## Letter of Authorization Application – Addendum to G&G Permit Application

Long Form – Assumes proprietary materials of BOEM G&G application are not provided to NMFS

BOEM has not provided an application number at this time. It will be forwarded as soon as issue/received.

## A. Type of Survey:

Please indicate which type of survey will be used in the proposed activity
Deep Penetration Seismic (greater than 1,500 in <sup>3</sup> 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)
Shallow Penetration Seismic (less than 1.500 in <sup>3</sup> total airgun array volume)
• Surface Vessel
• Surface Vessel and AUV/ROV
Borehole Seismic (VSP)
HRG Surveys (no airguns used)
• Surface vessel
• AUV/ROV
• Both
Other
Describe (if Other): Please see attachment: Confidential Acquisition Plan

B.	Survey	Area	and	Operational	Plan:
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Question:	Response
<b>Overall Duration of the Activity</b> (days):	10 (total) including streamer deployment or 3 days of sound source operation
Areal extent of the survey area:	21OCS blocks
(in OCS lease blocks or km <sup>2</sup> )	
(Attach GIS file(s) of survey lines and/or	Map provided as a separate attachment
survey area perimeter)	
G&G ITR/PEIS Modeling Zone(s) in which the activity will occur (1-7):	Zone 6 (3 days) Western GoM in intermediate waters 300-1,000 m deep.
Number of days during the overall activity	All (3 days); approx. 4,000 production shots
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.)	

#### **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.

Energy Source	Manu- facturer	Model	Total Array Volume & Number of Elements (cubic inches or Liters.)	Source Level (SL) in dB re 1µPa@1m in water (RMS)	Source Level (SL) in dB re 1µPa@1m in water (Peak to Peak)	<b>Operating</b> <b>Frequency</b> (Hz, kHz, range)	Pulse Duration (seconds, milli- seconds)	Pulse Rate (or Cycle) (Pulses per second or minute)	<b>Towing</b> <b>Depth of</b> <b>the Source</b> (ft or m)	Towing Depth of the Receiver(s) (ft or m)	Duration of Use (Number of Days or Percent of Active Sound Source Days)
Air Array	Bolt	LLXT 1900	1650cuin 9 elements	230	256	2-200		1 pulse approximat ely every 8 seconds	9m	NA	3
Echosounder	Krongsberg	EM122	NA	NA	NA	12kHz		Max 1 per second	NA	NA	3

Acquisition Plan:

Please see attachment: Confidential Acquisition Plan

#### **D.** 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]

## **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:



CGG is requesting approval for February 1, 2023, through November 30, 2023.

1) 3 days in winter in zone 6



Parameters	Schedule		
Survey Type	3D NAZ	Season	# day
Zone Number	6	Summer	0
		Winter	3

Exposures by Metric	Level A Color Legend:							
	Summer	Winter	Total		Level A	SEL		
Level A				Level A Peak				
Low-Frequency Hearing Group	"if no color hig	hlight, both level A pr <0.01	sak and SEL are					
Bryde's whale	< 0.01	0.01	0.01					
High-Frequency Hearing Group	Total take	, including Lev	el B Scaling					
Kogia (dwarf, pygmy sperm whale)	< 0.01	0.65	0.65	(wł	nere appropria	te)		
Level B				Summer	Winter	Total		
Low-Frequency Hearing Group								
Bryde's whale	< 0.01	2.07	2.07	< 0.01	2.07998433	2.08		
Mid-Frequency Functional Hearing Group								
Beaked whales (Cuvier/Blainville/Gervais)	< 0.01	442.82	442.82	< 0.01	442.82	442.82		
Bottlenose dolphin	< 0.01	198.26	198.26	< 0.01	198.26	198.26		
Short-finned pilot whale	< 0.01	78.33	78.33	< 0.01	78.33	78.33		
Sperm whale	< 0.01	100.71	100.71	< 0.01	100.71	100.71		
Atlantic spotted dolphin	< 0.01	82.79	82.79	< 0.01	82.79	82.79		
Clymene dolphin	< 0.01	253.96	253.96	< 0.01	253.96	253.96		
False killer whale	< 0.01	45.91	45.91	< 0.01	45.91	45.91		
Fraser's dolphin	< 0.01	23.96	23.96	< 0.01	23.96	23.96		
Killer whale	< 0.01	1.31	1.31	< 0.01	1.31	1.31		
Melon-headed whale	< 0.01	118.46	118.46	< 0.01	118.46	118.46		
Pantropical spotted dolphin	< 0.01	587.71	587.71	< 0.01	587.71	587.71		
Pygmy killer whale	< 0.01	29.72	29.72	< 0.01	29.72	29.72		
Risso's dolphin	< 0.01	47.70	47.70	< 0.01	47.70	47.70		
Rough-toothed dolphin	< 0.01	62.27	62.27	< 0.01	62.27	62.27		
Spinner dolphin	< 0.01	14.09	14.09	< 0.01	14.09	14.09		
Striped dolphin	< 0.01	65.04	65.04	< 0.01	65.04	65.04		
High-Frequency Hearing Group								
Kogia (dwarf, pygmy sperm whale)	< 0.01	21.79	21.79	< 0.01	22.43	22.43		

# E. Mitigation and Monitoring Efforts:

Question:	Response:			
Please indicate which set of monitoring and mitigation measures from the ITR's apply to the planned activity:	All monitoring and mitigation measures in the ITRs applicable to Airgun Surveys with a total volume >400 cu in will be followed. See attached list for summary of applicable monitoring and mitigation measures. BOEM NTL 2016-G02 revised 6/19/2020 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 3D streamer source effort.			

#### F. Map of Survey Area and Transit Route



[Insert map here or attach as a separate file]

Additional Notes:

Other was chosen as this is a specific proprietary acquisition.

Water depths in the area range from 300m to over 1,000m with most of the activities taking place in waters greater than 400m. The requested dates for the LOA are February 1, 2023, through November 30, 2023.