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

April 22, 2024

Prepared by:

RPS a TetraTech company

Stephanie Milne and Russell Dauksis

T +1 206 334 0862
E Stephanie.Milne@rpsgroup.com

Prepared for:

Echo Offshore, LLC

Matt Keith

T +1 225-673-2163
E keithm@echo-offshore.net

Operations Contact:

Donald Spicer

T +1 225 673-2163
Marine T +1 985 218-8298
E spicerd@echo-offshore.net

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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 19, 2021 (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 2). Field operations will be conducted on behalf of Byron Energy, Inc 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 South Marsh Island Area and will cover a portion of lease blocks SM66 and SM61. The proposed 1.5-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
___ **Deep Penetration Seismic (greater than 1,500 in^3 total airgun array volume)** • 2D Seismic-towed Streamer • 2D Seismic-Seafloor Cable or Nodes • 3D Seismic-towed Streamer • 3D Seismic-Seafloor Cable or Nodes • NAZ • WAZ • 4D (Time Lapse) • Vertical Cable • Borehole Seismic (VSP) _X_ **Shallow Penetration Seismic (less than 1,500 in^3 total airgun array volume)** • Surface Vessel • Surface Vessel and AUV/ROV • Borehole Seismic (VSP) ___ **HRG Investigations (no airguns used)** • Surface vessel • AUV/ROV • Both ___ **Other** Describe (if Other):

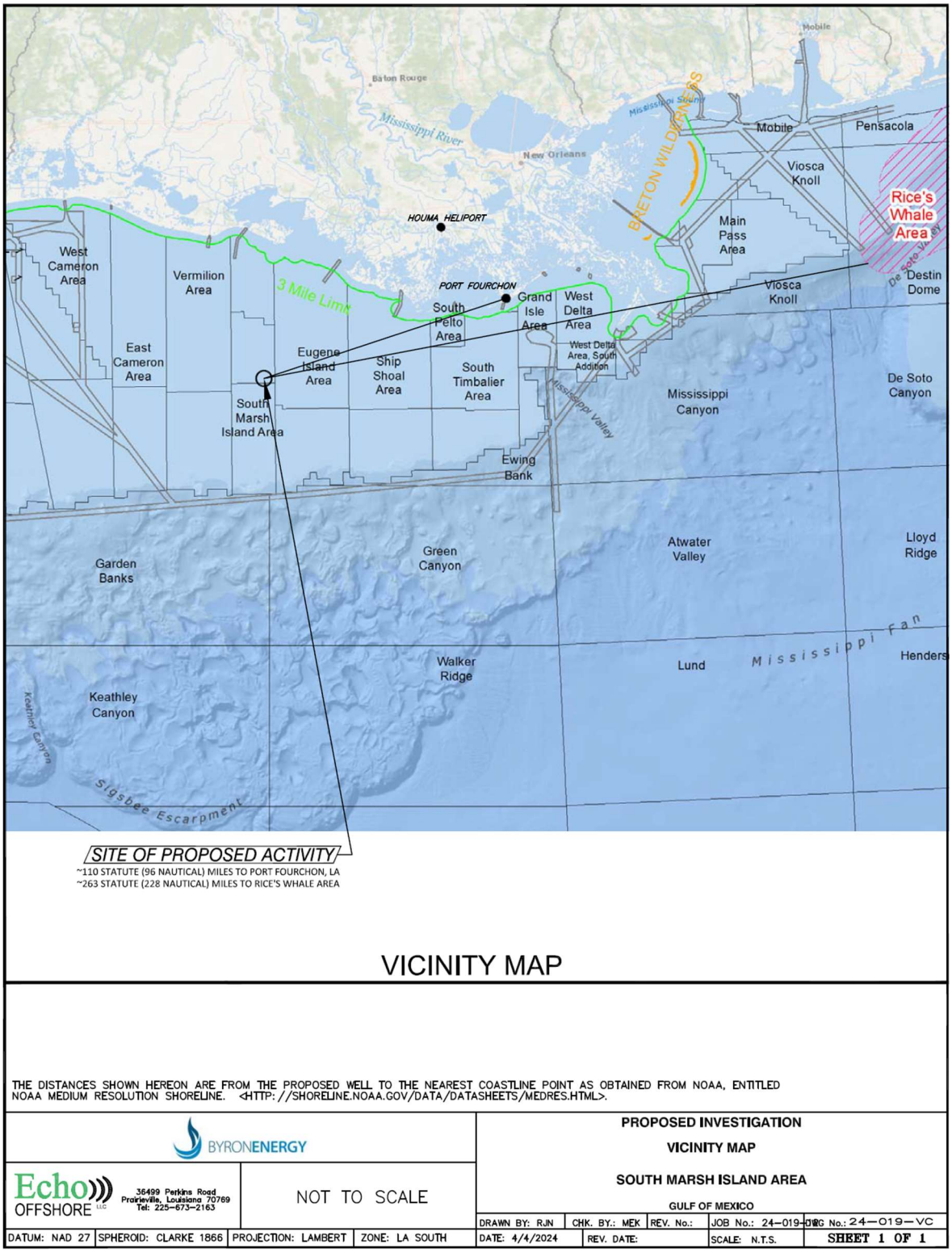


Figure 1. Location of proposed seismic survey within the South Marsh Island Area. Vessel transit will be a 96 nautical mile route to the west from Port Fourchon, LA.

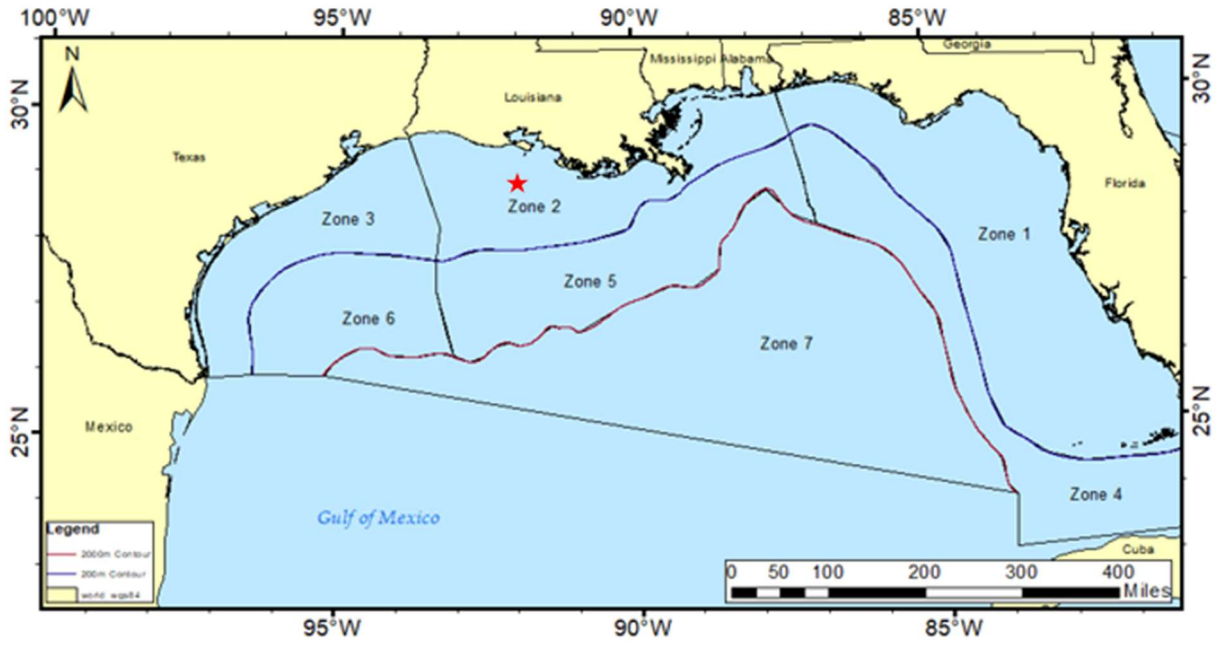


Figure 2. Approximate location of the proposed survey within ITR Zone 2. The ITR Zone 2 southern boundary is along a 200-meter depth contour, which is south of the survey location.

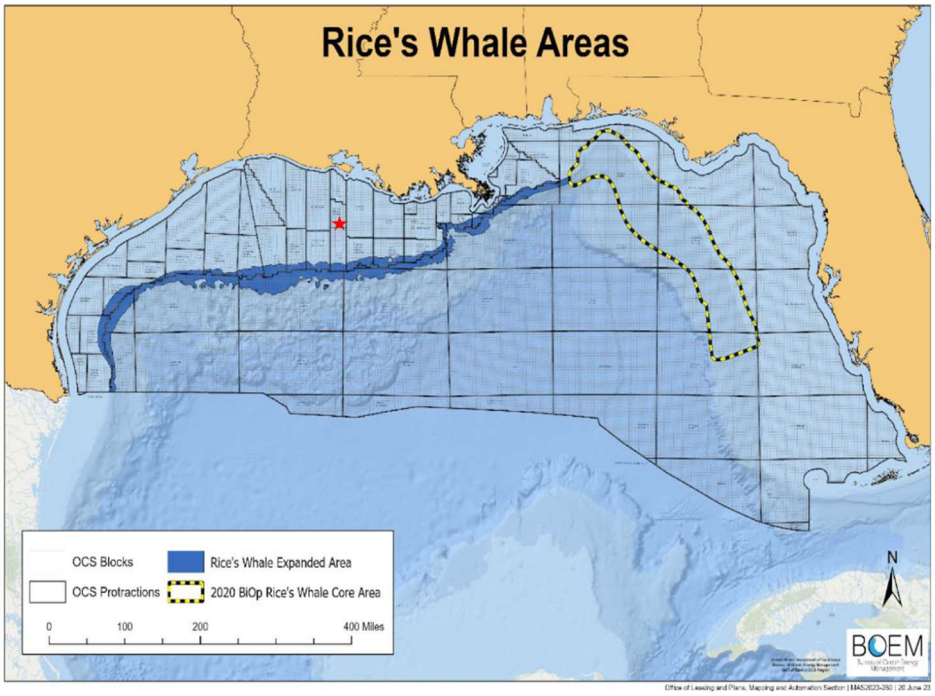


Figure 3. Expanded Rice's Whale Area between the 100- and 400-m isobaths (BOEM NTL No. 2023-G01). The proposed survey is approximately 42 statute miles north of this expanded area.

1.2 Activities Considered in Application

A one-day seismic investigation is planned to occur within the South Marsh Island Area protraction area, located in a depth of approximately 120 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. This investigation is expected to occur during 1.5 days between an expected start as soon as permitted and prior to December of 2024.

Table 2. Study area and operational plan.

Question:	Response:
Location: (Lease Block(s), Facility or Prospect Name, Lat/Lon, etc.)	South Marsh Island Area– Lease Block 66 (28° 39' 3.78" N, 91° 57' 1.56" W)
Proposed Start Date:	No earlier than May 2024
Proposed End Date:	No later than December 2024
Overall Duration of the Activity (days):	1.5 days (~18 hours of seismic sources)
Purpose of Activity:	Geohazard investigation
Lease Number(s):	SM61 and SM66
OCS Area(s):	South Marsh Island Area
OCS Lease Block(s):	1 lease block
Range of water depths (ft or m):	Between 114 and 126 feet
Average water depth (ft or m):	~ 120 feet
Areal extent of the investigation area: (in OCS lease blocks or km^2) (Attach GIS file(s)geo of investigation lines and/or investigation area perimeter)	Portion of 2 adjacent lease blocks (see Figure 5)
G&G ITR/PEIS Modeling Zone(s) in which the activity will occur (1-7):	2
Number of days during the overall activity period on which the sound source(s) listed in Section 1.3 will operate: (If the activity will occur in more than one Modeling Zone, provide the number of operating days within each Modeling Zone.)	1 day

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 mulitbeam echosounder. One ION Geophysical 2DHR air gun will be used with a maximum total volume of 20 in^3. The towing depth of this air gun will be 3 meters. The proposed geophysical investigation will cover a portion of lease block SM61 and SM66 (Figure 5). Approximately 35% of the survey will occur in SM61, and the remaining 65% of the survey will occur within SM66. The entire study area consists of a total of 43 north/northeast by south/southeast oriented primary transect lines and four (4) perpendicular tie-lines totaling 76 statute line miles of coverage. It is

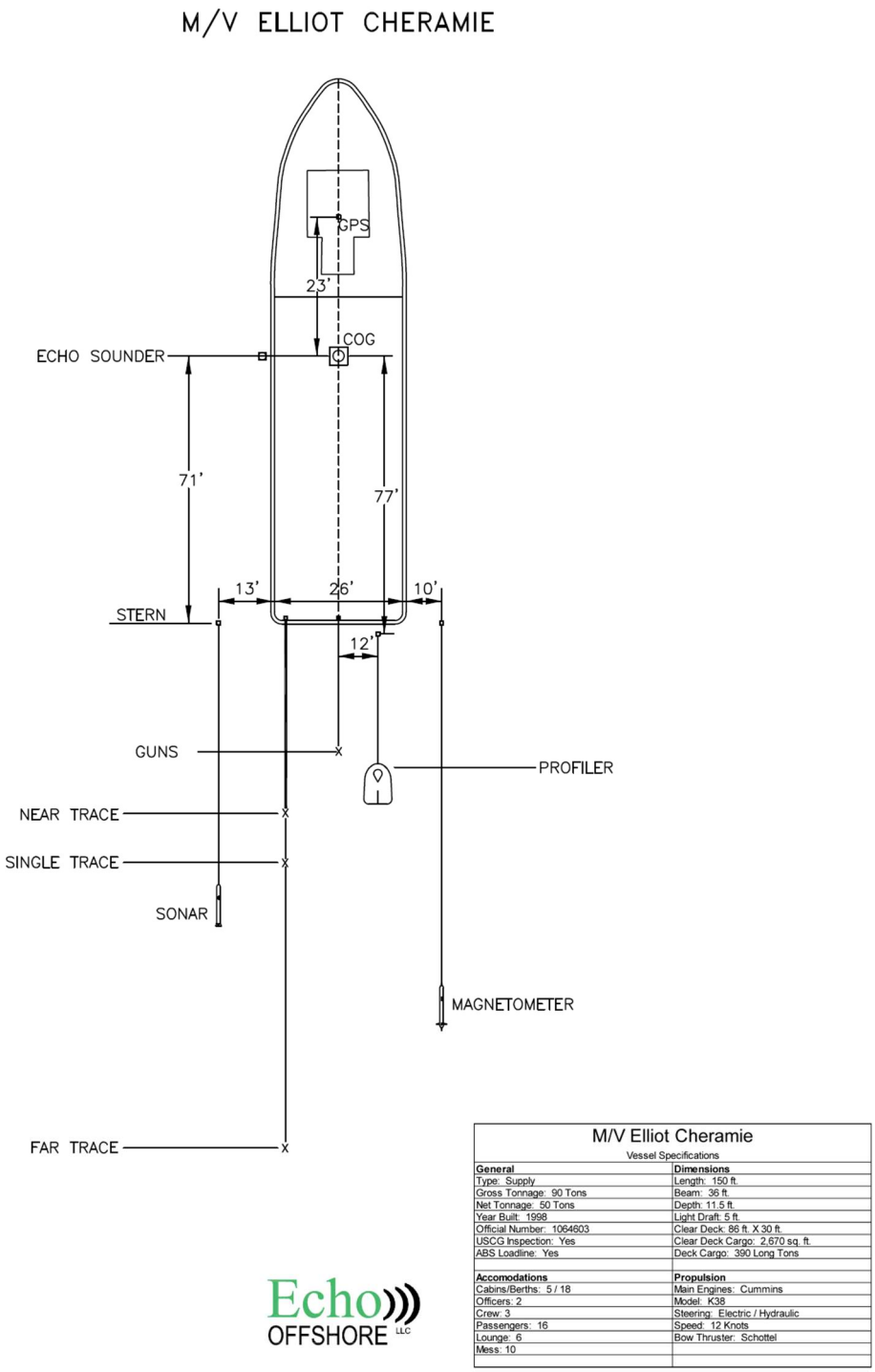
anticipated that the entirety of this project will take approximately 1.5 days. All transect lines will employ the high resolution sources. The single airgun will be utilized along 15 lines of the primary lines and the four (4) tie-line for a total of 32 statute miles. It is anticipated that the airgun will be utilized for less than 1 day.

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	1.5 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	1.5 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	1.5 days
2DHR	ION Geophysical	SG II	20 in^3	207 dB	231 dB	0 – 1,500 Hz	25 µ	6 sec	1-1.5 m	N/A	1 day

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 South Marsh Island Area



M/V Elliot Cheramie

Vessel Specifications

General	Dimensions
Type: Supply	Length: 150 ft.
Gross Tonnage: 90 Tons	Beam: 36 ft.
Net Tonnage: 50 Tons	Depth: 11.5 ft.
Year Built: 1998	Light Draft: 5 ft.
Official Number: 1064603	Clear Deck: 86 ft. X 30 ft.
USCG Inspection: Yes	Clear Deck Cargo: 2,670 sq. ft.
ABS Loadline: Yes	Deck Cargo: 390 Long Tons
Accomodations	**Propulsion**
Cabins/Berths: 5 / 18	Main Engines: Cummins
Officers: 2	Model: K38
Crew: 3	Steering: Electric / Hydraulic
Passengers: 16	Speed: 12 Knots
Lounge: 6	Bow Thruster: Schottel
Mess: 10	

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

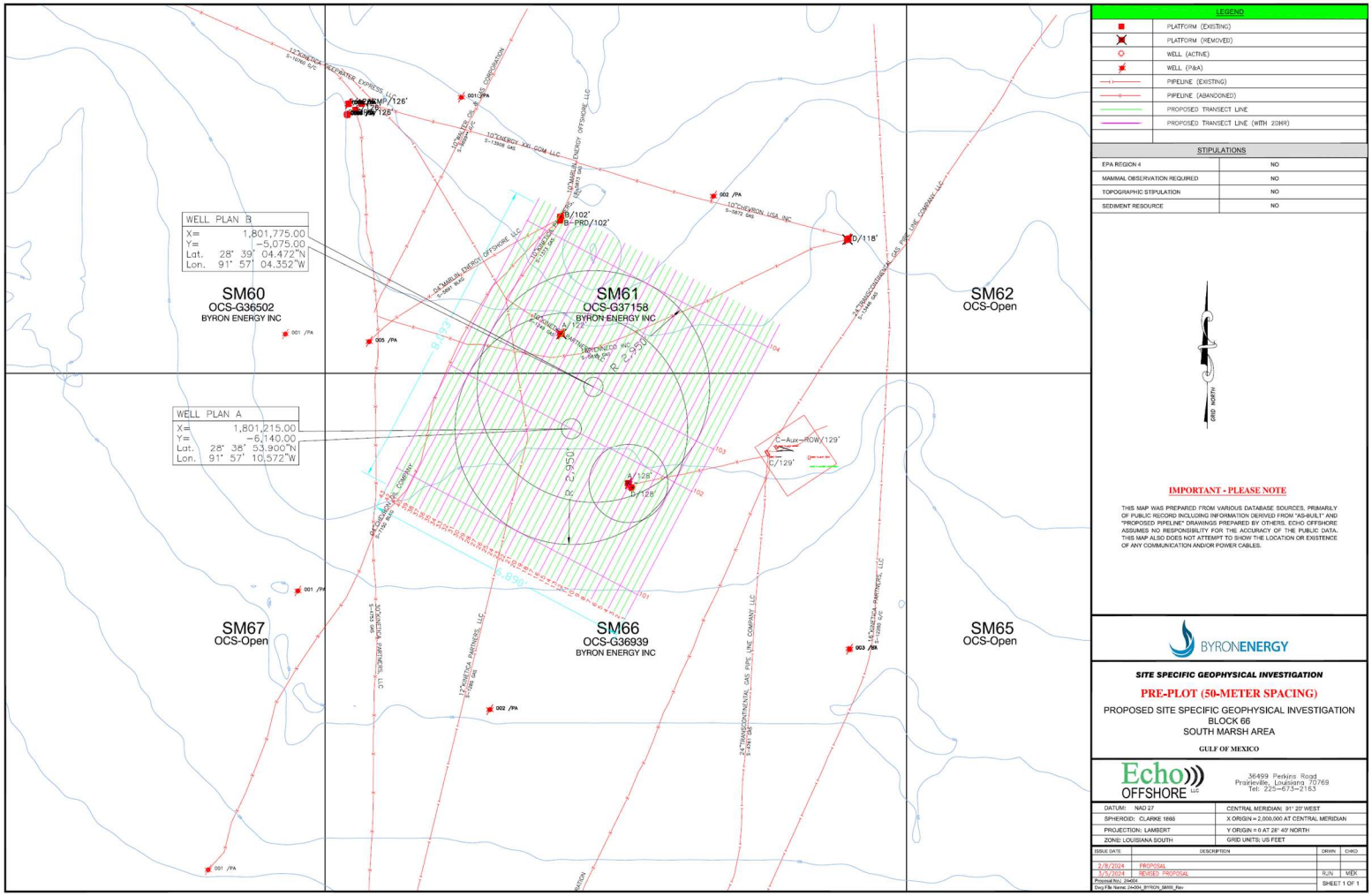


Figure 5. The proposed 2DHR air gun (20 in^3) investigation will occur during one day shown in magenta lines of 15 transects running north-northeast to south-southwest and four transects running northwest to southeast for a total of 32 statute miles across South Marsh Lease Area, lease block 61 and 66. There will also be 28 non-seismic HRG transects in light green over 44 statute miles.

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 only one day, with the entirety of the investigation expected to take approximately 1.5 days. The investigation will occur within South Marsh Island Area, lease blocks 61 and 66 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 southwest to the survey area traveling 96 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) or the newly expanded Rice's Whale Area between 100- and 400-m isobaths (Figure 3).

3 MARINE MAMMAL SPECIES AND ABUNDANCES

The published ITR (86 *Federal Register* 5322) 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[1]	Predicted Mean Abundance	Predicted Maximum Abundance
Rice's whale	*Balaenoptera edeni*	GOM	E/D	44	n/a
Sperm whale	*Physeter macrocephalus*	GOM	E/D	2,128	2,234
Pygmy sperm whale[2]	*Kogia breviceps*	GOM	N	2,234	6,117
Dwarf sperm whale[2]	*K. sima*	GOM	N	2,234	6,117
Cuvier's beaked whale[3]	*Ziphius cavirostris*	GOM	N	2,910	3,958
Gervais beaked whale[3]	*Mesoplodon europaeus*	GOM	N	2,910	3,958
Blainville's beaked whale[3]	*M. densirostris*	GOM	N	2,910	3,958
Rough-toothed dolphin	*Steno bredanensis*	GOM	N	4,853	n/a
Common bottlenose dolphin	*Tursiops truncatus truncatus*	GOM Oceanic, Coastal, and Continental Shelf	N	138,602	192,176

Common Name	Scientific Name	Stock	ESA Status[1]	Predicted Mean Abundance	Predicted Maximum Abundance
Clymene dolphin	*Stenella clymene*	GOM	N	11,000	12,115
Atlantic spotted dolphin	*S. frontalis*	GOM	N	47,488	85,108
Pantropical spotted dolphin	*S. attenuata attenuata*	GOM	N	84,014	108,764
Spinner dolphin	*S. longirostris longirostris*	GOM	N	13,485	31,341
Striped dolphin	*S. coeruleoalba*	GOM	N	4,914	5,323
Fraser's dolphin	*Lagenodelphis hosei*	GOM	N	1,665	n/a
Risso's dolphin	*Grampus griseus*	GOM	N	3,137	4,153
Melon-headed whale	*Peponocephala electra*	GOM	N	6,733	7,105
Pygmy killer whale	*Feresa attenuata*	GOM	N	2,126	n/a
False killer whale	*Pseudorca crassidens*	GOM	N	3,204	n/a
Killer whale	*Orcinus orca*	GOM	N	185	n/a
Short-finned pilot whale	*Globicephala macrorhynchus*	GOM	N	1,981	n/a

[1]ESA status: (E) – Endangered, (D) – Depleted, (N) – Not listed or designated as depleted under the Marine Mammal Protection Act.
[2]These species are too difficult to differentiate at sea and are grouped together in their abundance estimate.
[3]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 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, 2021b). 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^3 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^3, 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
High-frequency cetaceans	True porpoises, *Kogia,* 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, 2021b) 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).

Table 7. Maximum Level A exposures for the one day proposed single airgun seismic survey during summer 2024 estimated using the NMFS exposure estimation tool within ITR Zone 2 (NMFS, 2021b).

Common Name	Hearing Group	Predicted Mean Abundance	Zone 2 Exposures	Maximum Population Affected
Rice's (Bryde's) whale	Low-frequency	44	< 0.01	0%
Kogia sp. (Dwarf, pygmy sperm whale)	High-frequency	2,234	< 0.01	0%
Sperm whale	Mid-frequency	2,128	0	0%
Beaked whales (Cuvier's/Blainville's/Gervais)	Mid-frequency	2,910	0	0%
Rough-toothed dolphin	Mid-frequency	4,853	0	0%
Common bottlenose dolphin	Mid-frequency	138,602	0	0%
Clymene dolphin	Mid-frequency	11,000	0	0%

Common Name	Hearing Group	Predicted Mean Abundance	Zone 2 Exposures	Maximum Population Affected
Atlantic spotted dolphin	Mid-frequency	47,488	0	0%
Pantropical spotted dolphin	Mid-frequency	84,014	0	0%
Spinner dolphin	Mid-frequency	13,485	0	0%
Striped dolphin	Mid-frequency	4,914	0	0%
Fraser's dolphin	Mid-frequency	1,665	0	0%
Risso's dolphin	Mid-frequency	3,137	0	0%
Melon-headed whale	Mid-frequency	6,733	0	0%
Pygmy killer whale	Mid-frequency	2,126	0	0%
False killer whale	Mid-frequency	3,204	0	0%
Killer whale	Mid-frequency	185	0	0%
Short-finned pilot whale	Mid-frequency	1,981	0	0%

5.2 Level B Harassment of Marine Mammals

Level B exposures were calculated using the NMFS exposure estimation tool (NMFS, 2021b) 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 common bottlenose dolphins potentially having the highest percentage of the population at 0.02% or only 27.17 individuals in summer months (Table 8). The only other populations with any expected Level B harassment are the rough-toothed dolphin at 0.46 individuals (0.01%), the Atlantic spotted dolphin at 5.9 individuals (0.01%), and the false killer whale at 0.03 individuals (< 0.01%). 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, 2021b).

Common Name	Hearing Group	Predicted Mean Abundance	Zone 2 Exposures	Maximum Population Affected
Rice's (Bryde's) whale	Low-frequency	44	< 0.01	0%
Kogia sp. (Dwarf, pygmy sperm whale)	High-frequency	2,234	< 0.01	0%

Common Name	Hearing Group	Predicted Mean Abundance	Zone 2 Exposures	Maximum Population Affected
Sperm whale	Mid-frequency	2,128	< 0.01	0%
Beaked whales (Cuvier's/Blainville's/Gervais)	Mid-frequency	2,910	< 0.01	0%
Rough-toothed dolphin	Mid-frequency	4,853	0.46	0.01%
Common bottlenose dolphin	Mid-frequency	138,602	27.17	0.02%
Clymene dolphin	Mid-frequency	11,000	< 0.01	0%
Atlantic spotted dolphin	Mid-frequency	47,488	5.90	0.01%
Pantropical spotted dolphin	Mid-frequency	84,014	< 0.01	0%
Spinner dolphin	Mid-frequency	13,485	< 0.01	0%
Striped dolphin	Mid-frequency	4,914	< 0.01	0%
Fraser's dolphin	Mid-frequency	1,665	< 0.01	0%
Risso's dolphin	Mid-frequency	3,137	< 0.01	0%
Melon-headed whale	Mid-frequency	6,733	< 0.01	0%
Pygmy killer whale	Mid-frequency	2,126	< 0.01	0%
False killer whale	Mid-frequency	3,204	0.03	< 0.01%
Killer whale	Mid-frequency	185	< 0.01	0%
Short-finned pilot whale	Mid-frequency	1,981	< 0.01	0%

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 one-day investigation, with no individuals of any species estimated to be exposed. Only 0.02% of the common bottlenose dolphin population are estimated to be exposed to Level B harassment, with 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^3 single air gun as the closest available survey type in the GOM exposure estimator tool instead of the proposed 20 in^3 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 only occur within a portion of one lease block or 32 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. There will be no adverse effects to marine life. The use of airgun sources will follow BOEM NTL 2016-G02.

Noise from source activities can create a disturbance to marine mammals. To mitigate the impact, there will be real-time MMO (marine mammal observers) aboard the source vessel during the one day of 2DHR airgun operation. This allows detection of marine mammals 24/7 during operations and take avoiding action and/or vessel standby until the area is free for seismic data acquisition to recommence. Another control used are soft start procedures in line with JNCC requirements where the source airgun steadily increases over a period of 20 minutes to allow mammals to vacate the area. This requirement is

monitored for compliance by the MMO. Fluids are not dispersed into the environment from these normal subsea and source operations.

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 ANCILLARY ACTIVITIES CERTIFICATION

ANCILLARY ACTIVITES CERTIFICATION

SOUTH MARSH ISLAND AREA – LEASE BLOCK 66

The proposed ancillary activities in this notification will be conducted in accordance with the performance standards in 30 CFR 550.202(a), (b), (d), and (e) and applicable protection measures listed in Appendix F of BOEM NTL No. 2009-G34 Reissued: June 19, 2020.

Byron Energy Inc

Lessee or Operator

Certifying Official

April 8, 2024
Date

13 REFERENCES

50 Code of Federal Regulations (CFR) § 216.104. 2009. Submission of Requests.

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.

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). 2021b. 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.