Detection 101 - Bottlenose dolphins - 19 June 2023.**



**Figure 48: Visual Detection 103 - Fin whale - 19 June 2023.**



**Figure 49: Visual Detection 104 - Bottlenose dolphins - 02 July 2023.**



**Figure 50: Visual Detection 105 - Bottlenose dolphins - 02 July 2023**



**Figure 51: Visual Detection 106 - Loggerhead sea turtle - 05 June 2023.**



**Figure 52: Visual Detection 107 - Bottlenose dolphins - 05 June 2023.**





**Figure 53: Visual Detection 108 - Kemp's Ridley sea turtle - 05 July 2023.**



**Figure 54: Visual Detection 111 - Bottlenose dolphins - 06 July 2023.**



**Figure 55: Visual Detection 113 - Common dolphins - 07 July 2023.**



**Figure 56: Visual Detection 114 - Unidentified dolphins - 08 July 2023.**





**Figure 57: Visual Detection 115 - Bottlenose dolphins - 08 July 2023.**



**Figure 58: Visual Detection 116 - Common dolphins - 08 July 2023.**



**Figure 59: Visual Detection 118 - Bottlenose dolphins - 09 July 2023.**



**Figure 60: Visual Detection 119 - Loggerhead sea turtle - 09 July 2023.**



**Figure 61: Visual Detection 120 - Common dolphins - 09 July 2023.**