



9805 Katy Freeway, Suite G200
Houston, Texas 77024

Transmitted via email to: pr.itp.applications.noaa.gov

October 3, 2023

Jolie Harrison, Division Chief
Permits and Conservation Division, Office of Protected Resources
1315 East-West Highway, F/PR1 Room 13805
Silver Spring, Maryland 20910

RE: **Incidental Take Authorization**
Wellbore Seismic Acquisition (Vertical Seismic Profile)
Lease OCS-G 36676, Atwater Valley Block 138
Well No. 002ST01 (API No. 60-818-40080-01)

Ms. Harrison:

Please find the attached request for an incidental take authorization under section 101(a)(5) of the Marine Mammal Protection Act of 1972 (MMPA), as amended, for the potential take of marine mammals incidental to conducting a Borehole Seismic Survey by Murphy Exploration & Production Company – USA (Murphy).

Murphy as the designated operator of Lease OCS-G 36676, Atwater Valley (AT) Block 138; proposes to conduct Seismic Profile (VSP) operations on the following:

AT 138. Well No. 002ST01: AT Block 138, Well No. 002ST01, API No. 60-818-40080-01, (Initial Exploration Plan, Control No N-10161), and any sidetrack or bypass thereof. No explosives will be used in this operation.

Murphy's upcoming VSP survey is subject to the provisions of the MMPA and the Regulations Governing Taking Marine Mammals Incidental to Geophysical Surveys Related to Ancillary Oil and Gas Activities in the Gulf of Mexico (50 CFR § 217, Subpart S); therefore, Murphy respectfully requests issuance of a Letter of Authorization for the proposed activities.

In support of this request, please find the attached Letter of Authorization Application.

Murphy will be on location with the *Noble Valiant Drillship* on or around October 15, 2023 and ready to conduct the survey as early as November 1, 2023; therefore, Murphy respectfully requests an expedited review.

Should you have any questions or require additional information, please contact Kelley Pisciola, J. Connor Consulting, Inc. at 281-698-8519 or kelly.pisciola@jccteam.com.

Sincerely,
Murphy Exploration & Production Company - USA

A handwritten signature in blue ink, appearing to read "Sara Dingwall", is written over a light blue horizontal line.

Sara Dingwall
Sr. HSE Specialist - Regulatory

/kp

Ancillary Activity G&G Information and LoA Application

Murphy Exploration & Production Company - USA

Atwater Valley Block 138

Contact Person:	
Name:	Sara Dingwall
Title:	Sr. HSE Specialist - Regulatory
Telephone Number:	(281) 546-4036

A. Type of Survey

Please indicate which type of survey will be conducted during the planned activity	
<input checked="" type="checkbox"/>	Deep Penetration Seismic (greater than 1,500 in³ total airgun array volume) <ul style="list-style-type: none">• 2D Seismic-towed Streamer• 2D Seismic-Sea-floor Cable or Nodes• 3D Seismic-towed Streamer• 3D Seismic-Sea-floor Cable or Nodes• NAZ• WAZ• 4D (Time Lapse)• Vertical Cable• Borehole Seismic (VSP)
<input type="checkbox"/>	Shallow Penetration Seismic (less than 1,500 in³ total airgun array volume) <ul style="list-style-type: none">• Surface Vessel• Surface Vessel and AUV/ROV• Borehole Seismic (VSP)
<input type="checkbox"/>	HRG Surveys (no airguns used) <ul style="list-style-type: none">• Surface vessel• AUV/ROV• Both
<input type="checkbox"/>	Other <u>Describe (if Other):</u>

B. Date, Location, and Operations Information:

Question:	Response:
Purpose of the Activity:	<p>The primary objectives of the Rig Source VSP are for clean, first break travel time information for vertical time-depth pairs and derived seismic interval velocities. Rig source acquisition geometry also provide for high resolution seismic imaging along the wellbore for an accurate well to seismic tie (seismic calibration).</p> <p>Source will be stationary. Choice of crane will be made closer to survey time based on rig activity and current direction.</p>
Proposed Start Date:	~November 01, 2023
Proposed End Date:	~November 03, 2023
Overall Duration of the Activity (days):	~2 days
Well Name:	Well No. 002ST01 (API No.608184008000)
Lease Number(s):	OCS-G 36676
OCS Area(s):	Atwater Valley
OCS Lease Block(s):	138
Range of water depths (ft or m):	3,444'
Average water depth (ft or m):	3,444'
Areal extent of the survey area: (in OCS lease blocks or km ²) (Attach GIS file(s) of survey lines and/or survey area perimeter)	1 lease block AT 138 – See attached map
G&G ITR/PEIS Modeling Zone(s) in which the activity will occur (1-7):	5
Number of days during the overall activity period on which the sound source(s) listed in Section C will operate: (If the activity will occur in more than one Modeling Zone, provide the number of operating days within each modeling zone.)	~2 days (24 hours)

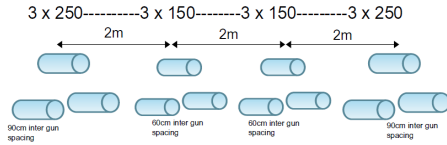
C. Sound Sources:

- List all survey-related instruments that emit acoustic energy into the water column, including but not limited to airgun or airgun arrays, sub-bottom profilers, bubble pulsers, sparkers, side scan sonars, multi-beam sonars, single-beam echosounders, ultra-short baseline (USBL) position systems, pressure inverted echosounder (PIES), etc.
- For airgun arrays, please attach a diagram showing the layout (geometry) of the array and list of airgun sizes (**Attached**).

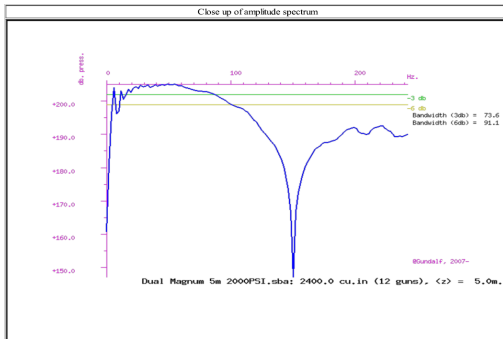
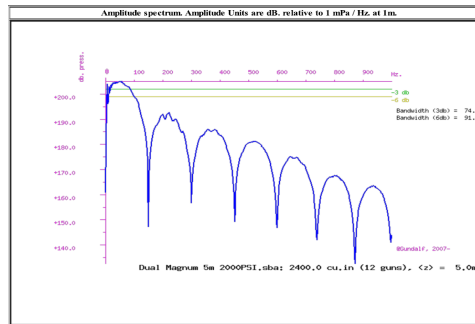
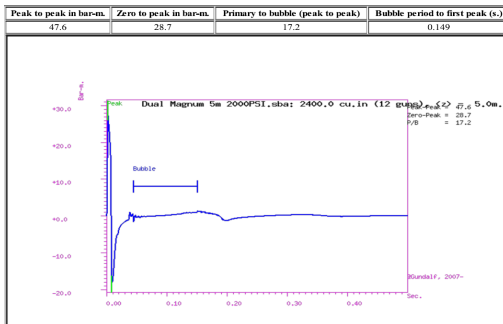
Array parameter	Array value
Manufacturer	Sercel
Model	G-SOURCE 150 and G-SOURCE 250
Number of guns	12
Total volume (cu.in.)	2400.0 (39.3 litres)
Peak to peak in bar-m.	47.6 (4.76 MPa, 254 db re 1 muPa. at 1m.)
Zero to peak in bar-m.	28.7 (2.87 MPa, 249 db re 1 muPa. at 1m.)
RMS pressure in bar-m.	3.06 (0.306 MPa, 230 db re 1 muPa. at 1m.)
Primary to bubble (peak to peak)	17.2
Bubble period to first peak (s.)	0.149
Maximum spectral ripple (dB): 10.0 - 50.0 Hz.	4.42
Maximum spectral value (dB): 10.0 - 50.0 Hz.	205
Average spectral value (dB): 10.0 - 50.0 Hz.	204
Total acoustic energy (Joules)	129344.5
Total acoustic efficiency (%)	23,8
Frequency Range of Guns	Frequencies could range from 4 Hz to 90 Hz
Pulse Duration & Pulse Range	<p>Pulse duration: 0.04 seconds</p> <p>Pulse rate: For the VSP from 32,067' to 21,500' there will be 53 stations. At each of the 53 stations we shoot at least 5 times (but it can be more if the traces look noisy). This can take from 10 to 20 minutes. Time to move from one station to the next is ~15 minutes. For the Check Shot from 21,500' to 3,444' there will be 9 stations. At each of the 9 stations we shoot at least 3 times (but it can be more if the traces look noisy). This can take from 7 to 10 minutes. Time to move from one station to the next is ~25 minutes.</p>

Dual Magnum Air Gun Array

- 12 x G-Guns
- Peak to Peak output: 47 +/- 0.678 (4.7 +/- 0.0678 MPa, ~ 253 db re 1 muPa. at 1m.) (15' depth)*
- RMS Pressure in bar-m 3.3 (0.33 MPa, 230 db re 1 muPa. at 1m.)*
- SEL (Sound Exposure Level) 154.1 dB re 1muPa²-s (Mxx) (10Hz - 25 kHz) 148.1 at 500 M*
- Total Volume 2400 ins³ / Firing Pressure 2,000 PSI



Array parameter	Array value
Number of guns	12
Total volume (cu.in.)	2400.0 (39.3 litres)
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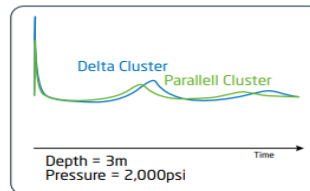


Specifications



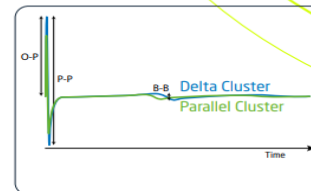
	G-SOURCE 150	G-SOURCE 250
Volume	45 • 50 • 60 • 70 • 80 • 90 • 100 • 110 • 120 • 130 • 140 • 150	180 • 200 • 210 • 220 • 250
Length	L = 597mm	L = 597mm
Width	W = 292mm	W = 292mm
Weight	55kg	65kg

High-energy cluster configuration



Near field signatures

The Delta Cluster & Parallel Cluster will produce a higher peak performance within a similar overall arrangement of a single impulsive source. The Delta cluster getting the edge over the Parallel by lowering the fundamental frequency.



Far field amplitude spectra

Sercel developed the Delta Cluster by adding a third impulsive source to the Parallel cluster assembly. It generates great output performance with unrivalled acoustic signature (+33 % in Peak-Output, + 19% in peak-to-bubble).

D. Vessel Information:

Vessel Type	Vessel Name	Registration Number	Registered Owner	Typical survey speed (knots)	Highest Travelling Speed (knots)	Home Port
DP Drillship	Noble Valiant	IMO: 9604158 MMSI 538010623	Noble	NA	NA	Marshall Islands
Vessel/Activity Support Base:	Port Fourchon, LA					
Transit Route: (Describe clearly or attach a map)	Direct from Port Fourchon to lease block.					

E. Take Estimate:

[Insert the “Summary for NOAA” table here after completing all required inputs on the “Applicant Data Entry” spreadsheet in the Take Calculator Excel file or alternative tool developed with/by NMFS]

Attached.

Gulf of Mexico Seismic Survey Exposure Calculator

Compute estimated marine animal exposures based on user-defined seasonal schedule, survey configuration, and location.

Instructions:

- Select the survey type and zone number (2-7, operations in Zone 1 are not covered by the incidental take regulations) from the drop down lists (click in the cell to see the dropdown arrow)

- Type in the number of days of acquisition per season in the "Schedule" section (Winter: December - March, Summer: April - November)

Report tables are automatically updated based on user selections.

Zone Map:

Parameters				Schedule		
Survey Type	COIL			Season	# days	
Zone Number	5			Summer	2	
				Winter	2	

Exposures by Metric				Level A Color Legend:		
	Summer	Winter	Total			
Level A					Level A SEL	
Low-Frequency Hearing Group					Level A Peak	
Bryde's whale	0.02	0.02	0.04	*If no color highlight, both Level A peak and SEL are <0.01		
High-Frequency Hearing Group						
Kogia (dwarf, pygmy sperm whale)	1.05	1.05	2.10			
Level B						
Low-Frequency Hearing Group						
Bryde's whale	0.86	0.86	1.72			
Mid-Frequency Functional Hearing Group						
Beaked whales (Cuvier/Blainville/Gervais)	225.50	232.18	457.69			
Bottlenose dolphin	177.82	189.16	366.98			
Short-finned pilot whale	21.04	21.35	42.39			
Sperm whale	52.61	52.13	104.74			
Atlantic spotted dolphin	73.20	75.56	148.76			
Clymene dolphin	106.67	112.34	219.01			
False killer whale	26.81	27.63	54.44			
Fraser's dolphin	12.43	12.62	25.05			
Killer whale	0.72	0.74	1.46			
Melon-headed whale	72.75	73.81	146.55			
Pantropical spotted dolphin	484.04	509.78	993.82			
Pygmy killer whale	16.85	17.37	34.22			
Risso's dolphin	31.29	33.01	64.30			
Rough-toothed dolphin	38.72	39.92	78.65			
Spinner dolphin	129.70	136.60	266.30			
Striped dolphin	41.66	43.88	85.54			
High-Frequency Hearing Group						
Kogia (dwarf, pygmy sperm whale)	17.93	18.83	36.76			

Total take, including Level B Scaling (where appropriate)		
Summer	Winter	Total
0.87899813	0.88296308	1.76
225.50	232.18	457.69
177.82	189.16	366.98
21.04	21.35	42.39
52.61	52.13	104.74
73.20	75.56	148.76
106.67	112.34	219.01
26.81	27.63	54.44
12.43	12.62	25.05
0.72	0.74	1.46
72.75	73.81	146.55
484.04	509.78	993.82
16.85	17.37	34.22
31.29	33.01	64.30
38.72	39.92	78.65
129.70	136.60	266.30
41.66	43.88	85.54
18.98	19.88	38.86

F. Monitoring and Mitigation Plans:

Question:	Response:
Please indicate which set of monitoring and mitigation measures from the ITR apply to the planned activity:	All monitoring and mitigation measures in the ITRs applicable to Airgun Surveys with a total volume greater than 1,500 cubic inches will be followed. Appendix F of BOEM NTL No. 2009-G34 Appendices A, B, and C to NMFS 2020 BiOp for the GoMex Oil and Gas Program
Confirm that you will apply this set of monitoring and mitigation measures during the activity:	Yes, we will apply these measures during the VSP survey.

G. Attach Certification

Attach a certification signed by an authorized company official attesting that you will conduct your ancillary activity in accordance with the performance standards in 30 CFR 550.202(a), (b), (d), and (e) and any applicable protection measures listed in Appendix F of BOEM NTL No. 2009-G34 Reissued: June 19, 2020.

Certification attached.

ANCILLARY ACTIVITIES CERTIFICATION

ATWATER VALLEY BLOCK 138

LEASE OCS-G 36676

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

Reissued: June 19, 2020

Murphy Exploration & Production Company - USA

Lessee or Operator

A handwritten signature in blue ink, appearing to read "S. D. Dwyer", is written over a horizontal line.

Certifying Official

October 2, 2023

Date

H. Map of Survey Area and Transit Route

Location Plat Attached.

Vicinity/Transit Map Attached.

Note: There are no shapefiles for survey area. Please find Point Source on the following page.

Point Source:

NAD 1927 UTM Zone 16N

Location	Block Calls				Latitude	Longitude	X	Y
AT138-2ST1 SL	7,291	FEL	5,739	FNL	27° 48' 27.6902" N	89° 38' 50.7424" W	784,708.95	10,100,180.62

A T 0 9 4

Location	Block Calls			Latitude	Longitude	X	Y	WD (ft)	
AT138-2ST1 SL	7,291	FEL	5,739	FNL	27° 48' 27.6902" N	89° 38' 50.7424" W	784,708.95	10,100,180.62	3,444

AT137

AT139

● AT138-2ST1 SL

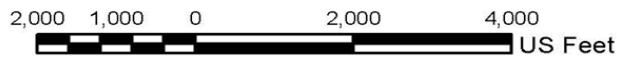
138

1 ST0BP2 1 ST0BP0
ST0BP1

Sturgis N

X=792,002
Y=10,090,100

AT182



Scale: 1" = 2,000'

NAD 1927 UTM Zone 16N



Atwater Valley
Block 138 OCS-G36676

Oso
AT138-2ST1
Well Location Map
Public



Murphy Exploration & Production Co.

Vicinity Map
Atwater 138

