APPENDICES

Appendix A: BOEM Lease OCS-A-0499 and NMFS IHA

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

ADDENDUM "C"

LEASE-SPECIFIC TERMS, CONDITIONS, AND STIPULATIONS

Lease Number OCS-A 0499

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).

1 DEFINITIONS

1.1 Definition of "Archaeological Resource": The term "archaeological resource" has the same meaning as "archaeological resource" in 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 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, as designated by NMFS, to allow for whale movement. NOAA NMFS may apply mandatory or voluntary speed restrictions. 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" is used to refer to the process by which site-specific sediment and underlying geologic data are acquired from the seafloor and the sub-bottom and includes geotechnical surveys utilizing 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 "Listed Species": The term "listed species," also referred to in adjective form as "listed," means any species of fish, wildlife, or plant that has been determined to be endangered or threatened under Section 4 of the Endangered Species Act. Listed species are provided in 50 CFR 17.11-17.12.

1.8 Definition of "Plan": The term "plan" means a Site Assessment Plan (SAP) and/or a Construction and Operations Plan (COP).

1.9 Definition of "Protected-Species Observer": The term "protected-species observer," or "observer," means an individual who is trained in the shipboard identification and behavior of protected species. Protected species include marine mammals (those protected under the Endangered Species Act and those protected under the Marine Mammal Protection Act) and sea turtles.

1.10 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.

1.11 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.

1.12 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.

1.13 Definition of "Take": The terms "Takes," "Taken," and "Taking" have the same meaning as the term "take" as defined in 16 U.S.C. § 1532(19).

2 SCHEDULE

2.1 Site Characterization

2.1.1 Survey Plan(s).

2.1.1.1 SAP Survey Plan. If the Lessee proposes to conduct site assessment activities during the site assessment term, then the Lessee must submit to the Lessor a complete SAP survey plan. This SAP survey plan must include details and timelines of the surveys to be conducted on this lease necessary to support the submission of a SAP (i.e., necessary to satisfy the information requirements in the applicable regulations, including but not limited to 30 CFR 585.606, 610, 611).

The Lessee must submit the SAP 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). The Lessor may require that the Lessee modify the SAP survey plan to address any comments the Lessor submits to the Lessee on the contents of the SAP survey plan in a manner deemed satisfactory to the Lessor prior to the commencement of any survey activities described in the SAP survey plan.

2.1.1.2 COP Survey Plan. The Lessee must submit to the Lessor a complete COP survey plan providing details and timelines of the surveys to be conducted on this lease that are necessary to support the submission of a COP (i.e., necessary to satisfy the information requirements in the applicable regulations, including but not limited to 30 CFR 585.621, 626, 627). The Lessee must submit the COP survey plan to the Lessor at least 30 calendar days prior to the date of the pre-survey meeting with the Lessor (see 2.1.2). The Lessee must modify the COP survey plan to address any comments the Lessor submits to the Lessee on the contents of the COP survey plan in a manner deemed satisfactory to the Lessor prior to the commencement of these survey activities.

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 (see 4.2.2). 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 submittal.

3.1 Hold and Save Harmless

The Lessee assumes all risks of damage or injury to persons or property that occurs in, on, or above the 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, whether compensation for such damage or injury might be due under a theory of strict or absolute liability or otherwise.

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 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 that 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 (see Contact Information for Reporting Requirements Sheet), 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

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, the Lessee 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 Requirements

4.1.1 Prior to the start of operations, the Lessee must hold a briefing to establish responsibilities of each involved party, define the chains of command, discuss communication procedures, provide an overview of monitoring procedures, and review operational procedures. This briefing must include all relevant personnel, crew members and protected species observers (PSO). New personnel must be briefed as they join the work in progress.

4.1.2 The Lessee must ensure that all vessel operators and crew members, including PSOs, are familiar with, and understand, the requirements specified in Addendum C.

4.1.3 The Lessee must ensure that a copy of the standard operating conditions (Addendum C) is made available on every project-related vessel.

4.1.4 Marine Trash and Debris Prevention. The Lessee must ensure that vessel operators, employees, and contractors actively engaged in activity in support of plan (i.e., SAP and COP) submittal are briefed on marine trash and debris awareness and elimination, as described in the Bureau of Safety and Environmental Enforcement (BSEE) Notice to Lessees and Operators (NTL) No. 2012-G01 ("Marine Trash and Debris Awareness and Elimination") or any NTL that supersedes this NTL, except that the Lessor will not require the Lessee, vessel operators, employees, and contractors to undergo formal training or post placards. The Lessee must ensure that these vessel operator employees and contractors are made aware of 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. The above-referenced NTL provides information the Lessee may use for this awareness briefing.

4.2 Vessel Strike Avoidance Measures

4.2.1 The Lessee must ensure that all vessels conducting activities in support of plan submittal comply with the vessel-strike avoidance measures specified in stipulations 4.2.1 through 4.2.9.1, except under extraordinary circumstances when complying with these requirements would put the safety of the vessel or crew at risk.

4.2.2 The Lessee must ensure that vessel operators and crews maintain a vigilant watch for cetaceans, pinnipeds, and sea turtles and slow down or stop their vessel to avoid striking these protected species.

4.2.3 The Lessee must ensure that all vessel operators comply with 10 knot (18.5 km/hr) speed restrictions in any Dynamic Management Area (DMA).

4.2.4 The Lessee must ensure that vessels 65 feet in length or greater, operating from November 1 through July 31, operate at speeds of 10 knots (18.5 km/hr) or less.

4.2.5 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 non-delphinoid cetaceans are observed near an underway vessel.

4.2.6 North Atlantic right whales.

4.2.6.1 The Lessee must ensure all vessels maintain a separation distance of 500 meters (1,640 ft) or greater from any sighted North Atlantic right whale.

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

4.2.6.2.1 If underway, vessels must steer a course away from any sighted North Atlantic right whale at 10 knots (18.5 km/h) or less until the 500 meters (1,640 ft) minimum separation distance has been established (except as provided in 4.2.6.2.2).

4.2.6.2.2 If a North Atlantic right whale is sighted in a vessel's path, or within 100 meters (328 ft) to an underway vessel, the underway vessel must reduce speed and shift the engine to neutral. The lessee must not engage engines until the North Atlantic right whale has moved outside the vessel's path and beyond 100 meters (328 ft), at which point the Lessee must comply with 4.2.6.2.1.

4.2.6.2.3 If a vessel is stationary, the vessel must not engage engines until the North Atlantic right whale has moved beyond 100 meters (328 ft), at which point the Lessee must comply with 4.2.6.2.1.

4.2.7 Non-delphinoid cetaceans other than the North Atlantic right whale.

4.2.7.1 The Lessee must ensure all vessels maintain a separation distance of 100 meters (328 ft) or greater from any sighted non-delphinoid cetacean.

4.2.7.2 The Lessee must ensure that the following avoidance measures are taken if a vessel comes within 100 meters (328 ft) of any sighted non-delphinoid cetacean:

4.2.7.2.1 If any non-delphinoid cetacean is sighted, the vessel underway must reduce speed and shift the engine to neutral, and must not engage the engines until the non-delphinoid cetacean has moved outside of the vessel's path and beyond 100 meters (328 ft).

4.2.7.2.2 If a vessel is stationary, the vessel must not engage engines until the sighted non-delphinoid cetacean has moved out of the vessel's path and beyond 100 meters (328 ft).

4.2.8 Delphinoid cetaceans and Pinnipeds.

4.2.8.1 The Lessee must ensure that all vessels underway do not divert to approach any delphinoid cetacean and/or pinniped.

4.2.8.2 The Lessee must ensure that if a delphinoid cetacean and/or pinniped approaches any vessel underway, the vessel underway must avoid excessive speed or abrupt changes in direction to avoid injury to the delphinoid cetacean and/or pinniped.

4.2.9 Sea Turtles.

4.2.9.1 The Lessee must ensure all vessels maintain a separation distance of 50 meters (164 ft) or greater from any sighted sea turtle.

4.3 Archaeological Survey Requirements

4.3.1 Archaeological Survey Required. The Lessee must provide the results of an archaeological survey with its plans.

4.3.2 Qualified Marine Archaeologist. The Lessee must ensure that the analysis of archaeological survey data collected in support of plan submittal and the preparation of archaeological reports in support of plan submittal are conducted by a Qualified Marine Archaeologist.

4.3.3 Tribal Pre-Survey Meeting. The Lessee must invite by certified mail the Narragansett Indian Tribe, the Shinnecock Indian Nation, and the Lenape Tribe of Delaware 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). This 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 the commencement of survey activities performed in support of a plan 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).

4.3.4 Geotechnical Exploration.

4.3.4.1 The Lessee may only conduct geotechnical exploration activities in support of plan 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.

4.3.4.2 Except as allowed by the Lessor under 4.3.6, the geotechnical exploration activities must avoid potential archaeological resources by a minimum of 50 meters, and the Qualified Marine Archaeologist must calculate the avoidance distance from the maximum discernible extent of the archaeological resource.

4.3.4.3 Upon completion of geotechnical exploration activities, a Qualified Marine Archaeologist must certify, in the Lessee's archaeological reports, that such 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.

4.3.5 Monitoring and Avoidance. The Lessee must inform the Qualified Marine Archaeologist that he or she is permitted to be present during HRG surveys and bottom-disturbing activities performed in support of plan 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 the 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.

4.3.6 No Impact without Approval. The Lessee must not knowingly impact a potential archaeological resource without the Lessor's prior approval.

4.3.7 Post-Review Discovery Clauses. If the Lessee, while conducting site characterization activities in support of plan submittal, discovers a 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), prehistoric artifacts, or relict landforms within the project area, the Lessee must:

4.3.7.1 Immediately halt seafloor/bottom-disturbing activities within the area of discovery;

4.3.7.2 Notify the Lessor within 24 hours of discovery;

4.3.7.3 Notify the Lessor in writing via report to the Lessor within 72 hours of its discovery;

4.3.7.4 Keep the location of the discovery confidential and take no action that may adversely affect the archaeological resource until the Lessor conducts an evaluation and instructs the applicant on how to proceed; and

4.3.7.5 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 direct the Lessee to conduct such investigations 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)).

4.4 Geological and Geophysical (G&G) Survey Requirements

4.4.1 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 4.4, except under extraordinary circumstances when complying with these requirements would put the safety of the vessel or crew at risk.

4.4.2 Visibility. The Lessee must not conduct G&G surveys in support of plan submittal at any time when lighting or weather conditions (*e.g.*, darkness, rain, fog, sea state) prevent visual monitoring of the high-resolution geophysical (HRG) survey exclusion zone (see 4.4.6) or the geotechnical exploration exclusion zone (see 4.4.7), except as allowed under 4.4.3.

4.4.3 Modification of Visibility Requirement. If the Lessee intends to conduct G&G survey operations in support of plan submittal at night or when visual observation is otherwise impaired, it must submit to the Lessor an alternative monitoring plan detailing the alternative monitoring methodology (*e.g.*, active or passive acoustic monitoring technologies). The alternative monitoring plan must demonstrate the effectiveness of the methodology proposed to the Lessor's satisfaction. The Lessor may, after consultation with National Marine Fisheries Service (NMFS), decide to allow the Lessee to conduct G&G surveys in support of plan submittal at night or when visual observation is otherwise impaired using the proposed alternative monitoring methodology.

4.4.4 Protected-Species Observer. The Lessee must ensure that the exclusion zone for all G&G surveys performed in support of plan submittal is monitored by NMFS-approved protected species observers around the sound source. The number of protected species observers must be sufficient to effectively monitor the exclusion zone at all times. In order to ensure effective monitoring, observers must be on watch for no more than 4 consecutive hours, with at least a 2-hour break after a 4-hour watch, unless otherwise accepted by the Lessor. Observers must be on watch for no more than 12 hours in a 24-hour period. The Lessee must provide to the Lessor a list of observers and their résumés no later than 45 calendar days prior to the scheduled start of surveys performed in support of plan submittal. The Lessee must provide the résumés of additional observers at least 15 calendar days prior to each observer's start date. The Lessor will send the observer qualifications to NMFS for approval.

4.4.5 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 each observer has access to reticle binoculars and other suitable equipment to adequately perceive and monitor protected species within the exclusion zone during surveys conducted in support of plan submittal.

4.4.6 High-Resolution Geophysical (HRG) Surveys. The following stipulations are specific to HRG surveys conducted in support of plan submittal where one or more acoustic sound source is operating at frequencies below 200 kHz:

4.4.6.1 Establishment of Default Exclusion Zone. The Lessee must ensure that a protected species observer monitors a 200-meter default exclusion zone for cetaceans, pinnipeds, 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 4.2.6.1.

4.4.6.1.1 If the Lessor determines that the exclusion zone does not encompass the 180 dB Level A harassment threshold calculated for the acoustic source having the highest source level, the Lessor will consult with NMFS and may impose additional, relevant requirements on the Lessee, including, but not limited to, required expansion of this exclusion zone.

4.4.6.2 Field Verification of HRG Survey Exclusion Zone. The Lessee must conduct field verification of the exclusion zone for the HRG survey equipment operating below 200 kHz. As part of such field verification, the Lessee must take acoustic measurements at a minimum of two reference locations and in a manner that is sufficient to establish the following: source level (peak at 1 meter) and distance to the 207, 180, 166, 160, and 150 dB(RMS) re 1µPa sound pressure level (SPL) isopleths as well as the 187 dB re 1µPa cumulative sound exposure level (cSEL) and 206 dB_{peak}. The Lessee must take these sound measurements at the reference locations at two depths (i.e., a depth at mid-water and a depth at approximately 1 meter (3.28 ft) above the seafloor). The Lessee must report the field verification results to the Lessor in the SAP and COP Survey Plans, unless otherwise authorized by the Lessor.

4.4.6.3 Field Verification Plan for HRG Survey Exclusion Zone. No later than 45 days prior to the commencement of the field verification activities, the Lessee must submit a plan for verifying the sound source levels of any electromechanical survey equipment operating at frequencies below 200 kHz. The plan must demonstrate how the field verification activities will comply with the requirements of 4.4.6.2. Prior to the commencement of the field verification activities, the Lessor may require the Lessee to 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.

4.4.6.4 Modification of Exclusion Zone Per Lessee Request. The Lessee may use the results from its field verification to request modification of the exclusion zone for the specific HRG survey equipment under consideration. The Lessee must base any proposed new exclusion zone radius on the largest safety zone configuration of the target Level A or Level B harassment acoustic threshold zone as defined by NMFS. 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 4.4.6.2. The Lessee must obtain Lessor approval of any new exclusion zone before it is implemented.

4.4.6.5 Clearance of Exclusion Zone. The Lessee must ensure that active acoustic sound sources are not activated until the protected species observer has reported the exclusion zone clear of all marine mammals and sea turtles for at least 60 minutes.

4.4.6.6 Seasonal Management Areas (SMAs) Right Whale Monitoring. The Lessee must ensure that between November 1 and July 31, vessel operators monitor NMFS North Atlantic Right Whale reporting systems (*e.g.*, the Early Warning System, Sighting Advisory System, and Mandatory Ship Reporting System) for the presence of North Atlantic right whales during HRG survey operations.

4.4.6.7 Dynamic Management Area (DMA) Shutdown Requirement. The Lessee must ensure that vessels cease HRG survey activities within 24 hours of NMFS establishing a DMA in the Lessee's HRG survey area. The Lessee may resume HRG survey activities in the affected area as soon as the DMA has expired.

4.4.6.8 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 must begin with the power of the smallest acoustic equipment for the HRG survey at its lowest power output. The power output must be gradually increased and other acoustic sources added in such a way that the source level would rise in steps not exceeding 6 dB per 5-minute period.

4.4.6.9 Shutdown for Non-Delphinoid Cetaceans and Sea Turtles. If a non-delphinoid cetacean or sea turtle is sighted at or within the exclusion zone, the Lessee must immediately shut down all the electromechanical survey equipment. The Lessee must ensure that the vessel operator immediately complies with such a call by the observer. Any disagreement or discussion must occur only after shutdown. Subsequent restart of the electromechanical survey equipment must use the ramp-up provisions described in 4.4.6.8 and must only occur following clearance of the exclusion zone of all marine mammals and sea turtles for at least 60 minutes as described in 4.4.6.5.

4.4.6.10 Power Down for Delphinoid Cetaceans and Pinnipeds. If a delphinoid cetacean or pinniped is sighted at or within the exclusion zone, the Lessee must immediately power down the electromechanical survey equipment to the lowest power output that is technically feasible. The Lessee must ensure that the vessel operator immediately complies with such a call by the observer. Any disagreement or discussion must occur only after power-down. Subsequent restart of the electromechanical survey equipment must use the ramp-up procedures described in 4.4.6.8 and may occur only after (1) the exclusion zone is clear of delphinoid cetaceans and pinnipeds or (2) a determination by the protected species observer after a minimum of 10 minutes of observation that the delphinoid cetacean and/or pinniped is approaching the vessel or towed equipment at a speed and vector that indicates voluntary approach to bow-ride or chase towed equipment.

4.4.6.10.1 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 non-delphinoid cetacean 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, as described in 4.4.6.5, and the implementation of ramp-up procedures, as described in 4.4.6.8. If the shutdown 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 a shutdown of 20 minutes or less, the Lessee must restart the electromechanical survey equipment following clearance of the exclusion zone, as described in 4.4.6.5, and implementation of ramp-up procedures, as described in 4.4.6.8.

4.4.7 Geotechnical (Sub-bottom) Exploration. Stipulations specific to geotechnical exploration conducted in support of plan submittal are provided in 4.4.7.1 through 4.4.7.6.

4.4.7.1 Establishment of Default Exclusion Zone. The Lessee must ensure that a protected species observer monitors a 200-meter (656 ft) default exclusion zone for all marine mammals and sea turtles around any vessel conducting geotechnical surveys.

4.4.7.2 Modification of Default Exclusion Zone Per Lessee Request. If the Lessee wishes to modify the 200 m (656 ft) 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 4.4.7.3. 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 largest safety zone configuration of the target Level A or Level B harassment acoustic threshold zone as defined by NMFS. 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 4.4.7.3. The Lessee must obtain Lessor approval of any new exclusion zone before it is implemented.

4.4.7.3 Field Verification of Geotechnical Exclusion Zone. If the Lessee wishes to modify the existing exclusion zone, the Lessee must conduct field verification of the exclusion zone for specific geotechnical exploration equipment. The Lessee must use the results of the sound measurements from the survey equipment to establish a new exclusion zone, which may be greater than or less than the 200 m (656 ft) default exclusion zone depending on the results of the field tests. As part of such field verification, the Lessee must take acoustic measurements at a minimum of two reference locations and in a manner that is sufficient to establish the following: source level (peak at 1 meter) and distance to the 207, 180, 166, 160, and 150 dB(RMS) re 1µPa sound pressure level (SPL) isopleths as well as the 187 dB re 1µPa cumulative sound exposure level (cSEL) and 206 dB_{peak}. The Lessee must take these sound measurements at the reference locations at two depths (i.e., a depth at mid-water and a depth at approximately 1 meter above the seafloor).

4.4.7.4 Clearance of Exclusion Zone. The Lessee must ensure that the geotechnical sound source is not activated until the protected species observer has reported the exclusion zone clear of all marine mammals and sea turtles for 60 minutes.

4.4.7.5 Shutdown for Non-Delphinoid Cetaceans and Sea Turtles. If any non-delphinoid cetaceans or sea turtles are sighted at or within the exclusion zone, the Lessee must immediately shut down the geotechnical survey equipment. The vessel operator must comply immediately with such a call by the observer. Any disagreement or discussion should occur only after shutdown. Subsequent restart of the geotechnical survey equipment must only occur following clearance of the exclusion zone as described in 4.4.7.4.

4.4.7.6 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 non-delphinoid cetacean or sea turtle, including, 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 after clearance of the exclusion zone, as described in 4.4.7.4. If the shutdown is less than 20 minutes, the equipment may be restarted as soon as practicable as long the Lessee has continued visual surveys 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 a shutdown of 20 minutes or less, the Lessee must restart the geotechnical survey equipment following clearance of the exclusion zone, as described in 4.4.7.4.

4.5 Protected-Species Reporting Requirements

The Lessee must ensure compliance with the following reporting requirements for site characterization activities performed in support of plan submittal, and, where appropriate, must fulfill these requirements using the contact information provided as an Enclosure to this lease, or updated contact information as provided by the Lessor:

4.5.1 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 or sturgeon) are reported to the Lessor, NMFS and the NMFS 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 notify the Lessor of the strike 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 assists in any salvage effort as requested by NMFS.

4.5.2 Reporting Observed Impacts to Protected Species.

4.5.2.1 The Lessee must report any observed takes of listed marine mammals, sea turtles or sturgeon (as defined in 1.13) resulting in injury or mortality within 24 hours to the Lessor and NMFS**.**

4.5.2.2 The Lessee must report any observations concerning any impacts on Endangered Species Act listed marine mammals, sea turtles or sturgeon to the Lessor and NMFS Northeast Region's Stranding Hotline within 48 hours.

4.5.2.3 The Lessee must record injuries or mortalities using the form provided in Appendix A to ADDENDUM "C".

4.5.3 Protected Species Observer Reports. The Lessee must ensure that the protected-species observer 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".

4.5.4 Reports of G&G Survey Activities and Observations. The Lessee must provide BOEM and NMFS with reports every 90 calendar days following the commencement of HRG and/or geotechnical exploration activities, and a final report at the conclusion of the HRG and/or geotechnical exploration activities. Each report must include a summary of survey activities, all protected species observer and incident reports (See Appendices A and B), a summary of the survey activities, and an estimate of the number of listed marine mammals and sea turtles observed and/or taken during these survey activities.

4.5.5 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, the Lessee must provide to the Lessor a copy of such authorization prior to commencing survey activities, pursuant to 30 CFR 585.801(b).

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

APPENDIX "A"

Lease Number OCS-A 0499

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, p*lease 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:_____

_____

_____

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

APPENDIX "B"

Lease Number OCS-A 0499

REQUIRED DATA ELEMENTS FOR PROTECTED SPECIES OBSERVER REPORTS

The Lessee must ensure that the protected-species observer 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. Observers' 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.

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

ADDENDUM "D"

PROJECT EASEMENT

Lease Number OCS-A 0499

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.

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

ADDENDUM "E"

RENT SCHEDULE

Lease Number OCS-A 0499

This section includes a description of the schedule for rent payments that will be determined after the Construction and Operations Plan (COP) 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.

U.S. DEPARTMENT OF THE INTERIOR

BUREAU OF OCEAN ENERGY MANAGEMENT

Lease Number OCS-A 0499

CONTACT INFORMATION FOR REPORTING REQUIREMENTS

The following contact information must be used for the reporting and coordination requirements specified in Addendum C, Stipulation 3.2.5:

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

NOAA Fisheries Northeast Region's Stranding Hotline
866-755-6622

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

National Marine Fisheries Service
Northeast Regional Office, Protected Resources Division
Section 7 Coordinator
Phone: 978-281-9328
Email: incidental.take@noaa.gov; kellie.foster-taylor@noaa.gov

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

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, Maryland 20910

INCIDENTAL HARASSMENT AUTHORIZATION

Atlantic Shores Offshore Wind, LLC (Atlantic Shores) is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371(a)(5)(D)) to harass marine mammals incidental to marine site characterization surveys off the coasts of New York and New Jersey, when adhering to the following terms and conditions.

1. This incidental harassment authorization (IHA) is valid from April 20, 2020 through April 19, 2021.

2. This IHA is valid only for the marine site characterization survey specified in the IHA application, in the Atlantic Ocean.

3. General Conditions

   (a) A copy of this IHA must be in the possession of Atlantic Shores, the vessel operators, the lead protected species observers (PSO), and any other relevant designees of Atlantic Shores operating under the authority of this IHA.

   (b) The species authorized for taking are listed in Table 1. The taking, by Level B harassment only, is limited to the species and numbers listed in Table 1. Any taking of species not listed in Table 1, or exceeding the authorized amounts listed in Table 1, is prohibited and may result in the modification, suspension, or revocation of this IHA.

   (c) The taking by injury, serious injury, or death of any of the species listed in Table 1 of the Authorization or any taking of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA

   (d) Atlantic Shores must ensure that the vessel operator and other relevant vessel personnel are briefed on all responsibilities, communication procedures, marine mammal monitoring protocols, operational procedures, and IHA requirements prior to the start of survey activity, and when relevant new personnel join the survey operations.

4. Mitigation Requirements – The holder of this Authorization is required to implement the following mitigation measures:

(a) Atlantic Shores must employ a minimum of one (1) NMFS-approved PSO on duty at all times during daylight hours (i.e., from 30 minutes prior to sunrise through 30 minutes following sunset) and 30 minutes prior to and during nighttime ramp-ups of HRG equipment on all survey vessels during geophysical surveys. PSOs must have no tasks other than to conduct observational effort, record observational data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements.

(b) Visual monitoring must begin no less than 30 minutes prior to initiation of survey equipment and must continue until 30 minutes after use of survey equipment ceases.

(c) Exclusion Zones – PSOs must establish and monitor marine mammal Exclusion Zones. Distances to Exclusion Zones must be from any survey equipment, not the distance from the vessel. Exclusion Zones must be as follows:

(i) 500-m Exclusion Zone for North Atlantic right whales; and

(ii) 100-m Exclusion Zone for all other marine mammals.

(d) Marine Mammal Monitoring Zone – PSOs must establish and monitor a marine mammal Monitoring Zone that represents a distance of 500 m from survey equipment.

(e) Marine Mammal Buffer Zone – PSOs must establish and monitor a 200 m Buffer Zone.

(i) During use of geophysical 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 Buffer Zone must be communicated to the vessel operator and crew to prepare for potential shutdown of the acoustic source.

(ii) The Buffer Zone is not applicable when the EZ is greater than 100 meters.

(f) Shutdown requirements

(i) If a marine mammal is observed within or entering the relevant Exclusion

Zones as described under 4(c) while geophysical survey equipment is operational, the geophysical survey equipment must be immediately shut down.

(ii) Any PSO on duty has the authority to call for shutdown of survey equipment. When there is certainty regarding the need for mitigation action on the basis of visual detection, the relevant PSO(s) must call for such action immediately.

(iii) When a shutdown is called for by a PSO, the shutdown must occur and any dispute resolved only following shutdown.

(iv) The vessel operator must establish and maintain clear lines of communication directly between PSOs on duty and crew controlling the geophysical source(s) to ensure that shutdown commands are conveyed swiftly while allowing PSOs to maintain watch.

(v) Upon implementation of a shutdown, survey equipment may be reactivated when all marine mammals that triggered the shutdown have been confirmed by visual observation to have exited the relevant Exclusion Zone or an additional time period has elapsed with no further sighting of the animal that triggered the shutdown (15 minutes for small odontocetes and seals and 30 minutes for all other marine mammals).

(vi) If geophysical survey equipment shuts down for less than 30 minutes for reasons other than marine mammal mitigation (*e.g.,* due to mechanical or electronic failure) the equipment may be re-activated as soon as is practicable at full operational level if PSOs have maintained constant visual observation during the shutdown and no visual detections of marine mammals occurred within the applicable Exclusion and Buffer Zones during that time. For a shutdown of 30 minutes or longer, or if visual observation was not continued diligently during the pause, pre-clearance observation is required, as described under 4(g).

(vii) If a delphinid(s) from the genera *Delphinus, Lagenorhynchus, Stenella,* or *Tursiops* is visually detected approaching the vessel (*e.g*., to bow ride) or towed survey equipment, shutdown is not required. If there is uncertainty regarding identification of a marine mammal species (*i.e.,* whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived), PSOs must use best professional judgment in making the decision to call for a shutdown. If delphinids from the above genera are observed within or entering the relevant EZ but do not approach the vessel or towed survey equipment, shutdown is required.

(viii) Shutdown of geophysical survey equipment is required upon observation of a

species for which authorization has not been granted, or, observation of a species for which authorization has been granted but the authorized number of takes has been met, approaching or observed within Level B harassment zone (i.e., within approximately 370 m of geophysical survey equipment).

(g) Pre-clearance observation –PSOs must conduct 30 minutes of pre-clearance observation must be conducted prior to initiation of geophysical survey equipment. If a marine mammal is observed within or approaching the pre-clearance zones described below during the pre-clearance period, geophysical survey equipment must not be initiated until the marine mammal(s) is confirmed by visual observation to have exited the relevant zone, or, until an additional time period has elapsed with no further sighting of the animal (15 minutes for small odontocetes and seals and 30 minutes for all other species). The pre-clearance requirement includes small delphinoids that approach the vessel (*e.g.*, bow ride). Geophysical surveys must not be initiated if:

(i) a North Atlantic right whale is observed within a 500 m radius of geophysical survey equipment during the pre-clearance period; or

(ii) any other marine mammals are observed within a 200 m radius of geophysical survey equipment during the pre-clearance period.

(h) Ramp-up – when technically feasible, survey equipment must be ramped up at the start or re-start of survey activities. Ramp-up must begin with the power of the smallest acoustic equipment at its lowest practical power output appropriate for the survey. When technically feasible the power will then be gradually turned up and other acoustic sources added in a way such that the source level would increase gradually.

(i) Vessel Strike Avoidance – Vessel operator and crew must maintain a vigilant watch for all marine mammals and slow down or stop the vessel or alter course, as appropriate, to avoid striking any marine mammal, unless such action represents a human safety concern. Survey vessel crew members responsible for navigation duties must receive site-specific training on marine mammal sighting/reporting and vessel strike avoidance measures. Vessel strike avoidance measures must include the following, except under circumstances when complying with these requirements would put the safety of the vessel or crew at risk:

(i) The vessel operator and crew must maintain vigilant watch for cetaceans and pinnipeds, and slow down or stop the vessel to avoid striking marine mammals;

(ii) The vessel operator must reduce vessel speed to 10 knots (18.5 km/hr) or less when any large whale, any mother/calf pairs, whale or dolphin pods, or larger

assemblages of non-delphinoid cetaceans are observed near (within 100-m (330-ft)) an underway vessel;

(iii) The survey vessel must maintain a separation distance of 500-m (1640 ft) or greater from any sighted North Atlantic right whale. 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 maintain a minimum separation distance of 500 m.

(iv) If underway, the vessel must steer a course away from any sighted North Atlantic right whale at 10 knots (18.5 km/hr) or less until the 500-m (1640 ft) minimum separation distance has been established. If a North Atlantic right whale is sighted in a vessel's path, or within 500-m (330 ft) to an underway vessel, the underway vessel must reduce speed and shift the engine to neutral. Engines must not be engaged until the North Atlantic right whale has moved outside of the vessel's path and beyond 500-m. If stationary, the vessel must not engage engines until the North Atlantic right whale has moved beyond 500-m;

(v) The vessel must maintain a separation distance of 100-m (330 ft) or greater from any sighted non-delphinoid cetacean. If sighted, the vessel underway must reduce speed and shift the engine to neutral, and must not engage the engines until the non-delphinoid cetacean has moved outside of the vessel's path and beyond 100-m. If a survey vessel is stationary, the vessel must not engage engines until the non-delphinoid cetacean has moved out of the vessel's path and beyond 100-m;

(vi) The vessel must maintain a separation distance of 50-m (164 ft) or greater from any sighted delphinoid cetacean or pinniped. Any vessel underway must remain parallel to a sighted delphinoid cetacean's course whenever possible, and avoid excessive speed or abrupt changes in direction. Vessels may not adjust course and speed until the delphinoid cetaceans have moved beyond 50-m and/or the abeam of the underway vessel;

(vii) All vessels underway must not divert or alter course in order to approach any whale, delphinoid cetacean, or pinniped. Any vessel underway must avoid excessive speed or abrupt changes in direction to avoid injury to the sighted cetacean or pinniped; and

(viii) All vessels, regardless of length, must observe a 10-knot speed restriction in specific areas designated by NMFS for the protection of North Atlantic right whales, including any Dynamic Management Areas when in effect, and the Mid-Atlantic Seasonal Management Area (from November 1 through April 30).

5. Monitoring Requirements – Atlantic Shores is required to conduct marine mammal visual monitoring during geophysical survey activity. Monitoring must be conducted in accordance with the following requirements:

(a) A minimum of one NMFS-approved PSO must be on duty and conducting visual observations at all times on all active survey vessels during daylight hours (i.e., from 30 minutes prior to sunrise through 30 minutes following sunset) and 30 minutes prior to and during nighttime ramp-ups of HRG equipment on all survey vessels during geophysical surveys.

(b) PSO resumes must be provided to NMFS for approval prior to commencement of the survey. PSO qualifications must include completion of a PSO training course and direct field experience conducting similar surveys.

(c) PSOs must be employed by a third-party observer provider, must have no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards), and must have successfully completed an approved PSO training course appropriate for their designated task. Non-third-party observers may be approved by NMFS on a case-by-case basis for limited, specific duties in support of approved, independent PSOs.

(d) Visual monitoring must begin no less than 30 minutes prior to initiation of geophysical survey equipment and must continue until one hour after use of the acoustic source ceases or until 30 minutes past sunset.

(e) PSOs must coordinate to ensure 360° visual coverage around the vessel from the most appropriate observation posts.

(f) Visual observations must be conducted using binoculars and the naked eye while free from distractions and in a consistent, systematic, and diligent manner.

(g) PSOs may be on watch for a maximum of four consecutive hours followed by a break of at least two hours between watches and may conduct a maximum of 12 hours of observation per 24-hour period.

(h) In cases where multiple vessels are surveying concurrently, any observations of marine mammals must be communicated to PSOs on all active survey vessels.

(i) PSOs must be equipped with binoculars and have the ability to estimate distances to marine mammals located in proximity to the vessel and/or Exclusion Zones using range finders. Reticulated binoculars must also be available to PSOs for use

as appropriate based on conditions and visibility to support the sighting and monitoring of marine species.

(j) Position data must be recorded using hand-held or vessel global positioning system (GPS) units for each sighting.

(k) Atlantic Shores must consult NMFS' North Atlantic right whale reporting systems for the presence of North Atlantic right whales throughout survey operations for the establishment of a Dynamic Management Area (DMA).

(l) During good conditions (e.g., daylight hours; Beaufort sea state 3 or less), to the maximum extent practicable, visual 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.

(m) Night-vision equipment (i.e., night-vision goggles and/or infrared technology) must be available for use during nighttime monitoring.

(n) Any observations of marine mammals by crew members aboard any vessel associated with the survey must be relayed to the PSO team.

(o) If Exclusion Zones, Buffer Zone and/or Monitoring Zone are not fully visible to PSOs due to darkness or inclement weather, survey activities may continue, unless a marine mammal is detected within or entering the Exclusion Zones as described under 4(c).

(p) Data on all PSO observations must be recorded based on standard PSO collection requirements. PSOs must use standardized data forms, whether hard copy or electronic. The following information must be reported:

(i) PSO names and affiliations

(ii) Dates of departures and returns to port with port name

(iii) Dates and times (Greenwich Mean Time) of survey effort and times corresponding with PSO effort

(iv) Vessel location (latitude/longitude) when survey effort begins and ends; vessel location at beginning and end of visual PSO duty shifts

(v) Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change

(vi) Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including wind speed and direction, Beaufort sea state, Beaufort wind force, swell height, weather conditions, cloud cover, sun glare, and overall visibility to the horizon

(vii) Factors that may be contributing to impaired observations during each PSO shift change or as needed as environmental conditions change (*e.g.*, vessel traffic, equipment malfunctions)

(viii) Survey activity information, such as type of survey equipment in operation, acoustic source power output while in operation, and any other notes of significance (*i.e.*, pre-clearance survey, ramp-up, shutdown, end of operations, etc.)

(ix) If a marine mammal is sighted, the following information should be recorded:

(A) Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);

(B) PSO who sighted the animal;

(C) Time of sighting;

(D) Vessel location at time of sighting;

(E) Water depth;

(F) Direction of vessel's travel (compass direction);

(G) Direction of animal's travel relative to the vessel;

(H) Pace of the animal;

(I) Estimated distance to the animal and its heading relative to vessel at initial sighting;

(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) Estimated number of animals (high/low/best) ;

(L) Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);

(M) 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);

(N) Detailed behavior observations (*e.g.*, number of blows, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);

(O) Animal's closest point of approach and/or closest distance from the center point of the acoustic source;

(P) Platform activity at time of sighting (*e.g.*, deploying, recovering, testing, data acquisition, other);

(Q) Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up, speed or course alteration, etc.) and time and location of the action: and

(R) Documentation of whether the marine mammal was estimated to have been within 370 m of active survey equipment.

6. Reporting – Atlantic Shores is required to report to NOAA Fisheries in accordance with the following requirements:

(a) A monitoring report must be provided to NMFS within 90 days after completion of survey activities. The report must fully document the methods and monitoring protocols, summarizes the data recorded during monitoring, estimates the number of marine mammals that may have been taken during survey activities, describes, assesses and compares the effectiveness of monitoring and mitigation measures. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by NMFS. PSO datasheets or raw sightings data must also be provided with the draft and final monitoring report.

(b) Reporting sightings of North Atlantic right whales:

(i) If a North Atlantic right whale is observed at any time by PSOs or personnel on any project vessels, during surveys or during vessel transit, Atlantic Shores must immediately report sighting information to the NMFS North Atlantic Right Whale Sighting Advisory System: (866) 755-6622. North Atlantic right whale sightings in any location may also be reported to the U.S. Coast Guard

via channel 16.

(c) Reporting injured or dead marine mammals:

(i) In the event that personnel involved in the survey activities covered by the authorization discover an injured or dead marine mammal, Atlantic Shores must report the incident to the NOAA Fisheries Office of Protected Resources (OPR) (301-427-8401), and to the NOAA Fisheries New England/Mid-Atlantic Regional Stranding Coordinator (978-282-8478) 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 vessel strike of a marine mammal by any vessel involved in the activities covered by the authorization, the Atlantic Shores must report the incident to NOAA Fisheries OPR (301-427-8401) and to the NOAA Fisheries New England/Mid-Atlantic Regional Stranding Coordinator (978-282-8478) 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 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 withdrawn if the holder fails to abide by the conditions prescribed herein, or if NMFS determines the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals.

8. Renewals – On a case-by-case basis, NMFS may issue a 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, or nearly identical, activities as described in the Specified Activities section of this notice is planned or (2) the activities as described in the Specified Activities section of this notice would not be completed by the time the IHA expires and a Renewal would allow for completion of the activities beyond that described in the Dates and Duration section of this notice, 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 (recognizing that the Renewal IHA expiration date cannot extend beyond one year from expiration of the initial 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 under the initial IHA, are

a subset of the activities, or include changes so minor (e.g., reduction in pile size) 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 in the initial IHA remain valid.

_____ _____

Donna S. Wieting, Date
Director, Office of Protected Resources
National Marine Fisheries Service

Table 1. Numbers of Incidental Take of Marine Mammals Authorized

Species	Total Takes by Level B Harassment Authorized
North Atlantic right whale	9
Humpback whale	18
Fin whale	20
Sei whale	2
Minke whale	9
Sperm whale	3
Long-finned pilot whale	6
Bottlenose dolphin (W.N. Atlantic Coastal Migratory)	1,102
Bottlenose dolphin (W.N. Atlantic Offshore)	5,113
Common dolphin	544
Atlantic white-sided dolphin	82
Atlantic spotted dolphin	100
Risso's Dolphin	6
Harbor porpoise	115
Harbor seal	1,404
Gray seal	1,404

Appendix B: Environmental Management Plan

ATLANTIC SHORES OFFSHORE WIND LLC

Environmental Management Plan: Marine Mammals and Sea Turtles Monitoring, Mitigation, and Reporting

Version 4
April 30, 2020

rpsgroup.com

ATLANTIC SHORES OFFSHORE WIND LLC

Environmental Management Plan: Marine Mammals and Sea Turtles Monitoring, Mitigation, and Reporting

With reference to BOEM Lease OCS-A 0499, BOEM NTL 2016 – G01, Atlantic Shores Survey Plan and the issued Incidental Harassment Authorization for this survey

Revision		
Date	**Version**	**Revision made**
08 Jan 2020	1	Draft issued to Fugro and Atlantic Shores for review
09 Jan 2020	2	Draft issued with changes and appendices added
17 Apr 2020	3	Updated mitigation requirements with issued IHA requirements. Final report submission procedures
30 Apr 2020	4	Clarifications to dead/injured protected species reporting procedures. Addition of section 6.2 for lease stipulation 4.4.6.7 DMA shutdown requirement.
26 May 2020	5	Corrections to discrepancies in clearance times for sea turtles and NARW in flowcharts vs texts (60 mins clearance from sea turtles and NARW). Allowable silent period duration corrected in text from 30 to 20 mins (BOEM lease requirement)

Approval for issue	
Stephanie Milne	26 May 2020

Contents

Appendices

1 INTRODUCTION

Fugro has been contracted by Atlantic Shores Offshore Wind LLC (Atlantic Shores) to conduct high resolution geophysical (HRG) surveys within Lease Area OCS-A 0499. The details of the survey activities to be executed by Fugro are provided in the Atlantic Shores 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 200 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 Atlantic Shores will be conducted 24-hours per day and include the use of equipment operating below 200 kHz, Fugro 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 0499 contains monitoring and mitigation requirements that apply to marine mammals, marine turtles, and other protected marine species.

Atlantic Shores submitted a request to NOAA for an Incidental Harassment Authorization (IHA) pursuant to Section 101(a)(5) of the MMPA and 50 CFR § 216 Subpart I on May 1, 2019. The IHA request was determined to be sufficient and complete on December 23, 2019. The mitigation and monitoring measures as described in this document are consistent with those of the IHA as discussed with NOAA on January 6, 2020.

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)
- Sea turtles

3 PROTECTED SPECIES OBSERVERS AND PASSIVE ACOUSTIC MONITORING OPERATORS

3.1 Staffing Plan

A team of six dual role Passive Acoustic Monitoring (PAM) Operators / Protected Species Observers (PSOs) supplied by RPS will be on board each vessel that will be conducting 24-hour survey operations to undertake visual and acoustic watches, implement mitigation and conduct data collection and reporting in accordance with the Atlantic Shores Survey Plan, the IHA the requirements in the BOEM Lease and BOEM Waiver Modifications.

A team of two Protected Species Observers (PSOs) supplied by RPS will be on board each vessel that will be conducting 12-hour/daylight only survey operations to undertake visual watches, implement mitigation and conduct data collection and reporting in accordance with the Atlantic Shores Survey Plan, the IHA the requirements in the BOEM Lease and BOEM Waiver Modifications.

3.2 Roles and Responsibilities

Lead PAM Operator / Environmental Team Lead

- Coordinate and Oversee PAM and PSO Operations and ensure compliance with monitoring requirements
- Acoustically monitor, detect, and identify marine mammals and determine distance to source
- Record and report marine mammal sightings, survey activities and environmental conditions according to 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 200kHz)
- Maintain and troubleshoot the PAM system hardware and software
- Oversee all deployments and retrievals of the hydrophone cable
- Participate in daily meetings and drills with crew when appropriate

PAM Operator

- Acoustically monitor, detect, and identify marine mammals and determine distance to source
- Record and report marine mammal sightings, survey activities and environmental conditions according to 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
- Assist Lead PAM Operator in maintaining and troubleshooting the PAM system hardware and software
- Oversee all deployments and retrievals of the hydrophone cable

PSO

- Visually monitor, detect, and identify protected species
- Record and report according to 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
- Participate in daily operation meeting 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 or Gulf of Mexico. The resumes of all proposed PSOs will be submitted to BOEM for review and approval by NMFS at least 2 weeks prior to the start of survey operations.

3.4 PAM Operator Requirements

All PAM Operators will have completed a BOEM/NMFS approved protected species observer training program in addition to a PAM Training course. PAM Operators will have relevant observation experience in the Atlantic or Gulf of Mexico. The resumes of all proposed PSOs and PAM operators will be submitted to BOEM for review and approval by NMFS at least 2 weeks prior to the start of survey operations.

4 MONITORING EQUIPMENT

4.1 Visual Monitoring Equipment

4.1.1 Day-time monitoring equipment

The PSO on duty will monitor for marine protected species using the naked eye and hand-held reticle binoculars. Digital single-lens reflex camera equipment will be provided to record sightings and verify species identification.

4.1.2 Night-time monitoring equipment

The PSOs on duty will monitor for marine protected species using infrared LED pistol grip spotlight; and Morovision PVS-7 Gen 3 PINNACLE night vision goggles with a thermal acquisition clip-on system, so PSOs can focus observations in any direction. The specifications of this equipment are provided in Appendix A.

RPS has used this equipment on multiple renewable wind leases and have collected data on the detection distances of various species groups. Sea turtles were detected at distances of up to 150 meters and delphinids were detected at distances up to 250 meters.

Note that this equipment will only be utilized on the vessels conducting 24-hour operations.

4.1.3 Distance estimation and calibration of equipment of visual monitoring equipment

Reticle binoculars have the capability to localize the distance to detected animals.

Monitoring equipment will be calibrated when possible throughout the duration of survey using the vessel radar, by comparing estimated distances to known distances and will be conducted during varying sea states and both at night and during the day.

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.

4.2 Acoustic Monitoring Equipment

4.2.1 Passive Acoustic Monitoring (PAM) System

The PAM system is designed to provide a flexible approach to the monitoring for marine mammals using a towed hydrophone system. The system uses PAMGUARD software modules such that the optimum system can be configured for the application, vessel, and deployment method. PAM software modules will be configured for the application, vessel, and deployment method.

The source vessel will have two acoustic monitoring systems installed, a primary system and a secondary system available as back-up should any issues be encountered with the main system.

PAM equipment specifications are provided in Appendix B.

Note that this equipment will only be utilized on the vessels conducting 24-hour operations.

The PAM operator must be proficient in its use and PAM must be deployed and functional for use during periods of reduced visibility (including night time and day-time fog when exclusion zones [EZs] are obscured) in order to meet the acoustic monitoring requirements of the survey plan.

The PAM system will be considered to be non-functioning for the purposes of mitigation monitoring in the case of:

1. **Equipment Failure**
   - If the PAM cable is damaged such that monitoring cannot be undertaken using at least two of the hydrophones, where one must be a low-frequency hydrophone capable of detecting the vocalizations of North Atlantic right whales.
   - If the PAM computer is damaged or unable to load or run the acoustic monitoring software properly (i.e., Pamguard, etc.)
2. **Software Failure**
   - If the acoustic monitoring software is not functioning
3. **HSE Restriction**
   - If sea conditions are too rough for deployment of the hydrophone array

4.2.2 PAM JSA and PAM deployment and retrieval procedure

A job safety analysis (JSA) will be completed prior to hydrophone deployment. The PAM Operator will develop, in cooperation with the vessel crew, a vessel-specific deployment and retrieval procedure that considers both the minimization of entanglement risks with other towed equipment while maximizing the acoustic range of the system.

Hydrophone cable deployment is dependent upon operational constraints and the hydrophone towing cable will not be deployed if it hinders safe operations on the vessel; however, no actions allowable with PAM are afforded to the vessel with respect to sound source use during periods of reduced visibility if the PAM system is not operation.

4.2.3 Distance estimation of acoustic detections

There are a variety of methods that can be used to estimate the distance to vocalizing marine mammals using the acoustic detection software, Pamguard.

When the distance to a vocalizing animal cannot be determined by Pamguard, the experienced PAM Operator can make a distance estimation assisted by the noise or detection score system developed by Gannier et al. (2002). Gannier et al. monitored sperm whales in the Mediterranean both visually and acoustically. A scale was developed based upon the strength or intensity of the sperm whale clicks at various distances that were then measured when the sperm whales surfaced and were visually observed. Although the scale is subjective, and sounds produced in marine environments will vary according to local conditions, the scale provides a measure for approximating distances when using a single, linear hydrophone array.

5 VISUAL AND ACOUSTIC MONITORING PROCEDURES

5.1 Visual Monitoring Watches

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 PSO will be on watch at all times during nighttime operations.

12-Hour/Day-light only 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.

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 may 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 EZs of the vessel.

Visual monitoring will begin no less than 60 minutes prior to the initiation of the sound sources operating below 200kHz and continue until source operations cease for a significant duration.

If a protected species is observed, the PSO should first take care of any necessary mitigation actions, or if no mitigation 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 Monitoring During Day-time Reduced Visibility

During periods of reduced visibility (any time any of the EZs are not fully visible) during the day, the PSO on visual watch will continue observations but an additional acoustic PSO/PAM Operator will be alerted to augment the monitoring until visibility has returned.

During these periods, all requirements surrounding watch durations and break periods will be adhered to. Additionally, no PSO will conduct additional monitoring watches such that they do not have a sufficient long break to obtain at least 8 hours of uninterrupted sleep.

The PSO team and vessel / survey crew will work together to co-ordinate monitoring to the best of their abilities to minimize any operational downtime during reduced visibility during the day.

5.3 Passive Acoustic Monitoring Watches

On vessels that will be conducting 24-hour operations, one PAM Operator will be on watch during nighttime or periods of reduced visibility, such as fog.

During these observations, the following guidelines shall be followed:

- Other than brief alerts to bridge personnel of maritime hazards no additional duties may be assigned to the observer during his/her acoustic monitoring watch
- No operator will be allowed more than four consecutive hours on watch as a PAM Operator before they will be allocated a break of two hours
- No person on watch as a protected species observer and/or PAM Operator will be assigned a combined watch schedule of more than 12 hours in a 24-hour period

The PAM operator will monitor for marine mammals using the PAM system (headphones for aural monitoring and spectrogram and click detectors for visualization). The PAM operators will be in a suitable location that will not interfere with navigation or the operation of the vessel. The location will provide the PAM operator a comfortable, ergonomic position to monitor the PAM system. The PAM Operator will monitor from a location that allows for a quick exchange of communication to the source operator in case of a need for shut down or delay.

Acoustic monitoring will begin no less than 60 minutes prior to the initiation of the sound sources operating below 200 kHz and continue until source operations cease for a significant duration.

Acoustic monitoring must be consistent, diligent, and free of distractions for the duration of the watch.

5.4 Proposed Monitoring Scheduled for PSOs and PAM Operations: 24-hour Operations

LOCAL TIME	A	B	C	D	E	F
20:00	PAM		PSO			PSO
21:00	PAM		PSO			PSO
22:00		PAM	PSO		PSO	
23:00		PAM	PSO		PSO	
0:00		PAM		PSO	PSO	
1:00	PAM			PSO	PSO	
2:00	PAM		PSO	PSO		
3:00		PAM	PSO	PSO		
4:00	PSO	PAM			PSO	
5:00	PSO	PAM			PSO	
6:00		PSO		*PAM*		
7:00	*PAM*			PSO		
8:00	PSO				*PAM*	
9:00					PSO *PAM*	*PSO*
10:00				PSO	*PAM*	
11:00				PSO	*PAM*	
12:00				*PAM*		PSO
13:00				*PAM*		PSO
14:00			*PAM*			PSO
15:00			*PAM*			PSO
16:00		*PAM*	PSO			
17:00		*PAM*	PSO			
18:00		*PAM*				PSO
19:00	*PAM*					PSO
Watch	7	7	8	7	7	8
Sleep shift	11	13	12	12	12	14
Watch low vis	8	11	10	10	10	9

NIGHT

DAY

LEGEND
Standard shifts
On Call, Lo Vis shifts (fog)

LOCAL TIME	PAM	PSO	
20:00	A	C	F
21:00	A	C	F
22:00	B	C	E
23:00	B	C	E
0:00	B	D	E
1:00	A	D	E
2:00	A	C	D
3:00	B	C	D
4:00	B	A	E
5:00	B	A	E
6:00	D	B	
7:00	A	D	
8:00	E	A	
9:00	E	E	
10:00	E	D	
11:00	E	D	
12:00	D	F	
13:00	D	F	
14:00	C	F	
15:00	C	F	
16:00	B	C	
17:00	B	C	
18:00	B	F	
19:00	A	F	

Lo Vis On Call

5.5 Proposed Monitoring Schedule for PSOs: 12-hour Operations

LOCAL TIME	A	B
20:00	*PSO*	*PSO*
21:00		*PSO*
22:00		
23:00		
0:00		
1:00		
2:00		
3:00		
4:00		
5:00		
6:00	PSO	
7:00	*PSO*	
8:00	PSO	
9:00		PSO
10:00		*PSO*
11:00		PSO
12:00	PSO	
13:00	*PSO*	
14:00	PSO	
15:00		PSO
16:00		*PSO*
17:00		PSO
18:00	PSO	
19:00	*PSO*	*PSO*
Watch	7-9	7-9

Shifts shown in red will be performed by either PSO A or B, depending on the time of sunset (and when watch will terminate). Watches will be divided evenly between the PSOs and such that each person has 11 hrs off to sleep

NIGHT

DAY

6 MITIGATION PROCEDURES: STRIKE AVOIDANCE

6.1 Monitoring of NMFS NARW Notification Systems

PSOs will monitor the NMFS' NARW 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 DMA Shutdown Requirement

Vessels must stop HRG survey activities within 24 hours of NMFS establishing a DMA in the survey area.

HRG survey activities may resume in the affected area as soon as the DMA has expired.

6.3 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 Mid-Atlantic Seasonal Management Area (SMA) from November 1st through July 31st.
- Vessel speed will be restricted to 10 knots or less inside any established DMA.

6.4 Species-Specific Separation Distances & Speed Restrictions

6.4.1 North Atlantic Right Whale

All survey vessels will maintain a separation distance of 500 meters or greater from any sighted North Atlantic right whale (NARW)

- If underway, steer a course away from any sighted NARW at 10 knots until the separation distance is achieved
- If sighted within 100 meters to underway vessel, reduce speed and shift the engine to neutral until the NARW has moved beyond 100 meters and out of path, then re-engage engines and steer away at 10 knots
- If a whale is observed but the species cannot be confirmed, it must be assumed to be a right whale and all applicable strike avoidance procedures for NARWs implemented

6.4.2 Non-delphinoid Cetaceans (Baleen whales, Beaked whales, Sperm Whales)

All vessels will maintain a separation distance of 100 meters or greater from any sighted non-delphinoid cetacean

- If sighted within 100 meters to underway vessel, reduce speed and shift the engine to neutral until the animal has moved beyond 100 meters

6.4.3 Delphinoid Cetaceans and Pinnipeds

All vessels will maintain a separation distance of 50 meters or greater from any sighted delphinoid cetacean or pinniped

- Vessels should not divert to approach delphinoid cetaceans or pinnipeds
- Vessels should remain parallel to delphinoids course whenever possible and avoid excessive speed or direction changes until the animals have moved beyond 50 m
- Vessels must reduce speed to 10 knots or less when any dolphin pods are observed within 100 m of an underway vessel

6.4.4 Sea Turtles

All vessels will maintain a separation distance of 50 meters or greater from any sighted sea turtle

7 MITIGATION PROCEDURES: SOUND SOURCES

7.1 Survey Equipment Subject to Monitoring and Mitigation Procedures

All of the survey equipment that produces sound below 200kHz is subject to the following monitoring and mitigation protocols with the exception of the USBL, which is considered to be navigational equipment.

7.2 Sound Source Exclusion Zones and Buffer Zones

Two types of zones will be established around Atlantic Shores survey equipment operating below 200 kHz:

Buffer Zones (BZ): Applicable during the pre-clearance search periods conducted prior to initiating the LF sound sources from silence, where detections of a protected species inside it's applicable BZ during the search will result in a delay

- **500 meters:** North-Atlantic right whales
- **200 meters**: All other marine mammals with no exception to voluntarily approaching delphinids
- **50 meters:** Sea turtles
- **370 m:** Level B harassment zone for marine mammals*.

  *Delays are required at this distance for marine mammals where take has not been granted or where the authorized takes have been met.

Exclusion Zones (EZ): Applicable once the LF sound sources have been activated, where detections of a protected species inside it's applicable EZ will result in a shutdown

- **500 meters:** North-Atlantic right whales
- **100 meters**: All other marine mammals with the exception of voluntarily approaching delphinids as described in Section 7.7
- **50 meters:** Sea turtles
- **370 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.

Note that BZs and EZs for the purposes of sound exposure mitigation are established around the survey equipment and not around the vessel itself.

Although mitigation will be applied for animals detected in the aforementioned EZs, observations will extend to the furthest observable distances which will include the 500 m monitoring zone required under the IHA.

7.3 Visual and Acoustic Search Periods

To activate any other equipment operating below 200kHz from silence, a minimum of a 60-minute search period must be conducted.

During the daytime, the search must be conducted visually by the PSO on watch.

During night time or other periods of reduced visibility, the search must be conducted visually by the PSOs on watch AND acoustically by the PAM Operator.

Note that visual observations for all marine protected species will extend to the furthest observable distances even though the above EZs around the sound sources will apply.

7.4 Delays to Initiation of the LF Sound Sources

If any marine mammal or sea turtle was detected visually or acoustically inside its respective Buffer Zone during the 60-minute search period, initiation of the LF sound sources must be delayed until:

- All marine protected species that were observed inside the relevant Buffer Zone have been confirmed by the visual observer to have been exiting the relevant Buffer Zone

  OR

- When a marine protected species was not observed exiting the Buffer Zone, an additional time period has elapsed with no further sightings of the animal within the relevant Buffer Zone:
  - **15 minutes** for small cetaceans (porpoises and dolphins), pinnipeds
  - **30 minutes** for large whales including NARW
  - **60 minutes** for sea turtles

Both the 60-minute pre-clearance search period and the mandatory delay for animals not seen exiting the buffer zone must be completed before source initiation.

Note that if a marine mammal(s) for which no authorized takes have been granted OR a marine mammal(s) for which authorization has been granted by the authorized number of takes has been met is observed during the search prior to initiating the sound source, the larger applicable Buffer Zone of 370 m (the Level B Harassment zone) should be used such that no potential takes occur when the source is initiated.

During the day, when acoustic monitoring is not being conducted continuously, if at any point during the 60-minute search period, the full Buffer Zones were not completely visible, then either:

1. Initiation of the source must be delayed until the full Buffer Zone has been visible for a full 60-minute clearance search or,
2. A PAM Operator augments the ongoing visual monitoring with acoustic monitoring to conduct the search, if the vessel is equipped with PAM

7.5 Ramp Up (Soft Start) Procedure

Ramp-up or soft-start procedures cannot be conducted for individual pieces of survey equipment without increasing the HSE risk to personnel operating the equipment.

Ramp-up will be conducted by activating the low frequency sound producing equipment in a sequence beginning with the equipment with the lowest sound output level and adding in additional sound producing equipment incrementally over a period of 20 minutes until all of the sound producing equipment is activated.

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 <200kHz sound sources may be silenced for periods of time not exceeding 20 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 EZ must remain visible throughout the silent period)
   AND
2. No marine protected species are observed in the EZ.

7.7 Shut Down Procedures

If any marine protected species is sighted at or within its EZ, an immediate shutdown of the survey equipment operating below 200kHz is required.

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

The requirement to shut-down is waived for delphinids in the genera *Delphinus, Lagenorhynchus*, *Stenella* and *Tursiops* IF delphinids are observed voluntarily approaching the vessel (e.g., to bow ride) or towed equipment

- The determination of whether the animal has “voluntarily” approached will be made by the PSO on watch.
- If there is uncertainty regarding the species identification, PSOs will use their professional judgement to determine whether a shut-down should be implemented
- If the delphinids in the above genera enter the EZ but not by their own approach, shutdown is required

Note that if a marine mammal(s) for which no authorized takes have been granted OR a marine mammal(s) for which authorization has been granted by the authorized number of takes has been met is observed while the LF source is active, the larger EZ of 370 m (the Level B Harassment zone) should be used for all species except the NARW, where the 500 m EZ still applies, such that no potential takes occur.

7.7.1 Resuming Source Operations Following a Protected Species Shutdown

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

- **60 minutes** following the last sighting of a sea turtle or NARW inside the EZ
- When all other marine mammals have been confirmed by the visual observer to have been seen exiting the relevant EZ
  OR
  When a marine mammal was not observed exiting the EZ, and additional time period has elapsed with no further sightings of the animal within the relevant EZ:
  - **15 minutes** for small cetaceans (porpoises and dolphins) and pinnipeds
  - **30 minutes** for large 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 C.

8 REPORTING

8.1 Data Forms

PSOs and PAM Operators will utilize 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.

- Vessel name;
- Observers' names and affiliations;
- Date and location of survey operations;
- Time and latitude/longitude when daily visual survey began;
- Time and latitude/longitude when daily visual survey ended; and
- 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);
- 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 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 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.

8.2 Reporting Observed Impacts to Protected Species

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

The RPS Project Manager will send reports to:

On-board:

- Fugro Onboard Party Chief
- Atlantic Shores Client Representative

On-shore:

- Fugro Project Manager
- Atlantic Shores Permit Manager

8.3 Injured or Dead Protected Species Reporting

1. The PSO on watch will report the sightings of a dead and/or injured marine species to the Lead PAM Operator / Environmental Team Lead, RPS project manager, on board client representative and Fugro Party Chief.
2. The Environmental Team Lead 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. This will occur as soon as practicably possible but no more than 24 hours of the detection. The shore-based RPS Project Manager may collect the data and assist with the initial phone report.
3. A report will be sent to RPS on the first break.
4. 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:

- Fugro Onboard Party Chief
- Atlantic Shores Client Representative

On-shore:

- Fugro Project Manager
- Atlantic Shores Permit Manager
- Shell Permitting Manager
- Shell Project Manager

It will be the responsibility of the Atlantic Shores Development Director to provide the written report to NOAA and BOEM.

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 and touching the animals in any manner is considered harassment and is punishable by law.

8.4 Daily Progress Report

A daily detection spreadsheet will be completed and submitted to the Fugro Party chief, Atlantic Shores onboard client representative and RPS project manager. If there were no detections that day, the Lead PAM will email the distribution list noting that there were no detections on that day.

8.5 Final Report

The PAM and PSO team will develop a final report summarizing the Atlantic Shores HRG survey activities and all PAM / PSO observations. The report will contain all of the data required to meet the requirements of the lease and IHA reporting requirements.

Reports will be completed and submitted to the RPS Project Manager within 10 days of survey completion. The RPS Project Manager will provide the finalized report to the Fugro Project Manager within 30 days of project completion for review and comment by the Fugro and Atlantic Shores team.

The RPS Project Manager will submit the final report to Atlantic Shores who will be responsible for submitting the report to BOEM and NMFS.

Appendix C: Protected Species Observers Onboard

RPS PSOs and PAM Ops Deployed ***Fugro Brasilis***
Edgar Brunett
Robert McShane
Ana Salomon
Bronson Nagareda
Ana Lira
Leonardo De La Rosa
Monica Arancibia-Colgain
Amanda Dubuque
Belen Sharon Toro
Jordan Boliver
Richard Holt
Lilia Perez
Arek Barkaszi
Robert Burgess

RPS PSOs Deployed ***Aqueous Splash***
Jason Herr
Austin McGowan

RPS PSOs and PAM Ops ***Fugro Enterprise***
Neftali Bonfil
Sean Bogle
Heidi Malizia
Johnathan Alexander
Diana Maldonado
Maritza Martinez
Edgar Brunett
Ana Salomon
Ana Lira
Lisa Barry
Mercedes Itzel Serrano
Leonardo De La Rosa
Alicia Jackson
Felipe Rodriguez
Ana Daniela Durazo
Vanessa Blair-Glantz
Daniela Cuevas
Aaron McWilliams
Jesse Agee
Angie Tallman
Arek Barkaszi

Appendix D: Vessel Photos

Figure 1: Fugro Brasilis

Figure 2: Fugro Enterprise

Figure 3: Aqueous Splash

Appendix E: Reticle Binoculars Calibration Tables

Fugro Brasilis Reticle Binocular Calibration Table

Week #	Date	Observer Name	Ret. Binoc. Estimated distance (m)	True Distance from Radar (m)	Sea State (Beaufort)	Wind Force (knots)	Swell (m)
1	2020-04-24	Ana Salomon	2340	2227	B3	8	<2
2	2020-05-02	Ana Salomon	1000	933	B4	13	<2
2	2020-05-02	Ana Lira	2400	2418	B2	6	<2
3	2020-05-13	Ana Lira	1180	1300	B3	9	<2
3	2020-05-14	Ana Salomon	2400	2297	B3	8	<2
4	2020-05-17	Ana Salomon	2200	2345	B3	9	<2
4	2020-05-22	Bronson Nagareda	4732	5000	B4	14	<2
6	2020-05-31	Amanda Dubuque	4700	4889	B4	20	<2
6	2020-06-03	Jordan Boliver	2515	2666	B3	15	<2
6	2020-06-06	Sharon Toro	585	571	B3	20	<2
6	2020-06-06	John Fisher	1184	1111	B3	16	<2
10	2020-07-03	Bronson Nagareda	3150	3050	B4	11	<2
12	2020-07-12	Leo De la Rosa	1370	1300	B3	10	<2
12	2020-07-14	Bronson Nagareda	2366	2695	B4	12	<2

Fugro Enterprise Reticle Binocular Calibration Table

Week #	Date	Observer Name	Ret. Binoc. Estimated distance (m)	True Distance from Radar (m)	Sea State (Beaufort)	Wind Force (knots)	Swell (m)
1	05-14-2020	Neftali Bonfil	800	866	2	4	<2
2	05-22-2020	Neftali Bonfil	650	676	3	8	<2
3	05-29-2020	Neftali Bonfil	1300	1373	2	3	<2
4	06-05-2020	Neftali Bonfil	1550	1444	2	4	<2
5	06-19-2020	Edgar Brunett	2360	2070	2	9	<2
6	06-25-2020	Edgar Brunett	787	870	1	3	<2
7	06-28-2020	Edgar Brunett	1180	1350	3	10	<2
8	07-05-2020	Edgar Brunett	393	310	2	6	<2
9	07-08-2020	Edgar Brunett	295	276	2	11	<2
10	07-24-2020	Edgar Brunett	1180	1440	3	10	<2
11	08-02-2020	Edgar Brunett	2360	2980	6	24	2-4
12	08-07-2020	Edgar Brunett	2500	2760	3	10	<2
13	08-10-2020	Edgar Brunett	1700	1955	4	11	<2
14	08-21-2020	Felipe Rodriguez	780	800	3	8	<2
15	08-25-2020	Felipe Rodriguez	1300	1350	4	13	<2
16	09-01-2020	Felipe Rodriguez	500	530	3	7	<2
17	09-10-2020	Felipe Rodriguez	300	320	2	4	<2
18	09-18-2020	Felipe Rodriguez	500	580	6	22	<2
19	09-28-2020	Felipe Rodriguez	1100	1200	5	20	<2
20	10-04-2020	Ana Salomon	1350	1246	4	11	<2
21	10-06-2020	Ana Salomon	500	579	3	8	<2
22	10-19-2020	Ana Salomon	250	228	4	12	<2
23	10-22-2020	Ana Salomon	1600	1780	2	7	<2
24	10-27-2020	Ana Salomon	92	81	1	1	<2

Appendix F: Night Vision Equipment Specifications

Morovision PVS-7 Gen 3 PINNACLE Goggle Delta Kit

SKU MVP-MVPVS7-3DP CID 20215

MORO VISION

Review This Product
MSRP:$4,595.00
Your Price:$4,365.00
You Save:$230.00

Available: Call for availablity

Purchase PVS-7 Gen 3 PINNACLE Goggle Delta Kit

Quantity 1 Add to Cart

- Description
- Warranty

Morovision Night Vision proudly offers the PVS-7 Delta Generation 3 PINNACLE® Delta Kit. The PVS-7 goggle is standard issue goggle type supplied to the U.S. Military and its allies. Equipped with a factory new, high-performance, ITT Generation 3 PINNACLE® image intensifier tube, the PVS-7 PINNACLE® night vision goggle is designed for the most demanding of night time applications. Battle-proven technology includes Automatic Brightness Control which automatically adjusts the brightness of the image tube to achieve the highest quality image resolution under varying light conditions as well as protect the user and the system against inadvertent exposure to excessive light. In addition, a built-in infra-red illuminator with momentary or continuous switching function allows the user to operate under zero light

Figure F-1: Night vision goggles specifications

NIVISYS™ LLC

NIGHT VISION SYSTEMS

TACS-M™

Rev. 21 Jan 2013

Thermal Acquisition Clip-On System, Miniature

TACS-M shown here on a MUM-14.

Manufactured by OPTICS 1

SPECIFICATIONS*

Field of View	Boresight Accuracy	Magnification	F Number
20° circular (centered)	3 MOA	1X, optical unity	1.2
Sensor	**Spectral Response**	**Pitch**	**NEΔT**
320 x 240 VOx uncooled LWIR microbolometer	8-12µm	25µm	50mK
Display Brightness	**Polarity**	**Calibration**	**Display**
Adjustable	White hot/black hot	Manual	Kopin (RED)
Range (Clear)	**Range (Obscured)**	**Compatibility**	**Interface**
Detection: 300m Recognition: 260m	Detection: 250m Recognition: 210m	PVS-7, PVS-14, PVS-15, PVS-18, PVS-23, MUM-14	Standard quick connect
Battery Type	**Battery Life**	**Dimensions**	**Weight**
CR123, 3V Lithium, 1ea.	>3.0 hrs (23°C) 2.5 hrs (0°C)	(W x H x L) 38 x 64 x 89mm	166g with battery

*Specifications are subject to change without notice.

Export of the commodities described herein is strictly prohibited without a valid export license issued by the U.S. Department of State, Directorate of Defense Trade Controls as proscribed in the International Traffic in Arms Regulations (ITAR), Title 22 Code of Federal Regulation, Parts 120-130.

DESCRIPTION

The Miniature Thermal Acquisition Clip-On System (TACS-M) provides the soldier with ultimate performance in technology. Low power consumption, optimal sensor technology, and high-performance optics all seamlessly integrate to provide state of the art long wave infrared (LWIR) technology.

When added to a standard image intensified system, TACS-M provides a second channel with LWIR capability, extending engagement capabilities through obscurants. The TACS-M unit along with Nivisys experience and expertise provides the best value solution for adding low light and no light performance to currently fielded night vision systems.

The unit's waterproof and rugged construction stands up to the harshest environments and features a red display for visual security. This multi-purpose surveillance tool uses the latest in miniature thermal sensor technology and a high resolution display to provide superior imagery in the smallest package available.

For more information on the TACS-M or other Nivisys products call (480) 970-3222 or visit us on the web at www.nivisys.com.

Made in USA

Nivisys, LLC • 400 S. Clark Drive, Suite 105 • Tempe, Arizona USA • 480.970.3222 • 480.970.3555(fax) • email: info@nivisys.com

Figure F-2: Thermal acquisition clip-on system specifications

Appendix G: Passive Acoustic Monitoring (PAM) Deployment for *Fugro Brasilis* and *Fugro Enterprise*

Brasilis PAM and Hydrophone Deployment

The PAM data processing unit with dual monitors for HF and LF modules was stationed in the survey lab located on the main deck (Figure 1). A GPS feed (GPGGA string) was provided via a MR-350P GPS external antenna located portside outside the vessel's workshop and was connected to the PAM system using a serial to USB converter.

Figure 1: Passive Acoustic Monitoring station in the survey lab onboard Fugro Brasilis

A 100m deck cable was routed from the survey lab to the deck cable spool secured to the starboard side aft deck, using existing cable routes, secured with cable ties and protected with heavy duty rubber cable protector ramps where needed.

The cable was fed from the PAM system located in the main survey room through an existing penetration point in the bulkhead, then routed along the starboard and stern railings of the main deck to the starboard side back deck.

The A 250-meter hydrophone cable (configured as a separate 230-meter steel-reinforced tow cable and a detachable 20 meter hydrophone array) was coiled and stowed along the railing of the starboard side back deck. The tow cable was measured and marked in 10-meter increments.

A Chinese finger tow point attachment was affixed to the tow cable approximately 80m, 65m, and 50m ahead of the depth gauge. The hydrophone cable was taped prior to adding the Chinese fingers to help reduce chaffing to the cable.

The system was tested, and the hydrophone depth gauge calibrated.

The hydrophone array and tow cable were deployed by hand from the starboard side aft deck until the appropriate length was reached (60 m of tow cable + 25 m of hydrophone cable) at which point a Chinese finger attachment is secured to the hand railing with a short rope and shackle. The tow-point attachments used on this project were affixed to allow a towing distance of 85 m. On average, the end of the cable towed at a depth of 12 m.

During retrieval, the cable was slowly recovered by hand and loosely coiled around the deck cable and tow cable reels that are tightly secured to the aft back deck with rachet straps. Loose coiling allows for quick and easy deployment/retrieval and tends to reduce the amount of twists tangles that develop in the steel reinforced tow cable when attempting to coil by hand.

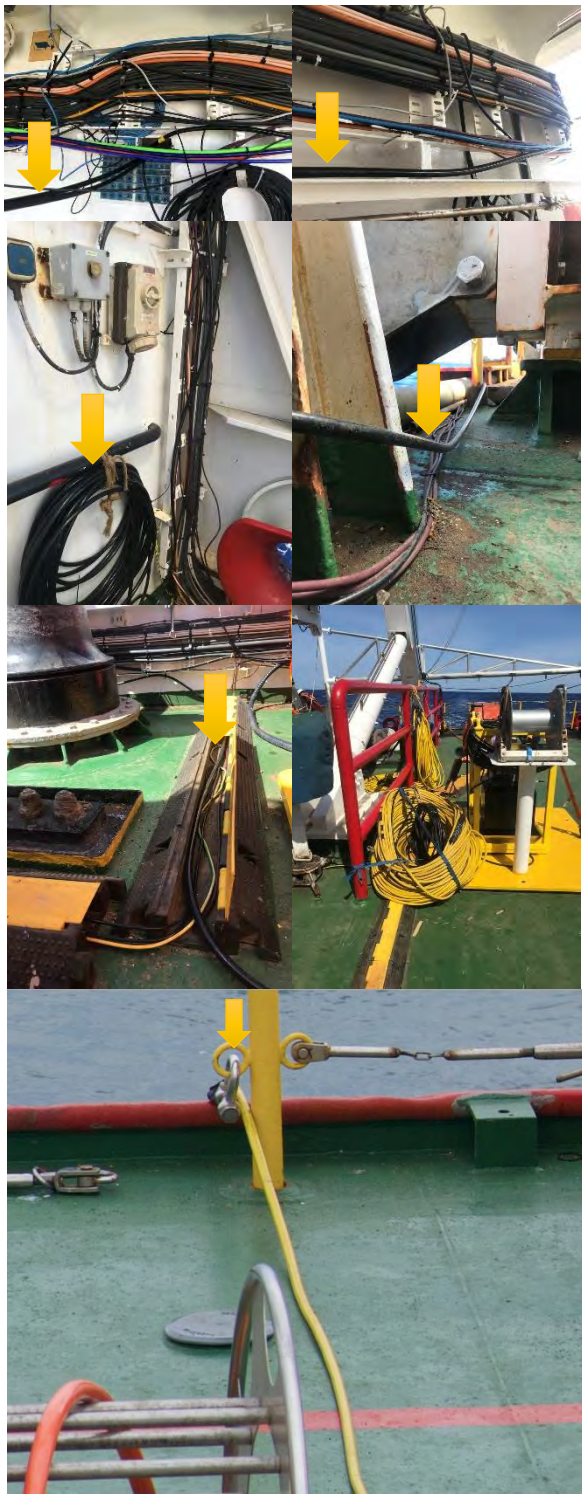


Figure 2: Deck cable pathway and hydrophone cable stowed and deployed from starboard side back deck of the Fugro Brasilis

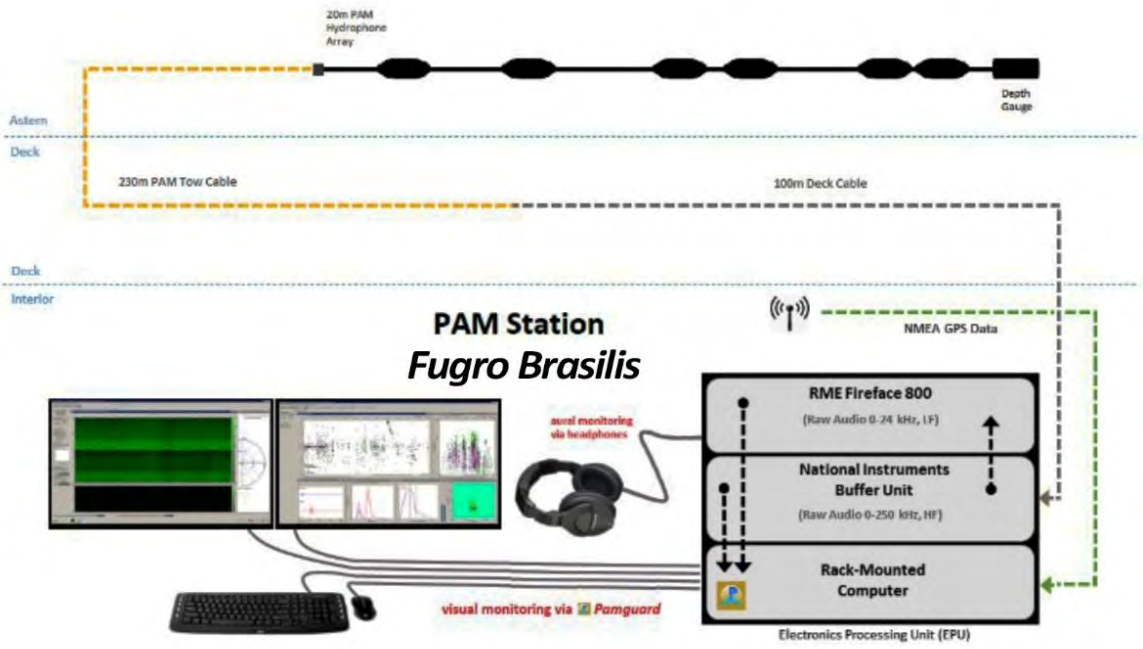


Figure 3: Sketch of the hydrophone deployment on the Fugro Brasilis

Enterprise PAM and Hydrophone Deployment

The PAM data processing unit with dual monitors for HF and LF modules was stationed in the survey lab located on the main deck (Figure 4). A GPS feed (GPGGA string) was provided via a serial cable feed from navigation GPS and was connected to the PAM system using a serial to USB converter.

Figure 4: Passive Acoustic Monitoring station in the survey room onboard Fugro Enterprise

The hydrophone cable was guided from the secured wooden cable reels on the port stern and coiled around a bollard (Figure 5). Upon approach to the survey area, a 2-meter boom arm was deployed off the port stern. The hydrophone cable was secured to the boom arm and connected to the hydrophone cable by a Chinese finger (Figure 6). The Chinese finger was attached to the cable at the deployment point to prevent excessive strain on the cable or snapping. Pre-measured distances were marked on the hydrophone tow cable at 10-meter increments to assisted with accurate deployment in relation to the source locations off the port side of the vessel should a change to hydrophone deployment distances became necessary. During deployment, the hydrophone cable was slowly put out manually from the port stern by two PAM operators. One operator slowly uncoiled the hydrophone cable from the bollard while feeding it to the other who ensured proper deployment off the stern. Upon reaching the desired deployment distance, the attachment point was led out to the end of the boom arm by the pulley system to avoid entanglement with the survey equipment (Figure 7).

On 09 September 2020, five kilograms of metal chain was added at the end of the hydrophone cable in order to have more depth, where the chain was attached with zip ties and back tape.

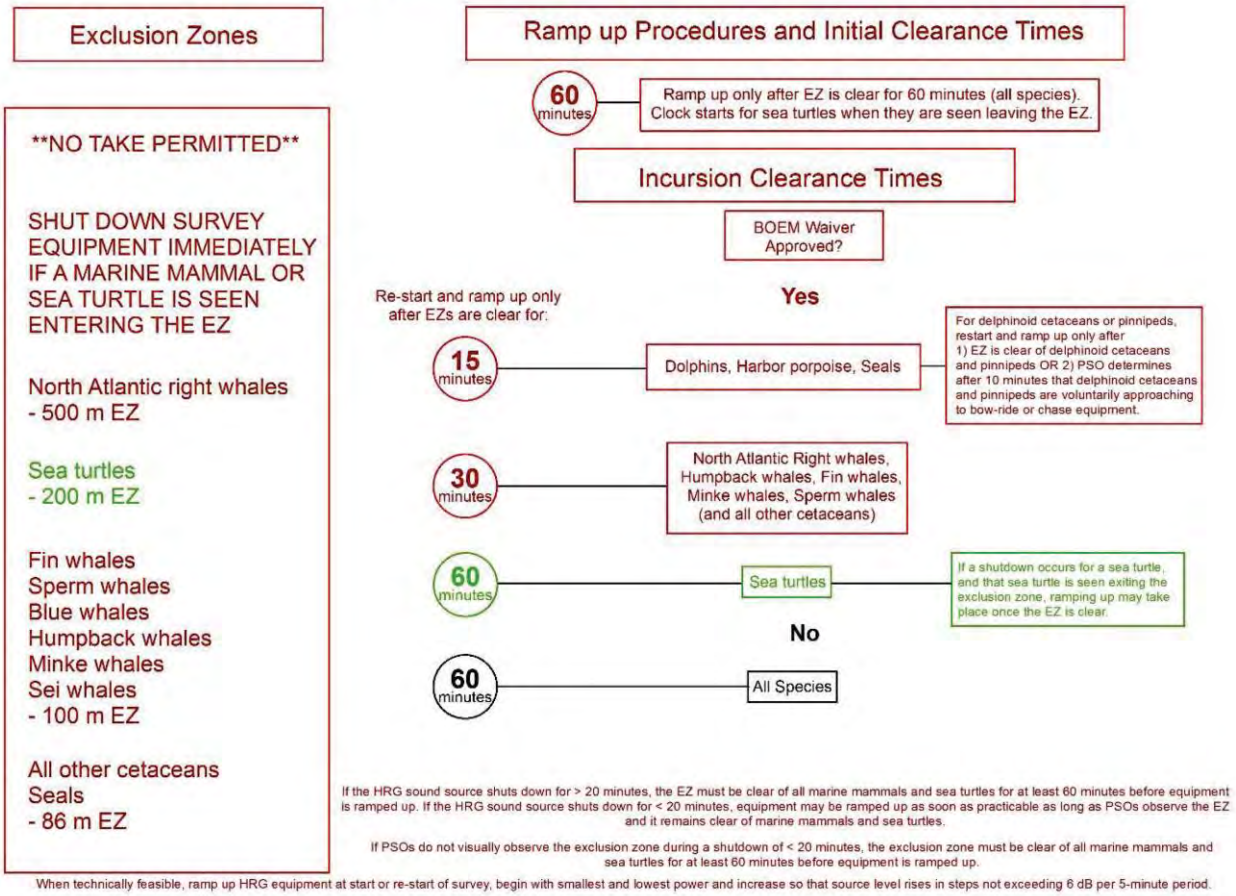
Figure 5: Hydrophone cable deployed, and tow cable stowed on the bollard

Figure 6: Chinese finger attached to hydrophone cable tow point leading out

Figure 7: Deck cable, main and spare hydrophone cable and two cable secured

Appendix H: Mitigation Flow Chart

Exclusion Zones and Clearance Times for HRG Surveys



If the HRG sound source shuts down for > 20 minutes, the EZ must be clear of all marine mammals and sea turtles for at least 60 minutes before equipment is ramped up. If the HRG sound source shuts down for < 20 minutes, equipment may be ramped up as soon as practicable as long as PSOs observe the EZ and it remains clear of marine mammals and sea turtles.

If PSOs do not visually observe the exclusion zone during a shutdown of < 20 minutes, the exclusion zone must be clear of all marine mammals and sea turtles for at least 60 minutes before equipment is ramped up.

When technically feasible, ramp up HRG equipment at start or re-start of survey, begin with smallest and lowest power and increase so that source level rises in steps not exceeding 6 dB per 5-minute period.

Appendix I: Complete ASOW Survey Raw Datasheets

Appendix J: Protected Species Distribution Maps

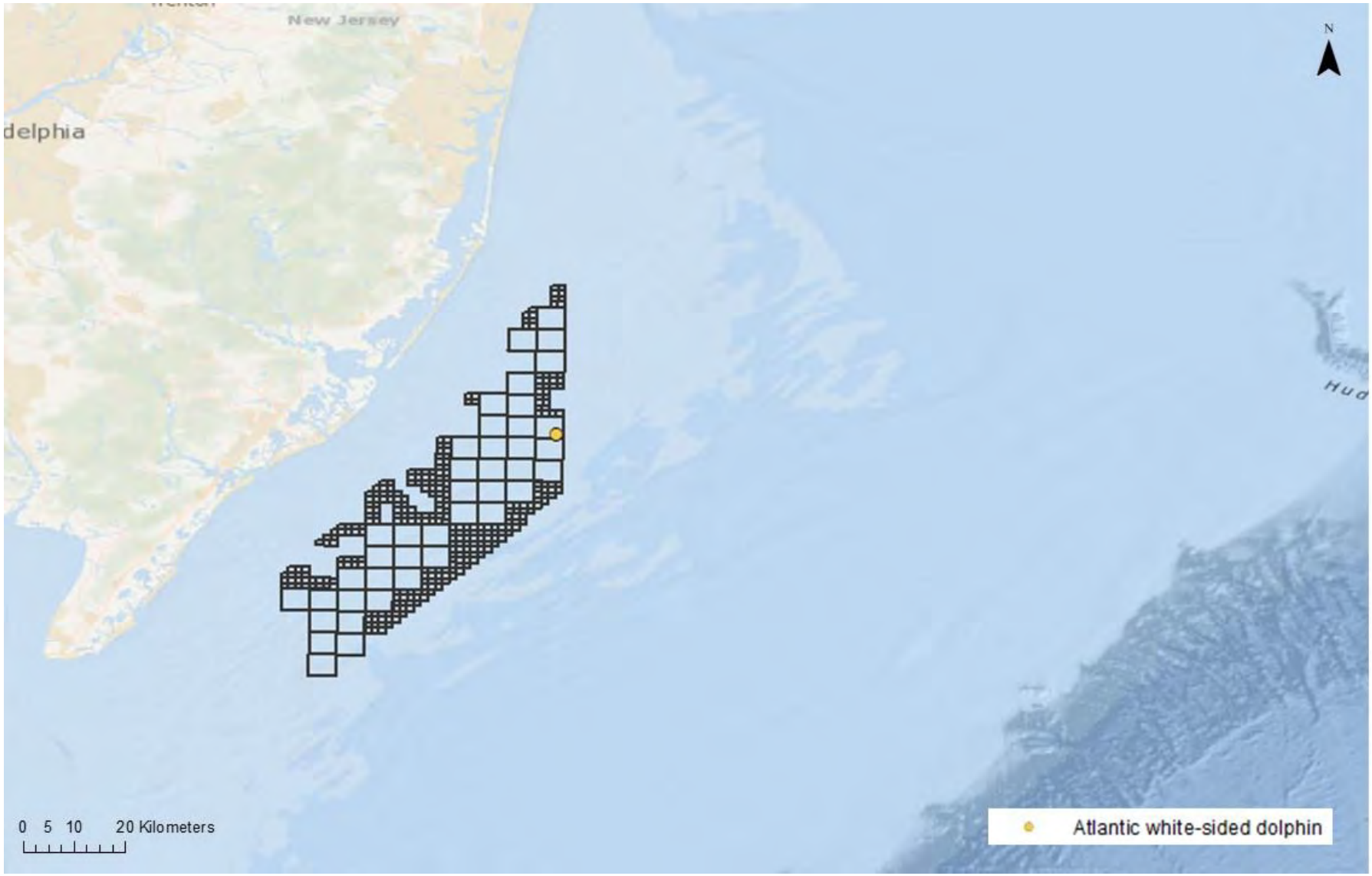


Figure J- 1: Map of the Atlantic white-sided dolphin detection during the survey

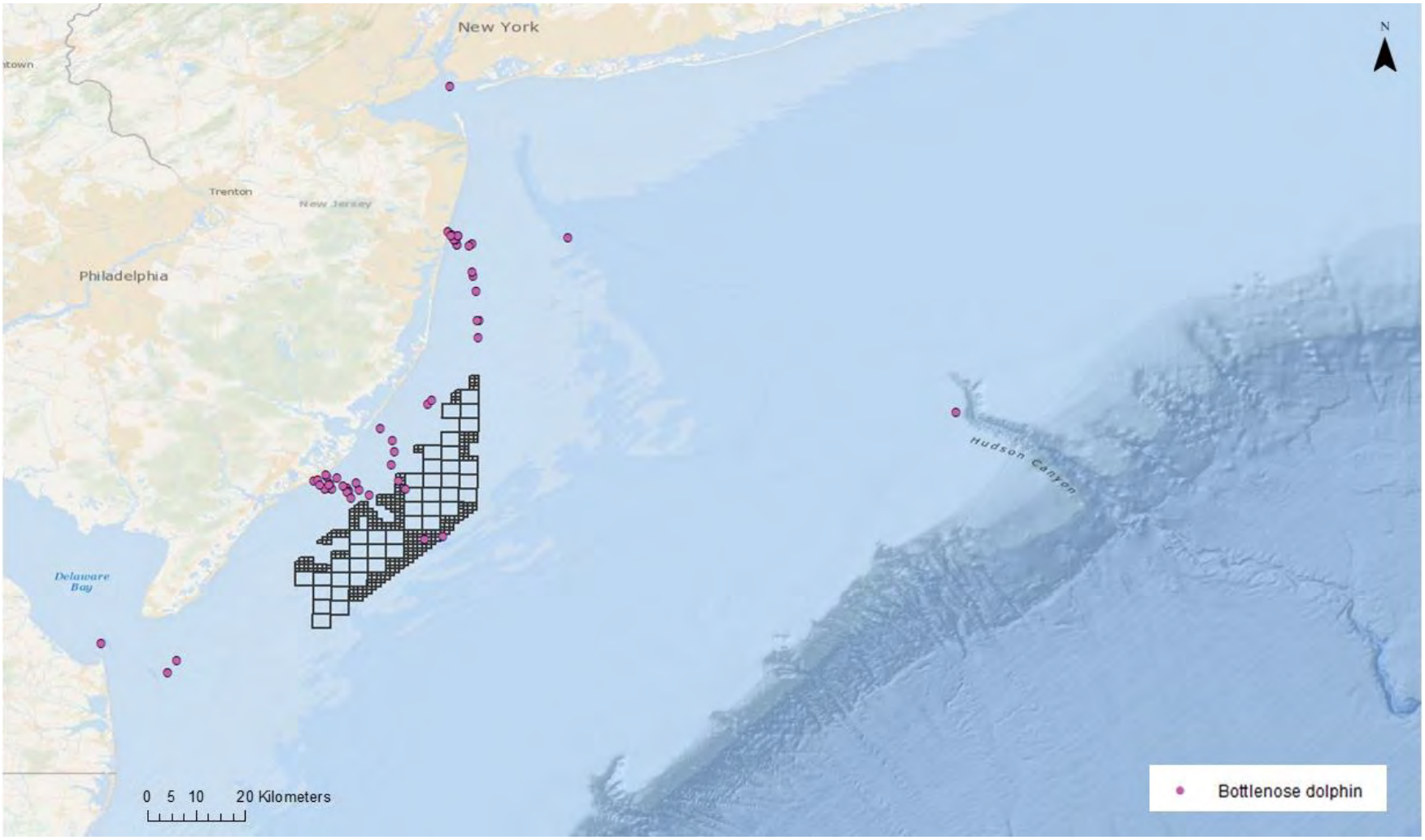


Figure J- 2: Map of bottlenose dolphin detections during the survey

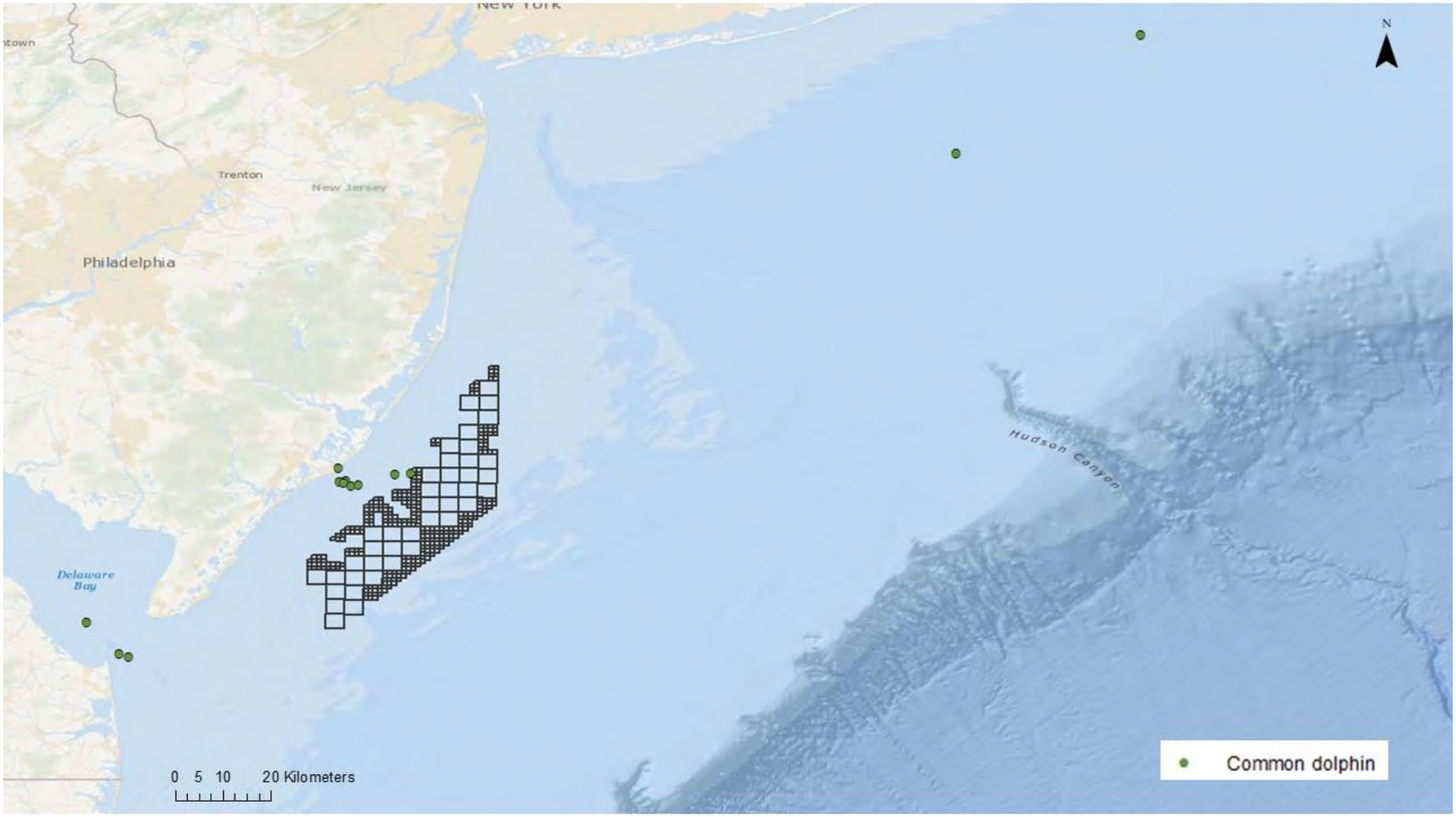


Figure J- 3: Map of Common dolphin detections to include the transit detections during the survey

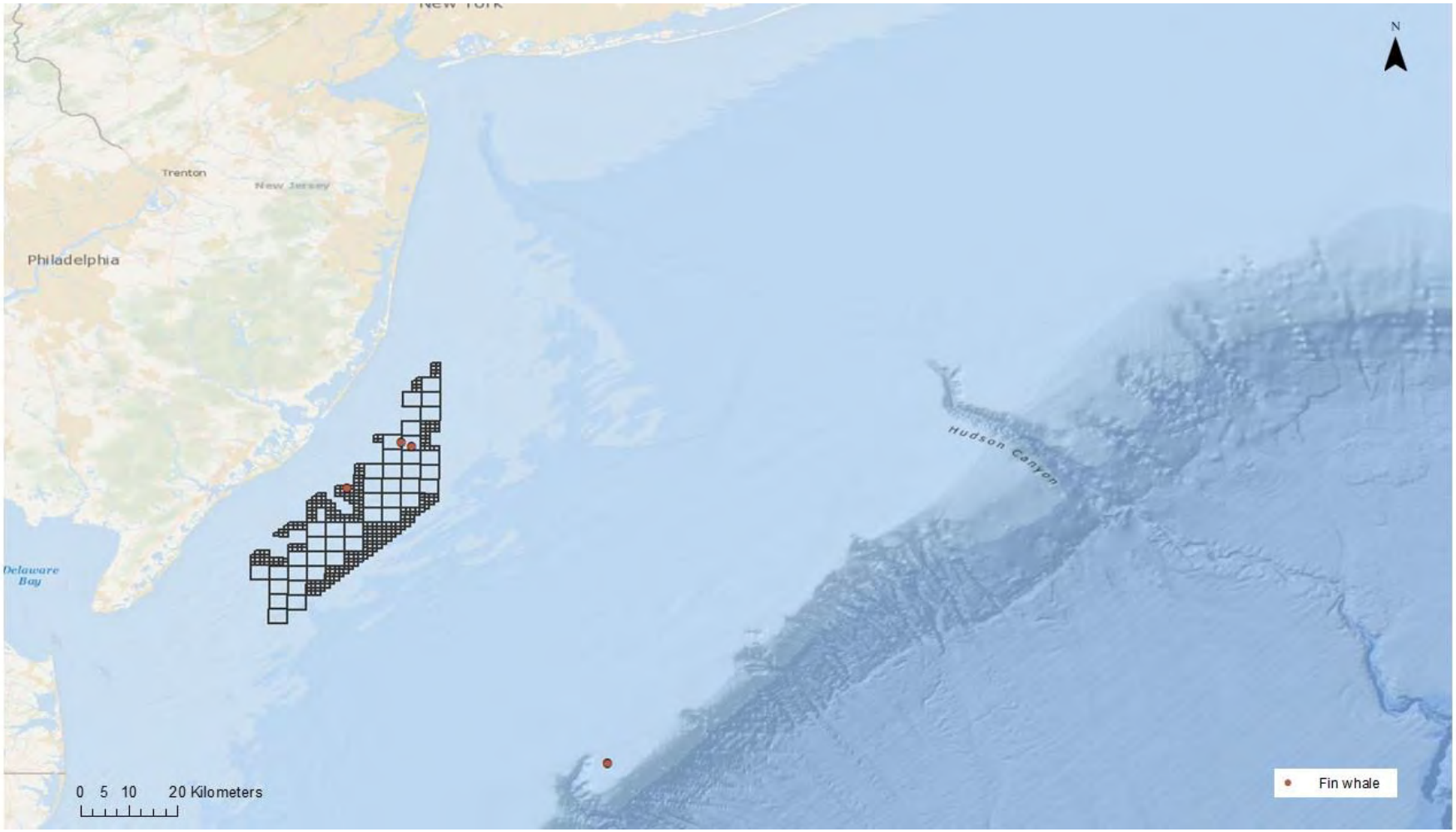


Figure J- 4: Map of fin whale detections to include the detection during weather avoidance patterns during the survey

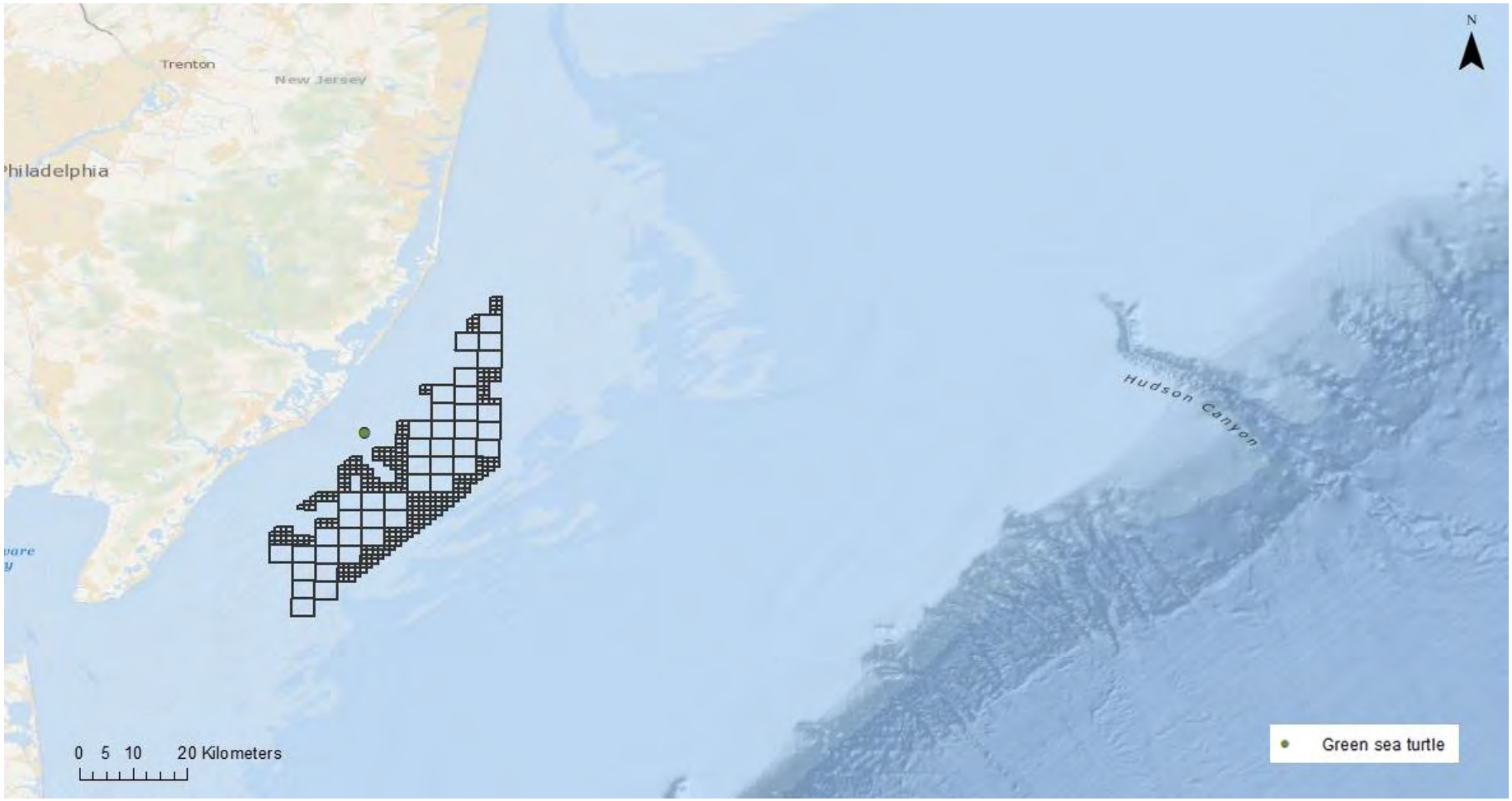


Figure J- 5: Map of the green sea turtle detection during the survey

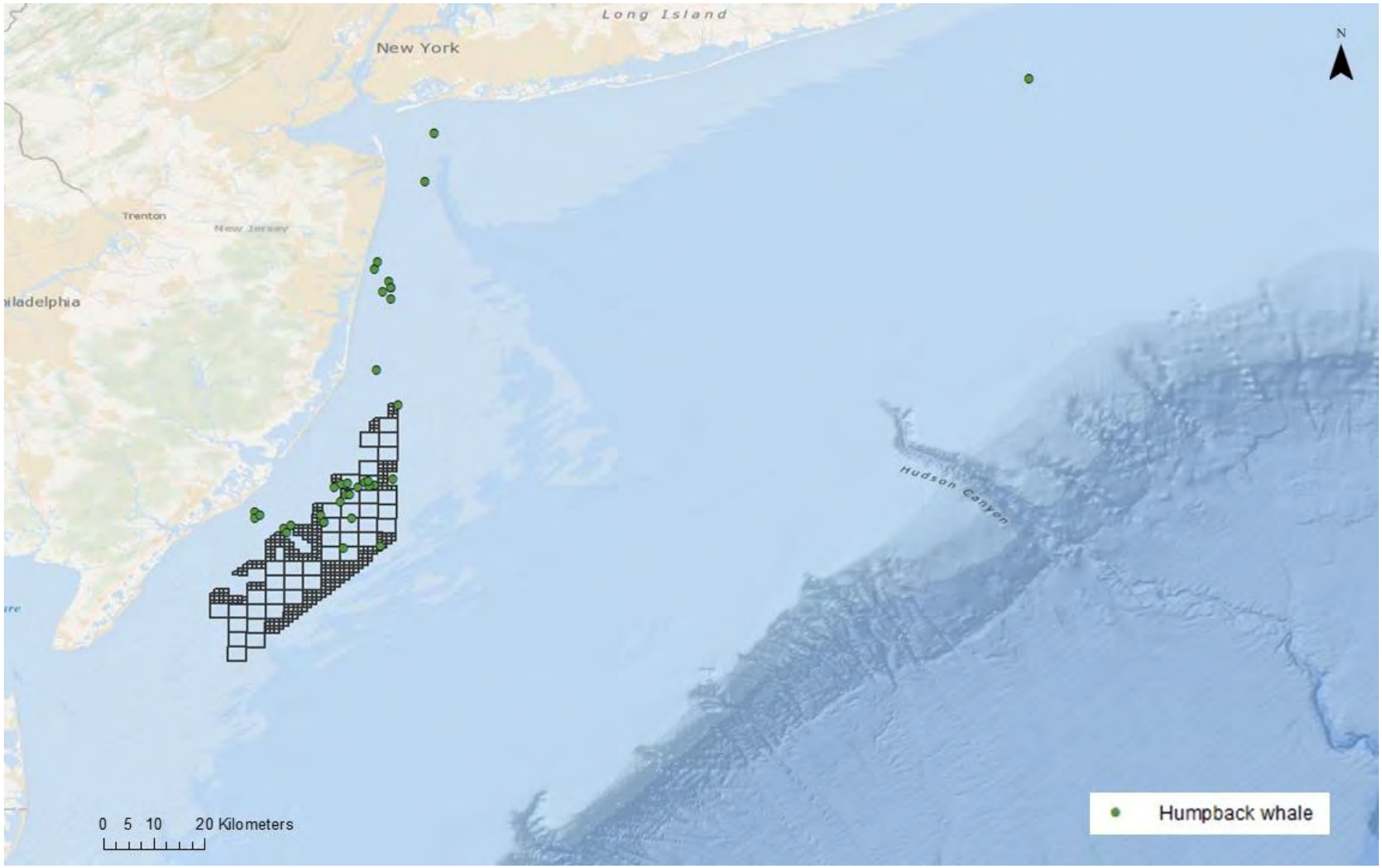


Figure J- 6: Map of humpback whale detections during the survey

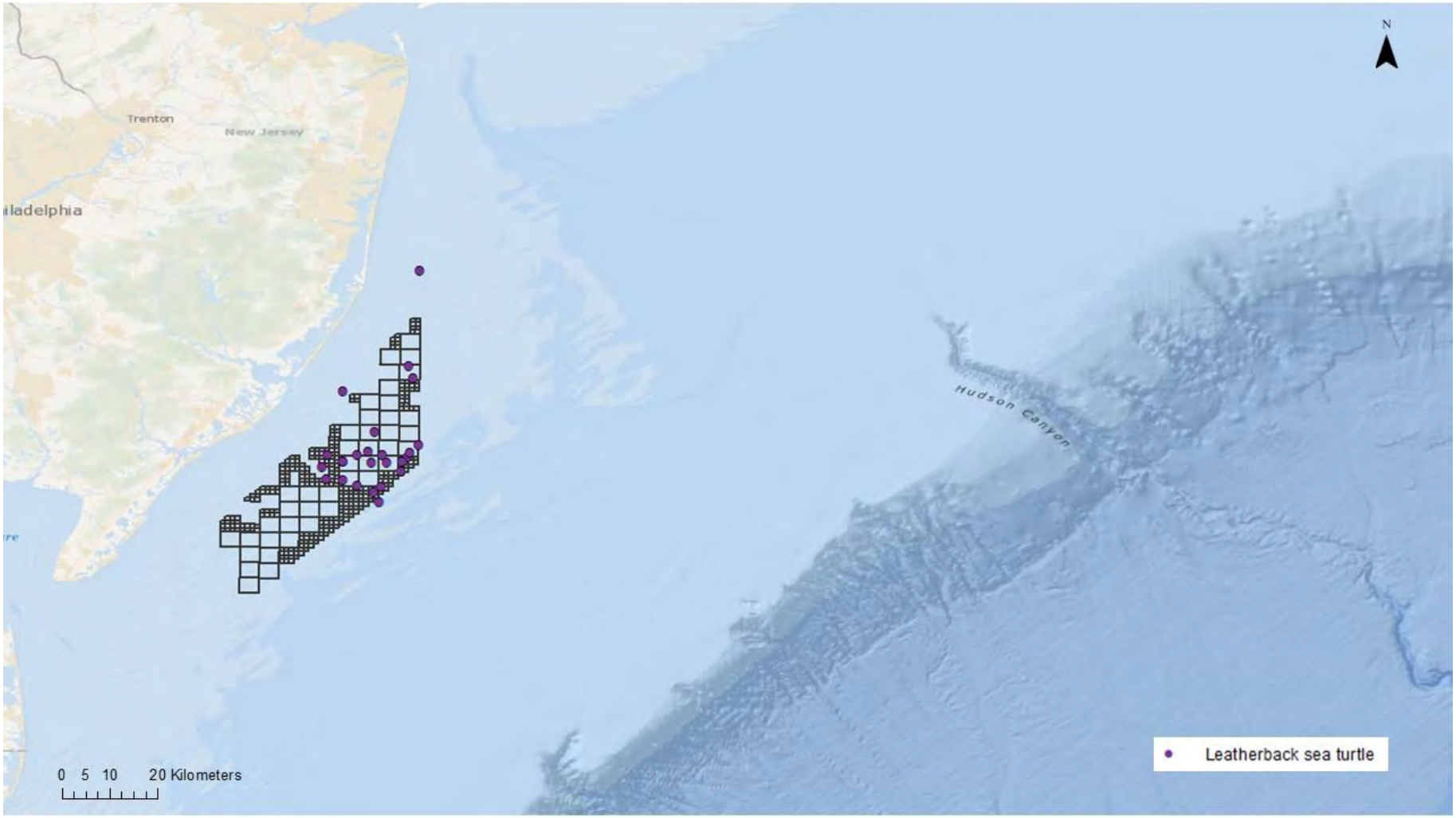


Figure J- 7: Map of leatherback sea turtle detections during the survey

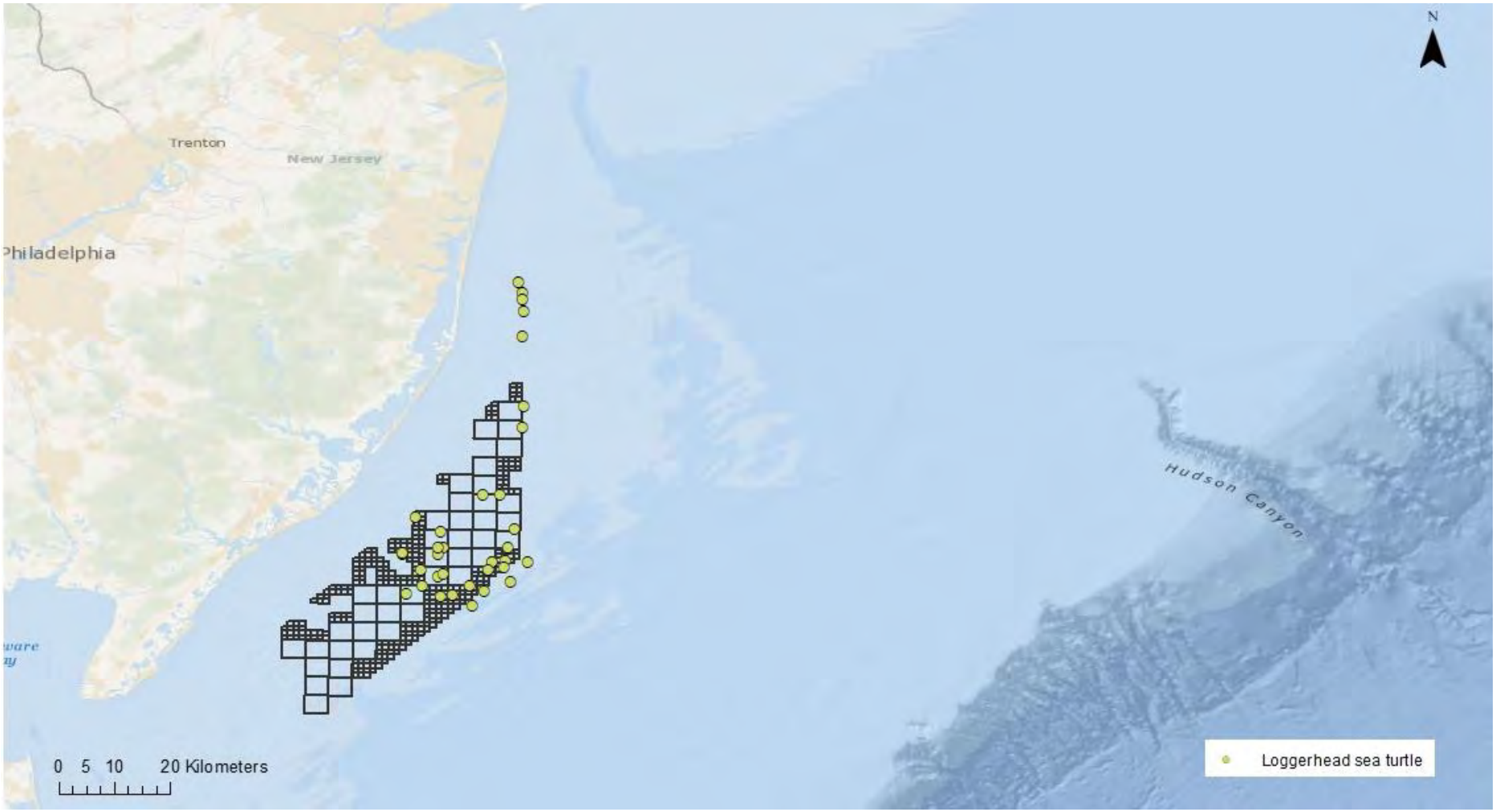


Figure J- 8: Map of loggerhead sea turtle detections during the survey

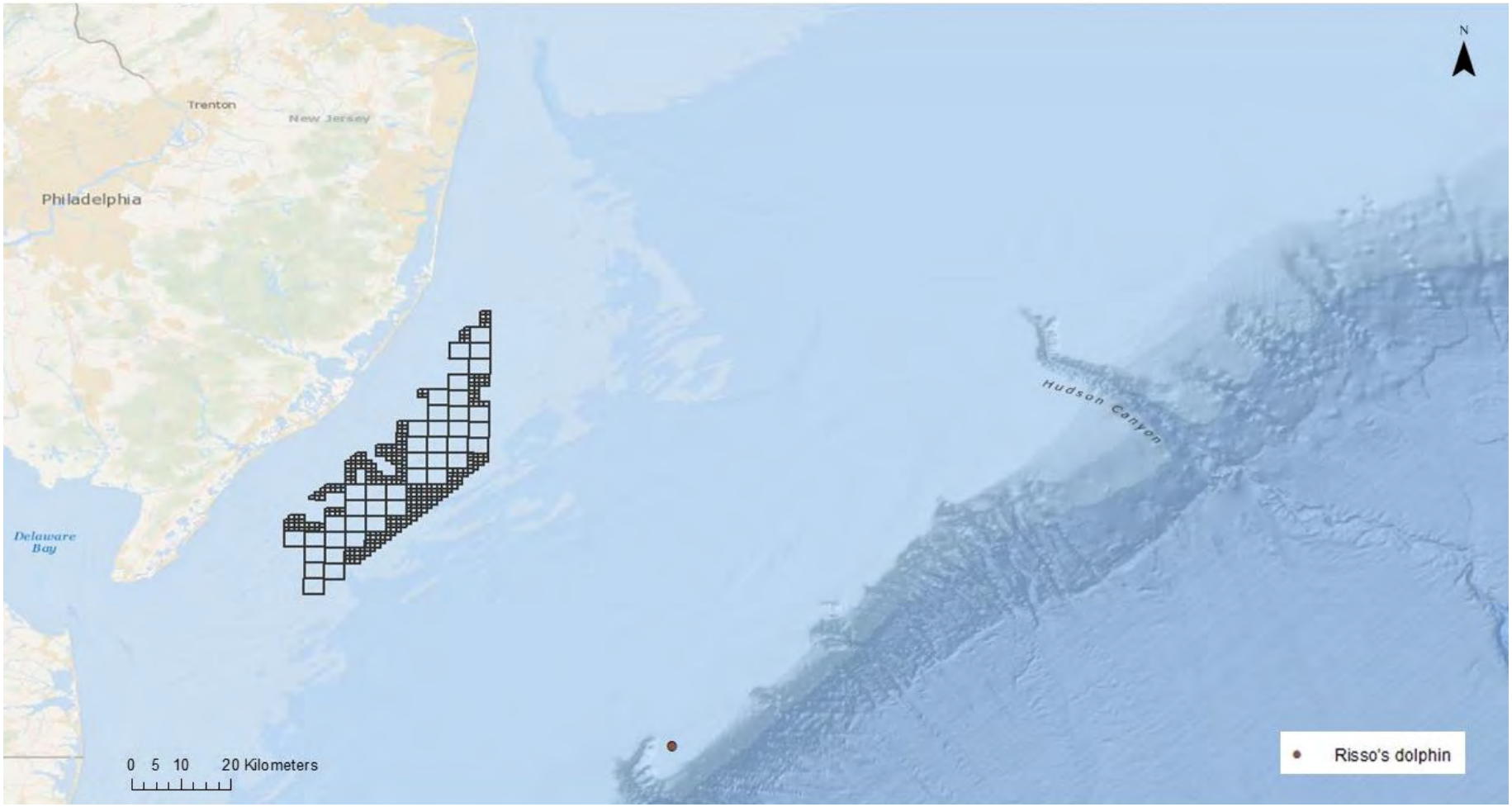


Figure J- 9: Map of the Risso's dolphin detection during weather avoidance patterns during the survey

Figure J- 10: Map of the Sei whale detection during the survey

Appendix K: Photographs of Identified Protected Species Visually Detected during the Survey

Figure 1: *Fugro Brasilis* - Visual Detection 01 - Unidentified dolphin - 27 April 2020.

Figure 2: *Fugro Brasilis* - Visual Detection 02 - Injured Risso's dolphin - 29 April 2020.

Figure 3: *Fugro Brasilis* - Visual Detection 03 - Fin whale - 28 April 2020.

Figure 4: *Fugro Brasilis* - Visual Detection 04 - Bottlenose dolphin - 01 May 2020.

Figure 5: *Fugro Brasilis* - Visual Detection 05 - Bottlenose dolphin - 01 May 2020.

Figure 6: *Fugro Brasilis* - Visual Detection 09 - Bottlenose dolphin - 18 May 2020.

Figure 7: *Fugro Brasilis* - Visual Detection 12 - Humpback whale - 25 May 2020.

Figure 8: *Fugro Brasilis* - Visual Detection 22 - Loggerhead sea turtle - 02 July 2020.

Figure 9: *Fugro Brasilis* - Visual Detection 26 - Loggerhead sea turtle - 08 July 2020.

Figure 10: *Fugro Brasilis* – Visual Detection 27 - Leatherback sea turtle - 08 July 2020.

Figure 11: *Fugro Brasilis* – Visual Detection 28 – Leatherback sea turtle – 13 July 2020.

Figure 12: *Fugro Brasilis* - Visual Detection 29 - Leatherback sea turtle - 18 July 2020.

Figure 13: *Fugro Brasilis* - Visual Detection 30 - Common dolphins - 20 July 2020.

Figure 14: *Fugro Brasilis* - Visual Detection 31 - Humpback whale - 20 July 2020.

Figure 15: *Fugro Enterprise* - Visual Detection 04 - Bottlenose dolphins - 12 May 2020.

Figure 16: *Fugro Enterprise* - Visual Detection 06 - Bottlenose dolphins - 13 May 2020.

Figure 17: *Fugro Enterprise* - Visual Detection 07 - Green sea turtle - 15 May 2020.

Figure 18: *Fugro Enterprise* - Visual Detection 09 - Bottlenose dolphins - 22 May 2020.

Figure 19: *Fugro Enterprise* - Visual Detection 12 - Bottlenose dolphin - 25 May 2020.

Figure 20: *Fugro Enterprise* - Visual Detection 13 - Bottlenose dolphins - 25 May 2020.

Figure 21: *Fugro Enterprise* - Visual Detection 15 - Bottlenose dolphins - 31 May 2020.

Figure 22: *Fugro Enterprise* - Visual Detection 16 - Bottlenose dolphin - 31 May 2020.

Figure 23: *Fugro Enterprise* - Visual Detection 20 - Humpback whale (through NVDs) - 07 June 2020.

Figure 24: *Fugro Enterprise* - Visual Detection 23 - Bottlenose dolphins - 08 June 2020.

Figure 25: *Fugro Enterprise* - Visual Detection 25 - Bottlenose dolphins - 09 June 2020.

Figure 26: *Fugro Enterprise* - Visual Detection 26 - Humpback whale breaching - 10 June 2020.

Figure 27: *Fugro Enterprise* - Visual Detection 29 - Loggerhead sea turtle - 12 June 2020.

Figure 28: *Fugro Enterprise* - Visual Detection 33 - Unidentified dolphin - 18 June 2020.

Figure 29: *Fugro Enterprise* - Visual Detection 34 - Unidentified sea turtle - 18 June 2020.

Figure 30: *Fugro Enterprise* - Visual Detection 35 - Loggerhead sea turtle - 18 June 2020.

Figure 31: *Fugro Enterprise* - Visual Detection 36 - Loggerhead sea turtle - 18 June 2020.

Figure 32: *Fugro Enterprise* - Visual Detection 42 - Leatherback sea turtle - 22 June 2020.

Figure 33: *Fugro Enterprise* - Visual Detection 45 - Loggerhead sea turtle - 23 June 2020.

Figure 34: *Fugro Enterprise* - Visual Detection 47 - Bottlenose dolphins - 24 June 2020.

Figure 35: *Fugro Enterprise* - Visual Detection 48 - Humpback whale - 30 June 2020.

Figure 36: *Fugro Enterprise* - Visual Detection 49 - Loggerhead sea turtle - 01 July 2020.

Figure 37: *Fugro Enterprise* - Visual Detection 52 - Loggerhead sea turtle - 01 July 2020.

Figure 38: *Fugro Enterprise* - Visual Detection 53 - Bottlenose dolphins - 01 July 2020.

Figure 39: *Fugro Enterprise* - Visual Detection 54 - Loggerhead sea turtle - 01 July 2020.

Figure 40: *Fugro Enterprise* - Visual Detection 55 - Bottlenose dolphin - 02 July 2020.

Figure 41: *Fugro Enterprise* - Visual Detection 56 - Humpback whale - 03 July 2020.

Figure 42: *Fugro Enterprise* - Visual Detection 57 - Bottlenose dolphin - 04 July 2020.

Figure 43: *Fugro Enterprise* - Visual Detection 59 - Bottlenose dolphins - 06 July 2020.

Figure 44: *Fugro Enterprise* - Visual Detection 60 - Humpback whale - 06 July 2020.

Figure 45: *Fugro Enterprise* - Visual Detection 62 - Bottlenose dolphin - 06 July 2020.

Figure 46: *Fugro Enterprise* - Visual Detection 63 - Bottlenose dolphin - 06 July 2020.

Figure 47: *Fugro Enterprise* - Visual Detection 64 - Bottlenose dolphin - 06 July 2020.

Figure 48: *Fugro Enterprise* - Visual Detection 66 - Bottlenose dolphins - 06 July 2020.

Figure 49: *Fugro Enterprise* - Visual Detection 68 - Loggerhead sea turtle - 12 July 2020.

Figure 50: *Fugro Enterprise* - Visual Detection 69 - Loggerhead sea turtle - 12 July 2020.

Figure 51: *Fugro Enterprise* - Visual Detection 71 - Leatherback sea turtle - 13 July 2020.

Figure 52: *Fugro Enterprise* - Visual Detection 72 - Loggerhead sea turtle - 13 July 2020.

Figure 53: *Fugro Enterprise* - Visual Detection 73 - Bottlenose dolphins - 20 July 2020.

Figure 54: *Fugro Enterprise* - Visual Detection 78 - Loggerhead sea turtle - 28 July 2020.

Figure 55: *Fugro Enterprise* - Visual Detection 80 - Leatherback sea turtle - 29 July 2020.

Figure 56: *Fugro Enterprise* - Visual Detection 81 - Leatherback sea turtle - 29 July 2020.

Figure 57: *Fugro Enterprise* - Visual Detection 82 - Leatherback sea turtle - 29 July 2020.

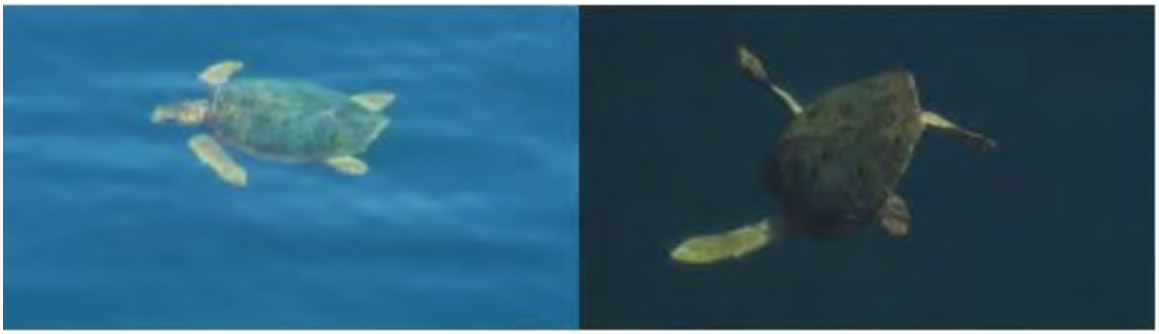


Figure 58: *Fugro Enterprise* - Visual Detection 87 - Loggerhead sea turtle - 01 August 2020.

Figure 59: *Fugro Enterprise* - Visual Detection 88 - Bottlenose dolphin - 02 August 2020.

Figure 60: *Fugro Enterprise* - Visual Detection 92 - Loggerhead sea turtle - 08 August 2020.

Figure 61: *Fugro Enterprise* - Visual Detection 102 - Humpback whale - 20 August 2020.

Figure 62: *Fugro Enterprise* - Visual Detection 104 - Leatherback sea turtle - 26 August 2020.

Figure 63: *Fugro Enterprise* - Visual Detection 105 - Leatherback sea turtle - 26 August 2020.

Figure 64: *Fugro Enterprise* - Visual Detection 106 - Loggerhead sea turtle - 28 August 2020.

Figure 65: *Fugro Enterprise* - Visual Detection 113 - Humpback whale - 05 September 2020.

Figure 66: *Fugro Enterprise* - Visual Detection 114 - Leatherback sea turtle - 06 September 2020.

Figure 67: *Fugro Enterprise* - Visual Detection 128 - Bottlenose dolphins - 01 October 2020.

Figure 68: *Fugro Enterprise* - Visual Detection 129 - Humpback whale - 01 October 2020.

Figure 69: *Fugro Enterprise* - Visual Detection 131 - Fin whale - 05 October 2020.

Figure 70: *Fugro Enterprise* - Visual Detection 132 - Humpback whales - 05 October 2020.

Figure 71: *Fugro Enterprise* - Visual Detection 133 - Humpback whales - 07 October 2020.

Figure 72: *Fugro Enterprise* - Visual Detection 134 - Humpback whale - 07 October 2020.

Figure 73: *Fugro Enterprise* - Visual Detection 136 - Humpback whales - 10 October 2020.

Figure 74: *Fugro Enterprise* - Visual Detection 139 - Sei whale - 20 October 2020.

Figure 75: *Fugro Enterprise* - Visual Detection 140 - Humpback whale - 21 October 2020.

Figure 76: *Fugro Enterprise* - Visual Detection 141 - Humpback whale - 21 October 2020.

Figure 77: *Fugro Enterprise* - Visual Detection 142 - Humpback whale - 22 October 2020.

Figure 78: *Fugro Enterprise* - Visual Detection 143 - Humpback whale - 22 October 2020.

Figure 79: *Fugro Enterprise* - Visual Detection 144 - Fin whale - 22 October 2020.

Figure 80: *Fugro Enterprise* - Visual Detection 145 - Humpback whale - 22 October 2020.

Figure 81: *Fugro Enterprise* - Visual Detection 146 - Fin whale - 22 October 2020.

Figure 82: *Fugro Enterprise* - Visual Detection 147 - Humpback whale - 22 October 2020.

Figure 83: *Fugro Enterprise* - Visual Detection 149 - Humpback whale - 22 October 2020.

Figure 84: *Fugro Enterprise* - Visual Detection 150 - Humpback whale - 22 October 2020.

Figure 85: *Fugro Enterprise* - Visual Detection 151 - Humpback whale - 22 October 2020.

Figure 86: *Splash* - Visual Detection 06 - Common dolphins - 15 July 2020.

Figure 87: *Splash* - Visual Detection 07 - Common dolphins - 15 July 2020.

Figure 88: *Splash* - Visual Detection 10 - Bottlenose dolphin - 18 July 2020.

Figure 89: *Splash* - Visual Detection 11 - Humpback whale - 18 July 2020.

Figure 90: *Splash* - Visual Detection 12 - Bottlenose dolphin - 19 July 2020.

Figure 91: *Splash* - Visual Detection 14 - Bottlenose dolphin - 20 July 2020.

Figure 92: *Splash* - Visual Detection 16 - Bottlenose dolphin - 24 July 2020.

Figure 93: *Splash* - Visual Detection 17 - Bottlenose dolphin - 25 July 2020.

Appendix L: Screenshots of the Acoustic Detections of Protected Species observed during the Survey

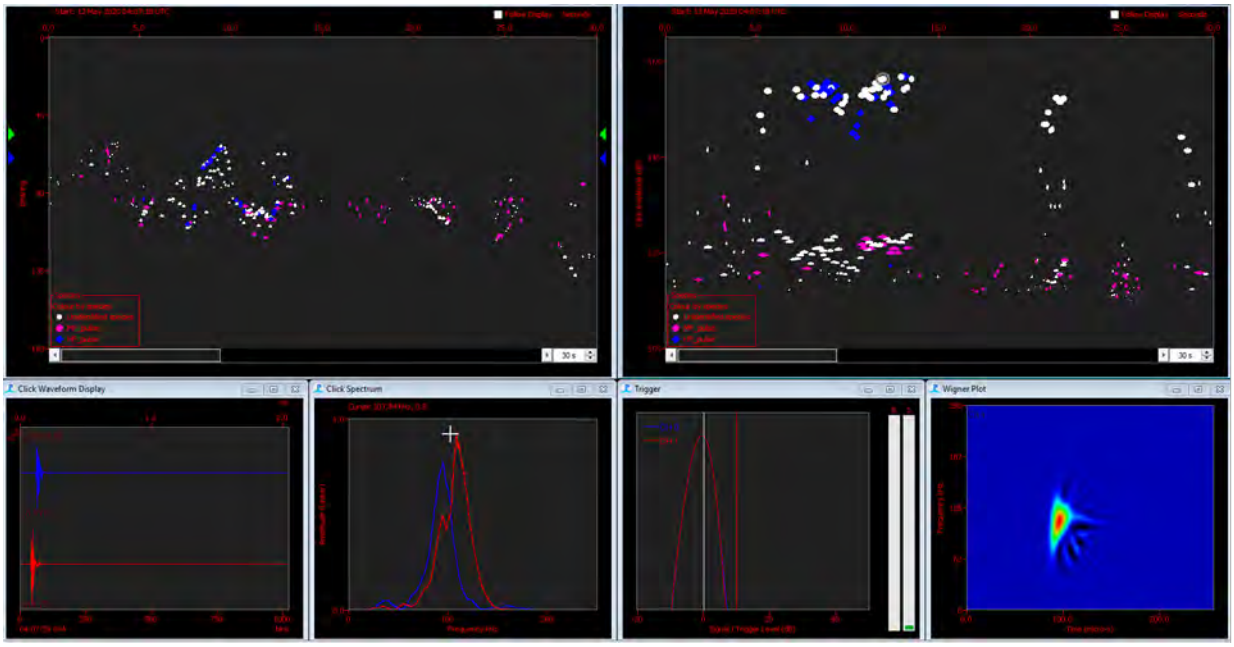


Figure L 1: *Fugro Brasilis* - Acoustic detection 01 - High frequency click trains of unidentifiable dolphins on the HF click detector.

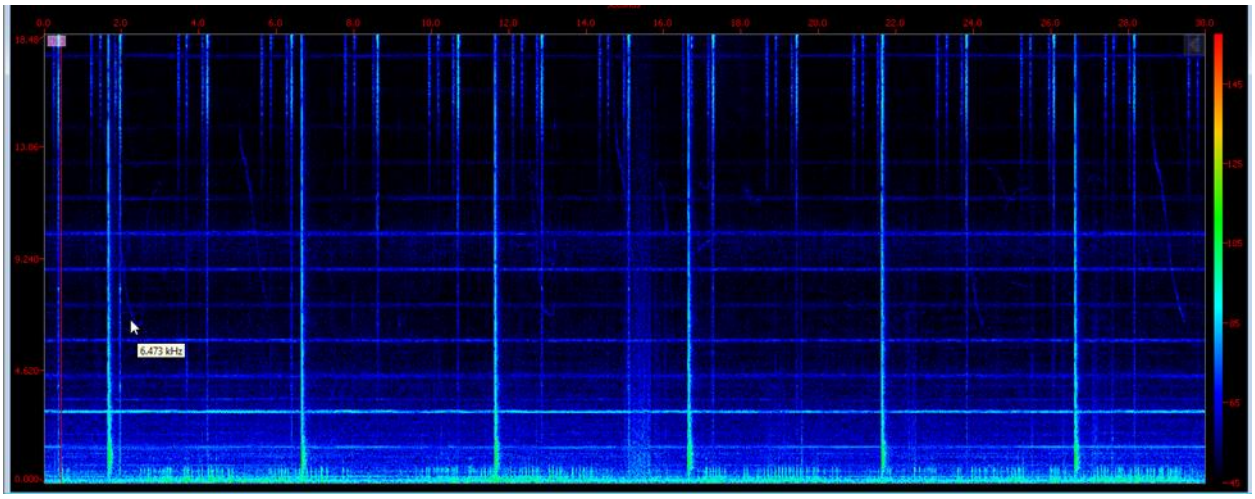


Figure L 2: *Fugro Brasilis* - Acoustic detection 02 (correlated with VD10) - Whistles of unidentifiable dolphins on spectrogram.

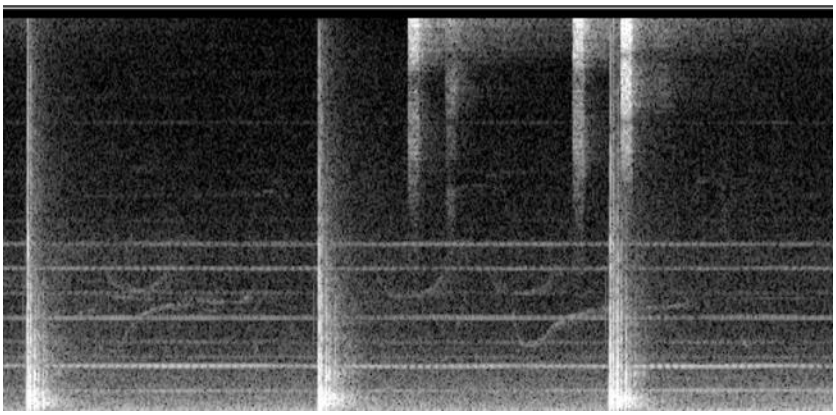


Figure L 3: *Fugro Brasilis* - Acoustic detection 03 - Concave shaped whistles of an unidentifiable dolphin on Spectrogram.

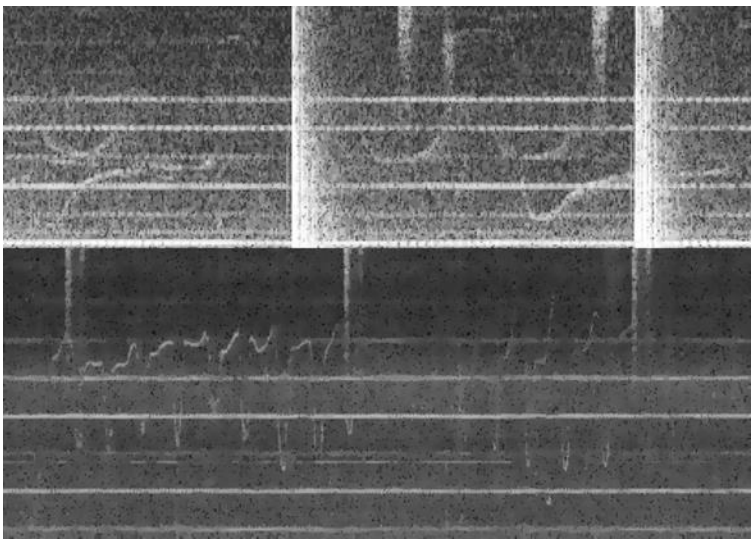


Figure L 4: *Fugro Brasilis* - Acoustic detection 04 - Whistles of an unidentifiable dolphin on Spectrogram.

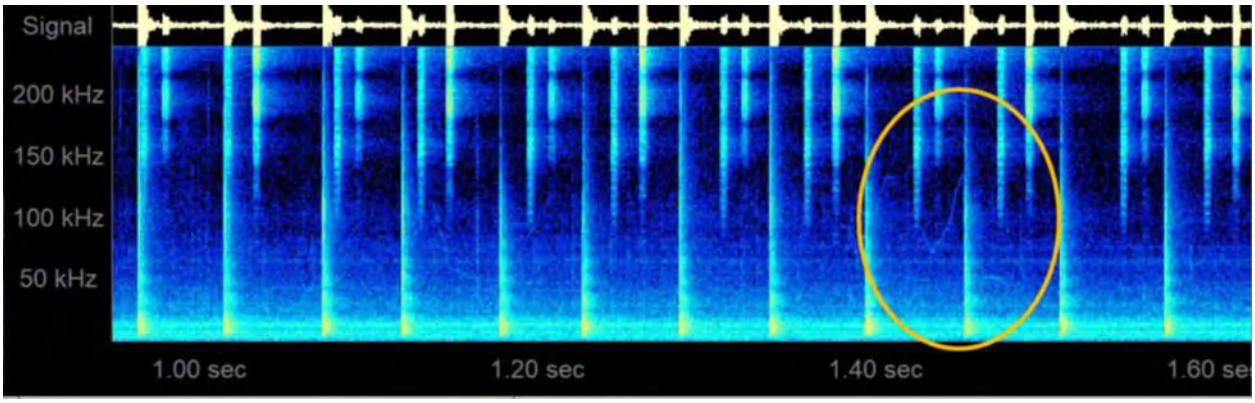


Figure L 5: *Fugro Enterprise* - Acoustic detection 01 (Unidentifiable dolphin) - 23 May 2020 - Low frequency whistles.

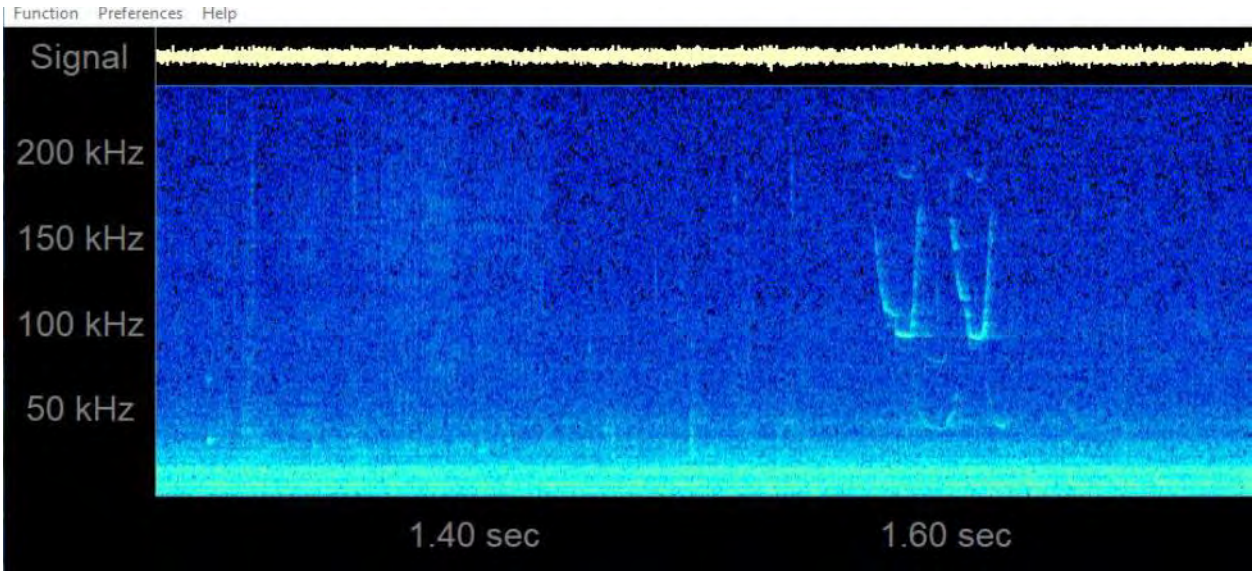


Figure L 6: *Fugro Enterprise* - Acoustic detection 02 (Unidentifiable dolphin) - 25 May 2020 - Sinusoidal tonal vocalization.

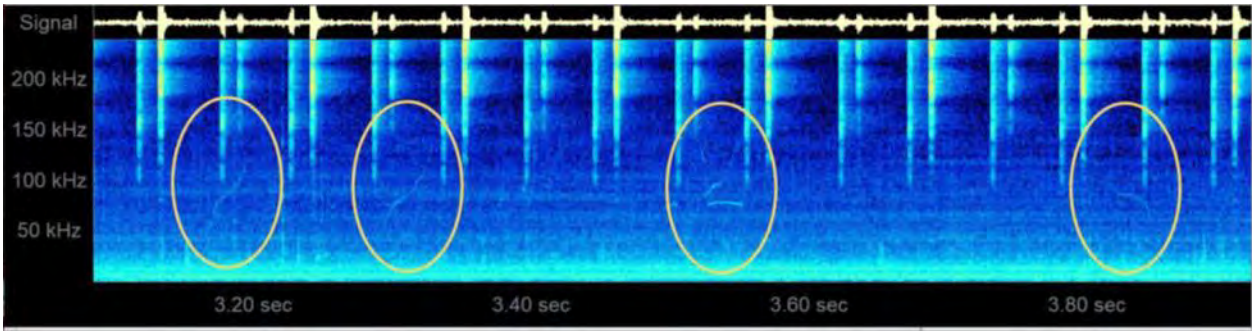


Figure L 7: *Fugro Enterprise* - Acoustic detection 03 (Unidentifiable dolphin) - 26 May 2020 - Up sweep tonal vocalizations.

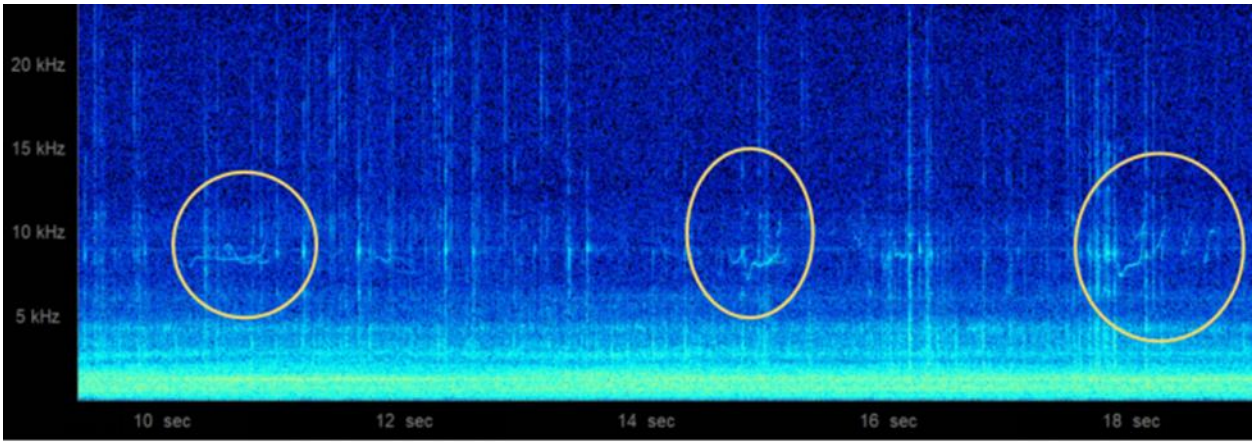


Figure L 8: *Fugro Enterprise* - Acoustic detection 04 (Unidentifiable dolphin) - 28 May 2020 - Low frequency whistles.

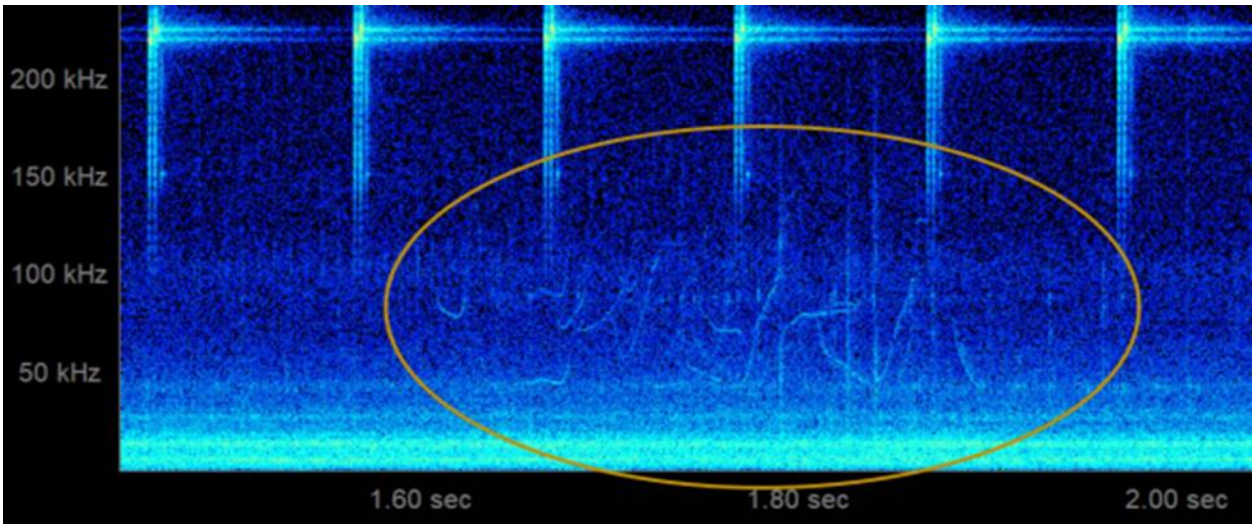


Figure L 9: *Fugro Enterprise* - Acoustic detection 05 (Unidentifiable dolphins) - 28 May 2020 - Tonal vocalizations.

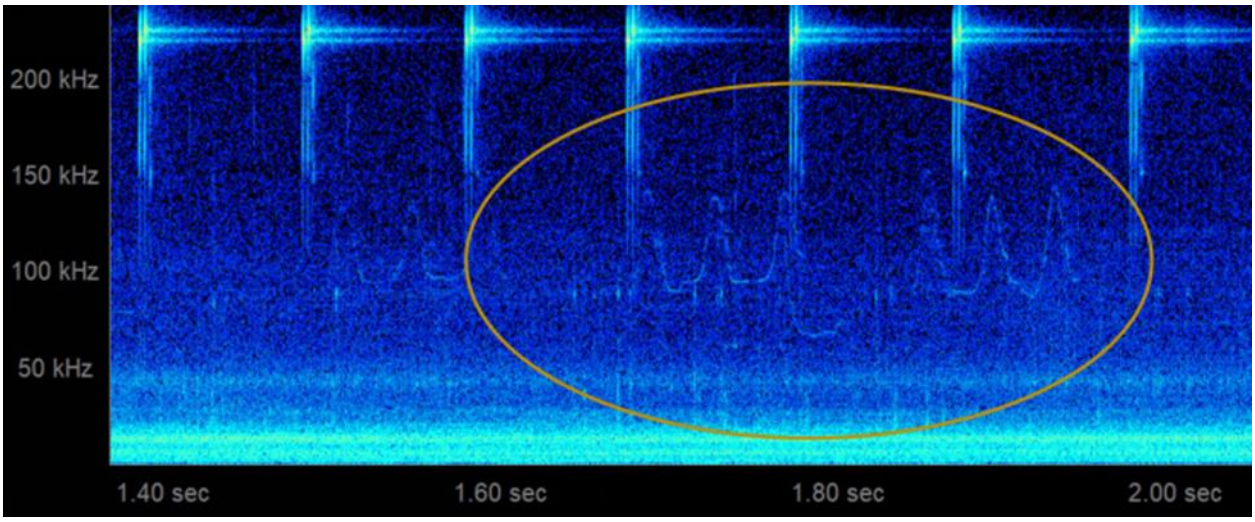


Figure L 10: *Fugro Enterprise* - Acoustic detection 06 (Unidentifiable dolphins) - 28 May 2020 - Sinusoidal vocalizations.

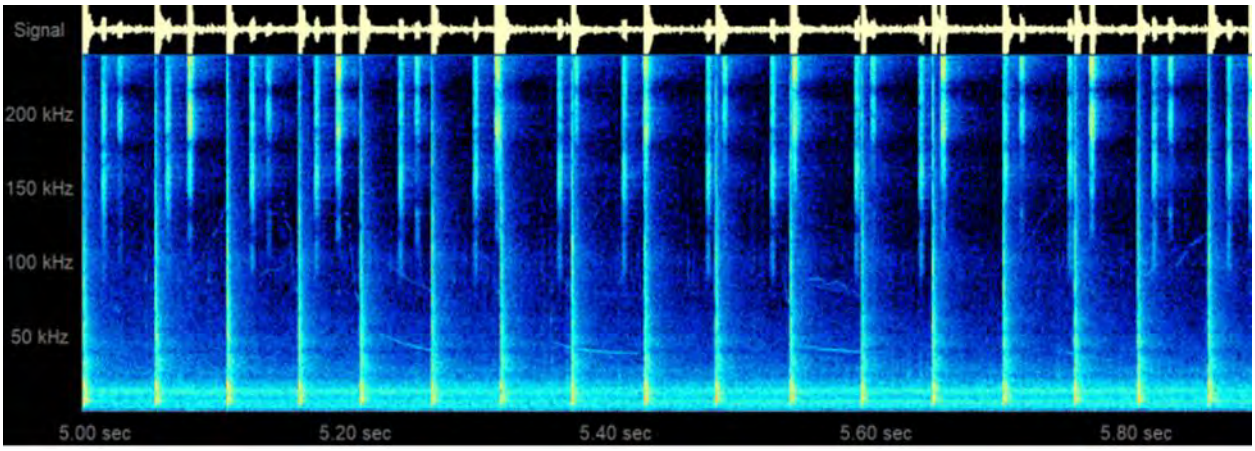


Figure L 11: *Fugro Enterprise* - Acoustic detection 07 (Unidentifiable dolphins) - 31 May 2020 - Tonal vocalizations.

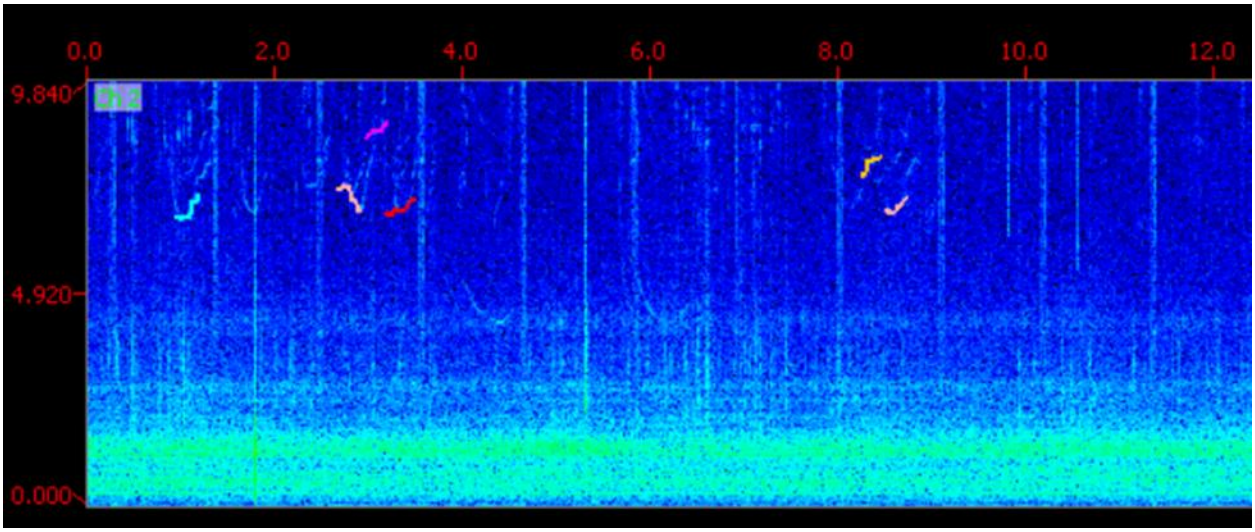


Figure L 12: *Fugro Enterprise* - Acoustic detection 08 (Unidentifiable dolphins) - 31 May 2020 - Low frequency whistles.

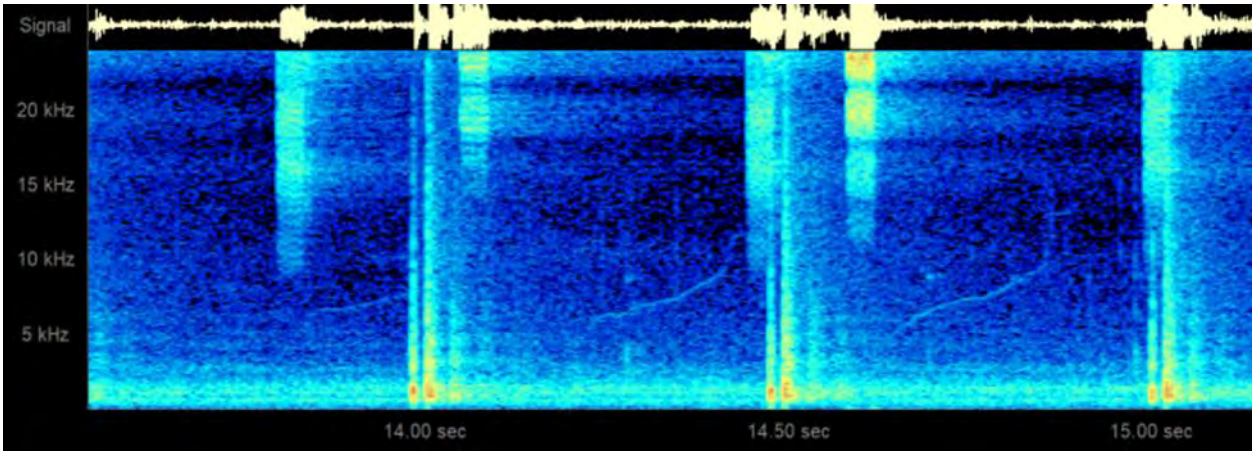


Figure L 13: *Fugro Enterprise* - Acoustic detection 09 (Unidentifiable dolphins) - 04 June 2020 - Up sweep tonal vocalizations.

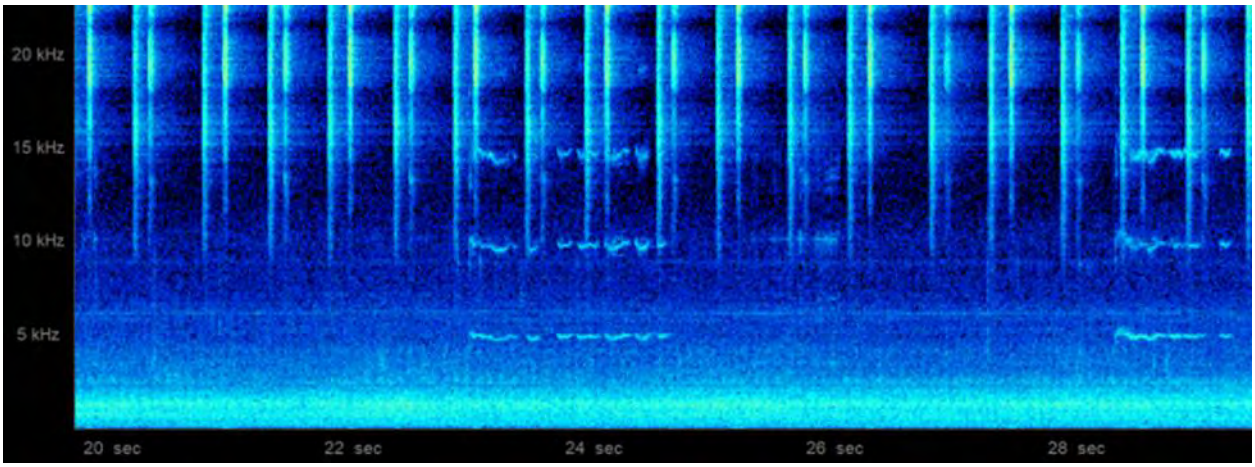


Figure L 14: *Fugro Enterprise* - Acoustic detection 10 (Humpback whale) - 11 June 2020 - Moans.

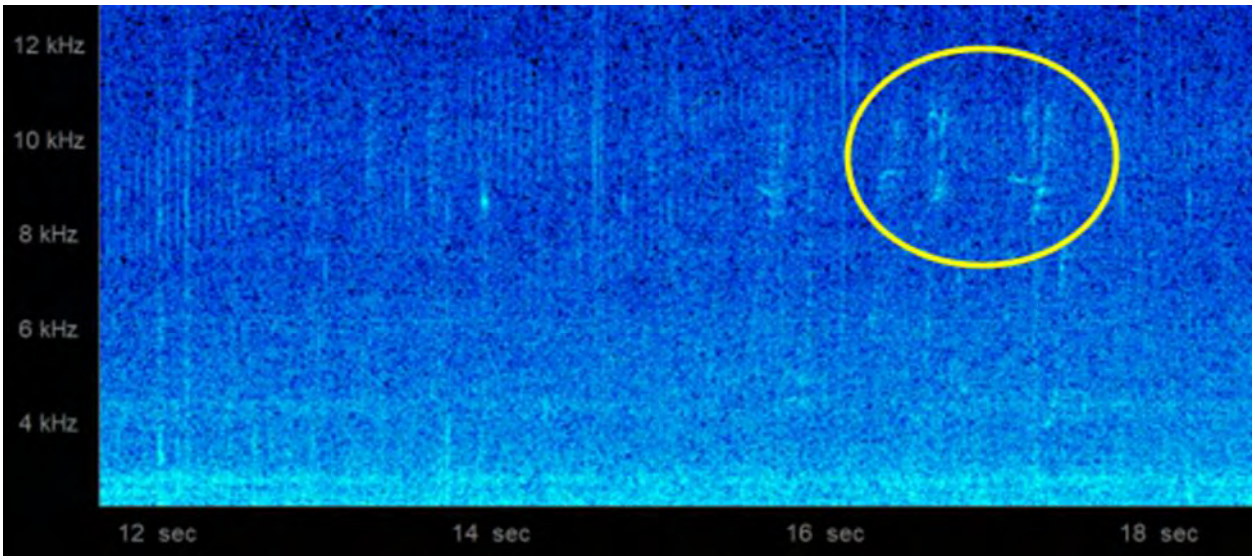


Figure L 15: *Fugro Enterprise* - Acoustic detection 11 (Unidentifiable dolphins) - 12 June 2020 - Faint whistles.

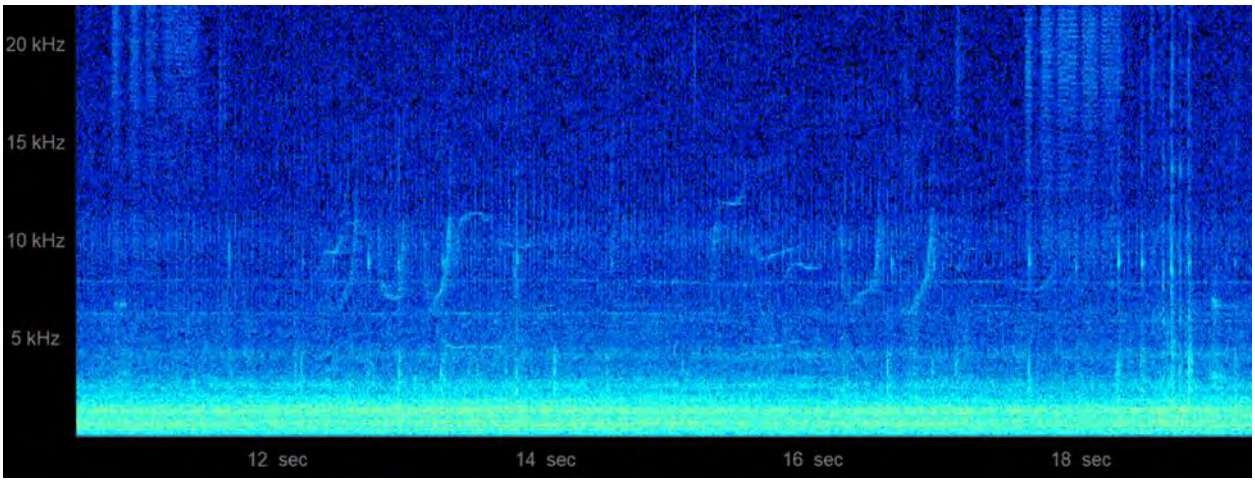


Figure L 16: *Fugro Enterprise* - Acoustic detection 12 (Unidentifiable dolphins) - 12 June 2020 - Delphinid vocalizations.

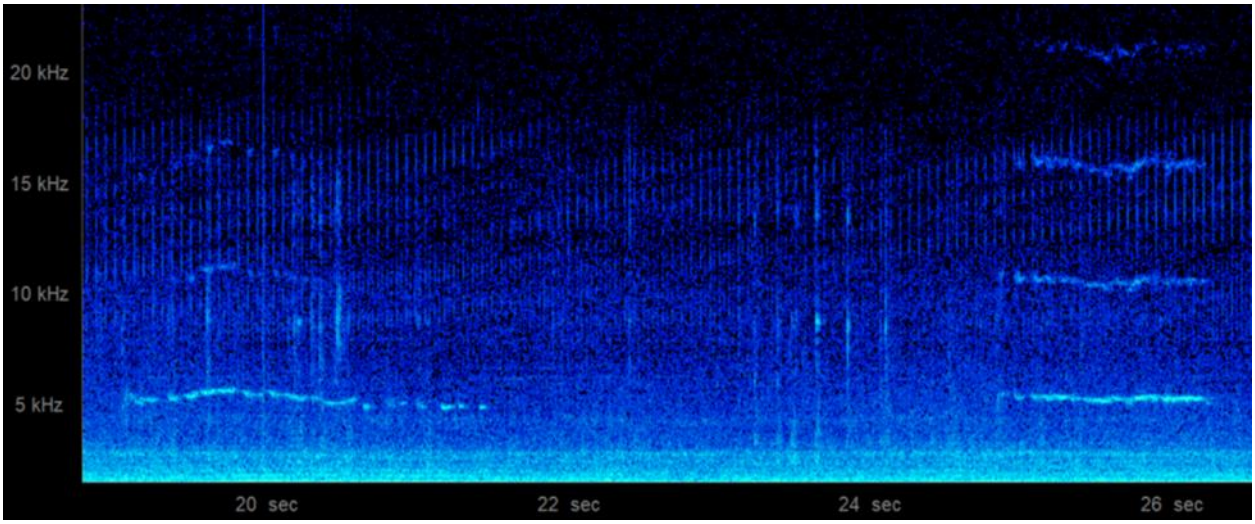


Figure L 17: *Fugro Enterprise* - Acoustic detection 13 (Humpback whale) - 12 June 2020 - Harmonic structure moans.

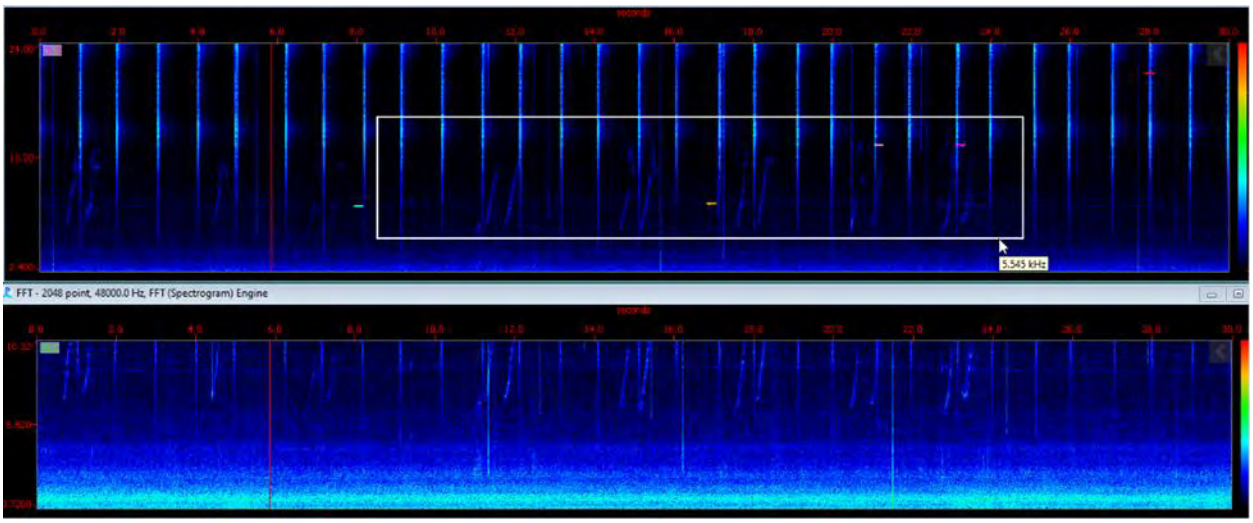


Figure L 18: *Fugro Enterprise* - Acoustic detection 14 (Unidentifiable dolphin) - 28 July 2020 - Up sweep tonal vocalizations.

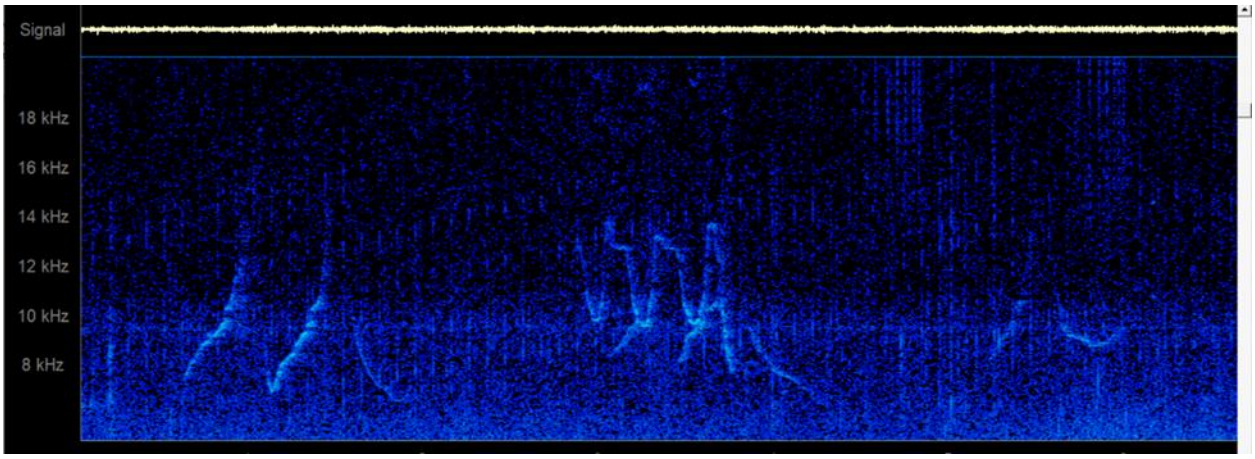


Figure L 19: *Fugro Enterprise* - Acoustic detection 15 (Unidentifiable dolphin) - 14 September 2020 - Up sweep tonal vocalizations.

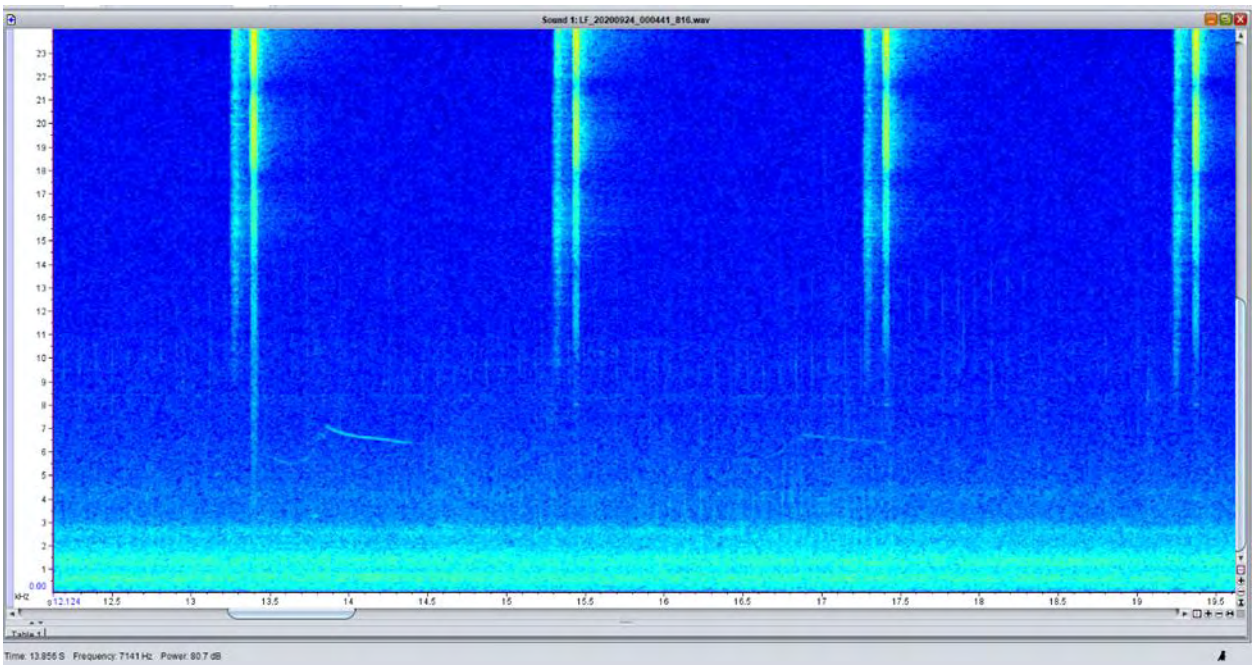


Figure L 20: *Fugro Enterprise* - Acoustic detection 16 (Humpback whale) - 24 September 2020 - Shrieks vocalizations, Raven Lite 2.0.

Appendix M: Protected Species Injury and Entanglement Reports

Atlantic Shores 2020
Fugro Brasilis

Lease Number OCS-A 0499
Incident Report: Injured Risso's dolphin
28 April 2020

Observer's full name: Ana Lira, Bronson Nagareda

Reporter's full name: Ana Lira, Bronson Nagareda

Species Identification: Risso's dolphin (*Grampus griseus*)

Name and type of platform: *Fugro Brasilis* / survey vessel operating on the Atlantic Shores offshore wind lease

Position of vessel at time of sighting:

Latitude: 38°29.014' N, Longitude: 073°26.520' W

Date animal observed: 28 April 2020

Time animal observed: 12:58 UTC (08:58 local time, EDT)

Date animal collected: Animal was not collected

Time animal collected: Animal was not collected

Environmental conditions at time of observation on 04-28-2020:

Cloud coverage at the time of the detection was 10%, no precipitation and severe glare at port side. Seas were B4 on the Beaufort scale with swell of less than two meters.

Water temperature (°C) and depth (m/ft) at site: water temperature unknown, 103 meters depth

Description of sighting event:

On 28 April 2020 at 12:58 UTC (08:58 local time, EDT), a young adult Risso's dolphin of approximately 3 meters in length was observed swimming at the surface and diving approximately 50 meters from the starboard bow of the *Fugro Brasilis* while it was stationary outside the survey area. None of the survey equipment was in operation at the time of the sighting.

The animal was identified as a Risso's dolphin based on characteristics observed including the rounded, beakless head, tall and falcate dorsal fin and gray body with scarring.

The animal appeared to have a relatively fresh/new wound on the front of the head, on the melon. The wound appeared open with evidence of redness and scraping observed. There were no other indications of injury visible apart from the head wound.

The animal was alone and throughout the detection, which lasted 21 minutes, it was observed diving and surfacing inside a relatively small area off the starboard bow. The final detection occurred at 13:19 UTC when the animal dove and was not sighted again.

Figure 1: Risso's dolphin with possible fresh wound on the front melon, observed on 28 Apr 2020

Figure 2: Risso's dolphin wth possible fresh injury to melon; side view showing scarring markings

Figure 3: Risso's dolphin observed on 28 Apr 2020 from Fugro Brasilis

Photograph/Video taken: Yes.

If Yes, was the data provided to NMFS? Yes (photos included in this report)

Date and Time reported to NMFS Stranding Hotline:

NOAA Fisheries Office of Protected Resources (OPR) (301-427-8401) and NOAA Fisheries New England/Mid-Atlantic Regional Stranding Co-Ordinator (978-282-8478) were both contacted by RPS Environmental Manger Stephanie Milne on 28 April at 16:10 UTC. The OPR directed the call to a different phone number (Benjamin Laws, 301-427-8425) where a voice message was left. An initial message was left with the stranding coordinator that was returned at 17:45 UTC and the sighting information was provided in full.

Marine Mammal Information: (please designate cm/m or inches)

Species: Risso´s dolphin (*Grampus grieseus*)
Length: 3 meters estimated
Weight (kg or lbs): Unknown
Sex: Unknown
Confidence of Species Identification: Certain
Description of Identification Characteristics: rounded, beakless head; tall, falcate dorsal fin; gray body with extensive scarring
Genetic samples collected: YES / **NO**
Genetics samples transmitted to: ____N/A____
Fate of Marine Mammal: Animal dove out of sight, appeared to be swimming normally
Description of Injuries Observed: possible scrape wound on the front of the head / melon

MAKING COMPLEX EASY

Atlantic Shores
Fugro *Enterprise*

OCS – A - 0499
Incident Report: Loggerhead Sea Turtle, Injury & stuck
23 September 2020

Observer's full name: Felipe Rodriguez

Reporter's full name: Felipe Rodriguez

Species Identification: Loggerhead Sea Turtle

Name and type of platform: Fugro Enterprise

Position of vessel at time of sighting: 39.22636°N / 74.12277°W

Date animal observed: 23 September 2020

Time animal observed: 21:30 UTC

Date animal collected: Animal not collected.

Time animal collected: Animal not collected.

Environmental conditions at time of observation: B4, slight chop, swell 0.5 meters. Windspeed 13 knots from WSW.

Water temperature (°C) and depth (m/ft) at site: 23°C, 23-meter water depth

On 23 September 2020 at 21:30 UTC, a sea turtle was observed around 800 meters off the port side of the Fugro *Enterprise*, at a bearing of 20 degrees, while the vessel was at a heading of 80 degrees. The Fugro Enterprise is a high-resolution survey vessel conducting survey activities on the Atlantic Shores offshore wind lease. The vessel was on a survey line at the time of the sighting with survey equipment deployed in the water. The sea turtle was swimming parallel to the vessel in the opposite direction. By 21:31 UTC, as vessel approached closer, and as the PSOs were able to continue to observe the turtle with binoculars, the PSO was able to identify that this was a loggerhead and that it appeared to be attached or entangled in some manner to a plastic bucket, although the exact material that was attaching the bucket to the turtle could not be observed, just the bucket.. The turtle was observed lifting its head above the surface, swimming slowly at the surface dragging the bucket behind it. At 21:35 the turtle dove and the bucket submerged with it, surfacing two minutes later with the bucket alongside. It was last observed at 21:37 swimming away from the vessel. The vessel continued along its path with the survey equipment deployed.

Figure 1: Loggerhead sea turtle, stuck with a plastic bucket, 800 meters from the Fugro Enterprise´s port beam, 21:31 UTC, 23 September 2020.

Figure 2: Loggerhead sea turtle, stuck with a plastic bucket, 800 meters from the Fugro Enterprise´s port beam, 21:33 UTC, 23 September 2020.

Figure 3: Loggerhead sea turtle dove taken the bucket with it, 800 meters from the Fugro Enterprise´s port beam, 21:35 UTC, 23 September 2020.

Photograph/Video taken: Yes

If Yes, was the data provided to NMFS? The photos have been provided to Bill with Sea Turtle Recovery Center New Jersey and Troy with Marine Mammal Stranding Center New Jersey by Stephanie Milne, RPS Senior Environmental Manager.

Date and Time reported to NMFS Stranding Hotline: RPS project specialist, Katherine Gideon, notified the NMFS stranding Hotline and the NOAA Fisheries Office of Protected Resources at 1735 CST and 1815 CST as required by the BOEM Lease and NMFS IHA.

Sea Turtle Species Information: (please designate cm/m or inches)
Species: Loggerhead sea turtle (*Caretta caretta*)
Weight (kg or lbs): approximately 130 kg
Sex: Unidentifiable
Straight carapace length: around 90 cm
Straight carapace width: Not possible from distance
Curved carapace length: Not possible from distance
Curved carapace width: Not possible from distance
Plastron length: Not possible from distance
Plastron width: Not possible from distance
Tail length: Not possible from distance
Head width: Not possible from distance

Condition of specimen/description of animal: slow movements, surfacing its head, apparently stuck in a plastic bucket / carapace and head yellow orange to reddish brown.

Existing Flipper Tag Information: Could not see from distance or photos
Left:
Right:

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

It appeared to the PSO on watch, the sea turtle was stuck to a plastic bucket by some kind of net, it could move its head but seemed that it could not swim freely. The turtle and the bucket were visible at the water surface, but the entanglement could be distinguished or identified from the distance of the sighting.