

# ECHO OFFSHORE, LLC

## Application for Letter of Authorization for the Non-Lethal Taking of Marine Mammals

Outer Continental Shelf, Gulf of Mexico

24-P-Echo Offshore  
Letter of Authorization

July 23, 2024

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## Table of Abbreviations

|       |   |
|-------|---|
| μPa   | micropascal   |
| 2D    | two-dimensional   |
| 3D    | three-dimensional   |
| AUV   | Autonomous underwater vehicle   |
| BOEM  | Bureau of Ocean Energy Management   |
| cm    | centimeters   |
| dB    | decibels  |
| ft    | feet  |
| GOM   | Gulf of Mexico  |
| Hz    | Hertz   |
| in    | inches  |
| ITR   | Incidental take regulation  |
| kg    | kilogram  |
| LOA   | Letter of Authorization   |
| m     | meter   |
| MMO   | Marine mammal observer  |
| NMFS  | National Marine Fisheries Service   |
| OCS   | Outer continental shelf   |
| OSPAR | Oslo and Paris Convention for the Protection of the Marine Environment of the NE Atlantic |
| PAM   | Passive acoustic monitoring   |
| psi   | pounds per square inch  |
| RMS   | Root mean squared   |
| ROV   | Remotely operated underwater vehicle  |
| VSP   | Vertical seismic profile  |

## 1 DESCRIPTION OF PROPOSED ACTIVITIES

Following the most recent incidental take regulation (ITR) that took effect on April 24, 2024 (89 Federal Register 31488), a 2021 ITR (86 *Federal Register* 5322), and the requirements of 50 Code of Federal Regulations (CFR) § 216.104, Echo Offshore, LLC, referred to as the “Applicant”, is submitting this request for a Letter of Authorization (LOA) for the unintentional, non-lethal taking of marine mammals from geophysical activities conducted in the Central Gulf of Mexico (GOM).

### 1.1 Project Description

The Applicant proposes to conduct a seismic investigation within the Bureau of Ocean Energy Management’s (BOEM’s) Central Planning Area of the Gulf of Mexico (GOM) that overlaps with ITR assessment Zone 2 (Figure 1 and Figure 2). Field operations will be conducted on behalf of W&T Offshore in compliance with BOEM NTL 2005-G07 (Archaeological Resources) and NTL 2022-G01 (Geohazards). The investigation is planned to occur within the protraction area of Eugene Island Area, South Addition and will cover a portion of lease blocks EI369, EI370, EI371, EI385, EI386, and EI387. The proposed 11 day survey is expected to begin as soon as permitted, which is currently anticipated to be prior to December 2024.

Table 1. Type of investigation.

| Please indicate which type of investigation will be used in the proposed activity |   |
|---|---|
| <input type="checkbox"/>  | <b>Deep Penetration Seismic (greater than 1,500 in<sup>3</sup> total airgun array volume)</b> <ul style="list-style-type: none"><li>• 2D Seismic-towed Streamer</li><li>• 2D Seismic-Seafloor Cable or Nodes</li><li>• 3D Seismic-towed Streamer</li><li>• 3D Seismic-Seafloor Cable or Nodes</li><li>• NAZ</li><li>• WAZ</li><li>• 4D (Time Lapse)</li><li>• Vertical Cable</li><li>• Borehole Seismic (VSP)</li></ul> |
| <input checked="" type="checkbox"/>   | <b>Shallow Penetration Seismic (less than 1,500 in<sup>3</sup> total airgun array volume)</b> <ul style="list-style-type: none"><li>• Surface Vessel</li><li>• Surface Vessel and AUV/ROV</li><li>• Borehole Seismic (VSP)</li></ul>  |
| <input type="checkbox"/>  | <b>HRG Investigations (no airguns used)</b> <ul style="list-style-type: none"><li>• Surface vessel</li><li>• AUV/ROV</li><li>• Both</li></ul>   |
| <input type="checkbox"/>  | <b>Other</b><br><u>Describe (if Other):</u>   |

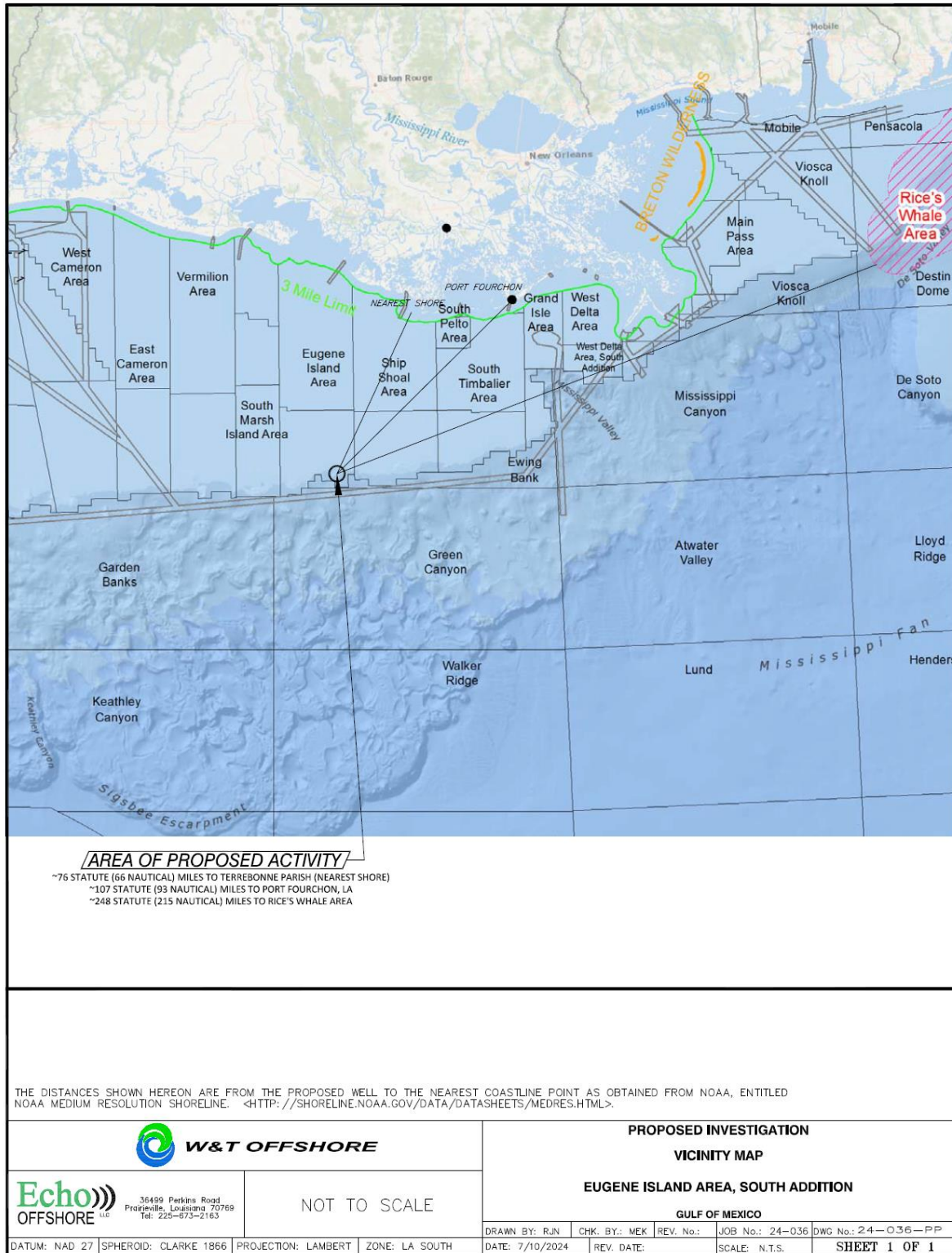


Figure 1. Location of proposed seismic survey within the Eugene Island Area, South Addition. Vessel transit will be a 93 nautical mile route to the southwest from Port Fourchon, LA.



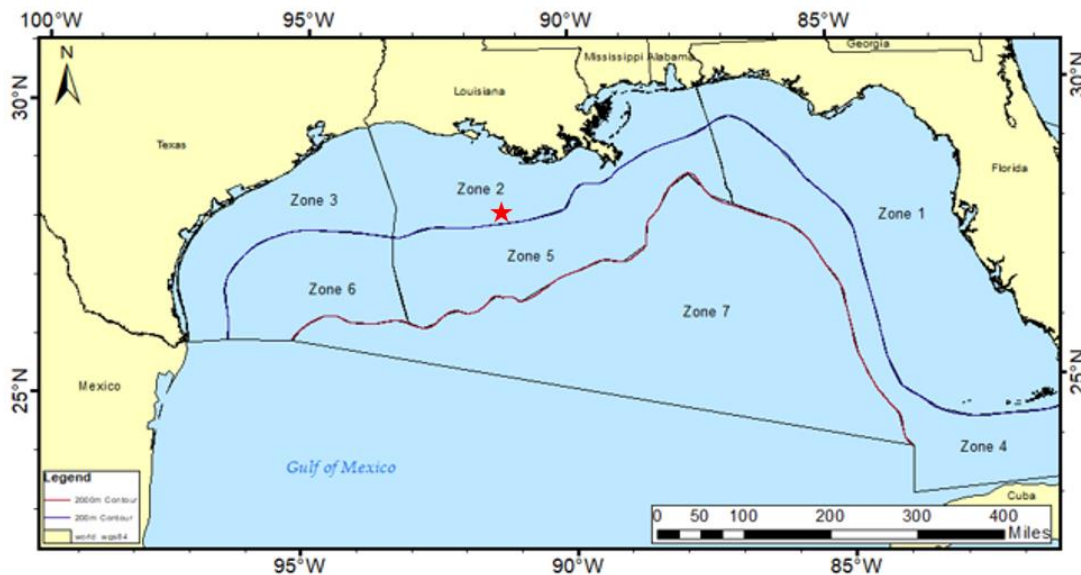


Figure 2. Approximate location of the proposed survey within ITR Zone 2. The ITR Zone 2 southern boundary is along a 200-meter depth contour, which is south of the survey location.

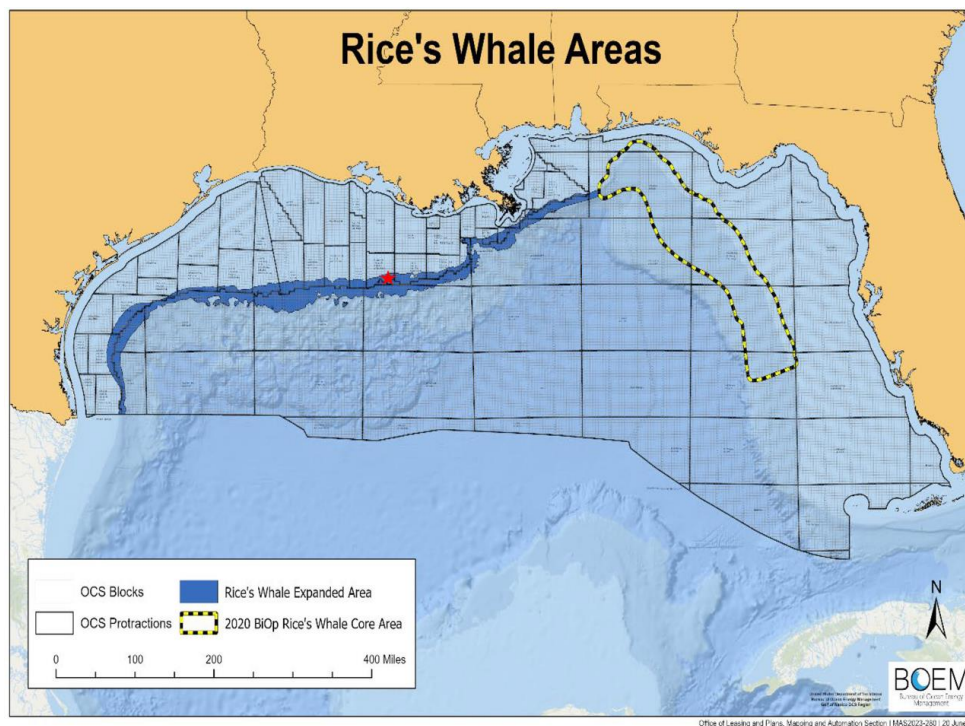


Figure 3. Expanded Rice's Whale Area between the 100- and 400-m isobaths (BOEM NTL No. 2023-G01). The proposed survey is within this expanded area, and additional mitigation measures are outlined in Section 10.

## 1.2 Activities Considered in Application

A five-day seismic investigation is planned to occur within the Eugene Island Area, South Addition protraction area, located in a depth of approximately 413 feet of water on average. All equipment will be towed in the water column, and then all equipment will be recovered back onto the vessel and no contact with the seafloor is expected during the proposed investigation. The seismic portion of this survey is expected to occur during five days, with an expected start as soon as permitted and prior to December of 2024.

Table 2. Study area and operational plan.

| Question:   | Response:   |
|---|---|
| <b>Location:</b><br>(Lease Block(s), Facility or Prospect Name, Lat/Lon, etc.)  | Eugene Island Area, South Addition – Lease Blocks 369, 370, 371, 385, 386, and 387<br>(28° 3' 10.5" N, 91° 29' 36.9" W center of western survey in EI370, EI371, EI385)<br>28° 2' 42.1" N, 91° 25' 3.8" W center of eastern survey in EI386, EI387, EI369, EI370) |
| <b>Proposed Start Date:</b>   | No earlier than July 2024   |
| <b>Proposed End Date:</b>   | No later than December 2024   |
| <b>Overall Duration of the Activity (days):</b>   | 11 days (5 days of seismic sources)   |
| <b>Purpose of Activity:</b>   | Geohazard investigation   |
| <b>Lease Number(s):</b>   | EI369, EI370, EI371, EI385, EI386, and EI387  |
| <b>OCS Area(s):</b>   | Eugene Island Area, South Addition  |
| <b>OCS Lease Block(s):</b>  | 6 lease blocks  |
| <b>Range of water depths (ft or m):</b>   | Between 310 and 515 feet  |
| <b>Average water depth (ft or m):</b>   | ~ 413 feet  |
| <b>Areal extent of the investigation area:</b><br>(in OCS lease blocks or km <sup>2</sup> )<br>(Attach GIS file(s) geo of investigation lines and/or investigation area perimeter)  | Portion of 6 adjacent lease blocks (see Figure 5)   |
| <b>G&amp;G ITR/PEIS Modeling Zone(s) in which the activity will occur (1-7):</b>  | 2   |
| <b>Number of days during the overall activity period on which the sound source(s) listed in Section 1.3 will operate:</b><br>(If the activity will occur in more than one Modeling Zone, provide the number of operating days within each Modeling Zone.) | 5 days  |

## 1.3 Sound Sources

The Applicant intends to use three high resolution sources of an Edgetech sidescan sonar, an Edgetech sub-bottom profiler, and R2 Sonic multibeam echosounder. One ION Geophysical 2DHR air gun will be used with a maximum total volume of 20 in<sup>3</sup>. The towing depth of this air gun will be 3 meters. The proposed geophysical investigation will cover a portion of lease blocks EI369, EI370, EI371, EI385, EI386, and EI387 (Figure 5). The entire study area consists of a total of 81 seismic lines running east to

west and seven perpendicular lines totaling 211 statute line miles of coverage. It is anticipated that the entirety of this project will take approximately 11 days, with 5 days of 2DHR air gun operations. All transect lines will employ the high resolution sources, for a total of 490 statute miles over an additional 124 non-seismic lines.

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Table 3. Sound sources to be used in the proposed investigation.

| Energy Source            | Manufacturer    | Model   | Total Array Volume & Number of Elements (cubic inches) | Source Level (SL) in dB re 1µPa@1m in water (RMS) | Source Level (SL) in dB re 1µPa@1m in water (Peak to Peak) | Operating Frequency (Hz, kHz, range) | Pulse Duration (seconds, milli-seconds) | Pulse Rate (or Cycle) (Pulses per second or minute) | Towing Depth of the Source (m) | Towing Depth of the Receiver(s) (ft or m) | Duration of Use (Number of Days or Percent of Active Sound Source Days) |
|--------------------------|-----------------|---------|--|---|--|--------------------------------------|---|---|--------------------------------|---|---|
| Sidescan Sonar           | Edgetech        | 4200-FS | N/A  | 163-169 dB rms                                    | N/A  | 120 – 410 kHz                        | 10 µ                                    | 2.6 Hz  | 1.5-2 m                        | N/A                                       | 11 days   |
| Chirp Subbottom Profiler | Edgetech        | 3400    | N/A  | 203 dB  | 210 dB   | 4 – 16 kHz                           | 20 ms                                   | 0.5 – 8/sec   | 1-1.5 m                        | N/A                                       | 11 days   |
| Multibeam                | R2 Sonic        | 2024    | N/A  | 191-221 dB rms                                    | N/A  | 200-400 kHz                          | 15 µ-1ms                                | 0-60 Hz   | N/A                            | N/A                                       | 11 days   |
| 2DHR                     | ION Geophysical | SG II   | 20 in <sup>3</sup>                                     | 207 dB  | 231 dB   | 0 – 1,500 Hz                         | 25 µ                                    | 6 sec   | 1-1.5 m                        | N/A                                       | 5 days  |

Table 4. Vessel Information.

| Vessel Type                         | Vessel Name         | Registration Number | Registered Owner    | Typical investigation speed (knots) | Highest Travelling Speed (knots) | Home Port         | Vessel/Activity Support Base | Transit Route:  |
|-------------------------------------|---------------------|---------------------|---------------------|-------------------------------------|----------------------------------|-------------------|------------------------------|---|
| Supply vessel (Sound source vessel) | M/V Elliot Cheramie | 1064603             | Cheramie Marine LLC | 3 knots                             | 12 knots                         | Port Fourchon, LA | Port Fourchon, LA            | Direct route from Port Fourchon to Eugene Island Area, South Addition |

M/V ELLIOT CHERAMIE

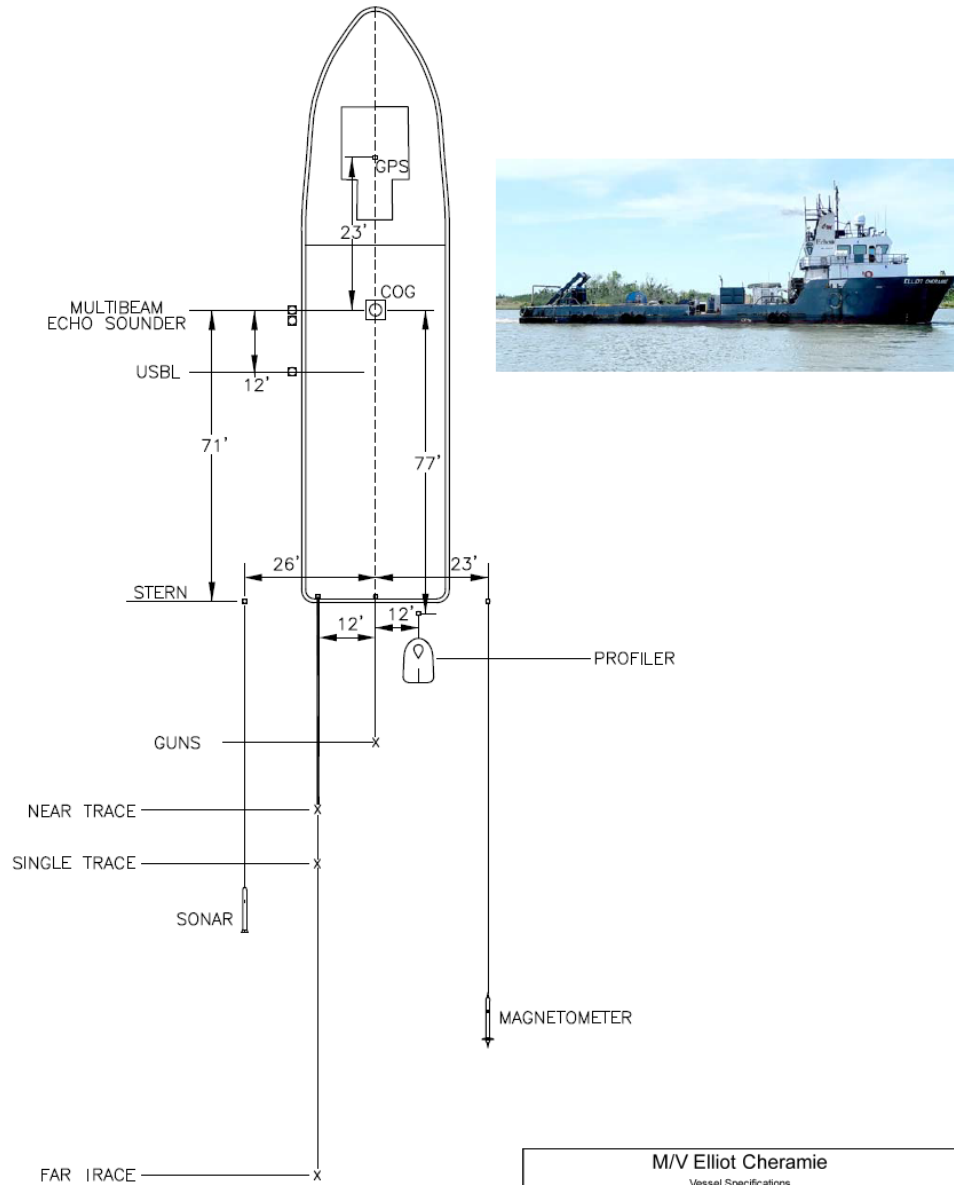


Figure 4. Schematic of high resolution sources and air gun towing location from vessel M/V Elliot Cheramie. The 2DHR air gun (20 in<sup>3</sup>) will be towed approximately 3 meters below the surface.

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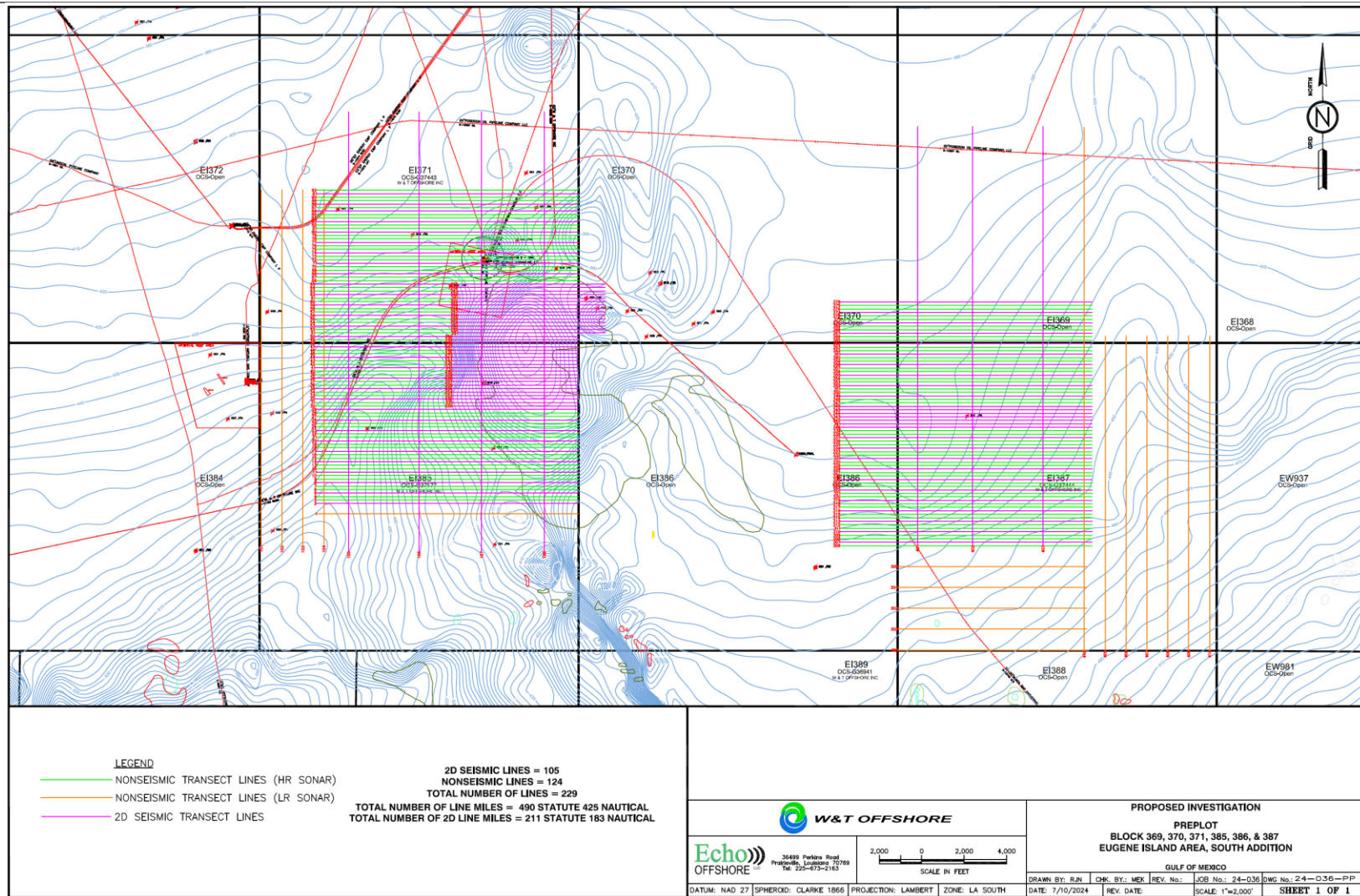


Figure 5. The proposed 2DHR air gun (20 in<sup>3</sup>) investigation will occur during five days shown in magenta lines of seven transects running north to south and 81 transects running east to west for a total of 183 nautical miles across Eugene Island Area lease blocks EI369, EI370, EI371, EI385, EI386, and EI387. There will also be 124 non-seismic HRG transects in light green for a total of 425 nautical miles for the entire survey of seismic and non-seismic miles.

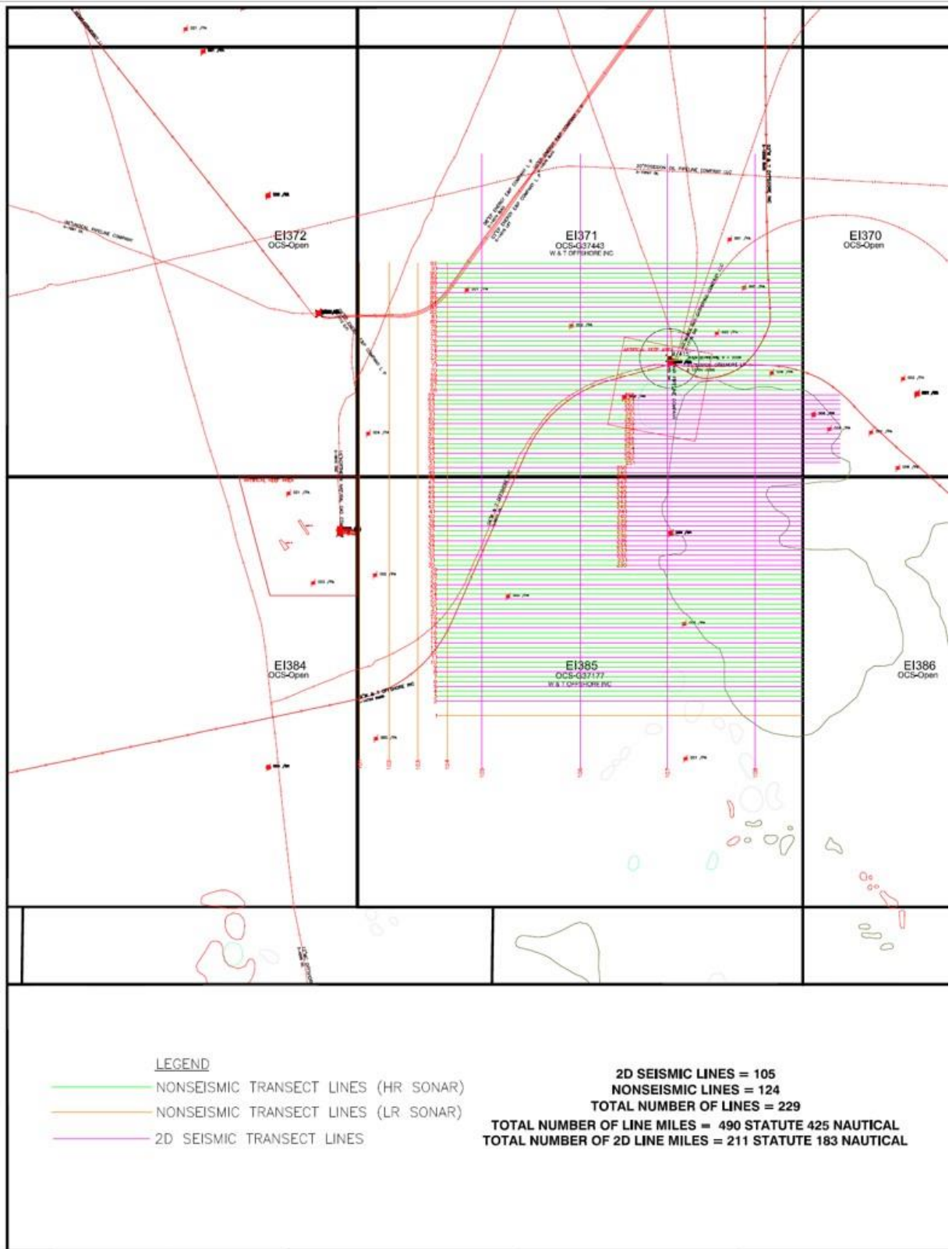


Figure 6. The proposed 2DHR air gun (20 in<sup>3</sup>) western survey of the Eugene Island Area lease blocks EI370, EI371, and EI385.

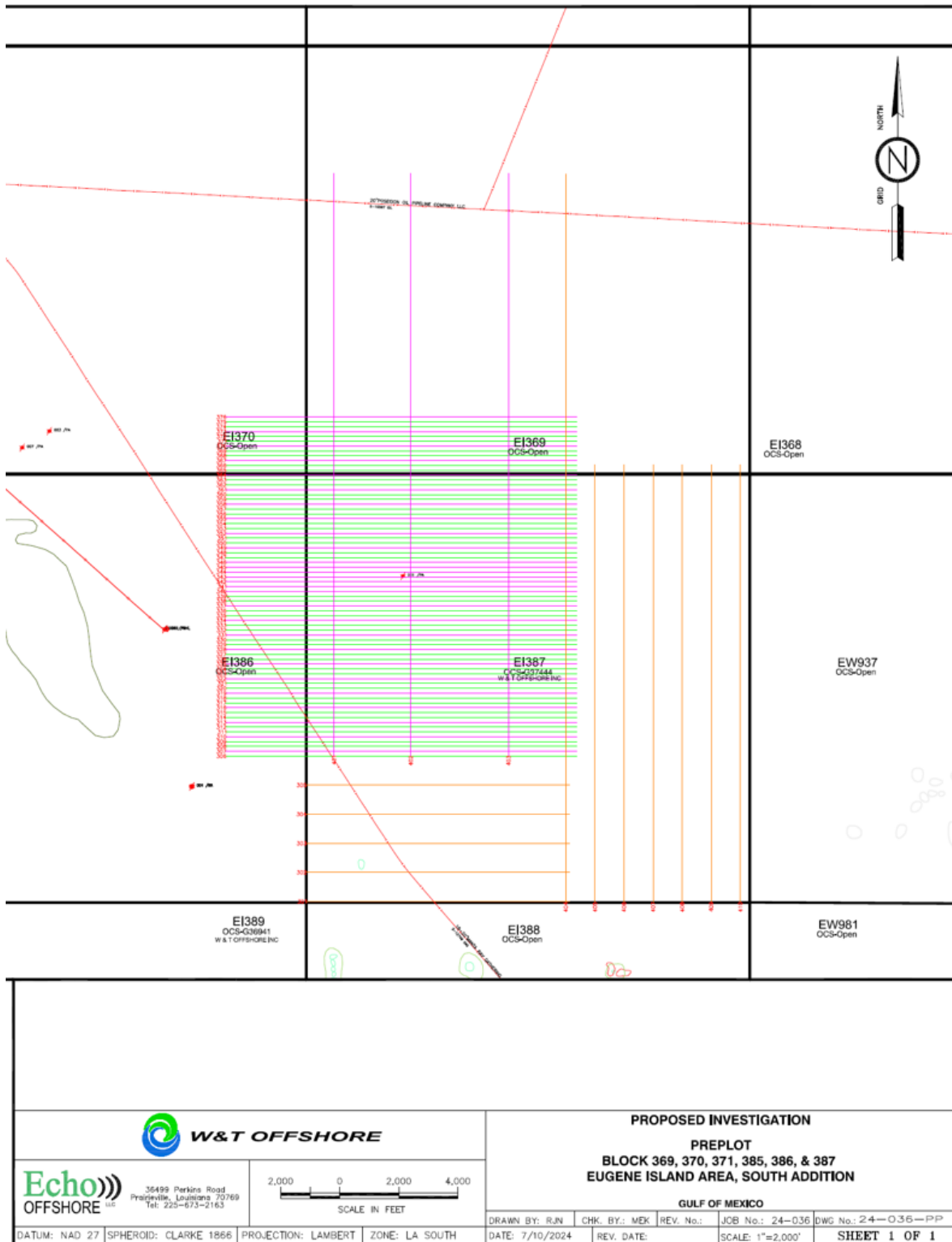


Figure 7. The proposed 2DHR air gun (20 in<sup>3</sup>) eastern survey of the Eugene Island Area lease blocks EI369, EI370, EI386, and EI387.



## 2 OPERATION DATES, DURATION, AND GEOGRAPHIC REGION

The Applicant proposes the investigation to occur in the months that the NOAA GOM exposure calculator classifies as summer with the survey expected to occur prior to December 2024. The 2DHR seismic portion of the investigation will take place during five days, with the entirety of the investigation expected to take approximately 11 days. The investigation will occur within the Eugene Island Area, South Addition, lease blocks EI369, EI370, EI371, EI385, EI386, and EI387 within BOEM's Central Planning Area of the GOM. This location falls within ITR assessment Zone 2, and this was used for the marine mammal exposure estimation. The vessel *M/V Elliot Cheramie* will depart from Port Fourchon, LA and transit directly west to the survey area traveling 93 nautical miles, avoiding any transit or operation near the Bryde's Whale Core Distribution Area that is over 100 miles to the east of Port Fourchon, LA (Figure 1). Transit and survey will occur in the newly expanded Rice's Whale Area between 100- and 400-m isobaths (Figure 3), and appropriate mitigation measures will be employed (Section 10).

## 3 MARINE MAMMAL SPECIES AND ABUNDANCES

The published ITRs (89 Federal Register 31488) provides information about marine mammal protection status, distribution, and predicted mean/maximum abundances for marine mammal species (Table 5).

Table 5. Summary information of species of marine mammals occurring in the northern Gulf of Mexico.

| Common Name                            | Scientific Name               | Stock | ESA Status <sup>1</sup> | NMFS Stock Abundance (CV, Nmin, most recent abundance survey) | Predicted Mean Abundance |
|--|-------------------------------|-------|-------------------------|---|--------------------------|
| Rice's whale                           | <i>Balaenoptera edeni</i>     | GOM   | E/D                     | 51 (0.50; 34; 2017-2018)                                      | 37                       |
| Sperm whale                            | <i>Physeter macrocephalus</i> | GOM   | E/D                     | 1,180 (0.22; 983; 2017-2018)                                  | 3,007                    |
| Pygmy sperm whale <sup>2</sup>         | <i>Kogia breviceps</i>        | GOM   | N                       | 336 (0.35; 34; 2017-2018)                                     | 980                      |
| Dwarf sperm whale <sup>2</sup>         | <i>K. sima</i>                | GOM   | N                       | 336 (0.35; 34; 2017-2018)                                     |                          |
| Cuvier's beaked whale <sup>3</sup>     | <i>Ziphius cavirostris</i>    | GOM   | N                       | 18 (0.75, N/A, 2020)  |                          |
| Gervais beaked whale <sup>3</sup>      | <i>Mesoplodon europaeus</i>   | GOM   | N                       | 20 (0.98, N/A, 2020)  |                          |
| Blainville's beaked whale <sup>3</sup> | <i>M. densirostris</i>        | GOM   | N                       | N/A   | 803                      |
| Unidentified Mesoplodont species       | N/A                           | GOM   | N                       | 98 (0.46, N/A, 2020)  |                          |
| Unidentified Ziphiids                  | N/A                           | GOM   | N                       | 181 (0.31, N/A, 2020)   |                          |

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| Common Name                 | Scientific Name                     | Stock   | ESA Status <sup>1</sup> | NMFS Stock Abundance (CV, Nmin, most recent abundance survey)   | Predicted Mean Abundance                                  |
|-----------------------------|-------------------------------------|---|-------------------------|---|---|
| Rough-toothed dolphin       | <i>Steno bredanensis</i>            | GOM   | N                       | 3,509 (0.67; Unk.; 2009)  | 4,853   |
| Common bottlenose dolphin   | <i>Tursiops truncatus truncatus</i> | GOM<br>Oceanic,<br>Continental Shelf,<br>Coastal Northern,<br>and Coastal Western | N                       | 7,462 (0.31; 5,769; 2017-2018; Oceanic)<br>63,280 (0.11; 57,917; 2017-2018; Continental Shelf)<br>11,543 (0.19; 9,881; 2017-2018; Coastal, Northern)<br>20,759 (0.13; 18,585; 2017-2018; Coastal, Western)<br><br>103,044 (Total) | 155,453 (Shelf)<br>9,672 (Oceanic)<br><br>165,125 (Total) |
| Clymene dolphin             | <i>Stenella clymene</i>             | GOM   | N                       | 513 (1.03; 250; 2017-2018)  | 4,619   |
| Atlantic spotted dolphin    | <i>S. frontalis</i>                 | GOM   | N                       | 21,506 (0.26; 17,339; 2017-2018)  | 6,187 (Shelf)<br>1,782 (Oceanic)<br><br>7,969 (Total)     |
| Pantropical spotted dolphin | <i>S. attenuata attenuata</i>       | GOM   | N                       | 37,195 (0.24; 30,377; 2017-2018)  | 67,225  |
| Spinner dolphin             | <i>S. longirostris longirostris</i> | GOM   | N                       | 2,991 (0.54; 1,954; 2017-2018)  | 5,548   |
| Striped dolphin             | <i>S. coeruleoalba</i>              | GOM   | N                       | 1,817 (0.56; 1,172; 2017-2018)  | 5,634   |
| Fraser's dolphin            | <i>Lagenodelphis hosei</i>          | GOM   | N                       | 213 (1.03; 104; 2017-2018)  | 1,665   |
| Risso's dolphin             | <i>Grampus griseus</i>              | GOM   | N                       | 1,974 (0.46; 1,368; 2017-2018)  | 1,501   |
| Melon-headed whale          | <i>Peponocephala electra</i>        | GOM   | N                       | 1,749 (0.68; 1,039; 2017-2018)  | 6,113   |
| Pygmy killer whale          | <i>Feresa attenuata</i>             | GOM   | N                       | 613 (1.15; 283; 2017-2018)  |   |
| False killer whale          | <i>Pseudorca crassidens</i>         | GOM   | N                       | 494 (0.79; 276; 2017-2018)  |   |
| Killer whale                | <i>Orcinus orca</i>                 | GOM   | N                       | 267 (0.75; 152; 2017-2018)  |   |

| Common Name              | Scientific Name                   | Stock | ESA Status <sup>1</sup> | NMFS Stock Abundance (CV, Nmin, most recent abundance survey) | Predicted Mean Abundance |
|--------------------------|-----------------------------------|-------|-------------------------|---|--------------------------|
| Short-finned pilot whale | <i>Globicephala macrorhynchus</i> | GOM   | N                       | 1,321 (0.43; 934; 2017-2018)                                  | 2,741                    |

<sup>1</sup>ESA status: (E) – Endangered, (D) – Depleted, (N) – Not listed or designated as depleted under the Marine Mammal Protection Act.

<sup>2</sup>These species are too difficult to differentiate at sea and are grouped together in their abundance estimate.

<sup>3</sup>These species are too difficult to differentiate at sea and are grouped together in their abundance estimate.

## 4 TYPE OF INCIDENTAL TAKE AUTHORIZATION REQUESTED

The Applicant requests an LOA pursuant to Section 101 (a)(5)(D) of the Marine Mammal Protection Act (MMPA) for incidental take of small numbers of marine mammals by Level B harassment in the specific ITR Zone 2 (Figure 1 and Figure 2). The sound source from the proposed investigation may exceed established acoustic thresholds for Level A or B marine mammal harassment (NMFS, 2018).

## 5 MARINE MAMMAL TAKE ESTIMATES

The GOM exposure estimation tool that was provided by the National Marine Fisheries Service (NMFS) was used to estimate exposures of each marine mammal species in the investigation area (NMFS, 2024). The tool applies modeling by Zeddies et al. (2015) to estimate exposure. The smallest sized investigation option of the exposure calculator was a single air gun of a 90 in<sup>3</sup> volume, and it was deemed unsuitable to divide those estimated exposure metrics to equal the size of the air gun array used in this investigation. With the air gun to be used only 20 in<sup>3</sup>, it must be noted that this is a conservative estimate of the exposure to marine mammals for the proposed investigation.

Acoustic thresholds are outlined by the NMFS to identify the received level of underwater sound at which marine mammals would be expected to have disrupted behavioral patterns or injury. Level B harassment is considered a disruption in behavior, but it can be difficult to assess as individuals will react differently depending on their activity at the time of sound or previous exposure to sound. Different species will also react differently, but NMFS considers 160 dB as an acoustic threshold for impulsive sources (air guns) and 120 dB for continuous sources (NMFS, 2018). Level A harassment is defined as having the potential to injure a marine mammal or marine mammal stock in the wild.

Table 6. Representative species of marine mammal hearing groups from the NMFS exposure estimation tool (NMFS, 2020).

| Marine Mammal Hearing Group | Species  |
|-----------------------------|--|
| Low-frequency cetaceans     | Baleen whales  |
| Mid-frequency cetaceans     | Dolphins, toothed whales, beaked whales, bottlenose whales |

| Marine Mammal Hearing Group | Species  |
|-----------------------------|--|
| High-frequency cetaceans    | True porpoises, <i>Kogia</i> , river dolphins, cephalorhynchid |
| Phocid pinnipeds            | True seals   |
| Otariid pinnipeds           | Sea lions and fur seals  |

## 5.1 Level A Harassment of Marine Mammals

According to the Gulf of Mexico Seismic Survey Exposure Calculator (NOAA 2024) Level A harassment from this seismic investigation is not expected, with no Zone 2 exposures to any of the GOM marine mammal populations (Table 7). NMFS determined that the potential for Level A harassment of mid-frequency cetaceans is de minimis. Therefore, the <sup>exposure</sup> calculator tool does not calculate incidents of Level A harassment for those species.

Table 7. Maximum Level A exposures for the five day proposed single airgun seismic survey during summer 2024 estimated using the NMFS exposure estimation tool within ITR Zone 2 (NMFS, 2024).

| Common Name                                   | Hearing Group  | Predicted Mean Abundance | Zone 2 Exposures | Maximum Population Affected |
|---|----------------|--------------------------|------------------|-----------------------------|
| Rice's (Bryde's) whale                        | Low-frequency  | 37                       | < 0.01           | 0%                          |
| <i>Kogia</i> sp. (Dwarf, pygmy sperm whale)   | High-frequency | 980                      | < 0.01           | 0%                          |
| Sperm whale                                   | Mid-frequency  | 3,007                    | 0                | 0%                          |
| Beaked whales (Cuvier's/Blainville's/Gervais) | Mid-frequency  | 803                      | 0                | 0%                          |
| Rough-toothed dolphin                         | Mid-frequency  | 4,853                    | 0                | 0%                          |
| Common bottlenose dolphin                     | Mid-frequency  | 165,125                  | 0                | 0%                          |
| Clymene dolphin                               | Mid-frequency  | 4,619                    | 0                | 0%                          |
| Atlantic spotted dolphin                      | Mid-frequency  | 7,969                    | 0                | 0%                          |
| Pantropical spotted dolphin                   | Mid-frequency  | 67,225                   | 0                | 0%                          |
| Spinner dolphin                               | Mid-frequency  | 5,548                    | 0                | 0%                          |
| Striped dolphin                               | Mid-frequency  | 5,634                    | 0                | 0%                          |
| Fraser's dolphin                              | Mid-frequency  | 1,665                    | 0                | 0%                          |
| Risso's dolphin                               | Mid-frequency  | 1,501                    | 0                | 0%                          |
| Melon-headed whale <sup>a</sup>               | Mid-frequency  |                          | 0                | 0%                          |

| Common Name                     | Hearing Group | Predicted Mean Abundance | Zone 2 Exposures | Maximum Population Affected |
|---------------------------------|---------------|--------------------------|------------------|-----------------------------|
| Pygmy killer whale <sup>a</sup> | Mid-frequency | 6,113                    | 0                | 0%                          |
| False killer whale <sup>a</sup> | Mid-frequency |                          | 0                | 0%                          |
| Killer whale <sup>a</sup>       | Mid-frequency |                          | 0                | 0%                          |
| Short-finned pilot whale        | Mid-frequency | 2,741                    | 0                | 0%                          |

<sup>a</sup> Blackfish guild density (false killer whale, killer whale, melon-headed whale, and pygmy killer whale)

## 5.2 Level B Harassment of Marine Mammals

Level B exposures were calculated using the NMFS exposure estimation tool (NMFS, 2024) using the sound source information (Table 8) of and the investigation occurring in the ITR Zone 2 of exposures. Exposure to level B harassment of marine mammals within the investigation area is expected to be low to non-existent, with Atlantic spotted dolphins potentially having the highest percentage of the population impacted at 0.37% or only 29.5 individuals in summer months (Table 8). The only other populations with any expected Level B harassment are the common bottlenose dolphin at 135.8 individuals (0.08%), and the rough-toothed dolphin at 2.3 individuals (0.05%). All other populations of marine mammals are estimated to have no exposure to Level B harassment.

Table 8. Maximum Level B exposures for the one day proposed single airgun seismic survey estimated using the NMFS exposure estimation tool during summer months in ITR Zone 2 (NMFS, 2024).

| Common Name                                   | Hearing Group  | Predicted Mean Abundance | Zone 2 Exposures | Maximum Population Affected |
|---|----------------|--------------------------|------------------|-----------------------------|
| Rice's (Bryde's) whale                        | Low-frequency  | 37                       | < 0.01           | 0%                          |
| Kogia sp. (Dwarf, pygmy sperm whale)          | High-frequency | 980                      | < 0.01           | 0%                          |
| Sperm whale                                   | Mid-frequency  | 3,007                    | < 0.01           | 0%                          |
| Beaked whales (Cuvier's/Blainville's/Gervais) | Mid-frequency  | 803                      | < 0.01           | 0%                          |
| Rough-toothed dolphin                         | Mid-frequency  | 4,853                    | 2.30             | 0.05%                       |
| Common bottlenose dolphin                     | Mid-frequency  | 165,125                  | 135.84           | 0.08%                       |
| Clymene dolphin                               | Mid-frequency  | 4,619                    | < 0.01           | 0%                          |
| Atlantic spotted dolphin                      | Mid-frequency  | 7,969                    | 29.49            | 0.37%                       |
| Pantropical spotted dolphin                   | Mid-frequency  | 67,225                   | < 0.01           | 0%                          |

| Common Name                     | Hearing Group | Predicted Mean Abundance | Zone 2 Exposures | Maximum Population Affected |
|---------------------------------|---------------|--------------------------|------------------|-----------------------------|
| Spinner dolphin                 | Mid-frequency | 5,548                    | < 0.01           | 0%                          |
| Striped dolphin                 | Mid-frequency | 5,634                    | < 0.01           | 0%                          |
| Fraser’s dolphin                | Mid-frequency | 1,665                    | 0.03             | 0%                          |
| Risso’s dolphin                 | Mid-frequency | 1,501                    | < 0.01           | 0%                          |
| Melon-headed whale <sup>a</sup> | Mid-frequency | 6,113                    | < 0.01           | < 0.01%                     |
| Pygmy killer whale <sup>a</sup> | Mid-frequency |                          | < 0.01           | < 0.01%                     |
| False killer whale <sup>a</sup> | Mid-frequency |                          | < 0.01           | < 0.01%                     |
| Killer whale <sup>a</sup>       | Mid-frequency |                          | < 0.01           | < 0.01%                     |
| Short-finned pilot whale        | Mid-frequency | 2,741                    | < 0.01           | 0%                          |

<sup>a</sup> Blackfish guild density (false killer whale, killer whale, melon-headed whale, and pygmy killer whale)

## 6 EFFECTS ON MARINE MAMMALS OR STOCKS

The results of an analysis of 10 years of geophysical activities in the GOM following an expert working group (Southall et al. 2014) shows that the total take from all approved activities will have negligible impacts on all impacted marine mammal stocks within the GOM (86 *Federal Register* 5322). Level A harassment of marine mammal populations are expected to be non-existent during the proposed five day investigation, with no individuals of any species estimated to be exposed. The only populations estimated to be exposed to Level B harassment are of the Atlantic spotted dolphin (0.37%), the common bottlenose dolphin (0.08%), the rough-toothed dolphin (0.05%), and all other GOM species experiencing ≤ 0.01% of their populations exposed.

The take estimates of this investigation are conservatively estimated using a larger 90 in<sup>3</sup> single air gun as the closest available survey type in the GOM exposure estimator tool instead of the proposed 20 in<sup>3</sup> air gun. No negative impacts to marine mammal populations are expected to occur. Take estimates represent the entirety of the ITR Zone 2, but this investigation will occur within a portion of six lease blocks or 211 statute miles of 2DHR seismic operation. The NMFS exposure estimation tool also does not factor mitigation efforts, which would be expected to negate any potential for Level A exposures and greatly reduce the risk of Level B harassment. No negative effects to marine mammal stocks are anticipated from this proposed project by the Applicant.

## **7 MINIMIZATION OF ADVERSE EFFECTS TO SUBSISTENCE USES**

NMFS requires any marine mammal stocks within the investigation area that are used for subsistence hunting to be identified and any adverse effects to be minimized. There are no subsistence hunting areas near the proposed investigation location, and no stocks of marine mammals that are used for subsistence uses will be impacted.

## **8 ANTICIPATED IMPACTS ON HABITAT**

Disturbance of the benthic environment is expected to be non-existent, as no contact of any equipment with the seafloor is expected. No use of ROVs is required for this investigation, and no nodes or receivers are being placed on the seafloor.

## **9 ANTICIPATED EFFECTS OF HABITAT IMPACTS ON MARINE MAMMALS**

The effects to marine mammals from loss or modification of habitat from the proposed investigation will be negligible and undetectable.

## **10 MITIGATION AND MONITORING EFFORTS**

Following the final ITR (86 *Federal Register* 5322), the investigation will aim to have the “least practicable adverse impact” on the affected species or stocks and their habitat.

Survey operations will be undertaken in accordance with the provisions of the Regulations Governing Taking Marine Mammals Incidental to Geophysical Survey Activities in the Gulf of Mexico (50 CFR Part 217, Subpart S), where those provisions include monitoring for marine protected species and implementation of mitigation actions.

Protected Species Observers (PSOs) will conduct monitoring for marine protected species including all marine mammals during all daytime operations of the acoustic source and during pre-clearance searches prior to initiation of the source. PSOs will implement monitoring watches consistent with the requirements outlined in Appendix A Seismic Survey Mitigation and Protected Species Observer Protocols of the Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico.

In addition, the sound sources will be turned on following ramp-up procedures are described in Appendix A and delays to initiation of the source and shut-downs of the active source will be implemented for

marine protected species observed inside clearance and shut-down zones (respectively) established around the source.

### **Additional Measures to Protect the Rice's Whale**

BOEM (NTL No. 2023-G01) recommends to lessees and operators that all oil and gas activity within the Expanded Rice's Whale Area (100 - 400 meters depth) should be conducted in accordance with the following measures:

- Use trained visual observers to monitor the vessel strike avoidance zone (500 meters). Such observers may be either third-party observers or crew members but crew members responsible for these duties should be provided with sufficient training to distinguish aquatic protected species to broad taxonomic groups.
- If transiting within the Expanded Rice's Whale Area, document and retain records for three years on details of transit, including what port is used for mobilization and demobilization.
- Observe on all vessels, regardless of size, at all times a 10-knot or less, year-round speed restriction in the Expanded Rice's Whale Area (as described in NTL No. 2023-G01 and Figure 3). This recommendation would not apply when compliance would place the safety of the vessel or crew, or the safety of life at sea, in doubt. To the maximum extent practicable, lessees and operators should avoid transit through the Expanded Rice's Whale Area after dusk and before dawn, and during other times of low visibility to further reduce the risk of vessel strike of Rice's whales.
- Maintain on all vessels a minimum separation distance of 500 meters from Rice's whales. If a whale is observed but cannot be confirmed as a species other than a Rice's whale, the vessel operator should assume that the whale is a Rice's whale and take appropriate action.
- Include a functioning Automatic Identification System (AIS) onboard all vessels 65 feet or greater associated with oil and gas activity (e.g., source vessels, chase vessels, supply vessels) that is operating at all times, as required by the U.S. Coast Guard. If the vessel does not require AIS, it is strongly encouraged that the operator document and retain records of the transit, including trackline (e.g., time and speed) data and visual marine mammal sightings.

## **11 ARCTIC PLAN OF COOPERATION**

This plan is not applicable for this application as this is only for activities that occur in Alaskan waters north of 60°N latitude, and the proposed investigation is in the Gulf of Mexico.



## 12 REFERENCES

- 50 Code of Federal Regulations (CFR) § 216.104. 2023. Submission of Requests.
- 50 Federal Register (FR) 31488. 2024. Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to Geophysical Surveys in the Gulf of Mexico. 24 April 2024.
- 86 Federal Register (FR) 5322. 2018. Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to Geophysical Surveys Related to Oil and Gas Activities in the Gulf of Mexico. 19 January 2021.
- BOEM NTL No. 2023-G01. 2023. Notice to Lessees and Operators of Federal Oil and Gas, and Sulphur Leases in the Gulf of Mexico Outer Continental Shelf. Expanded Rice's Whale Protection Efforts During Reinitiated Consultation with NMFS.
- National Marine Fisheries Service (NMFS). 2018. 2018 Revisions to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0): Underwater Thresholds for Onset of Permanent and Temporary Threshold Shifts. U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA). NOAA Technical Memorandum NMFS-OPR-59. 167 pp.
- National Marine Fisheries Service (NMFS). 2024. Gulf of Mexico exposure estimation tool.
- Southall BL, Ellison WT, Clark CW, Tollit D. 2014. Analytical Framework for Assessment Potential Effects of Seismic Airgun Surveys on Marine Mammals in the Gulf of Mexico (GOMEX). Expert Working Group (EWG) Final Report. 55 pp.
- Zeddies DG, Zykov M, Yurk H, Deveau T, Bailey L, Gaboury I, Racca R, Hannay D, Carr S. 2015. Acoustic Propagation and Marine Mammal Exposure Modeling of Geological and Geophysical Sources in the Gulf of Mexico: 2016-2025 Annual Acoustic Exposure Estimates for Marine Mammals. Technical Report by JASCO Applied Sciences for the U.S. Department of the Interior, Bureau of Ocean Energy Management. JASCO Document 00976, Version 3.0. 385 pp.