United States Government Memorandum December 8, 2020

To: Public Information
From: Plan Coordinator, OLP, Plans Section (GM235D)
Subject: Public Information Copy of Plan

Control#	-	N-10134
Type	-	Initial Exploration Plan
Lease(s)	-	OCS-G 35833 Block – 759 Mississippi Canyon Area
Operator	-	BOE Exploration & Production LLC
Description	-	Subsea Wells A,A-ALT,B,B-ALT

Attached is a copy of the subject plan for public comments on issues that should be addressed in an Environmental Assessment.

It has been deem submitted as of this date and is under review for approval.

Henry Emembolu
Plan Coordinator

16564 E Brewster Rd, Ste 203
Covington, LA 70433

November 16, 2020

Bureau of Ocean Energy Management
Gulf of Mexico OCS Region Office
1201 Elmwood Park Boulevard
New Orleans, LA 70123

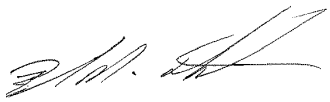
ATTN: Plans Section

BOE Exploration & Production has reviewed regulations for the activities proposed in this plan and has included all relevant proprietary and public information and documentation regarding those activities.

The activities proposed in this plan are expected to commence on or around March 1, 2021.

All questions and/or correspondence regarding this plan should be submitted to Brandon Hebert at 985.666.0143 or via email at bhebert@beaconoffshore.com.

Respectfully,



Brandon Hebert
Senior Regulatory Coordinator
Beacon Offshore Energy

INITIAL EXPLORATOIN PLAN

PUBLIC INFORMATION

Lease Number: OCS-G 35833

Area/Block: MC 759

Prospect: Zephyrus

Well(s): A / A-Alt / B / B-Alt

BOE Exploration & Production (03572)
16564 E Brewster Rd, Ste 203
Covington, LA 70433

Submitted By:
Brandon Hebert
(985) 666-0143
bhebert@beaconoffshore.com

Estimated Start Date: March 1, 2021

APPENDIX A
PLAN CONTENTS

A) PLAN INFORMATION
Included in the attachments for this appendix is the OCS Plan Information Form 137, providing information on the drilling and temporary abandonment activity proposed in this plan.

The status of previously proposed and approved activities in Exploration and/or Development Plans for this lease are as follows:

This is the first Exploration Plan submitted for the subject lease.

B) LOCATION
A map depicting the proposed surface and bottomhole location(s) and is included in the attachment(s) to this appendix of the proprietary information copy of this plan.

A map depicting the proposed surface location(s) is included in the attachment(s) to this appendix of the public information copy of this plan.

C) SAFETY AND POLLUTION PREVENTION FEATURES
BOE Exploration & Production proposes utilizing a drillship or dynamically positioned (DP) semisubmersible as its mobile offshore drilling unit to conduct the activities proposed in this plan. Rig specifications will be included in each Application for Permit to Drill.

Safety features on the drilling unit selected will include pollution prevention, well control, and blowout prevention equipment as described in Title 30 CFR Part 250, Subparts C, D, E, and G; and as further clarified by DOI Notices to Lessees, and current policy making invoked by the DOI, Environmental Protection Agency and the U.S. Coast Guard. A Safety and Environmental Management System that is consistent with Title 30 CFR Part 250 Subparts “O” and “S” will be in effect during the proposed operations. In addition, the Well Control System, consisting of subsea BOP equipment, BOP control system, choke and kill lines, choke manifold, mud-gas separator, circulation system and monitoring (PVT) equipment will be installed and available upon demand when the riser and BOP is attached to the well. The emergency systems consisting of secondary BOP activation equipment, firefighting and abandonment equipment utilized will meet or exceed the regulatory requirements of the DOI and USCG.

Pollution prevention measures will include the installation of curbs, gutters, drip pans, and drains on drilling deck areas to collect all contaminants and debris.

The drilling rig and each of the marine vessels servicing the rig and its operations will be equipped with all U.S. Coast Guard required navigational safety aids to alert ships of its presence in all weather conditions.

D) STORAGE TANKS AND/OR PRODUCTION VESSELS

The table below provides information on oil storage tanks with a capacity of 25 barrels or more that will be used to conduct the activities proposed in this plan.

Type of Storage Tank	Type of Facility	Tank Capacity (bbls)	Number of Tanks	Total Capacity (bbls)	Fluid Gravity (API)
Fuel Oil	Drillship	5514	2	11028	No. 2 Diesel
Fuel Oil	Drillship	12458	2	24916	No. 2 Diesel
Fuel Oil	Drillship	12065	2	24130	No. 2 Diesel
Fuel Oil	Drillship	640	2	1280	No. 2 Diesel
Fuel Oil	Drillship	480	3	1440	No. 2 Diesel
Fuel Oil	Drillship	80	1	80	No. 2 Diesel
Fuel Oil	DP Semisubmersible	4541	2	9082	No. 2 Diesel
Fuel Oil	DP Semisubmersible	3392	2	6784	No. 2 Diesel
Fuel Oil	DP Semisubmersible	629	1	629	No. 2 Diesel
Fuel Oil	DP Semisubmersible	164	1	164	No. 2 Diesel
Fuel Oil	DP Semisubmersible	30	1	30	No. 2 Diesel

E) POLLUTION PREVENTION

In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. The state of Florida is not an affected state.

F) ADDITIONAL MEASURES

BOE Exploration & Production will comply with regulations in 30 CFR Part 250 and will not take any additional measures beyond those stated in referenced regulations regarding safety, pollution prevention, and early spill detection measures.

G) SERVICE FEE

In accordance with 30 CFR 550.125, included in the attachments for this appendix is a copy of the pay.gov receipt for the required service fee for the activities proposed in this plan.

OCS PLAN INFORMATION FORM

OCS PLAN INFORMATION FORM

General Information

Type of OCS Plan:	X	Exploration Plan (EP)	Development Operations Coordination Document (DOCD)	

Company Name: BOE Exploration & Production LLC	BOEM Operator Number: 03572
Address: 16564 E Brewster Rd, Ste 203	Contact Person: Brandon Hebert
Covington, LA 70433	Phone Number: 985.666.0143
	E-Mail Address: bhebert@beaconoffshore.com

If a service fee is required under 30 CFR 550.125(a), provide the	Amount paid	$7346	Receipt No.	26QCF68T

Project and Worst Case Discharge (WCD) Information

Lease(s): OCS-G 35833			Area: MC		Block(s): 759		Project Name (If Applicable): Zephyrus				
Objective(s)	X	Oil		Gas		Sulphur		Salt	Onshore Support Base(s): Port Fourchon, LA		
Platform/Well Name: Loc B			Total Volume of WCD: 6,018,000 bbls						API Gravity: 23.7°		
Distance to Closest Land (Miles): 49			Volume from uncontrolled blowout: 166,933 BOPD								

Have you previously provided information to verify the calculations and assumptions for your WCD?		Yes	X	No
If so, provide the Control Number of the EP or DOCD with which this information was provided				
Do you propose to use new or unusual technology to conduct your activities?		Yes	X	No
Do you propose to use a vessel with anchors to install or modify a structure?		Yes	X	No
Do you propose any facility that will serve as a host facility for deepwater subsea development?		Yes	X	No

Description of Proposed Activities and Tentative Schedule (Mark all that apply)

Proposed Activity	Start Date	End Date	No. of Days
Drill / TA Well Location A / A-Alt	03/01/2021	06/19/2021	110
Drill / TA Well Location B / B-Alt	01/01/2022	04/21/2022	110
Note: Alternate locations are intended to be utilized as contingent drilling locations in the event of re-spud only.			

Description of Drilling Rig

	Jackup	X	Drillship		Caisson		Tension leg platform
	Gorilla Jackup		Platform rig		Fixed platform		Compliant tower
	Semisubmersible		Submersible		Spar		Guyed tower
X	DP Semisubmersible		Other (Attach Description)		Floating production system		Other (Attach Description)
Drilling Rig Name (If Known):							

Description of Lease Term Pipelines

From (Facility/Area/Block)	To (Facility/Area/Block)	Diameter (Inches)	Length (Feet)
N/A			

OCS PLAN INFORMATION FORM (CONTINUED)
Include one copy of this page for each proposed well/structure

Proposed Well/Structure Location

Well or Structure Name/Number (If renaming well or structure, reference previous name): Loc A					Previously reviewed under an approved EP or DOCD?		Yes	X	No
Is this an existing well or structure?		Yes	X	No	If this is an existing well or structure, list the Complex ID or API No.				
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?						X	Yes		No

WCD info	For wells, volume of uncontrolled blowout (Bbls/day): 103,200	For structures, volume of all storage and pipelines (Bbls):	API Gravity of fluid	23.7°

	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	OCS-G 35833		OCS OCS
Area Name	Mississippi Canyon		
Block No.	759		
Blockline Departures (in feet)	N/S Departure: F_S_L 4199.00	N/S Departure: F___L	N/S Departure: F___L N/S Departure: F___L N/S Departure: F___L
	E/W Departure: F_E_L 6437.00	E/W Departure: F___L	E/W Departure: F___L E/W Departure: F___L E/W Departure: F___L
Lambert X-Y coordinates	X: 864763.00	X:	X: X: X:
	Y: 10236839.00	Y:	Y: Y: Y:
Latitude/ Longitude	Latitude 28° 11’ 16.5067” N	Latitude	Latitude Latitude Latitude
	Longitude 89° 24’ 29.8165” W	Longitude	Longitude Longitude Longitude

Water Depth (Feet): 3527.00	MD (Feet):	TVD (Feet):	MD (Feet): MD (Feet): MD (Feet):	TVD (Feet): TVD (Feet): TVD (Feet):
Anchor Radius (if applicable) in feet: N/A				

Anchor Locations for Drilling Rig or Construction Barge (If anchor radius supplied above, not necessary)

Anchor Name or No.	Area	Block	X Coordinate	Y Coordinate	Length of Anchor Chain on Seafloor
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	

OCS PLAN INFORMATION FORM (CONTINUED)

Proposed Well/Structure Location

Well or Structure Name/Number (If renaming well or structure, reference previous name): Loc A-Alt					Previously reviewed under an approved EP or DOCD?		Yes	X	No
Is this an existing well or structure?		Yes	X	No	If this is an existing well or structure, list the Complex ID or API No.				
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?						X	Yes		No

WCD info	For wells, volume of uncontrolled blowout (Bbls/day): 103,200	For structures, volume of all storage and pipelines (Bbls):	API Gravity of fluid: 23.7°

	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	OCS-G 35833		OCS OCS
Area Name	Mississippi Canyon		
Block No.	759		
Blockline Departures (in feet)	N/S Departure: F_S_L 4249.00	N/S Departure: F____L	N/S Departure: F____L N/S Departure: F____L N/S Departure: F____L
	E/W Departure: F_E_L 6437.00	E/W Departure: F____L	E/W Departure: F____L E/W Departure: F____L E/W Departure: F____L
Lambert X-Y coordinates	X: 864763.00	X:	X: X: X:
	Y: 10236889.00	Y:	Y: Y: Y:
Latitude/ Longitude	Latitude 28° 11’ 17.0020” N	Latitude	Latitude Latitude Latitude
	Longitude 89° 24’ 29.8280” W	Longitude	Longitude Longitude Longitude
Water Depth (Feet): 3527.00		MD (Feet): / TVD (Feet):	MD (Feet): / TVD (Feet): MD (Feet): / TVD (Feet): MD (Feet): / TVD (Feet):
Anchor Radius (if applicable) in feet: N/A			

Anchor Locations for Drilling Rig or Construction Barge (If anchor radius supplied above, not necessary)

Anchor Name or No.	Area	Block	X Coordinate	Y Coordinate	Length of Anchor Chain on Seafloor
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	

OCS PLAN INFORMATION FORM (CONTINUED)

Proposed Well/Structure Location

Well or Structure Name/Number (If renaming well or structure, reference previous name): Loc B					Previously reviewed under an approved EP or DOCD?		Yes	X	No
Is this an existing well or structure?		Yes	X	No	If this is an existing well or structure, list the Complex ID or API No.				
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?						X	Yes		No

WCD info	For wells, volume of uncontrolled blowout (Bbls/day): 103,200	For structures, volume of all storage and pipelines (Bbls):	API Gravity of fluid: 23.7°

	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	OCS-G 35833		OCS OCS
Area Name	Mississippi Canyon		
Block No.	759		
Blockline Departures (in feet)	N/S Departure: F_S_L 4951.00	N/S Departure: F____L	N/S Departure: F____L N/S Departure: F____L N/S Departure: F____L
	E/W Departure: F_E_L 5776.00	E/W Departure: F____L	E/W Departure: F____L E/W Departure: F____L E/W Departure: F____L
Lambert X-Y coordinates	X: 865424.00	X:	X: X: X:
	Y: 10237591.00	Y:	Y: Y: Y:
Latitude/ Longitude	Latitude 28° 11’ 24.0791” N	Latitude	Latitude Latitude Latitude
	Longitude 89° 24’ 22.6002” W	Longitude	Longitude Longitude Longitude
Water Depth (Feet): 3521.00		MD (Feet): / TVD (Feet):	MD (Feet): / TVD (Feet): MD (Feet): / TVD (Feet): MD (Feet): / TVD (Feet):
Anchor Radius (if applicable) in feet: N/A			

Anchor Locations for Drilling Rig or Construction Barge (If anchor radius supplied above, not necessary)

Anchor Name or No.	Area	Block	X Coordinate	Y Coordinate	Length of Anchor Chain on Seafloor
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	

OCS PLAN INFORMATION FORM (CONTINUED)

Proposed Well/Structure Location

Well or Structure Name/Number (If renaming well or structure, reference previous name): Loc B-Alt					Previously reviewed under an approved EP or DOCD?		Yes	X	No
Is this an existing well or structure?		Yes	X	No	If this is an existing well or structure, list the Complex ID or API No.				
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?						X	Yes		No

WCD info	For wells, volume of uncontrolled blowout (Bbls/day): 103,200	For structures, volume of all storage and pipelines (Bbls):	API Gravity of fluid	23.7°

	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	OCS-G 35833		OCS OCS
Area Name	Mississippi Canyon		
Block No.	759		
Blockline Departures (in feet)	N/S Departure: F_S_L 4901.00	N/S Departure: F____L	N/S Departure: F____L N/S Departure: F____L N/S Departure: F____L
	E/W Departure: F_E_L 5776.00	E/W Departure: F____L	E/W Departure: F____L E/W Departure: F____L E/W Departure: F____L
Lambert X-Y coordinates	X: 865424.00	X:	X: X: X:
	Y: 10237541.00	Y:	Y: Y: Y:
Latitude/ Longitude	Latitude 28° 11’ 24.5840” N	Latitude	Latitude Latitude Latitude
	Longitude 89° 24’ 22.5910” W	Longitude	Longitude Longitude Longitude

Water Depth (Feet): 3521.00	MD (Feet):	TVD (Feet):	MD (Feet): MD (Feet): MD (Feet):	TVD (Feet): TVD (Feet): TVD (Feet):
Anchor Radius (if applicable) in feet: N/A				

Anchor Locations for Drilling Rig or Construction Barge (If anchor radius supplied above, not necessary)

Anchor Name or No.	Area	Block	X Coordinate	Y Coordinate	Length of Anchor Chain on Seafloor
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	

Paperwork Reduction Act of 1995 Statement: The Paperwork Reduction Act of 1995 (44 U.S.C. 2501 et seq.) requires us to inform you that BOEM collects this information as part of an applicant's Exploration Plan or Development Operations Coordination Document submitted for BOEM approval. We use the information to facilitate our review and data entry for OCS plans. We will protect proprietary data according to the Freedom of Information Act and 30 CFR 550.197. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget Control Number. Responses are mandatory (43 U.S.C. 1334). The public reporting burden for this form is included in the burden for preparing Exploration Plans and Development Operations Coordination Documents. We estimate that burden to average 600 hours with an accompanying EP, or 700 hours with an accompanying DPP or DOCD, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the forms associated with subpart B. Direct comments regarding the burden estimate or any other aspect of this form to the Information Collection Clearance Officer, Bureau of Ocean Energy Management, 45600 Woodland Road, Sterling, Virginia 20166.

WELL LOCATION MAPS

MC759 PROPOSED WELL LOCATIONS (SL)								
WELL NAME	BLOCK	BLOCK CALL (N-S)	BLOCK CALL (E-W)	LATITUDE	LONGTITUDE	X (FT)	Y (FT)	WD
MC 759 LOCATION A (SL)	MC 759	4199.00' FSL	6437.00' FEL	28°11'16.5067"N	89°24'29.8165"W	864763.00	10236839.00	3527.00
MC 759 LOCATION A-ALT (SL)	MC 759	4249.00' FSL	6437.00' FEL	28°11'17.0020"N	89°24'29.8280"W	864763.00	10236889.00	3527.00
MC 759 LOCATION B (SL)	MC 759	4951.00' FSL	5776.00' FEL	28°11'24.0791"N	89°24'22.6002"W	865424.00	10237591.00	3521.00
MC 759 LOCATION B-ALT (SL)	MC 759	4901.00' FSL	5776.00' FEL	28°11'24.5840"N	89°24'22.5910"W	865424.00	10237541.00	3521.00

857500 860000 862500 865000 867500 870000

10247500 10245000 10242500 10240000 10237500 10235000 10232500

MC 714

MC759 - LEASE OCS-G35833
BOE EXPLORATION & PRODUCTION LLC

N

MC 758 MC 759 MC 760

MC759 LOC-B (SL)
LOC-B-ALT (SL)
MC759 LOC-A (SL)
LOC-A-ALT (SL)

MC 802 MC 803 MC 804

PROPOSED WELL LOCATION MAP
MC759 LOC - A, A-ALT, B & B-ALT (SL)
MC759 - LEASE OCS-G35833
MISSISSIPPI CANYON - GULF OF MEXICO

GEODETIC DATUM: NAD 27
PROJECTION: BLM 16 (NORTH) UTM 16N
GRID UNITS: US SURVEY FEET

SCALE
1:24,000 (24K)
0 500 1,000 2,000
FEET

SHEET: 1 OF 1
MAP BY: ESSJ (BOE)
CHECKED BY: AP (BOE)
PROJECT NAME: EP - ZEPHYRUS MC759
DATE: 11/02/2020

BOE Beacon OFFSHORE ENERGY

APPENDIX B
GENERAL INFORMATION

A) APPLICATIONS & PERMITS
Listed in the table below are the applications and/or permits that are required to be filed prior to conducting the activities proposed in this plan:

Application/Permit	Issuing Agency	Status
Application for Permit to Drill (APD)	BSEE	Pending
Application for Permit to Modify (APM)	BSEE	Pending

B) DRILLING FLUIDS
In accordance with BOEM guidance, the required drilling fluid information has been incorporated into the Waste & Discharge tables which are included in the attachment(s) to the Waste & Discharge Information appendix.

C) PRODUCTION
In accordance with NTL 2008-G04, this information is not applicable to this Exploration Plan.

D) OIL CHARACTERISTICS
In accordance with NTL 2008-G04, this information is not applicable to this Exploration Plan.

E) NEW OR UNUSUAL TECHNOLOGY
BOE Exploration & Production does not plan to use new or unusual technology to carry out the activities proposed in this plan. Further, no new or unusual technology will be utilized in the event of oil spill prevention, response or cleanup. The best available and safest technologies, as referred to in 30 CFR 250, will be incorporated as standard operating procedures to the extent that are practical and applicable.

F) BONDING STATEMENT
The bond requirements for the activities and facilities proposed in this plan are satisfied by a $3,000,000 area-wide bond, furnished and maintained according to 30 CFR Part 556, Subpart I, and NTL No. 2015-N04, “General Financial Assurance;” and additional security under 30 CFR Part 556, Subpart I, and NTL 2016-N01, “Requiring Additional Security.”

G) OIL SPILL FINANCIAL RESPONSIBILITY
BOE Exploration & Production, BOEM company number 03572, will demonstrate oil spill financial responsibility for the activities/facilities proposed in this plan in accordance with 30 CFR Part 553 and NTL 2008-N05, "Guidelines for Oil Spill Financial Responsibility for Covered Facilities."

H) DEEPWATER WELL CONTROL STATEMENT
BOE Exploration & Production (03572) has the financial capability to drill a relief well and conduct other emergency well control operations.

I) SUSPENSION OF PRODUCTION

In accordance with NTL 2008-G04, this information is not applicable to this Exploration Plan.

J) BLOWOUT SCENARIO

Information required by 30 CFR 550.243 (h) and referenced in NTL No. 2015-N01, “Information Requirements for Exploration Plans, Development and Production Plans, and Development Operations Coordination Documents on the OCS" are included in the attachments to this appendix.

BLOWOUT SCENARIO

BLOWOUT SCENARIO

The following attachment provides a blowout scenario description, information regarding any oil spill, WCD results and assumptions of potential spill and additional measures taken by BOE Exploration & Production (BOE E&P) first enhance the ability to prevent a blowout and secondly to manage a blowout scenario if it occurs.

INFORMATION REQUIREMENTS

PROPOSED PROSPECT INFORMATION

Well Surface Location	WD	X (NAD 27)	Y (NAD 27)	Latitude	Longitude
LOCATION A (SL)	3527	864763.00	10236839.00	28°11'16.5067"N	89°24'29.8165"W
LOCATION A-ALT (SL)	3527	864763.00	10236889.00	28°11'17.0020"N	89°24'29.8280"W
LOCATION B (SL)*	3521	865424.00	10237591.00	28°11'24.0791"N	89°24'22.6002"W
LOCATION B-ALT (SL)	3521	865424.00	10237541.00	28°11'24.5840"N	89°24'22.5910"W

* Plan WCD Well

INFORMATION REQUIREMENTS

A) Blowout scenario

The proposed MC 759 wells to be drilled to potential outlined in the Geological and Geophysical Information Section of this plan utilizing a typical subsea wellhead system, conductor, surface and intermediate casing strings and a MODU rig with marine riser and a subsea BOP system. A hydrocarbon influx and a well control event occurring from the objective sand is modeled with no drill pipe or obstructions in the wellbore followed by a full failure of the subsea BOP's (i.e. BOPS elements provide no restriction) and loss of well control at the seabed. The simulated flow and worst-case discharge (WCD) results for all wells and the highest WCD is used for this unrestricted blowout scenario.

B) Estimated flow rate of the potential blowout

Category	
Type of Activity	Drilling
Facility Location (area / block)	MC 759 (surface location)
Facility Designation	MODU
Distance to Nearest Shoreline (nautical miles)	49 miles
Uncontrolled Blowout (Volume per day)	**166,933**
Type of Fluid	Crude (23.7 API oil)

C) Total volume and maximum duration of the potential blowout

Duration of Flow (days)	**99** days total (see Relief Well Response Estimate below)
Total Volume of Spill (bbls)	**~6,018** MMBO based on **99** days of uncontrolled flow based on simulator models

WCD volume is generated using geologic maps to drive OOIP volumes. In the event of a worst-case discharge situation, there will be some gradual depletion in the reservoir. As a result, the well will gradually decline in production based on the transient reservoir model. The reported worst-case

discharge is based on these model assumptions rather than the WCD rate multiplied times the estimated relief well days.

D) Assumptions and calculations used in determining the worst-case discharge

Submitted separately in the Proprietary Copy of this Plan - Omitted from Public Information Copies

E) Potential for the well to bridge over

Mechanical failure/collapse of the borehole in a blowout scenario is influenced by several factors including in-situ stress, rock strength and fluid velocities at the sand face. Given the substantial fluid velocities inherent in the WCD, and the scenario as defined where the formation is not supported by a cased and cemented wellbore, it is likely that the borehole will fall/collapse/bridge over within a span of a few days, significantly reducing the outflow of the rates. However, for this blowout scenario, no bridging is considered.

F) Likelihood for intervention to stop blowout

The likelihood of surface intervention to stop a blowout is based on some of the following equipment specific to potential MODU's to be contracted for this well. It is reasonable to assume that the sooner BOE E&P is able to respond to the initial blowout, the better likelihood there is to control and contain the event due to reduced pressures at the wellhead, less exposure to well fluids to eroding and compromising the well control equipment, and less exposure of hydrocarbons to the surface and greater probability of safeguarding personnel and equipment in an emergency situation. This equipment includes:

- Secondary Acoustic BOP Control System – typically fitted on DP MODU's presently operating in the GOM. This system has the ability to communicate and function specific BOP controls from the surface in the event of a failure of the primary umbilical control system. This system typically can establish BOP controls from the surface acoustic system package on the rig or by deploying a second acoustic package from a separate vessel of opportunity. This system may not be included on all MODU's such as 4th generation moored rigs. This system is typically configured to function the following:

    - Blind/shear ram close
    - Pipe ram close
    - LMRP disconnect

- ROV Intervention BOP Control System – includes one or more ROV intervention panels mounted on the subsea BOP's located on the seabed allows a ROV utilizing standard ROV stabs to access and function the specific BOP controls. These functions will be tested at the surface as part of the required BOP stump test and selectively at the seafloor to ensure proper functionality. These functions include the following (at a minimum):

    - Blind/shear ram close
    - Pipe ram close
    - LMRP disconnect
    - WH disconnect

- Deadman / Autoshear function – typically fitted on DP MODU's and but to be on all MODU's operating in the GOM according to new requirements, this equipment allows for an automated pre-programmed sequence of functions to close the casing shear rams and the

blind/shear rams in the event of an inadvertent or emergency disconnect of the LMRP or loss of both hydraulic and electrical supply from the surface control system.

In the event that the intervention systems for the subsea BOP's fail, BOE E&P will initiate call out of a secondary containment / surface intervention system supported by the HWCG well containment company of which BOE E&P is a member. This system incorporates a capping stacks capable of being deployed from the back of a vessel of opportunity equipped with an ROV, or from the Helix Q4000 or Q5000 DP MODU. Based on the potential wellbore integrity concerns, a cap and flow system can be deployed from a range of vessels. This system is capable of handling flowback volumes of up to 130,000 bbls of fluid per day and 220 MMSCF of gas per day. The vertical intervention work is contingent upon the condition of the blowing out well and what equipment is intact to access the wellbore for kill or containment operations. The available intervention equipment may also require modifications based on actual wellbore conditions. Standard equipment is available through the HWCG equipment to fit the wellhead and BOP stack profiles used for the drilling of the above mentioned well.

G) Availability of rig to drill relief well, rig constraints and timing of rigs

In the event of a blowout scenario that does not involve loss or damage to the rig such as an inadvertent disconnect of the BOP's, then the existing contracted rig may be available for drilling the relief well and vertical intervention work. If the blowout scenario involves damage to the rig or loss of the BOP's and riser, a replacement rig or rigs will be required.

With the current activity level in the GOM, 10 to 15 deepwater MODU'S are potentially available to support the relief well drilling operations. Rig share and resource sharing agreements are in place between members of the HWCG as well as the larger Gulf of Mexico Operators Rig Share Agreement. BOE E&P is a member of both groups. The ability to negotiate and contract an appropriate rig or rigs to drill relief wells is highly probable in a short period of time. If the rig or rigs are operating, the time to properly secure the well and mobe the rig to the relief well site location is estimated to be about 14 days. Dynamically positioned (DP) MODU's would be the preferred option due to the logistical advantage versus a moored MODU which may add complications due to the mooring spread.

The only rig package constraint to drill a relief well is the approximate 1500 ft water depth restriction. Most 4th, 5th and 6th generation drill ships or semi-submersible rigs in the USGOM would be suitable to drill a relief well. Therefore, the rig choice would be first available, quickest to mobilize and move into position offsetting the blow out well. A relief well would be drilled from an open water location about 1500' south to southwest of the blowout well. The final rig location will be influenced by operator, contractor, BSEE and depth of intersect to ensure safety of all personnel and equipment involved in the relief well effort.

VESSELS OF OPPORTUNITY

Based on the water depth restrictions for the proposed locations the following "Vessels of Opportunity" are presently available for utilization for intervention and containment and relief well operations. These may include service vessels and drilling rigs capable of working in the potential water depths and may include moored vessels and dynamically positioned vessels. The specific conditions of the intervention or relief well operations will dictate the "best fit" vessel to efficiently perform the desired results based on the blowout scenario. The list included below illustrates specific option that may vary according to the actual timing / availability at the time the vessels are needed.

OPERATION	SPECIFIC VESSEL OF OPPORTUNITY
Intervention and Containment	• Helix Q4000 (DP Semi) • Helix Q5000 (DP Semi)
Relief Well Drilling Rigs	• BOE E&P has contractual agreements in place with HWC a GOM Rig Share group – these agreements give BOE E access to any MODU operating in GOM
ROV / Multi-Purpose Service Vessels	• Oceaneering (numerous DP ROV vessels) • HOS Achiever, Iron Horse 1 and 2 (DP MPSV) • Helix Pipe Lay Vessel (equipped w/ 6" PL – 75,000') • Other ROV Vessels – (Chouest, HOS, Fugro, Subsea 7)
Shuttle Tanker / Barge Support	• American Eagle Tankers (AET)

H) Measures taken to enhance ability to prevent blowout

The measures to enhance the ability to prevent or reduce the likelihood of a blowout are largely based on proper planning and communication, identification of potential hazards, training and experience of personnel, use of good oil field practices and proper equipment that is properly maintained and inspected for executing drilling operations of the proposed well or wells to be drilled.

When planning and designing the well, ample time is spent analyzing offset data, performing any needed earth modeling and identifying any potential drilling hazards or well specific conditions to safeguard the safety of the crews when well construction operations are underway. Once the design criteria and well design is established, the well design is modeled for the lifecycle of the wellbore to ensure potential failure modes are eliminated. A minimum of 2 independent barriers for both internal and external flow paths in addition to proper positive and negative testing of the barriers is part of BOE E&P's design and testing protocol.

The proper training of crew members and awareness to identify and handle well control event is the best way prevent a blowout incident. Contractor's personnel and service personnel training requirements are verified per regulatory requirements. Drills are performed frequently to verify crew training and improve reaction times.

Good communication between rig personnel, office support personnel is critical to the success of the operations. Pre-spud meetings are conducted with rig crews and service providers to discuss, inform and as needed improve operations and well plans for safety and efficiency considerations. Daily meetings are conducted to discuss planning and potential hazards to ensure state of preparedness and behavior is enforced to create an informed and safe culture for the operations. Any changes in the planning and initial approved wellbore design is incorporated and communicated in a Management of Change (MOC) process to ensure continuity for all personnel.

Use of established good oil field practices that safeguard crews and equipment are integrated to incorporate BOE E&P's, the contractor and service provider policies.

Additional personnel and equipment will be used as needed to elevate awareness and provide real time monitoring of well conditions while drilling such as MWD/LWD/PWD tools used in the bottom hole assemblies. The tool configuration for each open hole section varies to optimize information gathered including the use of Formation-Pressure-While-Drilling (FPWD) tools to establish real time formation pressures and to be used to calibrates pore pressure models while drilling. Log information

and pressure data is used by the drilling engineers, geologist and pore pressure engineers to maintain well control and reduced potential events such as well control events and loss circulation events.

Onsite Mud loggers continuously monitor return drilling fluids, drill gas levels and cuttings as well as surface mud volumes and flow rates, rate of penetration and lithology/paleo to aid in understanding trends and geology being drilled. Remote monitoring of real time drilling parameters and evaluation of geologic markers and pore pressure indicators is used to identify potential well condition changes.

Proper equipment maintenance and inspection program for same to before the equipment is required. Programmed equipment inspections and maintenance will be performed to ensure the equipment operability and condition. Operations will cease as needed in order to ensure equipment and well conditions are maintained and controlled for the safety of personnel, rig and subsurface equipment and the environment.

I) Measures to conduct effective and early intervention in the event of a blowout

The following is provided to demonstrate the potential time needed for performing secondary intervention and drilling of a relief well to handle potential worst-case discharge for the proposed prospect. Specific plans are integrated into the HWCG procedures to be approved and submitted with the Application for Permit to Drill. Equipment availability, backup equipment and adaptability to the potential scenarios will need to be addressed based on the initial site assessment of the seafloor conditions for intervention operations. Relief well equipment such as backup wellhead equipment and tubulars will be available in BOE E&P's inventory for immediate deployment as needed to address drilling the relief well(s).

SITE SPECIFIC PROPOSED RELIEF WELL AND INTERVENTION PLANNING

No platform was considered for drilling relief wells for this location due to location, water depth and lack of appropriate platform within the area. For this reason a moored or DP MODU will be preferred / required.

RELIEF WELL RESPONSE TIME ESTIMATE

OPERATION	TIME ESTIMATE (DAYS)
IMMEDIATE RESPONSE • safeguard personnel, render first-aid • make initial notifications • implement short term intervention (if possible) • implement spill control • develop Initial Action Plan	1
INTERIM REPSONSE • establish Onsite Command Center and Emergency Management Team • assess well control issues • mobilize people and equipment (Helix DW Containment System) • implement short term intervention and containment (if possible) • develop Intervention Plan • initiate relief well planning • continue spill control measures	4

INTERVENTION AND CONTAIMENT OPERATIONS • mobilize equipment and initiate intervention and containment operations • perform TA operations and mobilize relief wells rig(s) • finalize relief well plans, mobilize spud equipment, receive approvals • continue spill control measures	14
RELIEF WELL(S) OPERATIONS • continue intervention and containment measures • continue spill control measures • drill relief well (s)	60
PERFORM HYDRAULIC KILL OPERATIONS / SECURE BLOWNOUT WELL • continue intervention and containment measures • continue spill control measures • perform hydraulic kill operations, monitor well, secure well	20
ESTIMATED TOTAL DAYS OF UNCONTROLLED FLOW	**99**
SECURE RELIEF WELL(S) / PERFORM P&A / TA OPERATIONS / DEMOBE	30
TOTAL DAYS	**129**

APPENDIX C
GEOLOGICAL & GEOPHYSICAL INFORMATION

A) GEOLOGICAL DESCRIPTION
PROPRIETARY INFORMATION

B) STRUCTURE CONTOUR MAPS
Current structure maps drawn to the top of each prospective hydrocarbon sand, showing the location of the proposed well(s) and location(s) of geological cross-sections are included in the attachment(s) to this appendix of the proprietary information copy of this plan.

C) INTERPRETED 2D/3D SEISMIC CROSS SECTIONS
An interpreted 2D/3D seismic line cross section map is included for the proposed well(s) in the attachment(s) to this appendix of the proprietary information copy of this plan.

D) GEOLOGICAL STRUCTURE CROSS SECTIONS
Geological structure cross-section markers showing the key horizons and objective sands for the proposed well(s) location is included in the attachment(s) to this appendix of the proprietary information copy of this plan.

E) SHALLOW HAZARDS REPORT
A shallow hazard report incorporating the subject area(s)/block(s) is being submitted in conjunction with this plan (Berger Geosciences Project No. 19-08-18). An archaeological report incorporating the subject area(s)/block(s) is being submitted in conjunction with this plan (Echo Offshore Report No. 20-070-34).

F) SHALLOW HAZARDS ASSESSMENT
An assessment of any seafloor and subsurface geological and manmade features and conditions that may adversely affect drilling operations for the proposed well(s) is included in the attachment(s) to this appendix.

G) HIGH RESOLUTION SEISMIC LINES
3D Seismic Inline and 3D Seismic Crossline sections for the proposed well(s) are included in the attachment(s) to this appendix of the proprietary information copy of this plan.

H) STRATIGRAPHIC COLUMN
A stratigraphic column from the seafloor to the proposed total depth of the proposed well(s) is included in the attachment(s) to this appendix of the proprietary information copy of this plan.

I) TIME VS DEPTH TABLES
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. BOE Exploration & Production has determined that there is sufficient existing well control data for the proposed target areas.

J) GEOCHEMICAL INFORMATION

In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. The subject area is within the boundaries of the Gulf of Mexico.

K) FUTURE G&G ACTIVITIES

In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. The subject area is within the boundaries of the Gulf of Mexico.

SHALLOW HAZARDS ASSESSMENT

Wellsite Evaluation

Mississippi Canyon Area
Block 759 (Lease No.
G35833) Gulf of Mexico

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Table of Contents: Wellsite Evaluation Page

List of Tables

List of Figures

List of Maps

Shallow Hazards Assessment for the Proposed Wells

This section contains an assessment of the shallow hazards and a tophole prognosis for two proposed exploration wells located within MC 759.

The seafloor benthic communities assessment considers surface conditions within the muds and cuttings discharge radius of 2,000-ft from the proposed well locations. The archaeologic assessment considers surface conditions within 1,000-ft of the proposed well locations. The wellsite assessment considers the conditions within a 500-ft radius from the proposed well locations from the seafloor to 7,000 ft below the mudline (BML; ~2.12 s BML).

Maximum Anchor Radius Criteria

Beacon anticipates using a dynamically positioned mobile offshore drilling unit (MODU) in the Seafloor Assessment Area; therefore, no specific anchor pattern has been analyzed.

Tophole Prognosis Criteria

The following sections specify the criteria used to develop the tophole prognosis for the proposed wells. The assessment is based on the evaluation of 3-D seismic data, and comparison to regional stratigraphic units as available. The tophole assessment is restricted to the specific proposed well locations.

Gas Hydrates. The base of the gas hydrate stability zone (BGHSZ) is calculated based on Maekawa et al. (1995). The potential for solid gas hydrates was evaluated for the proposed wells. The criteria include:

- Is water depth conducive for gas hydrate formation?
- What is the depth to the BGHSZ at the proposed well?
- Is a BSR present between the seafloor and BGHSZ?
- Is a BSR present within 500 ft of the proposed well?
- Does the proposed well intersect a BSR?
- Have gas hydrates been identified in the region of the proposed well?

HIGH	The wellsite conditions meet ALL of the above stated criteria, and correlates to an existing well that encountered gas hydrates.
MODERATE	The wellsite conditions meet SEVERAL of the above stated criteria. There is no direct evidence of gas hydrates at nearby wells.
LOW	The wellsite conditions meet SOME of the above stated criteria, and does not correlate to nearby wells.
NEGLIGIBLE	The wellsite conditions meet FEW to NONE of the above stated criteria, and there is no evidence of gas hydrates at nearby wells.

Shallow Gas. The potential for shallow gas was evaluated for the proposed wells. The criteria used to evaluate the proposed wells include:

- Does an anomalous amplitude event exist in proximity to the proposed well, and is there evidence for connectivity to the proposed wellbore?
- Is there supporting geophysical evidence for shallow gas associated with the anomalous amplitude?
- Is the anomalous amplitude within a sequence that may be sand-prone?
- Is there evidence of migration of fluid (including hydrocarbons) from depth, such as along a fault plane?
- Does the sequence correlate to other wells within the area that encountered shallow gas?
- Is the proposed well located in a frontier area with little or no offset well control?

HIGH	The amplitude event meets ALL of the above stated criteria, or correlates to an existing well that encountered shallow gas.
MODERATE	The amplitude event meets SEVERAL of the above stated criteria. There is no direct evidence of shallow gas from nearby wells.
LOW	The amplitude event meets SOME of the above stated criteria, and does not correlate to nearby wells.
NEGLIGIBLE	The amplitude event meets FEW to NONE of the above stated criteria, and there is no evidence of shallow gas from nearby wells.

Shallow Water Flow. The potential for shallow water flow (SWF) was assessed for the proposed wells. The potential for SWF is based on the following criteria:

- Does the stratigraphic unit correlate to a regional sand-prone sequence?
- Is the area subject to high sedimentation rates and rapid overburden deposition?
- Is the sequence composed of high-amplitude, chaotic reflectors indicative of sand?
- Is there a potential seal (perhaps clay-prone) above the sand-prone sequence?
- Does the sequence correlate to other wells within the area that encountered SWF?
- Is the proposed well located in a frontier area with little or no offset well control?

HIGH	The stratigraphic unit meets ALL of the above stated criteria, or correlates to an existing well that encountered SWF.
MODERATE	The stratigraphic unit meets SEVERAL of the above stated criteria. There is no direct evidence of SWF from nearby wells.
LOW	The stratigraphic unit meets SOME of the above stated criteria, and does not correlate to nearby wells.
NEGLIGIBLE	The stratigraphic unit meets FEW to NONE of the above stated criteria, and there is no evidence of SWF from nearby wells.

Proposed Well MC 759-A

The following is an evaluation of Proposed Well MC 759-A along with a twinned location Proposed Well MC 759-Alt-A. The surface location for MC 759-A is in the southeastern portion of MC 759.

The water depth at Proposed Well MC 759-A is 3,527 ft BSL (Map W-1). The proposed well is within an area of relatively smooth seafloor that slopes to the south at about 1.4°. The proposed location provided by Beacon is as follows:

Table W-1. Location, block calls, and seismic lines for Proposed Well MC 759-A

NAD27 UTM Zone 16 North, US Survey ft		Geographic Coordinates	
X	**Y**	**Latitude**	**Longitude**
864,763.00	10,236,839.00	28° 11' 16.507" N	89° 24' 29.816" W
Block Calls		**3-D Seismic Line Reference**	
		Line	**Trace**
6,437’ FEL	4,199’ FSL	5706	1054

Twinned Location

Proposed Well MC 759-Alt-A is located 50 ft north of Proposed Well MC 759-A with the same well path and is intended to be used as an alternate drilling location. Seafloor and subsurface conditions at the twinned well are approximately equivalent and no separate illustrations of the subsurface conditions were prepared. The proposed alternate drilling location is as follows:

Table W-2. Location and block calls for Proposed Twinned Well MC 759-Alt-A

NAD27 UTM Zone 16 North, US Survey ft		Geographic Coordinates	
X	**Y**	**Latitude**	**Longitude**
864,763.00	10,236,889.00	28° 11' 17.002" N	89° 24' 29.828" W
		Block Calls	
		6,437’ FEL	4,249’ FSL

Power Spectrum Analysis

The power spectrum for the proposed well was derived through the use of IHS Kingdom Suite's Trace Calculator tools. For Proposed Well MC 759-A, the power spectrum was extracted from a subset that ranges from Inline 5606 to 5806 and Crossline 954 to 1154 and is limited to the upper one second below the seafloor. The frequency content within the upper one second below the seafloor is of sufficient quality for shallow hazards analysis.

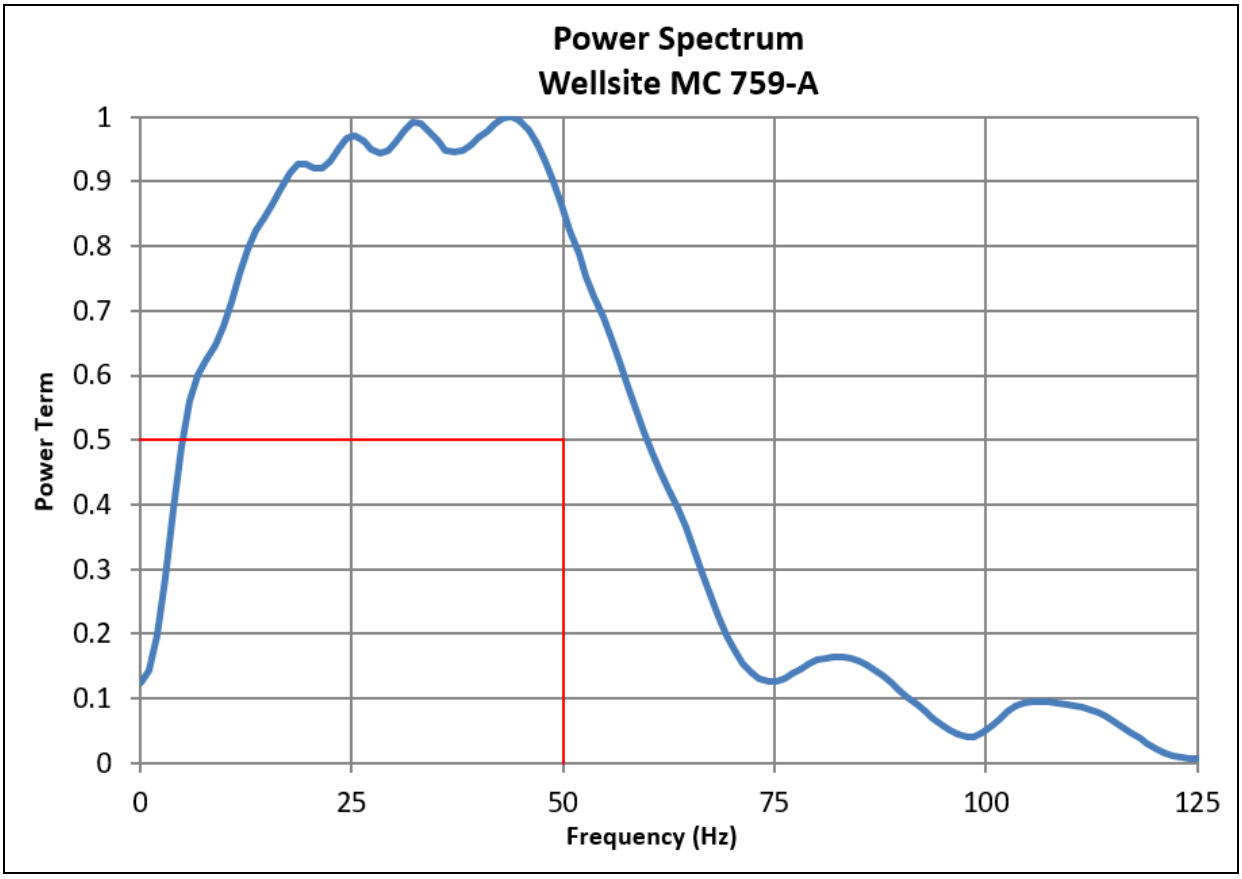


Figure W-1. Power spectrum at Proposed Well MC 759-A

Seafloor Conditions

The following paragraphs summarize the seafloor morphology and benthic community potential at the proposed well location.

Seafloor Morphology. Proposed Well MC 759-A is located in the southeastern quadrant of MC 759. Water depths near the proposed well range from 3,301 ft to 3,548 ft BSL (Map W-1). The seafloor at the proposed well location is relatively smooth to slightly irregular with a slope to the south of 1.4°. There are no seafloor faults within a 2,000 ft radius of the proposed well location (Map 5; Figure W-1, W-3, and W-4).

There are no seafloor faults within 2,000 ft of the proposed well location.

Benthic Communities Assessment. There is no evidence of fluid migration to the seafloor within 2,000 ft of Proposed Well MC 759-A. There are no seafloor amplitude anomalies or signs of gas migration within 2,000 ft of the proposed well (Map 5). There are no BSRs or other seismic indicators of gas hydrates within 2,000 ft of the proposed well.

Features or areas that could support high-density chemosynthetic or other benthic communities are not anticipated within 2,000 ft of Proposed Well MC 759-A.

Infrastructure. There is no existing infrastructure within 2,000 ft of Proposed Well MC 759-A. The closest infrastructure to the proposed well location is an active gas pipeline (Segment No. 19890) located 2.6 miles to the south. The pipeline runs west to east across the central portion of MC 803.

No infrastructure is within 2,000 ft of the proposed well location; however, an active gas pipeline is located approximately 2.6 miles to the south.

Archaeologic Assessment. All blocks in the Mississippi Canyon Protraction Area are regarded as being in a high probability zone for historic shipwrecks based on Bureau of Ocean Energy Management (BOEM) and Bureau of Safety and Environmental Enforcement (BSEE) NTL No. 2011-JOINT-G01 (BOEM/BSEE, 2011), including MC 759. Pursuant to the public information in the NOAA Automated Wreck and Obstruction Information System and Navigational Charts (NOAA, 2019); no shipwrecks are reported within MC 759. An archaeological survey and report were completed by Echo Offshore, LLC. (Echo) in 2020 and will be submitted to the BOEM under separate cover.

For details about sonar contacts and avoidances within the Seafloor Assessment Area please refer to the Echo Archaeological Assessment (2020).

Stratigraphy and Tophole Prognosis

The *wellsite assessment* covers the subsurface conditions within a 500-ft radius from the proposed well path from the seafloor to the investigation limit of 7,000 ft BML. Six 3-D seismic marker horizons (Horizon 10, 20, 30, 35, 40, and 50) were interpreted at Proposed Well MC 759-A (Figure W-4). A generalized description of the stratigraphic sequences can be found in Section 1.4 of this report. The following is an assessment of the conditions that will be encountered at or near the borehole.

Faults. The wellbore at the Proposed Well MC 759-A will not penetrate any apparent seafloor faults (Map W-1; Figure W-4). A buried channel margin rotational fault will be penetrated at 1,183 ft BML.

A vertical wellbore will not intersect any seafloor faults at the proposed location. A buried channel margin rotational fault will be penetrated at 1,183 ft BML.

Unit 1: Seafloor to Horizon 10. Utilizing the nearest subbottom profiler (SBP) data provided by Beacon, the proposed wellbore will penetrate ~5 ft of hemipelagic clay drape, ~58 ft of non-layered MTDs consisting of clay and silts, and ~110 ft of stratified MTDs consisting of clay and silt (Figure W-3). The limit of the subbottom profiler data is at 173 ft BML.

The 3-D data images Unit 1, between the seafloor and Horizon 10, as consisting of moderate-amplitude, parallel and continuous to semi-continuous reflections (Figure W-4). These reflections are interpreted to represent onlapping, fine-grained hemipelagic clays and clay-rich mass transport deposits which are filling the Young Timbalier Canyon. Horizon 10 is interpreted to represent the erosion and base of Young Timbalier Canyon and is expected to be encountered at 309 ft BML (Map 6 and Figure W-4).

There are no amplitude anomalies within 500 ft of the proposed wellbore within Unit 1 (Map 5).

This unit is assessed as having a ***low*** potential for gas hydrates (Figure W-4). There is a ***negligible*** potential for shallow gas and a ***negligible*** potential for SWF within this unit (Figure W-4).

Unit 2: Horizon 10 to Horizon 20. Unit 2 bound by Horizon 10 and Horizon 20 consist of two Subunits (Subunits 2a and 2b). The upper Subunit 2a, between Horizon 10 and the top of the Blue Unit is 929 ft thick and consists of low-amplitude, semi-continuous, semi-parallel to chaotic reflections (Figure W-4). Subunit 2a is interpreted to consist of channel margin deposits composed primarily of stratified clay and silt with thinly bedded sand associated with channel levees, channel-margin slides, and mass transport deposits. A buried channel margin rotational fault will be penetrated at 1,183 ft BML within Subunit 2a (Figure W-4).

The lower Subunit 2b, between the top of the Blue Unit and Horizon 20, contains moderate- to high-amplitude, discontinuous to chaotic reflections interpreted to represent the SWF Blue Unit. The Blue Unit at the proposed location is 339 ft thick and is interpreted to contain interbedded sand/silt ponded turbidites (Figure W-4). Horizon 20 marks the base of the Blue Unit, as well as the overall Unit 2, and is mapped at 1,577 ft BML.

The base of the gas hydrate stability zone (BGHSZ) at this water depth is estimated to be within the Blue Unit at 1,281 ft BML based on Maekawa et al. (1995).

There are no amplitude anomalies within 500 ft of the proposed wellbore within this unit (Map 5).

There is a ***low*** potential for gas hydrate from 309 ft BML to the BGHSZ at 1,281 ft BML and a ***negligible*** potential for gas hydrate from the BGHSZ at 1,281 ft BML to Horizon 20 at 1,577 ft BML (Figure W-4). There is a ***negligible*** potential for shallow gas and SWF shallow from Unit 2a between 309 ft BML and 1,238 ft BML. There is a ***low*** potential for shallow gas and a ***moderate*** potential for SWF from Unit 2b (Blue Unit) between 1,238 ft BML and 1,577 ft BML (Figure W-4).

Unit 3: Horizon 20 to Horizon 30. Unit 3, bound by Horizon 20 and Horizon 30, contains low-amplitude, semi-continuous to chaotic reflections. These reflections are interpreted to represent clay- and silt-rich mass transport deposits with thin sands possible (Figure W-4). Unit 3 is 1,228 ft thick at the proposed location. Horizon 30 marks the base of this unit and is mapped at 2,805 ft BML at the proposed well location.

There are no amplitude anomalies within 500 ft of the proposed wellbore within this unit (Map 5).

There is a ***negligible*** potential for gas hydrates within this unit (Figure W-4). There is a ***negligible*** potential for shallow gas and a ***negligible*** potential for SWF from Unit 3.

Unit 4: Horizon 30 to Horizon 40. Unit 4 is identified as the regional SWF Green Unit and is bound by Horizon 30 and Horizon 40 (Figure W-4). Unit 4 consists of two Subunits (Subunits 4a and 4b) separated by Horizon 35. Subunit 4a, between Horizon 30 and Horizon 35, consists of moderate- to high-amplitude, semi continuous, subparallel to chaotic reflectors. This Subunit is interpreted as bedded turbidite deposits containing silt and sand. Subunit 4a is 1,181 ft thick at the proposed location and Horizon 35, marking the base of this Subunit, is mapped at 3,986 ft BML.

Subunit 4b, between Horizons 35 and 40, consists of low-amplitude, subparallel, continuous to discontinuous to chaotic reflectors that are interpreted as clay and silt dominated slumped mass transport deposits. Subunit 4b is 704 ft thick at the proposed location and Horizon 40 is expected at 4,690 ft BML.

There are no amplitude anomalies within 500 ft of the proposed wellbore within this unit (Map 5).

There is a ***negligible*** potential for gas hydrates within Unit 4. There is a ***low*** potential for shallow gas and a ***moderate*** potential for SWF within Unit 4a between 2,805 ft BML and Horizon 35 at 3,986 ft BML (Figure W-4). There is a ***negligible*** potential for shallow gas and SWF from Subunit 4b between 3,986 ft BML and 4,690 ft BML.

Unit 5: Horizon 40 to Horizon 50. Unit 5, between Horizon 40 and Horizon 50 consists of an upper and lower interval separated by an interface at 5,335 ft BML (Figure W-4). The upper interval, between Horizon 40 at 4,690 ft BML and the interface at 5,335 ft BML, consists of low-amplitude, continuous to discontinuous, subparallel reflectors. This interval is interpreted as silt- and clay-rich normally deposited sediments and thin mass transport deposits and is 645 ft thick at the proposed location.

The lower interval, between the interface at 5,335 ft BML and Horizon 50 at 6,013 ft BML (9,540 ft BSL; Map 7) consists of moderate-amplitude, discontinuous to chaotic reflections. The lower interval is interpreted as silt- and sand-prone turbidites and is 678 ft thick at the proposed location (Figure W-4).

There are no amplitude anomalies within 500 ft of the proposed wellbore within this unit (Map 5).

There is a ***negligible*** potential for gas hydrates within Unit 5. There is a ***negligible*** potential for shallow gas and SWF within the upper interval between 4,690 ft BML and 5,335 ft BML (Figure W-4). There is a ***negligible*** potential for shallow gas and a ***low*** potential for SWF within the lower interval between 5,335 ft BML and 6,013 ft BML.

Unit 6: Horizon 50 to the Limit of Investigation. Unit 6, between Horizon 50 and the Limit of Investigation (7,000 ft BML) consists of low-amplitude, discontinuous to chaotic reflections interpreted as clay- and silt-rich mass transport deposits (Figure W-4). The unit is 987 ft thick at the proposed location.

There are no amplitude anomalies within 500 ft of the proposed wellbore within Unit 6 (Map 5).

There is a ***negligible*** potential for gas hydrates within this unit (Figure W-4). There is a ***negligible*** potential for shallow gas and a ***negligible*** potential for SWF within this unit (Figure W-4).

Proposed Well MC 759-B

The following is an evaluation of Proposed Well MC 759-B along with a twinned location Proposed Well MC 759-Alt-B. The surface location for MC 759-B is in the southeastern quadrant of MC 759.

The water depth at Proposed Well MC 759-B is 3,521 ft BSL (Map W-2). The proposed well is within an area of relatively smooth seafloor that slopes to the south at about 0.6°. The proposed location provided by Beacon is as follows:

Table W-3. Location, block calls, and seismic lines for Proposed Well MC 759-B

NAD27 UTM Zone 16 North, US Survey ft		Geographic Coordinates	
X	**Y**	**Latitude**	**Longitude**
865,424.00	10,237,591.00	28° 11' 24.079" N	89° 24' 22.600" W
Block Calls		**3-D Seismic Line Reference**	
		Line	**Trace**
5,776’ FEL	4,951’ FSL	5698	1062

Twinned Location

Proposed Well MC 759-Alt-B is located 50 ft south of Proposed Well MC 759-B with the same well path and is intended to be used as an alternate drilling location. Seafloor and subsurface conditions at the twinned well are approximately equivalent and no separate illustrations of the subsurface conditions were prepared. The proposed alternate drilling location is as follows:

Table W-4. Location and block calls for Proposed Twinned Well MC 759-Alt-B

NAD27 UTM Zone 16 North, US Survey ft		Geographic Coordinates	
X	**Y**	**Latitude**	**Longitude**
865,424.00	10,237,541.00	28° 11' 24.584" N	89° 24' 22.591" W
		Block Calls	
		5,776’ FEL	4,901’ FSL

Power Spectrum Analysis

The power spectrum for the proposed well was derived through the use of IHS Kingdom Suite's Trace Calculator tools. For Proposed Well MC 759-B, the power spectrum was extracted from a subset that ranges from Inline 5598 to 5798 and Crossline 962 to 1162 and is limited to the upper one second below the seafloor. The frequency content within the upper one second below the seafloor is of sufficient quality for shallow hazards analysis.

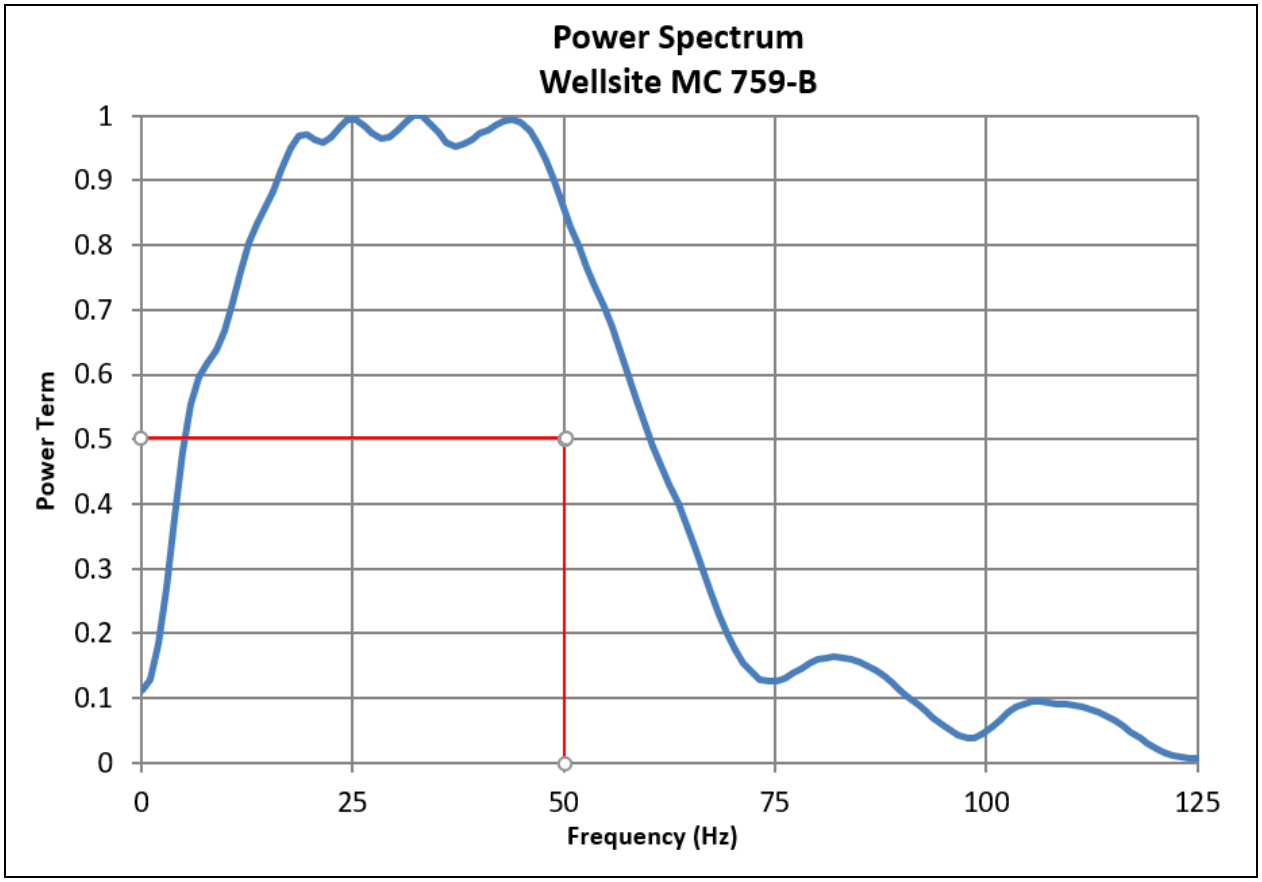


Figure W-5. Power spectrum at Proposed Well MC 759-B

Seafloor Conditions

The following paragraphs summarize the seafloor morphology and benthic community potential at the proposed well location.

Seafloor Morphology. Proposed Well MC 759-B is located in the southeastern quadrant of MC 759. Water depth near the proposed well ranges from 3,280 ft to 3,541 ft BSL (Map W-2). The seafloor at the proposed well location is relatively smooth to slightly irregular with a slope to the south of 0.6°. There are no seafloor faults within a 2,000 ft radius of the proposed well location (Map 5; and Figures W-2, W-6, and W-7).

There are no seafloor faults within 2,000 ft of the proposed well location.

Benthic Communities Assessment. There is no evidence of fluid migration to the seafloor within 2,000 ft of Proposed Well MC 759-B. There are no seafloor amplitude anomalies or signs of gas migration within 2,000 ft of the proposed well (Map 5). There are no BSRs or other seismic indicators of gas hydrates within 2,000 ft of the proposed well.

Features or areas that could support high-density chemosynthetic or other benthic communities are not anticipated within 2,000 ft of Proposed Well MC 759-B.

Infrastructure. There is no existing infrastructure within 2,000 ft of Proposed Well MC 759-B. The closest infrastructure to the proposed well location is an active gas pipeline (Segment No. 19890) located 2.7 miles to the south. The pipeline runs west to east across the central portion of MC 803.

No infrastructure is within 2,000 ft of the proposed well location; however, an active gas pipeline is located approximately 2.7 miles to the south.

Archaeologic Assessment. All blocks in the Mississippi Canyon Protraction Area are regarded as being in a high probability zone for historic shipwrecks based on Bureau of Ocean Energy Management (BOEM) and Bureau of Safety and Environmental Enforcement (BSEE) NTL No. 2011-JOINT-G01 (BOEM/BSEE, 2011), including MC 759. Pursuant to the public information in the NOAA Automated Wreck and Obstruction Information System and Navigational Charts (NOAA, 2020); no shipwrecks are reported within MC 759. An archaeological survey and report were completed by Echo Offshore, LLC. (Echo) in 2020 and will be submitted to the BOEM under separate cover.

For details about sonar contacts and avoidances within the Seafloor Assessment Area please refer to the Echo Archaeological Assessment (2020).

Stratigraphy and Tophole Prognosis

The *wellsite evaluation* covers the subsurface conditions within a 500-ft radius from the proposed well path from the seafloor to the investigation limit of 7,000 ft BML. Six 3-D seismic marker horizons (Horizon 10, 20, 30, 35, 40, and 50) were interpreted at Proposed Well MC 759-B (Figure W-7). A generalized description of the stratigraphic sequences can be found in Section 1.4 of this report. The following is an assessment of the conditions that will be encountered at or near the borehole.

Faults. The wellbore at the Proposed Well MC 759-B will not penetrate any apparent seafloor or buried faults (Map W-2; Figure W-7).

A vertical wellbore will not intersect any seafloor or buried faults at the proposed location.

Unit 1: Seafloor to Horizon 10. Utilizing the nearest subbottom profiler (SBP) data provided by Beacon, the proposed wellbore will penetrate ~5 ft of hemipelagic clay drape, ~52 ft of non-layered MTDs consisting of clay and silts, ~16 ft of stratified MTDs consisting of clay and silt, ~22 ft of stacked MTDs consisting of silt and clay and ~76 ft of stratified clays and silts with occasional, thin clay-rich mass transport deposits (Figure W-6). The limit of the subbottom profiler data is at 133 ft BML.

The 3-D data images Unit 1, between the seafloor and Horizon 10, as consisting of moderate-amplitude, parallel and continuous to semi-continuous reflections (Figure W-7). These reflections are interpreted to represent onlapping, fine-grained hemipelagic clays and clay-rich mass transport deposits which are filling the Young Timbalier Canyon. Horizon 10 is interpreted to represent the erosion and base of the Young Timbalier Canyon and is expected to be encountered at 264 ft BML (Map 6 and Figure W-7).

There are no amplitude anomalies within 500 ft of the proposed wellbore within Unit 1 (Map 5).

Unit 1 is assessed as having a ***low*** potential for gas hydrates (Figure W-7). There is a ***negligible*** potential for shallow gas and a ***negligible*** potential for SWF within this unit (Figure W-7).

Unit 2: Horizon 10 to Horizon 20. Unit 2, bound by Horizon 10 and Horizon 20, consist of two Subunits (Subunits 2a and 2b). The upper Subunit 2a, between Horizon 10 and the top of the Blue Unit is 839 ft thick and consists of low-amplitude, semi-continuous, semi-parallel to chaotic reflections (Figure W-7). Subunit 2a is interpreted to consist of channel margin deposits composed primarily of stratified clay and silt with thinly bedded sand associated with channel levees, channel-margin slides, and mass transport deposits.

The lower Subunit 2b, between the top of the Blue Unit and Horizon 20, contains moderate- to high-amplitude, discontinuous to chaotic reflections interpreted to represent the SWF Blue Unit. The Blue Unit at the proposed location is 442 ft thick and is interpreted to contain interbedded sand/silt ponded turbidites (Figure W-7). Horizon 20 marks the base of the Blue Unit, as well as the overall Unit 2, and is mapped at 1,545 ft BML.

The base of the gas hydrate stability zone (BGHSZ) at this water depth is estimated to be within the Blue Unit at 1,281 ft BML based on Maekawa et al. (1995).

There are no amplitude anomalies within 500 ft of the proposed wellbore within this unit (Map 5).

There is a ***low*** potential for gas hydrate from 264 ft BML to the BGHSZ at 1,281 ft BML and a ***negligible*** potential for gas hydrate from the BGHSZ at 1,281 ft BML to Horizon 20 at 1,545 ft BML (Figure W-7). There is a ***negligible*** potential for shallow gas and SWF shallow from Unit 2a between 264 ft BML and 1,103 ft BML. There is a ***low*** potential for shallow gas and a ***moderate*** potential for SWF from Unit 2b (Blue Unit) between 1,103 ft BML and 1,545 ft BML (Figure W-7).

Unit 3: Horizon 20 to Horizon 30. Unit 3, bound by Horizon 20 and Horizon 30, contains low-amplitude, semi-continuous to chaotic reflections. These reflections are interpreted to represent clay- and silt-rich mass transport deposits with thin sands possible (Figure W-7). Unit 3 is 1,214 ft thick at the proposed location. Horizon 30 marks the base of this unit and is mapped at 2,759 ft BML at the proposed well location.

There are no amplitude anomalies within 500 ft of the proposed wellbore within this unit (Map 5).

There is a ***negligible*** potential for gas hydrates within this unit (Figure W-7). There is a ***negligible*** potential for shallow gas and a ***negligible*** potential for SWF from Unit 3.

Unit 4: Horizon 30 to Horizon 40. Unit 4 is identified as the regional SWF Green Unit and is bound by Horizon 30 and Horizon 40 (Figure W-7). Unit 4 consists of two Subunits (Subunits 4a and 4b) separated by Horizon 35. Subunit 4a, between Horizon 30 and Horizon 35, consists of moderate- to high-amplitude, semi continuous, subparallel to chaotic reflectors. This Subunit is interpreted as bedded turbidite deposits containing silt and sand. Subunit 4a is 1,151 ft thick at the proposed location and Horizon 35, marking the base of this Subunit, is mapped at 3,910 ft BML.

Subunit 4b, between Horizons 35 and 40, consists of low-amplitude, subparallel, continuous to discontinuous to chaotic reflectors that are interpreted as clay and silt dominated slumped mass transport deposits. Subunit 4b is 719 ft thick at the proposed location and Horizon 40 is expected at 4,629 ft BML.

There is one amplitude anomaly within 500 ft of the proposed wellbore within this unit (Map 5). The anomaly is located 195 ft northeast of the proposed wellbore and occurs within Subunit 4a. The anomaly appears isolated with no connectivity to the wellbore and occurs stratigraphically updip of the planned wellbore. There is a ***low*** potential for encountering shallow gas associated with this anomaly.

There is a ***negligible*** potential for gas hydrates within Unit 4. There is a ***low*** potential for shallow gas and a ***moderate*** potential for SWF within Unit 4a between 2,759 ft BML and 3,910 ft BML (Figure W-7). There is a ***negligible*** potential for shallow gas and SWF from Subunit 4b between 3,910 ft BML and 4,629 ft BML.

Unit 5: Horizon 40 to Horizon 50. Unit 5, between Horizon 40 and Horizon 50 consists of an upper and lower interval separated by an interface at 5,197 ft BML (Figure W-7). The upper interval, between Horizon 40 at 4,629 ft BML and the interface at 5,197 ft BML, consists of low-amplitude, continuous to discontinuous, subparallel reflectors. This interval is interpreted as silt- and clay-rich normally deposited sediments and thin mass transport deposits and is 568 ft thick at the proposed location.

The lower interval, between the interface at 5,197 ft BML and Horizon 50 at 5,948 ft BML (9,469 ft BSL; Map 7) consists of moderate-amplitude, discontinuous to chaotic reflections. The lower interval is interpreted as silt- and sand-prone turbidites and is 751 ft thick at the proposed location (Figure W-7).

There are no amplitude anomalies within 500 ft of the proposed wellbore within this unit (Map 5).

There is a ***negligible*** potential for gas hydrates within Unit 5. There is a ***negligible*** potential for shallow gas and SWF within the upper interval between 4,629 ft BML and 5,197 ft BML (Figure W-7). There is a ***negligible*** potential for shallow gas and a ***low*** potential for SWF within the lower interval between 5,197 ft BML and 5,948 ft BML.

Unit 6: Horizon 50 to the Limit of Investigation. Unit 6, between Horizon 50 and the Limit of Investigation (7,000 ft BML) consists of low-amplitude, discontinuous to chaotic reflections interpreted as clay- and silt-rich mass transport deposits (Figure W-7). The unit is 1,052 ft thick at the proposed location.

There are no amplitude anomalies within 500 ft of the proposed wellbore within Unit 6 (Map 5).

There is a ***negligible*** potential for gas hydrates within this unit (Figure W-7). There is a ***negligible*** potential for shallow gas and a ***negligible*** potential for SWF within this unit (Figure W-7).

B-geO

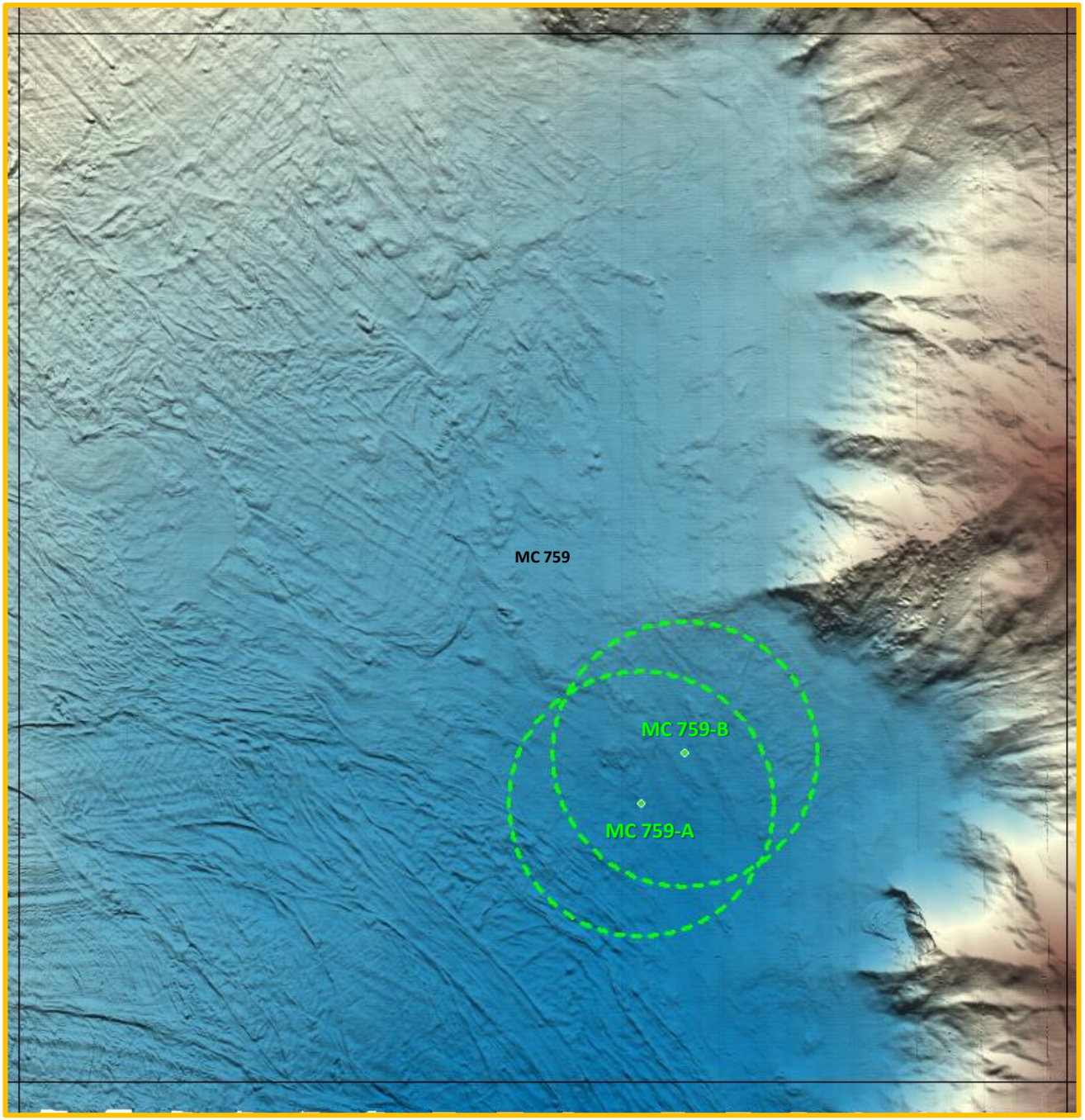
Legend

AUV survey area

Proposed well location
circle represents 2,000 ft radius

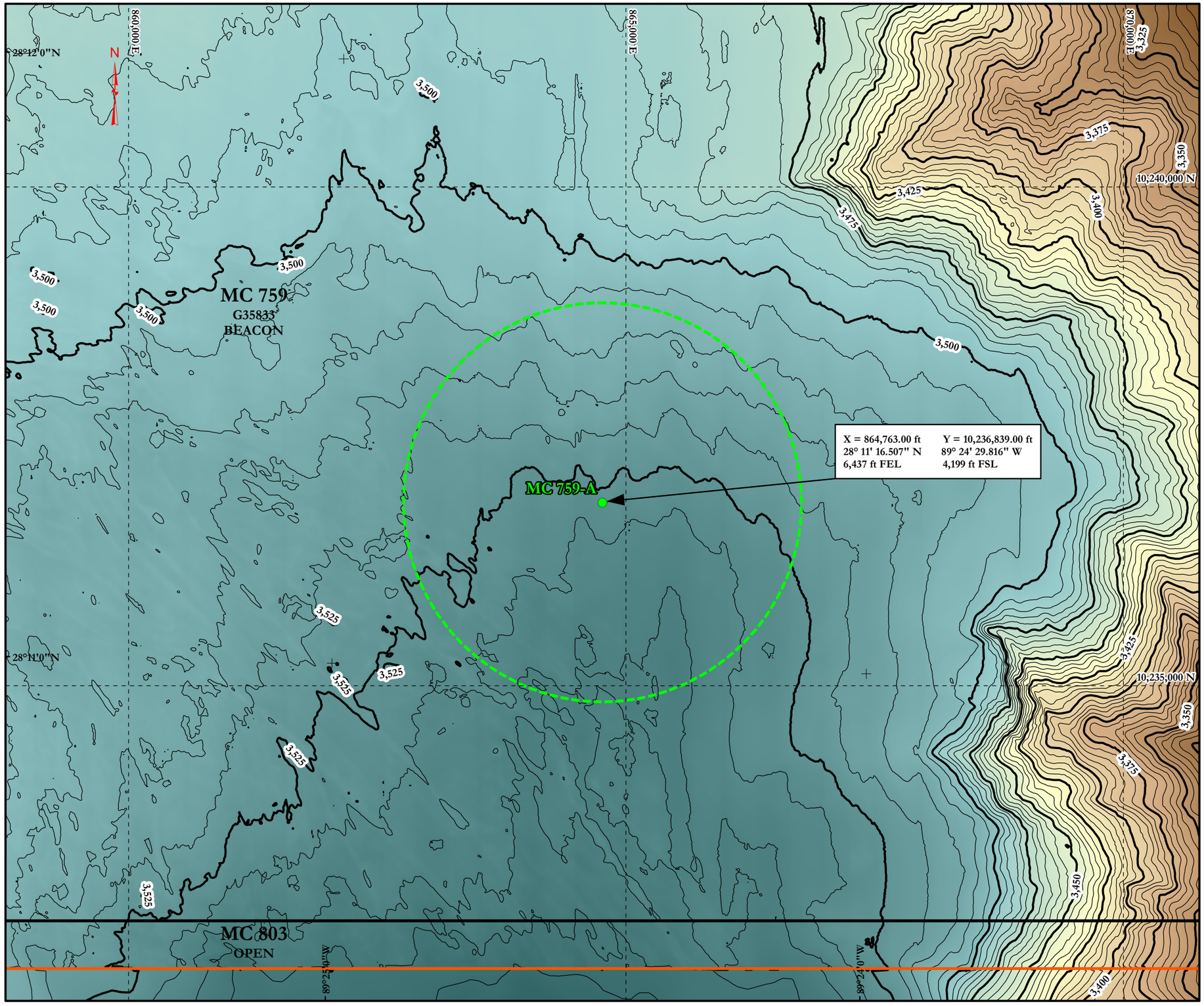
N

2,000 ft



Seafloor rendering showing MC 759-A and MC 759-B locations

Figure W-2



Legend

- Lat/Long Grid Points
- UTM Northing and Easting Grid Lines
- AUV Survey Area
- Proposed Well
- 2,000-ft Radius
- 5-ft Contours
- 25-ft Contours

Depths
(Below Sea Level)

3,301 ft

3,548 ft

Grid Information:
Data Source: AUV Multibeam
Method: Kriging
Spacing: 10 ft
Search Radius: 30 ft

Data Source: 3-D Seismic
Method: Kriging
Spacing: 100 ft
Search Radius: 300 ft

IMPORTANT NOTICE
This map is not intended for navigation purposes.
Public information obtained from BOEM database (October 2020).

Geodetic Datum: NAD27 Projection: UTM Zone: 16N Grid Units: Feet	Interpretation By: J. Keenan Cartography: T. Nguyen Project No.: 19-08-18 Date: October 2020

0 500 1,000 1,500 2,000 Feet

Scale =1:12,000

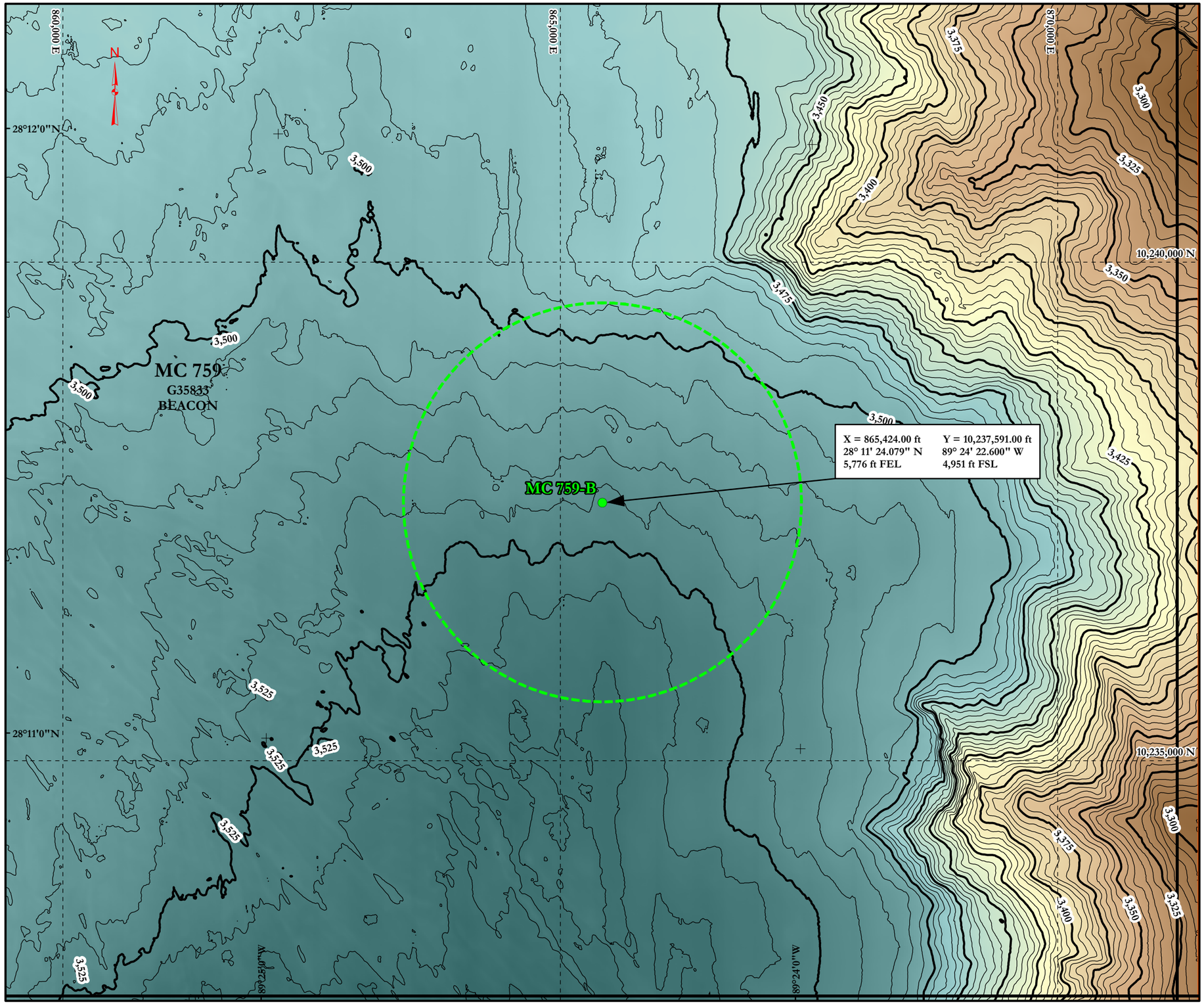
BOE Beacon OFFSHORE ENERGY

Block 759
Mississippi Canyon Area
Gulf of Mexico

Map W-1
Bathymetry
Proposed Well MC 759-A
Lease No. G35833

Map Prepared by:
Berger Geosciences, LLC.

B-geO



Legend

- Lat/Long Grid Points
- UTM Northing and Easting Grid Lines
- AUV Survey Area
- Proposed Well
- 2,000-ft Radius
- 5-ft Contours
- 25-ft Contours

Depths
(Below Sea Level)

3,280 ft

3,541 ft

Grid Information:
Data Source: AUV Multibeam
Method: Kriging
Spacing: 10 ft
Search Radius: 30 ft

IMPORTANT NOTICE
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Public information obtained from BOEM database (October 2020).

Geodetic Datum: NAD27 Projection: UTM Zone: 16N Grid Units: Feet	Interpretation By: J. Keenan Cartography: T. Nguyen Project No.: 19-08-18 Date: October 2020

0 500 1,000 1,500 2,000 Feet

Scale =1:12,000

BOE Beacon OFFSHORE ENERGY

Block 759
Mississippi Canyon Area
Gulf of Mexico

Map W-2
Bathymetry
Proposed Well MC 759-B
Lease No. G35833

B-geO

APPENDIX D
HYDROGEN SULFIDE INFORMATION

A) CONCENTRATION
BOE Exploration & Production has not determined the estimated H2S concentration it may encounter while conducting the activity proposed in this plan. The presence nor absence of H2S in any concentration has been confirmed in the zones or geologic formations proposed in this plan.

B) CLASSIFICATION
In accordance with 30 CFR 250.490(c), BOE Exploration & Production is requesting the subject area and block, and lease(s), respectively be classified as an area where H2S is unknown.

C) H2S CONTINGENCY PLAN
BOE Exploration & Production will submit to the appropriate BSEE GOMR district office an H2S contingency plan prepared in accordance with 30 CFR 250.490 (f) before conducting the proposed exploration activities.

D) MODELING REPORT
In accordance with NTL 2008-G04, a modeling report is not included in the attachments for this appendix. BOE Exploration & Production has not determined the estimated H2S concentration it may encounter while conducting the activity proposed in this plan. The presence nor absence of H2S in any concentration has been confirmed in the zones or geologic formations proposed in this plan.

APPENDIX E
MINERAL RESOURCE CONSERVATION INFORMATION

A) TECHNOLOGY & RESERVOIR ENGINEERING PRACTICES & PROCEDURES
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this Exploration Plan.

B) TECHNOLOGY & RECOVERY PRACTICES & PROCEDURES
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this Exploration Plan.

C) RESERVOIR DEVELOPMENT
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this Exploration Plan.

APPENDIX F
BIOLOGICAL, PHYSICAL, & SOCIOECONOMIC INFORMATION

A) HIGH-DENSITY DEEPWATER BENTHIC COMMUNITIES INFORMATION
The activities proposed in this plan could disturb seafloor areas in water depths or 984 feet or greater.

A summary statement addressing seafloor and subsurface geologic conditions for the proposed locations indicated in this plan is included below.

Mississippi Canyon 759 Well Location A / A-Alt
There is no evidence of fluid migration to the seafloor within 2,000 ft of the proposed location. There are no seafloor amplitude anomalies or signs of gas migration within 2,000 ft of the proposed location. There are no BSRs or other seismic indicators of gas hydrates within 2,000 ft of the proposed location.

Features or areas that could support high-density chemosynthetic or other benthic communities are not anticipated within 2,000 ft of the proposed location.

Mississippi Canyon 759 Well Location B / B-Alt
There is no evidence of fluid migration to the seafloor within 2,000 ft of the proposed location. There are no seafloor amplitude anomalies or signs of gas migration within 2,000 ft of the proposed location. There are no BSRs or other seismic indicators of gas hydrates within 2,000 ft of the proposed location.

Features or areas that could support high-density chemosynthetic or other benthic communities are not anticipated within 2,000 ft of the proposed location.

Maps depicting wellsite-specific seafloor features are included in the attachment(s) to this appendix.

B) TOPOGRAPHIC FEATURES MAP
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. There will be no rig, barge or anchors, etc. placed within 1,000 feet of the "No Activity Zone" of an identified topographic feature.

C) TOPOGRAPHIC FEATURES STATEMENT (SHUNTING)
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. BOE Exploration & Production is not proposing to drill more than two wells from the same surface location.

D) LIVE BOTTOM (PINNACLE TREND) MAP
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. The Live Bottom (Pinnacle Trend) lease stipulation is not attached to the subject lease(s).

E) LIVE BOTTOM (LOW RELIEF) MAP
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. The Live Bottom (Low Relief) lease stipulation is not attached to the subject lease(s).

F) POTENTIALLY SENSITIVE BIOLOGICAL FEATURES
In accordance with NTL 2009-G39. this information is not applicable to the activities proposed in this plan. Bottom-disturbing activities are not within 100 feet of potentially sensitive biological features.

G) THREATENED & ENDANGERED SPECIES, CRITICAL HABITAT, & MARINE MAMMAL INFORMATION
The subject area(s) and block(s) is not designated as a critical habitat for any federally listed threated or endangered species. BOE Exploration & Production does not anticipate that any threatened or endangered species will be adversely affected as a result of the activities proposed in this plan. However, in the unlikely event of an accident, adverse impacts to endangered marine mammal species are possible.

In monitoring the effect of the proposed activities on marine life, BOE Exploration & Production will adhere to the information and guidelines set forth by NTL 2015-G03 “Marine Trash and Debris Awareness and Elimination” and NTL BOEM 2016-G01 “Vessel Strike Avoidance and Injured/Dead Protected Species Reporting.”

A list of endangered and threatened species and critical habitats found in the Gulf of Mexico is included in the attachments to this appendix.

H) ARCHAEOLOGICAL REPORT
An archaeological report incorporating Mississippi Canyon 759 is being submitted in conjunction with this plan (Echo Offshore Report No. 20-070-34).

A summary statement of that archaeological assessment indicates there are no sonar targets of potential archaeological interest identified on sidescan sonar data.

I) AIR & WATER QUALITY INFORMATION
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. The State of Florida is not an affected state.

J) SOCIOECONOMIC INFORMATION
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. The State of Florida is not an affected state.

WELLSITE-SPECIFIC SEAFLOOR FEATURES MAPS

B-geO

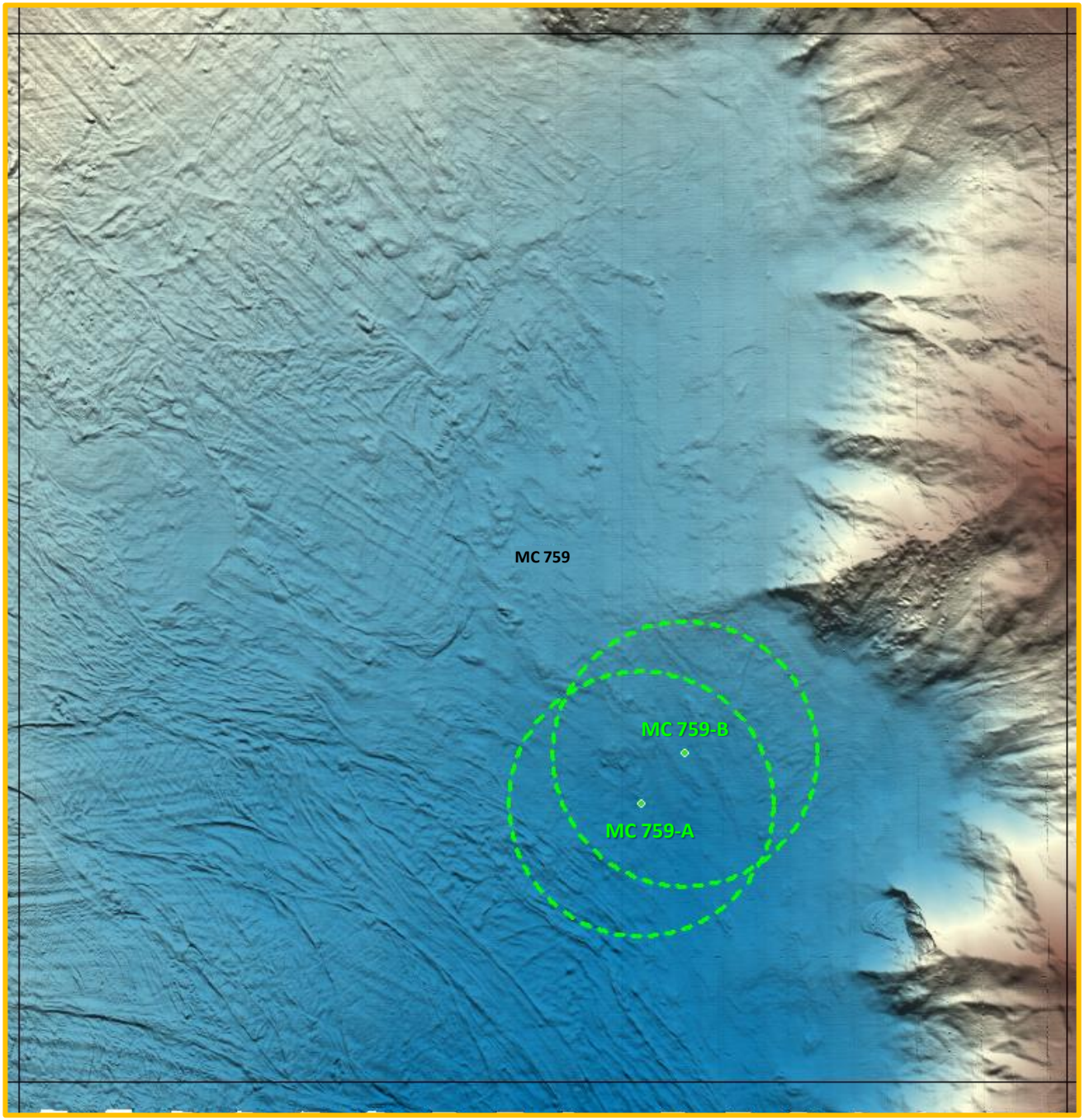
Legend

AUV survey area

Proposed well location
circle represents 2,000 ft radius

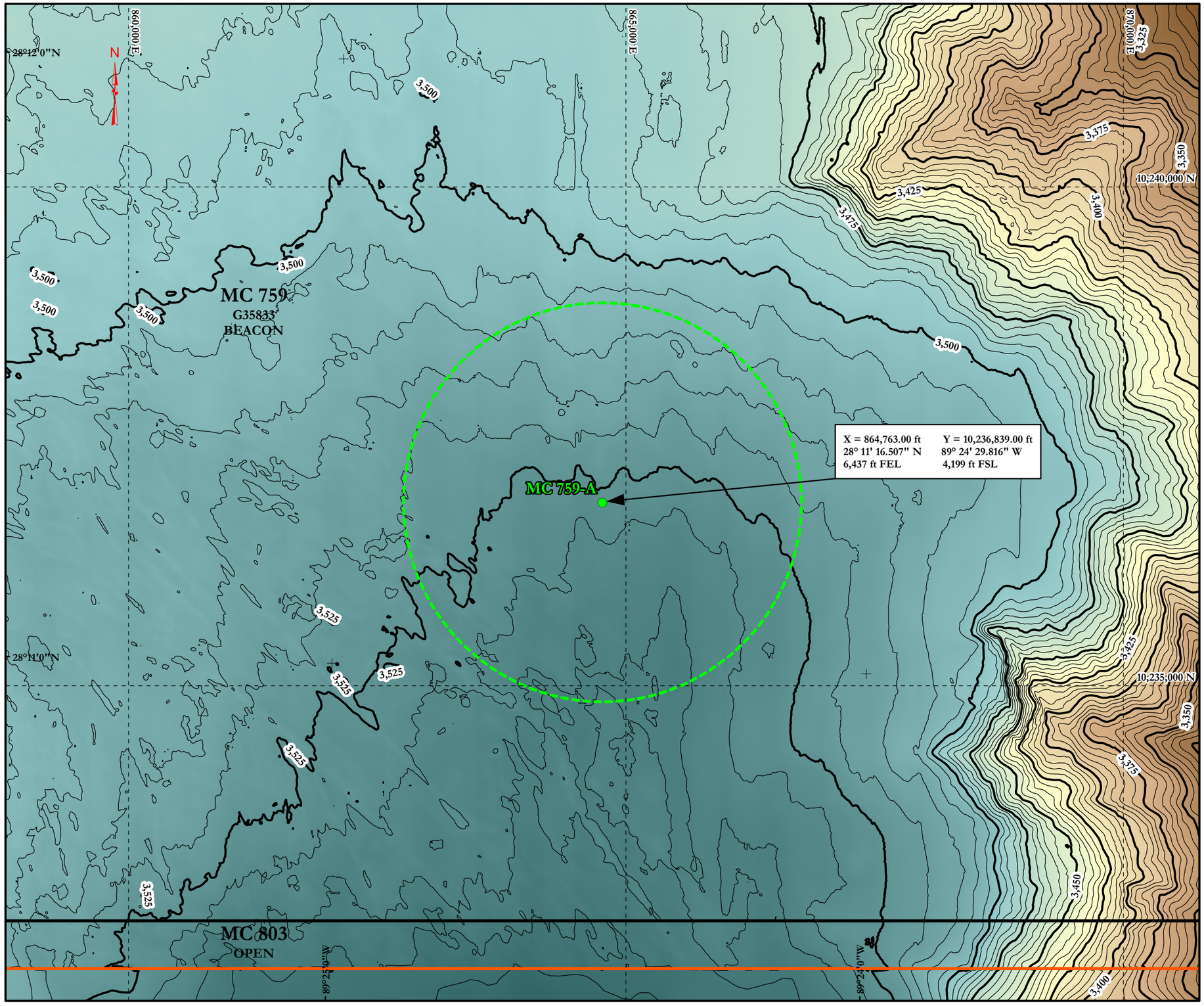
N

2,000 ft



Seafloor rendering showing MC 759-A and MC 759-B locations

Figure W-2



Legend

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- UTM Northing and Easting Grid Lines
- AUV Survey Area
- Proposed Well
- 2,000-ft Radius
- 5-ft Contours
- 25-ft Contours

Depths
(Below Sea Level)

3,301 ft

3,548 ft

Grid Information:
Data Source: AUV Multibeam
Method: Kriging
Spacing: 10 ft
Search Radius: 30 ft

Data Source: 3-D Seismic
Method: Kriging
Spacing: 100 ft
Search Radius: 300 ft

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Public information obtained from BOEM database (October 2020).

Geodetic Datum: NAD27
Projection: UTM
Zone: 16N
Grid Units: Feet

Interpretation By: J. Keenan
Cartography: T. Nguyen
Project No.: 19-08-18
Date: October 2020

0 500 1,000 1,500 2,000 Feet

Scale =1:12,000

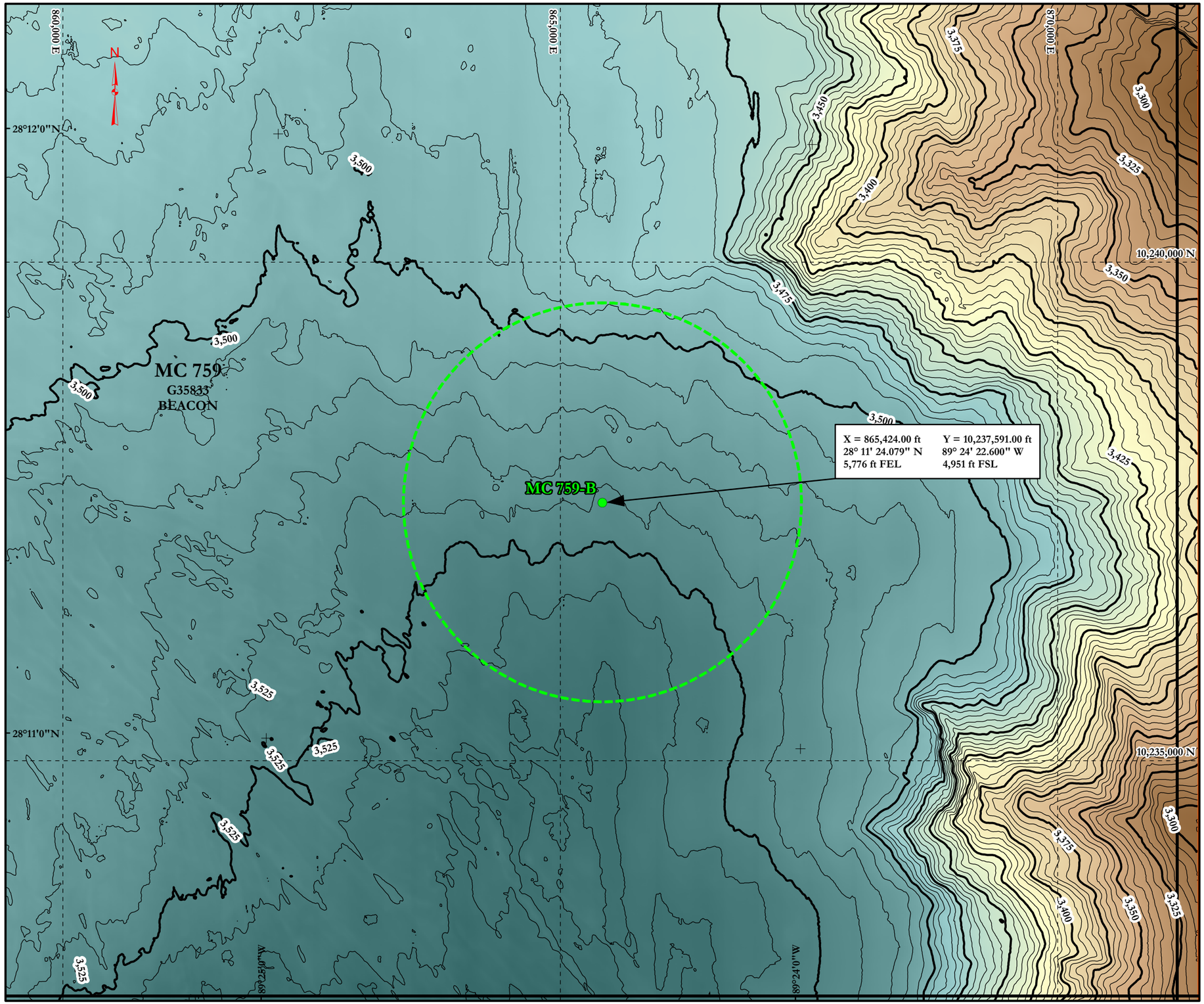
BOE Beacon OFFSHORE ENERGY

Block 759
Mississippi Canyon Area
Gulf of Mexico

Map W-1
Bathymetry
Proposed Well MC 759-A
Lease No. G35833

Map Prepared by:
Berger Geosciences, LLC.

B-geO



Legend

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- 2,000-ft Radius
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Depths
(Below Sea Level)

3,280 ft

3,541 ft

Grid Information:
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Search Radius: 30 ft

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Geodetic Datum: NAD27 Projection: UTM Zone: 16N Grid Units: Feet	Interpretation By: J. Keenan Cartography: T. Nguyen Project No.: 19-08-18 Date: October 2020

0 500 1,000 1,500 2,000 Feet

Scale =1:12,000

BOE Beacon OFFSHORE ENERGY

Block 759
Mississippi Canyon Area
Gulf of Mexico

Map W-2
Bathymetry
Proposed Well MC 759-B
Lease No. G35833

Map Prepared by:
Berger Geosciences, LLC.

B-geO

ENDANGERED AND THREATENED SPECIES IN THE GULF OF MEXICO

Gulf of Mexico

Threatened and Endangered Species and Critical Habitats Under NOAA Fisheries Jurisdiction

Species	Listing Status	Recovery Plan	Critical Habitat
Green sea turtle	Threatened - North and South Atlantic Distinct Population Segment (81 FR 20057; April 6, 2016)	October 1991	63 FR 46693; September 2, 1998
Kemp's ridley sea turtle	Endangered (35 FR 18319; December 2, 1970)	September 2011	None
Leatherback sea turtle	Endangered (35 FR 8491; June 2, 1970)	April 1992	44 FR 17710; March 23, 1979
Loggerhead sea turtle	Threatened - Northwest Atlantic Ocean Distinct Population Segment (76 FR 58868; September 22, 2011)	December 2008	79 FR 39856; July 10, 2014
Hawksbill sea turtle	Endangered (35 FR 8491; June 2, 1970)	December 1993	63 FR 46693; September 2, 1998
Smalltooth sawfish	U.S. Distinct Population Segment Endangered (68 FR 15674; April 1, 2003)	January 2009	72 FR 45353; October 2, 2009
Gulf sturgeon	Threatened (56 FR 49653; September 30, 1991)	September 1995	68 FR 13370; March 19, 2003
Nassau grouper	Threatened (81 FR 42268; June 29, 2016)	2018 Recovery Outline	None

Species	Listing Status	Recovery Plan	Critical Habitat
Oceanic whitetip shark	Threatened (83 FR 4153; January 30, 2018)	2018 Recovery Outline	None
Giant manta ray	Threatened (83 FR 2916; January 22, 2018)	December 2019	None
Elkhorn coral	Threatened (71 FR 26852; May 9, 2006)	March 2015	73 FR 72210; November 26, 2008
Staghorn coral	Threatened (71 FR 26852; May 9, 2006)	March 2015	73 FR 72210; November 26, 2008
Boulder star coral	Threatened (79 FR 53851; September 10, 2014)	None	None
Mountainous star coral	Threatened (79 FR 53851; September 10, 2014)	None	None
Lobed star coral	Threatened (79 FR 53851; September 10, 2014)	None	None
Rough cactus coral	Threatened (79 FR 53851; September 10, 2014)	None	None
Pillar coral	Threatened (79 FR 53851; September 10, 2014)	None	None
Fin whale	Endangered (35 FR 18319/ December 2, 1970)	August 2010	None
Sperm whale	Endangered (35 FR 18319; December 2, 1970)	December 2010	None
Sei whale	Endangered (35 FR 12222; December 2, 1970)	December 2011	None
Gulf of Mexico Bryde's whale	Endangered (84 FR 15446, April 15, 2019)	None	None

Last updated by Southeast Regional Office on May 28, 2020

APPENDIX G
WASTES AND DISCHARGES INFORMATION

A) PROJECTED GENERATED WASTES
A table entitled "Wastes you will transport and/or dispose of onshore" is included in the attachments to this appendix.

B) PROJECTED OCEAN DISCHARGES
A table entitled "Wastes you will generate, treat and/or downhole dispose or discharge to the GOM" is included in the attachments to this appendix.

C) MODELING REPORT
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. The subject activities do not require an individual NPDES permit. Therefore, a modeling report is not required.

D) NPDES PERMITS
The subject rig and/or facility will be covered under BOE Exploration & Production's General Permit upon commencement of the activities proposed in this plan.

E) COOLING WATER INTAKES
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. The associated leases are within the Gulf of Mexico Region.

WATER QUALITY SPREADSHEETS

TABLE 1. WASTES YOU WILL GENERATE, TREAT AND DOWNHOLE DISPOSE OR

please specify if the amount reported is a total or per well amount

MC 759

Projected generated waste			Projected ocean discharges		Downhole Disposal
Type of Waste	**Composition**	**Projected Amount**	**Discharge rate**	**Discharge Method**	**Answer yes or no**
Will drilling occur ? If yes, fill in the muds and cuttings.					
EXAMPLE: Cuttings wetted with synthetic based fluid	*Cuttings generated while using synthetic based drilling fluid.*	*X bbl/well*	*X bbl/day/well*	*discharge overboard*	*No*
Water-based drilling fluid	Water based mud additives, barite and gel used for WBM	108,919 bbls/well	7,299 bbls/day/well	Discharge overboard	No
Cuttings wetted with water-based fluid	Cuttings generated while using water based drilling fluid.	6,067 bbls/well	407 bbls/day/well	Discharge overboard	No
Cuttings wetted with synthetic-based fluid	Cuttings generated while using synthetic based drilling fluid.	7,738 bbls/well	183 bbls/day/well	Discharge overboard	No
Will humans be there? If yes, expect conventional waste					
EXAMPLE: Sanitary waste water	Sanitary waste from living quarters	X bbl/well	X bbl/hr/well	chlorinate and discharge overboard	No
Domestic waste	Misc waste for living quarters	4,650 bbls/well	4.6 bbls/hr/well	Discharge overboard (no free oil)	No
Sanitary waste	Processed sanitary waste from living quarters	3,100 bbls/well	3.1 bbls/hr/well	Chlorinate and discharge overboard	No
Is there a deck? If yes, there will be Deck Drainage					
Deck Drainage	Accumulated drainage due to rainfall	0 to 47,261 bbls/well	0 to 167 bbls/hr/well	Test for oil and grease and discharge overboard	No
Will you conduct well treatment, completion, or workover?					
Well treatment fluids	NPDES approved treatment fluid used for well operations	100 bbls/well	20 bbls/hr/well	Test for oil and grease and discharge overboard.	No
Well completion fluids	Clear brines used for completion operations	500 bbls/well	100 bbls/hr/well	Test for oil and grease and discharge overboard. This excludes clear brines containing Zinc	No
Workover fluids	NA	NA	NA	NA	NA
Miscellaneous discharges. If yes, only fill in those associated with your activity.					
Desalinization unit discharge	Uncontaminated spent seawater used for potable water generation unit	0 to 100,000 bbls/well	60 bbls/hr/well	Discharge overboard	No
Blowout prevent fluid	Treated freshwater used control of subsea blowout preventers	0 to 100 bbls/well	5 bbls/hr/well	Discharge at seafloor	No
Ballast water	Uncontaminated seawater used for ballast control	0 to 100,000 bbls/well	16,350 bbls/hr/well	Discharge overboard	No
Bilge water	NA	NA	NA	NA	NA
Excess cement at seafloor	Excess cement slurry and mixwater used for cementing operation - NPDES allowed	300 bbls/well	360 bbls/hr/well	Discharge at mudline	No
Fire water	Uncontaminated seawater used for fire control system	0 to 10,000 bbls/well	16,350 bbls/hr/well	Discharge overboard	No
Cooling water	Uncontaminated seawater used for heat exchanger operations used to cool machinery	0 to 400,000 bbls/well	120 bbls/hr/well	Discharge overboard	No
Will you produce hydrocarbons? If yes fill in for produced water.					
Produced water	NA	NA	NA	NA	NA
Will you be covered by an individual or general NPDES permit ?		**General NPDES**	GMG 290000		
			Comply with the requirements of the NPDES permit.		

NOTE: If you will not have a type of waste, enter NA in the row.

TABLE 2. WASTES YOU WILL TRANSPORT AND /OR DISPOSE OF ONSHORE

Please specify whatever the amount reported is a total or per well

MC 759	Projected generated waste	Solid and Liquid Wastses Transportation	Waste Disposal		
Type of Waste	**Composition**	**Transport Method**	**Name/Location of Facility**	**Amount**	**Disposal Method**
			Newport Environmental Services Inc., Ingleside, TX	*X bbl/well*	*Recycled*
Oil-based drilling fluid or mud	NA	NA	NA	NA	NA
Synthetic-based drilling fluid or mud	Internal olifin, ester nbased mud	Barged in 25 bbls cutting boxes and / or liquid mud tanks for supply vessels	Ecoserv, Fourchon, LA / R360, Fourchon, LA	6750 bbls / well	Recycled
Cuttings wetted with Water-based fluid	NA	NA	NA	NA	NA
Cuttings wetted with Synthetic-based fluid	NA	NA	NA	NA	NA
Cuttings wetted with oil-based fluids	NA	NA	NA	NA	NA
Will you produce hydrocarbons? If yes fill in for produced sand.					
Produced sand	NA	NA	NA	NA	NA
Will you have additional wastes that are not permitted for discharge? If					
EXAMPLE: trash and debris (recylables)	*Plastic, paper, aluminum*	*barged in a storage bin*	*ARC, New Iberia, LA*	*X lb/well*	*Recycled*
Trash and debris	Plastic, paper, aluminum	Barged in a storage bin	Blanchard Landfill, Golden Meadows, LA	4000 lbs / well	Recycled
Used oil	Spent oil from machinery	Barged in USCG approved transfer tote tanks.	L&L Services, Fourchon, LA	200 bbls / well	Recycled
Wash water	Wash water w/ SBM residue and surfactants	Barged in 25 bbls cutting boxes and / or liquid mud tanks for supply vessels	Ecoserv, Fourchon, LA / R360, Fourchon, LA	2000 bbls / well	Approved disposal well injection or land farm
Chemical product wastes	Spent treatment and / or damaged chemicals used in operations	Barged in 25 bbls cutting boxes and / or cutting boxes	L&L Services, Fourchon, LA	10 bbls / well	Recycled

NOTE: If you will not have a type of waste, enter NA in the row.

APPENDIX H
AIR EMISSIONS INFORMATION

A specific drilling unit has not been determined to conduct activities proposed in this plan.

In accordance with BOEM guidance, only one form for the type of drilling unit that has the highest potential emissions is included in the attachments to this appendix.

Multiple rig types proposed to conduct activities proposed in this plan are clarified on the title page of the attached.

BOE Exploration & Production is requesting the subject area and block, and lease(s), respectively be classified as an area where H2S is unknown. Accordingly, a possibly expected concentration is indicated in the Sulphur Content Source table of the attached air emissions information.

In accordance with NTL 2020-G01, air emission information in both PDF and Excel formats are included as part of this plan.

AIR EMISSION SPREADHSEETS

COMPANY	BOE Exploration & Production
AREA	MC
BLOCK	759
LEASE	OCS-G 35833
FACILITY	N/A
WELL	A / B
COMPANY CONTACT	Brandon Hebert
TELEPHONE NO.	985-666-0143
REMARKS	Proposed Rig Types: Drillship / DP Semisubmersible

AIR EMISSIONS COMPUTATION FACTORS

Fuel Usage Conversion Factors	Natural Gas Turbines				Natural Gas Engines		Diesel Recip. Engine		Diesel Turbines			
	SCF/hp-hr	9.524			SCF/hp-hr	7,143	GAL/hp-hr	0.0514	GAL/hp-hr	0.0514		

Equipment/Emission Factors	units	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	REF.	DATE	Reference Links
Natural Gas Turbine	g/hp-hr		0.0086	0.0086	0.0026	1.4515	0.0095	N/A	0.3719	N/A	AP42 3.1-1& 3.1-2a	4/00	https://www3.epa.gov/ttnchie1/ap42/ch03/final/c03s01.pdf
RECIP. 2 Cycle Lean Natural Gas	g/hp-hr		0.1293	0.1293	0.0020	6.5998	0.4082	N/A	1.2009	N/A	AP-42 3.2-1	7/00	https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s02.pdf
RECIP. 4 Cycle Lean Natural Gas	g/hp-hr		0.0002	0.0002	0.0020	2.8814	0.4014	N/A	1.8949	N/A	AP-42 3.2-2	7/00	https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s02.pdf
RECIP. 4 Cycle Rich Natural Gas	g/hp-hr		0.0323	0.0323	0.0020	7.7224	0.1021	N/A	11.9408	N/A	AP-42 3.2-3	7/00	https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s02.pdf
Diesel Recip. < 600 hp	g/hp-hr	1	1	1	0.0279	14.1	1.04	N/A	3.03	N/A	AP-42 3.3-1	10/96	https://www3.epa.gov/ttnchie1/ap42/ch03/final/c03s03.pdf
Diesel Recip. > 600 hp	g/hp-hr	0.32	0.182	0.178	0.0055	10.9	0.29	N/A	2.5	N/A	AP42 3.4-1 & 3.4-2	10/96	https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s04.pdf
Diesel Boiler	lbs/bbl	0.0840	0.0420	0.0105	0.0089	1.0080	0.0084	5.14E-05	0.2100	0.0336	AP42 1.3-6; Pb and NH3: WebFIRE (08/2018)	9/98 and 5/10	https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s03.pdf https://cfpub.epa.gov/webfire/
Diesel Turbine	g/hp-hr	0.0381	0.0137	0.0137	0.0048	2.7941	0.0013	4.45E-05	0.0105	N/A	AP-42 3.1-1 & 3.1-2a	4/00	https://www3.epa.gov/ttnchie1/ap42/ch03/final/c03s01.pdf
Dual Fuel Turbine	g/hp-hr	0.0381	0.0137	0.0137	0.0048	2.7941	0.0095	4.45E-05	0.3719	0.0000	AP42 3.1-1& 3.1-2a; AP42 3.1-1 & 3.1-2a	4/00	https://cfpub.epa.gov/webfire/
Vessels – Propulsion	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19	
Vessels – Drilling Prime Engine, Auxillary	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19	https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data
Vessels – Diesel Boiler	g/hp-hr	0.0466	0.1491	0.1417	0.4400	1.4914	0.0820	3.73E-05	0.1491	0.0003	USEPA 2017 NEI;TSP (units converted) refer to Diesel Boiler Reference	3/19	
Vessels – Well Stimulation	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19	
Natural Gas Heater/Boiler/Burner	lbs/MMscf	7.60	1.90	1.90	0.60	190.00	5.50	5.00E-04	84.00	3.2	AP42 1.4-1 & 1.4-2; Pb and NH3: WebFIRE (08/2018)	7/98 and 8/18	https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s04.pdf https://cfpub.epa.gov/webfire/
Combustion Flare (no smoke)	lbs/MMscf	0.00	0.00	0.00	3.37	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18	
Combustion Flare (light smoke)	lbs/MMscf	2.10	2.10	2.10	3.37	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18	
Combustion Flare (medium smoke)	lbs/MMscf	10.50	10.50	10.50	3.37	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18	https://www3.epa.gov/ttn/chief/ap42/ch13/final/C13S05_02-05-18.pdf
Combustion Flare (heavy smoke)	lbs/MMscf	21.00	21.00	21.00	3.37	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18	
Liquid Flaring	lbs/bbl	0.42	0.0966	0.0651	5.964	0.84	0.01428	5.14E-05	0.21	0.0336	AP42 1.3-1 through 1.3-3 and 1.3-5	5/10	https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s03.pdf
Storage Tank	tons/yr/tank						4.300				2014 Gulfwide Inventory; Avg emiss (upper bound of 95% CI)	2017	https://www.boem.gov/environment/environmental-studies/2014-gulfwide-emission-inventory
Fugitives	lbs/hr/component						0.0005				API Study	12/93	https://www.api.org/
Glycol Dehydrator	tons/yr/dehydrator						19.240				2011 Gulfwide Inventory; Avg emiss (upper bound of 95% CI)	2014	https://www.boem.gov/environment/environmental-studies/2011-gulfwide-emission-inventory
Cold Vent	tons/yr/vent						44.747				2014 Gulfwide Inventory; Avg emiss (upper bound of 95% CI)	2017	https://www.boem.gov/environment/environmental-studies/2014-gulfwide-emission-inventory
Waste Incinerator	lb/ton		15.0	15.0	2.5	2.0	N/A	N/A	20.0	N/A	AP 42 2.1-12	10/96	https://www3.epa.gov/ttnchie1/ap42/ch02/final/c02s01.pdf
On-Ice – Loader	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	
On-Ice – Other Construction Equipment	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	
On-Ice – Other Survey Equipment	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	
On-Ice – Tractor	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	https://www.epa.gov/moves/nonroad2008a-installation-and-updates
On-Ice – Truck (for gravel island)	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	
On-Ice – Truck (for surveys)	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	
Man Camp - Operation (max people/day)	tons/person/day		0.0004	0.0004	0.0004	0.006	0.001	N/A	0.001	N/A	BOEM 2014-1001	2014	https://www.boem.gov/sites/default/files/uploadedFiles/BOEM/BOEM_Newsroom/Library/Publications/2014-1001.pdf
Vessels - Ice Management Diesel	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19	https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data
Vessels - Hovercraft Diesel	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19	https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data

Sulfur Content Source	Value	Units
Fuel Gas	3.38	ppm
Diesel Fuel	0.0015	% weight
Produced Gas (Flare)	20	ppm
Produced Oil (Liquid Flaring)	1	% weight

Density and Heat Value of Diesel Fuel		
Density	7.05	lbs/gal
Heat Value	19,300	Btu/lb

Heat Value of Natural Gas		
Heat Value	1,050	MMBtu/MMscf

Natural Gas Flare Parameters	Value	Units
VOC Content of Flare Gas	0.6816	lb VOC/lb-mol gas
Natural Gas Flare Efficiency	98	%

AIR EMISSIONS CALCULATIONS - 2ND YEAR

COMPANY	AREA		BLOCK	LEASE	FACILITY	WELL					CONTACT	PHONE	REMARKS
KOE Exploration & Production	MC		Hsb	OCS-G 35833	N/A	A-8					Brandon Pellett	985-666-6143	Proposed Rig Types: Drillship / DP Semisubmersible

OPERATIONS	EQUIPMENT	EQUIPMENT ID	RATING	MAX. FUEL	ACT. FUEL	RUN TIME	MAXIMUM POUNDS PER HOUR									ESTIMATED TONS								
	Diesel Engines		HP	GAL/HR	GAL/D																			
	Nat. Gas Engines		HP	SCF/HR	SCF/D																			
	Burners		MMBTU/HR	SCF/HR	SCF/D	HR/D	D/YR	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
DRILLING	VESSELS- Drilling - Propulsion Engine - Diesel		81800	3179.3526	76304.73	24	110	43.60	26.30	25.51	0.63	1044.59	30.03	0.00	163.84	0.30	57.55	34.72	33.68	0.84	1,378.85	39.64	0.00	216.27	0.40
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels - Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels – Drilling Prime Engine, Auxiliary		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Heavy Lift Vessel/Derrick Barge Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			BPD																						
DRILLING	Liquid Flaring		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WELL TEST	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
ALASKA-SPECIFIC SOURCES	VESSELS		kW			HR/D	D/YR																		
	VESSELS - Ice Management Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
2021	**Facility Total Emissions**							**43.60**	**26.30**	**25.51**	**0.63**	**1,044.59**	**30.03**	**0.00**	**163.84**	**0.30**	**57.55**	**34.72**	**33.68**	**0.84**	**1,378.85**	**39.64**	**0.00**	**216.27**	**0.40**
EXEMPTION CALCULATION	**DISTANCE FROM LAND IN MILES**																								
	49.0																**1,631.70**			**1,631.70**	**1,631.70**	**1,631.70**		**45,527.76**	
DRILLING	VESSELS- Crew Diesel		7200	370.4112	8889.87	6	63	5.08	3.06	2.97	0.07	121.70	3.50	0.00	19.09	0.04	0.96	0.58	0.56	0.01	23.00	0.66	0.00	3.61	0.01
	VESSELS - Supply Diesel		7200	370.4112	8889.87	10	94	5.08	3.06	2.97	0.07	121.70	3.50	0.00	19.09	0.04	2.39	1.44	1.40	0.03	57.20	1.64	0.00	8.97	0.02
	VESSELS - Tugs Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY	VESSELS - Material Tug Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INSTALLATION	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	VESSELS - Support Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALASKA-SPECIFIC SOURCES	**On-Ice Equipment**			GAL/HR	GAL/D																				
	Man Camp - Operation (maximum people per day)		PEOPLE/DAY																						
	VESSELS		kW			HR/D	D/YR																		
	On-Ice – Loader			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Construction Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Survey Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Tractor			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for gravel island)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for surveys)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	Man Camp - Operation		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	
	VESSELS - Hovercraft Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021	**Non-Facility Total Emissions**							**10.16**	**6.13**	**5.95**	**0.15**	**243.40**	**7.00**	**0.00**	**38.18**	**0.07**	**3.35**	**2.02**	**1.96**	**0.05**	**80.20**	**2.31**	**0.00**	**12.58**	**0.02**

AIR EMISSIONS CALCULATIONS - 3RD YEAR

COMPANY	AREA		BLOCK	LEASE	FACILITY	WELL					CONTACT	PHONE	REMARKS
KOE Exploration & Production	MC		Hyp	OCS-G 35833	N/A	A + B					Brandon Pellant	985-666-6143	Proposed Rig Types: Drillship / DP Semisubmersible

OPERATIONS	EQUIPMENT	EQUIPMENT ID	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR								ESTIMATED TONS								
	Diesel Engines		HP	GAL/HR	GAL/D																			
	Nat. Gas Engines		HP	SCF/HR	SCF/D																			
	Burners		MMBTU/HR	SCF/HR	SCF/D	HR/D	D/YR	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
DRILLING	VESSELS- Drilling - Propulsion Engine - Diesel		81800	3179.3526	76304.73	24	110	43.60	26.30	25.51	0.63	1044.59	30.03	0.00	163.84	0.30	57.55	34.72	33.68	0.84	1,378.85	39.64	0.00	216.27	0.40
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels - Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels – Drilling Prime Engine, Auxiliary		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Heavy Lift Vessel/Derrick Barge Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			BPD																						
DRILLING	Liquid Flaring		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WELL TEST	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
ALASKA-SPECIFIC SOURCES	VESSELS		kW			HR/D	D/YR																		
	VESSELS - Ice Management Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
2022	Facility Total Emissions							43.60	26.30	25.51	0.63	1,044.59	30.03	0.00	163.84	0.30	57.55	34.72	33.68	0.84	1,378.85	39.64	0.00	216.27	0.40
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES																								
	49.0																1,631.70			1,631.70	1,631.70	1,631.70		45,527.76	
DRILLING	VESSELS- Crew Diesel		7200	370.4112	8889.87	6	63	5.08	3.06	2.97	0.07	121.70	3.50	0.00	19.09	0.04	0.96	0.58	0.56	0.01	23.00	0.66	0.00	3.61	0.01
	VESSELS - Supply Diesel		7200	370.4112	8889.87	10	94	5.08	3.06	2.97	0.07	121.70	3.50	0.00	19.09	0.04	2.39	1.44	1.40	0.03	57.20	1.64	0.00	8.97	0.02
	VESSELS - Tugs Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Material Tug Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	VESSELS - Support Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALASKA-SPECIFIC SOURCES	On-Ice Equipment			GAL/HR	GAL/D																				
	Man Camp - Operation (maximum people per day)		PEOPLE/DAY																						
	VESSELS		kW			HR/D	D/YR																		
	On-Ice – Loader			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Construction Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Survey Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Tractor			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for gravel island)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for surveys)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	Man Camp - Operation		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	
	VESSELS - Hovercraft Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022	Non-Facility Total Emissions							10.16	6.13	5.95	0.15	243.40	7.00	0.00	38.18	0.07	3.35	2.02	1.96	0.05	80.20	2.31	0.00	12.58	0.02

AIR EMISSIONS CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	FACILITY	WELL	
BOE Exploration & Production	759	OCS-G 35833	N/A	A / B		

Year	Facility Emitted Substance								
	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021	57.55	34.72	33.68	0.84	1378.85	39.64	0.00	216.27	0.40
2022	57.55	34.72	33.68	0.84	1378.85	39.64	0.00	216.27	0.40
2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2024	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2025	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2029	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Allowable	1631.70			1631.70	1631.70	1631.70		45527.76	

APPENDIX I
OIL SPILLS INFORMATION

A) OIL SPILL RESPONSE PLANNING

Pursuant to 30 CFR 550.219 and NTL BOEM 2015-N01, this appendix provides information regarding any potential oil spill(s), the assumptions and calculations used to determine the worst-case discharge (WCD) measures scenario.

Below is a reference to and status of BOE Exploration & Production's Regional OSRP. A site specific OSRP nor a sub-regional OSRP is not required with this plan. The state of Florida is not an affected state for the activities proposed in this plan.

1) REGIONAL OR SUBREGIONAL OSRP INFORMATION

Activities proposed in this plan will be covered by oil spill response plan number O-1039, approved via letter dated September 17, 2019, revision approved February 2020 and OSRP non-regulatory submission found in compliance July 2020.

The below operators are covered under oil spill response plan number O-1039:

- BOE Exploration & Production LLC (03572)
- Beacon Growthco Operating Company, L.L.C. (03567)

2) SPILL RESPONSE SITES

The table below provides information on the location of the primary spill response equipment and the location of the planned staging area(s) that would be used should an oil spill occur resulting from the activities proposed in this plan.

Primary Response Equipment Location	Pre-Planned Staging Location
Houma, LA	Venice, LA

3) OIL SPILL REMOVAL ORGANIZATION (OSRO) INFORMATION

The O'Brien Group will provide trained personnel capable of providing supervisory oil spill response management in addition to contacting and deploying cleanup personnel and equipment.

BOE Exploration & Production's primary equipment provider is Clean Gulf Associates (CGA). CGA is supported by the Marine Spill Response Corporation (MSRC), which is responsible for storing, inspecting, maintaining and dispatching CGA equipment. The MSRC STARs network provides for the closest available personnel as well as an MSRC supervisor to operate the equipment.

4) WORST CASE SCENARIO COMPARISON

The table below provides a comparison of the worst-case discharge scenario from the above referenced Regional OSRP with the worst-case scenario from the activities proposed in this plan. Please note the Regional OSRP distance to shore scenarios are approximate and will be updated as required with modifications to the OSRP. The distance to shore for the proposed activities is accurate and based on survey data.

Worst Case Discharge Comparison Chart

Category	Regional OSRP WCD	Plan WCD
Type of Activity	Drilling	Drilling
Facility (Area/Block)	Mississippi Canyon 257	Mississippi Canyon 759
Facility Designation	Well 002	Location B
Distance to Shore (miles)	61	49
	Volume	
Flowlines (on facility)	0	0
Lease Term Pipelines	0	0
Storage	0	0
Uncontrolled Blowout	337,164 BOPD	166,933 BOPD
Total Volume	**337,164 BOPD**	**166,933 BOPD**
Type of Oil	Crude	Crude
API Gravity	35°	23.7°

BOE Exploration & Production has the capability to respond to the worst-case spill scenario included in its regional OSRP, approved via letter dated September 17, 2019, revision approved February 2020 and OSRP non-regulatory submission found in compliance July 2020, and since the worst-case scenario determined for the subject EP does not replace the worst-case scenario in its regional OSRP, BOE Exploration & Production hereby certifies that it has the capability to respond, to the maximum extent practicable, to a worst-case discharge, or a substantial threat of such a discharge, resulting from the activities proposed in the subject EP.

5) WORST CASE DISCHARGE ASSUMPTIONS AND CALCULATIONS

In accordance with NTL No. 2015-N01, "Information Requirements for Exploration Plans, Development and Production Plans, and Development Operations Coordination Documents on the OCS," worst case discharge assumptions and calculations are included in the attachments of the proprietary information copy of this plan.

6) OIL SPILL RESPONSE DISCUSSION

An oil spill response discussion is included in the attachments to this appendix.

OIL SPILL RESPONSE DISCUSSION

SPILL RESPONSE DISCUSSION

BOE Exploration & Production LLC will make every effort to respond to the Worst Case Discharge as effectively as practicable. A description of the response equipment under contract to contain and recover the Worst Case Discharge is shown in **Figure 2.**

Figure 2 outlines equipment, personnel, materials and support vessels as well as temporary storage equipment available to respond to the worst case discharge. The volume accounts for the amount remaining after evaporation/dispersion at 24 hours. The list estimates individual times needed for procurement, load out, travel time to the site and deployment. **Figure 2** also indicates how operations will be supported.

BOE Exploration & Production LLC's Oil Spill Response Plan includes alternative response technologies such as dispersants and in-situ burn. Strategies will be decided by Unified Command based on an operations safety analysis, the size of the spill, weather and potential impacts. If aerial dispersants are utilized, 8 sorties (9,600 gallons) from two of the DC-3 aircrafts and 4 sorties (8,000 gallons) from the Basler aircraft would provide a daily dispersant capability of 7,540 barrels. If the conditions are favorable for in-situ burning, the proper approvals have been obtained and the proper planning is in place, in-situ burning of oil may be attempted. Slick containment boom would be immediately called out and on-scene as soon as possible. Offshore response strategies may include attempting to skim utilizing CGA and MSRC spill response equipment, with a total derated skimming capacity of 616,318 barrels. Temporary storage associated with skimming equipment equals 120,896 barrels. If additional storage is needed, various tank barges with a total of 505,000+ barrels of storage capacity may be mobilized and centrally located to provide temporary storage and minimize off-loading time. **Safety is first priority. Air monitoring will be accomplished and operations deemed safe prior to any containment/skimming attempts.**

If the spill went unabated, shoreline impact would depend upon existing environmental conditions. Shoreline protection would include the use of CGA's near shore and shallow water skimmers with a totaled derated skimming capacity of 235,300 barrels. Temporary storage associated with skimming equipment equals 2,841 barrels. If additional storage is needed, various tank barges with a total of 235,000+ barrels of storage capacity may be mobilized and centrally located to provide temporary storage and minimize off-loading time. Onshore response may include the deployment of shoreline boom on beach areas, or protection and sorbent boom on vegetated areas. Master Service Agreements with AMPOL and OMI Environmental will ensure access to 131,350 feet of 18" shoreline protection boom. **Figure 2** outlines individual times needed for procurement, load out, travel time to the site and deployment. Strategies would be based upon surveillance and real time trajectories that depict areas of potential impact given actual sea and weather conditions. Applicable Area Contingency Plans (ACPs), Geographic Response Plans (GRPs), and Unified Command (UC) will be consulted to ensure that environmental and special economic resources are correctly identified and prioritized to ensure optimal protection. Shoreline protection strategies depict the protection response modes applicable for oil spill clean-up operations. As a secondary resource, the State of Louisiana Initial Oil Spill Response Plan will be consulted as appropriate to provide detailed shoreline protection strategies and describe necessary action to keep the oil spill from entering Louisiana's coastal wetlands. The UC should take into consideration all appropriate items detailed in Tactics discussion of this Appendix. The UC and their personnel have the option to modify the deployment and operation of equipment to allow for a more effective response to site-specific circumstances. BOE Exploration & Production LLC's contract Incident Management Team has access to the applicable ACP(s) and GRP(s).

Based on the anticipated worst case discharge scenario, BOE Exploration & Production LLC can be onsite with contracted oil spill recovery equipment with adequate response capacity to contain and recover surface hydrocarbons and prevent land impact, to the maximum extent practicable, within an estimated 78 hours, based on the equipment's Effective Daily Recovery Capacity (EDRC).

Initial Response Considerations

Actual actions taken during an oil spill response will be based on many factors to include but not be limited to:

- Safety
- Weather
- Equipment and materials availability
- Ocean currents and tides
- Location of the spill
- Product spilled
- Amount spilled
- Environmental risk assessments
- Trajectory and product analysis
- Well status, i.e., shut in or continual release

BOE Exploration & Production LLC will take action to provide a safe, aggressive response to contain and recover as much of the spilled oil as quickly as it is safe to do so. In an effort to protect the environment, response actions will be designed to provide an "in-depth" protection strategy meant to recover as much oil as possible as far from environmentally sensitive areas as possible. Safety will take precedence over all other considerations during these operations.

Coordination of response assets will be supervised by the designation of a SIMOPS group as necessary for close quarter vessel response activities. Most often, this group will be used during source control events that require a significant number of large vessels operating independently to complete a common objective, in close coordination and support of each other. This group must also monitor the subsurface activities of each vessel (ROV, dispersant application, well control support, etc.). The SIMOPS group leader reports to the Source Control Section Chief.

In addition, these activities will be monitored by the Incident Management Team (IMT) and Unified Command via a structured Common Operating Picture (COP) established to track resource and slick movement in real time.

Upon notification of a spill, the following actions will be taken:

- Information will be confirmed
- An assessment will be made and initial objectives set
- OSROs and appropriate agencies will be notified
- ICS 201, Initial Report Form completed
- Initial Safety plan will be written and published
- Unified Command will be established
    - Overall safety plan developed to reflect the operational situation and coordinated objectives
    - Areas of responsibility established for Source Control and each surface operational site
    - On-site command and control established

Offshore Response Actions

Equipment Deployment

Surveillance

- Surveillance Aircraft: within two hours of QI notification, or at first light
- Provide trained observer to provide on site status reports
- Provide command and control platform at the site if needed
- Continual surveillance of oil movement by remote sensing systems, aerial photography and visual confirmation
- Continual monitoring of vessel assets using vessel monitoring systems

Dispersant application assets

- Put ASI on standby
- With the FOSC, conduct analysis to determine appropriateness of dispersant application (refer to Section 18)
- Gain FOSC approval for use of dispersants on the surface
- Deploy aircraft in accordance with a plan developed for the actual situation
- Coordinate movement of dispersants, aircraft, and support equipment and personnel
- Confirm dispersant availability for current and long range operations
- Start ordering dispersant stocks required for expected operations

Containment boom

- Call out early and expedite deployment to be on scene ASAP
- Ensure boom handling and mooring equipment is deployed with boom
- Provide continuing reports to vessels to expedite their arrival at sites that will provide for their most effective containment
- Use Vessels of Opportunity (VOO) to deploy and maintain boom

Oceangoing Boom Barge

- Containment at the source
- Increased/enhanced skimmer encounter rate
- Protection booming

In-situ Burn assets

- Determine appropriateness of in-situ burn operation in coordination with the FOSC and affected SOSC
- Determine availability of fire boom and selected ignition systems
- Start ordering fire boom stocks required for expected operations
- Contact boom manufacturer to provide training & tech support for operations, if required
- Determine assets to perform on water operation
- Build operations into safety plan
- Conduct operations in accordance with an approved plan
- Initial test burn to ensure effectiveness

Dedicated off-shore skimming systems
General

- Deployed to the highest concentration of oil
- Assets deployed at safe distance from aerial dispersant and in-situ burn operations

CGA HOSS Barge

- Use in areas with heaviest oil concentrations
- Consider for use in areas of known debris (seaweed, and other floating materials)

CGA 95' Fast Response Vessels (FRVs)

- Designed to be a first vessel on scene
- Capable of maintaining the initial Command and Control function for on water recovery operations
- 24 hour oil spill detection capability
- Highly mobile and efficient skimming capability
- Use as far off-shore as safely possible

CGA FRUs

- To the area of the thickest oil
- Use as far off-shore as allowed
- VOOs 140' – 180' in length
- VOOs with minimum of 18' x 38' or 23' x 50' of optimum deck space
- VOOs in shallow water should have a draft of <10 feet when fully loaded

T&T Koseq Skimming Systems

- To the area of the thickest oil
- Use as far off-shore as allowed
- VOOs with a minimum of 2,000 bbls storage capacity
- VOOs at least 200' in length
- VOOs with deck space of 100' x 40' to provide space for arms, tanks, and crane
- VOOs for shallow water should be deck barges with a draft of <10 feet when fully loaded

Storage Vessels

- Establish availability of CGA contracted assets (See Appendix E)
- Early call out (to allow for tug boat acquisition and deployment speeds)
- Phase mobilization to allow storage vessels to arrive at the same time as skimming systems
- Position as closely as possible to skimming assets to minimize offloading time

Vessels of Opportunity (VOO)

- Use BOE Exploration & Production LLC's contracted resources as applicable
- Industry vessels are ideal for deployment of Vessel of Opportunity Skimming Systems (VOSS)
- Acquire additional resources as needed
- Consider use of local assets, i.e. fishing and pleasure craft for ISB operations or boom tending
- Expect mission specific and safety training to be required
- Plan with the US Coast Guard for vessel inspections
- Place VOOs in Division or Groups as needed
- Use organic on-board storage if appropriate
- Maximize non-organic storage appropriate to vessel limitations
- Decant as appropriate after approval to do so has been granted
- Assign bulk storage barges to each Division/Group
- Position bulk storage barges as close to skimming units as possible
- Utilize large skimming vessel (e.g. barges) storage for smaller vessel offloading
- Maximize skimming area (swath) to the optimum width given sea conditions and available equipment
- Maximize use of oleophilic skimmers in all operations, but especially offshore
- Nearshore, use shallow water barges and shuttle to skimming units to minimize offloading time
- Plan and equip to use all offloading capabilities of the storage vessel to minimize offloading time

Adverse Weather Operations:

In adverse weather, when seas are $\geq$ 3 feet, the use of larger recovery and storage vessels, oleophilic skimmers, and large offshore boom will be maximized. KOSEQ Arm systems are built for rough conditions, and they should be used until their operational limit (9.8' seas) is met. Safety will be the overriding factor in all operations and will cease at the order of the Unified Command, vessel captain, or in an emergency, "stop work" may be directed by any crew member.

Surface Oil Recovery Considerations and Tactics
(Offshore and Near-shore Operations)

Maximization of skimmer-oil encounter rate

- Place barges in skimming task forces, groups, etc., to reduce recovered oil offloading time
- Place barges alongside skimming systems for immediate offloading of recovered oil when practicable
- Use two vessels, each with heavy sea boom, in an open-ended "V" configuration to funnel surface oil into a trailing skimming unit's organic, V-shaped boom and skimmer (see page 7, *CGA Equipment Guide Book and Tactic Manual* (CGATM)

- Use secondary vessels and heavy sea boom to widen boom swath beyond normal skimming system limits (see page 15, CGATM)
- Consider night-time operations, first considering safety issues
- Utilize all available advanced technology systems (IR, X-Band Radar, etc.) to determine the location of, and move to, recoverable oil
- Confirm the presence of recoverable oil prior to moving to a new location

Maximize skimmer system efficiency

- Place weir skimming systems in areas of calm seas and thick oil
- Maximize the use of oleophilic skimming systems in heavier seas
- Place less mobile, high EDRC skimming systems (e.g. HOSS Barge) in the largest pockets of the heaviest oil
- Maximize onboard recovered oil storage for vessels.
- Obtain authorization for decanting of recovered water as soon as possible
- Use smaller, more agile skimming systems to recover streamers of oil normally found farther from the source. Place recovered oil barges nearby

Recovered Oil Storage

- Smaller barges in larger quantities will increase flexibility for multi-location skimming operations
- Place barges in skimming task forces, groups, etc., to reduce recovered oil offloading time
- Procure and deploy the maximum number of portable tanks to support Vessel of Opportunity Skimming Systems if onboard storage is not available
- Maximize use of the organic recovered oil storage capacity of the skimming vessel

Command, Control, and Communications (C^3)

- Publish, implement, and fully test an appropriate communications plan
- Design an operational scheme, maintaining a manageable span of control
- Designate and mark C^3 vessels for easy aerial identification
- Designate and employ C^3 aircraft for task forces, groups, etc.
- Use reconnaissance air craft and Rapid Response Teams (RAT) to confirm the presence of recoverable oil

On Water Recovery Group
When the first skimming vessel arrives on scene, a complete site assessment will be conducted before recovery operations begin. Once it is confirmed that the air monitoring readings for O2, LEL, H2S, CO, VOC, and Benzene are all within the permissible limits, oil recovery operations may begin.

As skimming vessels arrive, they will be organized to work in areas that allow for the most efficient vessel operation and free vessel movement in the recovery of oil. Vessel groups will vary in structure as determined by the Operations Section of the Unified Command, but will generally consist, at a minimum, of the following dedicated assets:

- 3 to 5 – Offshore skimming vessels (recovery)
- 1 – Tank barge (temporary storage)
- 1 – Air asset (tactical direction)
- 2 – Support vessels (crew/utility for supply)
- 6 to 10 – Boom vessels (enhanced booming)

***Example** (**Note:** Actual organization of TFs will be dependent on several factors including, asset availability, weather, spilled oil migration, currents, etc.)*

The 95' FRV Breton Island out of Venice arrives on scene and conducts an initial site assessment. Air monitoring levels are acceptable and no other visual threats have been observed. The area is cleared for safe skimming operations. The Breton Island assumes command and control (CoC) of on-water recovery operations until a dedicated non-skimming vessel arrives to relieve it of those duties.

A second 95' FRV arrives and begins recovery operations alongside the Breton Island. Several more vessels begin to arrive, including a third 95' FRV out of Galveston, the HOSS Barge (High Volume Open Sea Skimming System) out of Harvey, a boom barge (CGA 300) with 25,000' of 42" auto boom out of Leeville, and 9 Fast Response Units (FRUs) from the load-out location at C-Port in Port Fourchon.

As these vessels set up and begin skimming, they are grouped into task forces (TFs) as directed by the Operations Section of the Unified Command located at the command post.

Initial set-up and potential actions:

- A 1,000 meter safety zone has been established around the incident location for vessels involved in Source Control
- The HOSS Barge is positioned facing the incident location just outside of this safety zone or at the point where the freshest oil is reaching the surface
- The HOSS Barge engages its Oil Spill Detection (OSD) system to locate the heaviest oil and maintains that ability for 24-hour operations

- The HOSS Barge deploys 1,320’ of 67” Sea Sentry boom on each side, creating a swath width of 800’
- The Breton Island and H.I. Rich skim nearby, utilizing the same OSD systems as the HOSS Barge to locate and recover oil
- Two FRUs join this group and it becomes TF1
- The remaining 7 FRUs are split into a 2 and 3 vessel task force numbered TF2 and TF3
- A 95’ FRV is placed in each TF
- The boom barge (CGA 300) is positioned nearby and begins deploying auto boom in sections between two utility vessels (1,000’ to 3,000’ of boom, depending on conditions) with chain-link gates in the middle to funnel oil to the skimmers
- The initial boom support vessels position in front of TF2 and TF3
- A 100,000+ barrel offshore tank barge is placed with each task force as necessary to facilitate the immediate offload of skimming vessels

The initial task forces (36 hours in) may be structured as follows:

TF 1

- 1 – 95’ FRV
- 1 – HOSS Barge with 3 tugs
- 2 – FRUs
- 1 – 100,000+ barrel tank barge and associated tug(s)
- 1 – Dedicated air asset for tactical direction
- 8 – 500’ sections of auto boom with gates
- 8 – Boom-towing vessels
- 2 – Support vessels (crew/utility)

TF 2

- 1 – 95’ FRV
- 4 – FRUs
- 1 – 100,000+ barrel tank barge and associated tug(s)
- 1 – Dedicated air asset for tactical direction
- 10 – 500’ sections of auto boom with gates
- 10 – Boom-towing vessels
- 2 – Support vessels (crew/utility)

TF 3

- 1 – 95’ FRV
- 3 – FRUs
- 1 – 100,000+ barrel tank barge and associated tug(s)
- 1 – Dedicated air asset for tactical direction
- 8 – 500’ sections of auto boom with gates
- 8 – Boom-towing vessels
- 2 – Support vessels (crew/utility)

Offshore skimming equipment continues to arrive in accordance with the ETA data listed in figure H.3a; this equipment includes 2 AquaGuard skimmers and 11 sets of Koseq Rigid Skimming Arms. These high volume heavy weather capable systems will be divided into functional groups and assigned to specific areas by the Operations Section of the Unified Command.

At this point of the response, the additional TFs may assume the following configurations:

TF 4

- 2 – Sets of Koseq Rigid Skimming Arms w/ associated 200'+ PIDVs
- 1 – AquaGuard Skimmer
- 1 – 100,000+ barrel tank barge and associated tug(s)
- 1 – Dedicated air asset for tactical direction
- 2 – Support vessels (crew/utility)
- 6 – 500' sections of auto boom with gates
- 6 – Boom-towing vessels

TF 5

- 3 – Sets of Koseq Rigid Skimming Arms w/ associated 200'+ PIDVs
- 1 – AquaGuard Skimmer
- 1 – 100,000+ barrel tank barge and associated tug(s)
- 1 – Dedicated air asset for tactical direction
- 2 – Support vessels (crew/utility)
- 8 – 500' sections of auto boom with gates
- 8 – Boom-towing vessels

TF 6

- 3 – Sets of Koseq Rigid Skimming Arms w/ associated 200'+ PIDVs
- 1 – 100,000+ barrel tank barge and associated tug(s)
- 1 – Dedicated air asset for tactical direction
- 2 – Support vessels (crew/utility)
- 6 – 500' sections of auto boom with gates
- 6 – Boom-towing vessels

TF 7

- 3 – Sets of Koseq Rigid Skimming Arms w/ associated 200'+ PIDVs
- 1 – 100,000+ barrel tank barge and associated tug(s)
- 1 – Dedicated air asset for tactical direction
- 2 – Support vessels (crew/utility)
- 6 – 500' sections of auto boom with gates
- 6 – Boom-towing vessels

CGA Minimum Acceptable Capabilities for Vessels of Opportunity (VOO)
Minimum acceptable capabilities of Petroleum Industry Designed Vessels (PIDV) for conducting Vessel of Opportunity (VOO) skimming operations are shown in the table below. PIDVs are "purpose-built" to provide normal support to offshore oil and gas operators. They include but are not limited to utility boats, offshore supply vessels, etc. They become VOOs when tasked with oil spill response duties.

Capability	FRU	KOSEQ	AquaGuard
Type of Vessel	Utility Boat	Offshore Supply Vessel	Utility Boat
Operating parameters			
Sea State	3-5 ft max	9.8 ft max	3-5 ft max
Skimming speed	≤1 kt	≤3 kts	≤1 kt
Vessel size			
Minimum Length	100 ft	200 ft	100 ft
Deck space for: • Tank(s) • Crane(s) • Boom Reels • Hydraulic Power Units • Equipment Boxes	18x32 ft	100x40 ft	18x32 ft
Communication Assets	Marine Band Radio	Marine Band Radio	Marine Band Radio

Tactical use of Vessels of Opportunity (VOO): BOE Exploration & Production LLC will take all possible measures to maximize the oil-to-skimmer encounter rate of all skimming systems, to include VOOs, as discussed in this section. VOOs will normally be placed within an On-water recovery unit as shown in figures below.

Skimming Operations: PIDVs are the preferred VOO skimming platform. OSROs are more versed in operating on these platforms and the vessels are generally large enough with crews more likely versed in spill response operations. They also have a greater possibility of having on-board storage capacity and the most likely vessels to be under contract, and therefore more readily available to the operator. These vessels would normally be assigned to an on-water recovery group/division (see figure below) and outfitted with a VOSS suited for their size and capabilities. Specific tactics used for skimming operations would be dependent upon many parameters which include, but are not limited to, safety concerns, weather, type VOSS on board, product being recovered, and area of oil coverage. Planners would deploy these assets with the objective of safely maximizing oil- to-skimmer encounter rate by taking actions to minimize non-skimming time and maximizing boom swath. Specific tactical configurations are shown in figures below.

The Fast Response Unit (FRU): A self-contained, skid based, skimming system that is deployed from the right side of a vessel of opportunity (VOO). An outrigger holds a 75' long section of air inflatable boom in place that directs oil to an apex for recovery via a Foilex 250 weir skimmer. The outrigger creates roughly a 40' swath width dependent on the VOO beam. The lip of the collection bowl on the skimmer is placed as close to the oil and water interface as possible to maximize oil recovery and minimize water retention. The skimmer then pumps all fluids recovered to the storage tank where it is allowed to settle, and with the approval of the Coast Guard, the water is decanted from the bottom of the tank back into the water ahead of the containment boom to be recycled through the system. Once the tank is full of as much pure recovered oil as possible it is offloaded to a storage barge for disposal in accordance with an approved disposal plan. A second 100 barrel storage tank can be added if the appropriate amount of deck space is available to use as secondary storage.

Tactical Overview

Mechanical Recovery – The FRU is designed to provide fast response skimming capability in the offshore and nearshore environment in a stationary or advancing mode. It provides a rated daily recovery capacity of 4,100 barrels. An additional boom reel with 440' of offshore boom can be deployed along with the FRU, and a second support vessel for boom towing, to extend the swath width when attached to the end of the fixed boom. The range and sustainability offshore is dependent on the VOO that the unit is placed on, but generally these can stay offshore for extended periods. The FRU works well independently or assigned with other on-water recovery assets in a task force. In either case, it is most effective when a designated aircraft is assigned to provide tactical direction to ensure the best placement in recoverable oil.
Maximum Sea Conditions – Under most circumstances the FRU can maintain standard oil spill recovery operations in 2' to 4' seas. Ultimately, the Coast Guard licensed Captain in charge of the VOO (with input from the CGAS Supervisor assigned) will be responsible to determine when the sea conditions have surpassed the vessel's safe operating capabilities.

Possible Task Force Configuration (Multiple VOOs can be deployed in a task force)
1 – VOO (100' to 165' Utility or Supply Vessel)
1 – Boom reel w/support vessel for towing
1 – Tank barge (offshore) for temporary storage
1 – Utility/Crewboat (supply)
1 – Designated spotter aircraft

The VOSS (yellow) is being deployed and connected to an out-rigged arm. This is suitable for collection in both large pockets of oil and for recovery of streaming oil. The oil-to-skimmer encounter rate is limited by the length of the arm. Skimming pace is ≤ 1 knot.

Through the use of an additional VOO, and using extended sea boom, the swath of the VOSS is increased therefore maximizing the oil-to-skimmer encounter rate. Skimming pace is ≤ 1 knot.

The Koseq Rigid Sweeping Arm: A skimming system deployed on a vessel of opportunity. It requires a large Offshore or Platform Supply Vessel (OSV/PSV), greater than 200' with at least 100' x 50' of free deck space. On each side of the vessel, a 50' long rigid framed Arm is deployed that consists of pontoon chambers to provide buoyancy, a smooth nylon face, and a hydraulically adjustable mounted weir skimmer. The Arm floats independently of the vessel and is attached by a tow bridle and a lead line. The movement of the vessel forward draws the rubber end seal of the arm against the hull to create a collection point for free oil directed to the weir by the Arm face. The collection weir is adjusted to keep the lip as close to the oil water interface as possible to maximize oil recovery while attempting to minimize excess water collection. A transfer pump (combination of positive displacement, screw type and centrifuge suited for highly viscous oils) pump the recovered liquid to portable tanks and/or dedicated fixed storage tanks onboard the vessel. After being allowed to sit and separate, with approval from the Coast Guard, the water can be decanted (pumped off) in front of the collection arm to be reprocessed through the system. Once full with as much pure recovered oil as possible, the oil is transferred to a temporary storage barge where it can be disposed of in accordance with an approved disposal plan.

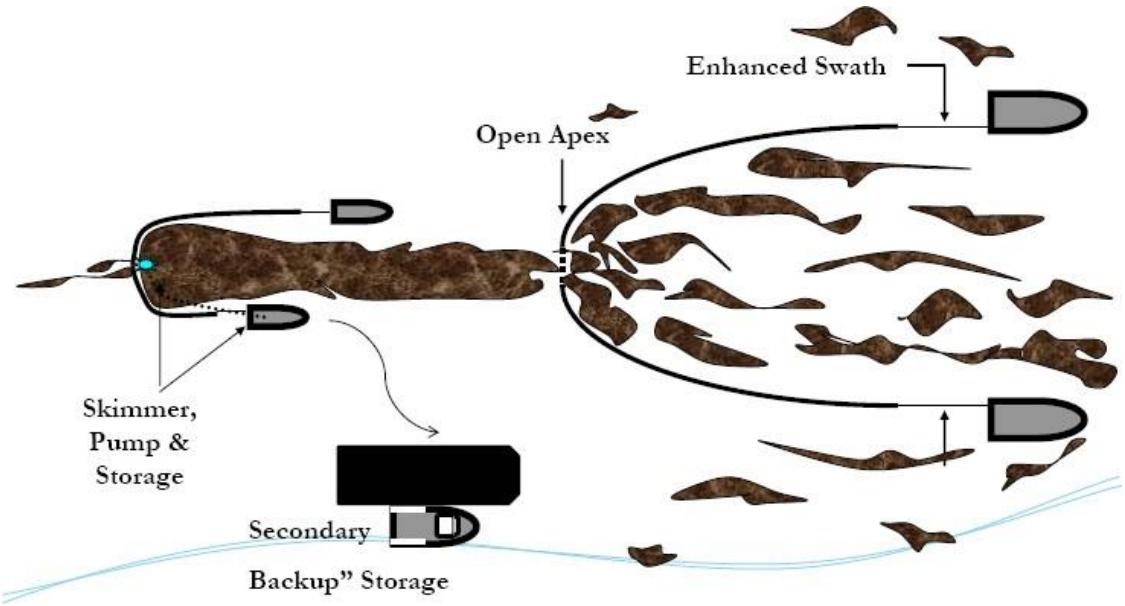
Tactical Overview

Mechanical Recovery – Deployed on large vessels of opportunity (VOO) the Koseq Rigid Sweeping Arms are high volume surge capacity deployed to increase recovery capacity at the source of a large oil spill in the offshore and outer nearshore environment of the Gulf of Mexico. They are highly mobile and sustainable in rougher sea conditions than normal skimming vessels (9.8' seas). The large Offshore Supply Vessels (OSV) required to deploy the Arms are able to remain on scene for extended periods, even when sea conditions pick up. Temporary storage on deck in portable tanks usually provides between 1,000 and 3,000 bbls. In most cases, the OSV will be able to pump 20% of its deadweight into the liquid mud tanks in accordance with the vessels Certificate of Inspection (COI). All storage can be offloaded utilizing the vessels liquid transfer system.

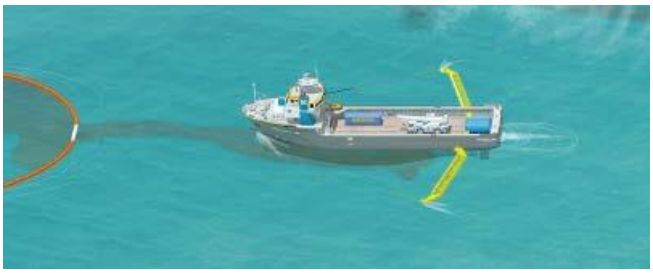
Maximum Sea Conditions - Under most circumstances the larger OSVs are capable of remaining on scene well past the Skimming Arms maximum sea state of 9.8'. Ultimately it will be the decision of the VOO Captain, with input from the T&T Supervisor onboard, to determine when the sea conditions have exceeded the safe operating conditions of the vessel.

Command and Control – The large OSVs in many cases have state of the art communication and electronic systems, as well as the accommodations to support the function of directing all skimming operations offshore and reporting back to the command post.

Possible Task Force Configuration (Multiple Koseq VOOs can be deployed in a task force)
1 – $\geq$ 200' Offshore Supply Vessels (OSV) with set of Koseq Arms
2 to 4 portable storage tanks (500 bbl)
1 – Modular Crane Pedestal System set (MCPS) or 30 cherry picker (crane) for deployment
1 – Tank barge (offshore) for temporary storage
1 – Utility/Crewboat (supply)
1 – Designated spotter aircraft
4 – Personnel (4 T&T OSRO)



Scattered oil is "caught" by two VOO and collected at the apex of the towed sea boom. The oil moves thought a "gate" at that apex, forming a larger stream of oil which moves into the boom of the skimming vessel. Operations are paced at >1. A recovered oil barge stationed nearby to minimize time taken to offload recovered oil.



This is a depiction of the same operation as above but using KOSEQ Arms. In this configuration, the collecting boom speed dictates the operational pace at ≥ 1 knot to minimize entrainment of the oil.

Clean Gulf Associates (CGA) Procedure for Accessing Member-Contracted and other Vessels of Opportunity (VOOs) for Spill Response

- CGA has procedures in place for CGA member companies to acquire vessels of opportunity (VOOs) from an existing CGA member's contracted fleet or other sources for the deployment of CGA portable skimming equipment including Koseq Arms, Fast Response Units (FRUs) and any other portable skimming system(s) deemed appropriate for the response for a potential or actual oil spill, WCD oil spill or a Spill of National Significance (SONS).

- CGA uses Port Vision, a web-based vessel and terminal interface that empowers CGA to track vessels through Automatic Identification System (AIS) and terminal activities using a Geographic Information System (GIS). It provides live AIS/GIS views of waterways showing current vessel positions, terminals, created vessel fleets, and points-of-interest. Through this system, CGA has the ability to get instant snapshots of the location and status of all vessels contracted to CGA members, day or night, from any web-enabled PC.

Near Shore Response Actions

Timing

- Put near shore assets on standby and deployment in accordance with planning based on the actual situation, actual trajectories and oil budgets
- VOO identification and training in advance of spill nearing shoreline if possible
- Outfitting of VOOs for specific missions
- Deployment of assets based on actual movement of oil

Considerations

- Water depth, vessel draft
- Shoreline gradient
- State of the oil
- Use of VOOs
- Distance of surf zone from shoreline

Surveillance

- Provide trained observer to direct skimming operations
- Continual surveillance of oil movement by remote sensing systems, aerial photography and visual confirmation
- Continual monitoring of vessel assets

Dispersant Use

- Generally will not be approved within 3 miles of shore or with less than 10 meters of water depth
- Approval would be at Regional Response Team level (Region 6)

Dedicated Near Shore skimming systems

- FRVs
- Egmopol and Marco SWS
- Operate with aerial spotter directing systems to observed oil slicks

VOO

- Use BOE Exploration & Production LLC's contracted resources as applicable
- Industry vessel are usually best for deployment of Vessel of Opportunity Skimming Systems (VOSS)
- Acquire additional resources as needed
- Consider use of local assets, i.e. fishing and pleasure craft
- Expect mission specific and safety training to be required
- Plan with the US Coast Guard for vessel inspections
- Operate with aerial spotter directing systems to oil patches

Shoreline Protection Operations

Response Planning Considerations

- Review appropriate Area Contingency Plan(s)
- Locate and review appropriate Geographic Response and Site Specific Plans
- Refer to appropriate Environmentally Sensitive Area Maps
- Capability for continual analysis of trajectories run periodically during the response
- Environmental risk assessments (ERA) to determine priorities for area protection
- Time to acquire personnel and equipment and their availability
- Refer to the State of Louisiana Initial Oil Spill Response Plan, Deep Water Horizon, dated 2 May 2010, as a secondary reference
- Aerial surveillance of oil movement
- Pre-impact beach cleaning and debris removal
- Shoreline Cleanup Assessment Team (SCAT) operations and reporting procedures
- Boom type, size and length requirements and availability
- Possibility of need for In-situ burning in near shore areas
- Current wildlife situation, especially status of migratory birds and endangered species in the area
- Check for Archeological sites and arrange assistance for the appropriate state agency when planning operations the may impact these areas

Placement of boom

- Position boom in accordance with the information gained from references listed above and based on the actual situation
- Determine areas of natural collection and develop booming strategies to move oil into those areas
- Assess timing of boom placement based on the most current trajectory analysis and the availability of each type of boom needed. Determine an overall booming priority and conduct booming operations accordingly. Consider:
    - Trajectories
    - Weather forecast
    - Oil Impact forecast
    - Verified spill movement
    - Boom, manpower and vessel (shallow draft) availability
    - Near shore boom and support material, (stakes, anchors, line)

Beach Preparation - Considerations and Actions

- Use of a 10 mile go/no go line to determine timing of beach cleaning
- SCAT reports and recommendations
- Determination of archeological sites and gaining authority to enter
- Monitoring of tide tables and weather to determine extent of high tides
- Pre cleaning of beaches by moving waste above high tide lines to minimize waste
- Determination of logistical requirements and arranging of waste removal and disposal

- Staging of equipment and housing of response personnel as close to the job site as possible to maximize on-site work time
- Boom tending, repair, replacement and security (use of local assets may be advantageous)
- Constant awareness of weather and oil movement for resource re-deployment as necessary
- Earthen berms and shoreline protection boom may be considered to protect sensitive inland areas
- Requisitioning of earth moving equipment
- Plan for efficient and safe use of personnel, ensuring:
    - A continual supply of the proper Personal Protective Equipment
    - Heating or cooling areas when needed
    - Medical coverage
    - Command and control systems (i.e. communications)
    - Personnel accountability measures
- Remediation requirements, i.e., replacement of sands, rip rap, etc.
- Availability of surface washing agents and associated protocol requirements for their use (see National Contingency Plan Product Schedule for list of possible agents)
- Discussions with all stakeholders, i.e., land owners, refuge/park managers, and others as appropriate, covering the following:
    - Access to areas
    - Possible response measures and impact of property and ongoing operations
    - Determination of any specific safety concerns
    - Any special requirements or prohibitions
    - Area security requirements
    - Handling of waste
    - Remediation expectations
    - Vehicle traffic control
    - Domestic animal safety concerns
    - Wildlife or exotic game concerns/issues

Inland and Coastal Marsh Protection and Response Considerations and Actions

- All considered response methods will be weighed against the possible damage they may do to the marsh. Methods will be approved by the Unified Command only after discussions with local Stakeholder, as identified above.
    - In-situ burn may be considered when marshes have been impacted
- Passive clean up of marshes should considered and appropriate stocks of sorbent boom and/or sweep obtained.
- Response personnel must be briefed on methods to traverse the marsh, i.e.,
    - use of appropriate vessel
    - use of temporary walkways or road ways
- Discuss and gain approval prior cutting or moving vessels through vegetation
- Discuss use of vessels that may disturb wildlife, i.e, airboats
- Safe movement of vessels through narrow cuts and blind curves

- Consider the possibility that no response in a marsh may be best
- In the deployment of any response asset, actions will be taken to ensure the safest, most efficient operations possible. This includes, but is not limited to:
    - Placement of recovered oil or waste storage as near to vessels or beach cleanup crews as possible.
    - Planning for stockage of high use items for expeditious replacement
    - Housing of personnel as close to the work site as possible to minimize travel time
    - Use of shallow water craft
    - Use of communication systems appropriate ensure command and control of assets
    - Use of appropriate boom in areas that I can offer effective protection
    - Planning of waste collection and removal to maximize cleanup efficiency
- Consideration or on-site remediation of contaminated soils to minimize replacement operations and impact on the area

Decanting Strategy

Recovered oil and water mixtures will typically separate into distinct phases when left in a quiescent state. When separation occurs, the relatively clean water phase can be siphoned or decanted back to the recovery point with minimal, if any, impact. Decanting therefore increases the effective on-site oil storage capacity and equipment operating time. FOSC/SOSC approval will be requested prior to decanting operations. This practice is routinely used for oil spill recovery.

CGA Equipment Limitations

The capability for any spill response equipment, whether a dedicated or portable system, to operate in differing weather conditions will be directly in relation to the capabilities of the vessel the system in placed on. Most importantly, however, the decision to operate will be based on the judgment of the Unified Command and/or the Captain of the vessel, who will ultimately have the final say in terminating operations. Skimming equipment listed below may have operational limits which exceed those safety thresholds. As was seen in the Deepwater Horizon (DWH) oil spill response, vessel skimming operations ceased when seas reached 5-6 feet and vessels were often recalled to port when those conditions were exceeded. Systems below are some of the most up- to-date systems available and were employed during the DWH spill.

Boom	3 foot seas, 20 knot winds
Dispersants	Winds more than 25 knots Visibility less than 3 nautical miles Ceiling less than 1,000 feet.
FRU	8 foot seas
HOSS Barge/OSRB	8 foot seas
Koseq Arms	8 foot seas
OSRV	4 foot seas

Environmental Conditions in the GOM

Louisiana is situated between the easterly and westerly wind belts, and therefore, experiences westerly winds during the winter and easterly winds in the summer. Average wind speed is generally 14-15 mph along the coast. Wave heights average 4 and 5 feet. However, during hurricane season, Louisiana has recorded wave heights ranging from 40 to 50 feet high and winds reaching speeds of 100 mph. Because much of southern Louisiana lies below sea level, flooding is prominent.

Surface water temperature ranges between 70 and 80˚F during the summer months. During the winter, the average temperature will range from 50 and 60˚F.

The Atlantic and Gulf of Mexico hurricane season is officially from 1 June to 30 November. 97% of all tropical activity occurs within this window. The Atlantic basin shows a very peaked season from August through October, with 78% of the tropical storm days, 87% of the minor (Saffir-Simpson Scale categories 1 and 2) hurricane days, and 96% of the major (Saffir-Simpson categories 3, 4 and 5) hurricane days occurring then. Maximum activity is in early to mid September. Once in a few years there may be a hurricane occurring "out of season" - primarily in May or December. Globally, September is the most active month and May is the least active month.

FIGURE 1
TRAJECTORY BY LAND SEGMENT

Trajectory of a spill and the probability of it impacting a land segment have been projected utilizing information in the BOEM Oil Spill Risk Analysis Model (OSRAM) for the Central and Western Gulf of Mexico available on the BOEM website using 30 day impact. The results are tabulated below.

Area/Block	OCS-G	Launch Area	Land Segment and/or Resource	Conditional Probability (%)
MC 759	G35833	C58	Galveston, TX	1
			Jefferson, TX	1
			Cameron, LA	3
			Vermilion, LA	2
			Iberia, LA	1
			Terrebonne, LA	3
			Lafourche, LA	3
			Jefferson, LA	1
			Plaquemines, LA	8
			St. Bernard, LA	1
			Okaloosa, FL	1

Figure 2 Equipment Response Time

Surveillance Aircraft

Name/Type	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Travel to site	Total Hrs
ASI (available through contract with CGA)						
Aero Commander	2	Houma, LA	2	2	0.9	4.9
T&T Marine (available through contract with CGA)						
CJ3 Citation	2	Houston/Galveston, TX	2	2	1	5

Dispersant Aircraft

Name/Type	Dispersant Capacity (gal)	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Travel to site	Total Hrs
ASI (available through contract with CGA)							
Basler 67T	2000	2	Houma, LA	2	2	0.9	4.9
DC 3	1200	2	Houma, LA	2	2	1.1	5.1
DC 3	1200	2	Houma, LA	2	2	1.1	5.1
MSRC							
C-130 Spray AC	3,250	3	Kiln, MS	4	0	0.4	4.4
King Air BE90 Spray AC	250	2	Kiln, MS	4	0	0.7	4.7

Offshore Response

Offshore Equipment Pre-Determined Staging	EDRC	Storage Capacity	Support Vessel(s)	Persons Required	From	Hrs to Procure	Hrs to Loadout	Hrs to GOM	Travel to Spill Site	Hrs to Deploy	Total Hrs
CGA											
95 FRV	22885	249	NA	6	Galveston	2	0	2	20	1	25
95 FRV	22885	249	NA	6	Leeville	2	0	2	6.5	1	11.5
95 FRV	22885	249	NA	6	Venice	2	0	3	4	1	10
95 FRV	22885	249	NA	6	Vermilion	2	0	3	10	1	16
Boom Barge (CGA-300) 42" Auto Boom (25000')	NA	NA	1 Tug 50 Crew	4 (Barge) 2 (Per Crew)	Leeville, LA	8	0	4	19	2	33
HOSS Barge	76285	4000	3 Tugs	8	Harvey, LA	6	0	12	10	2	30

Offshore Equipment Pre-determined Staging	EDRC	Storage Capacity	VOO	Persons Required	From	Hrs to Procure	Hrs to Loadout	Hrs to GOM	Travel to Spill Site	Hrs to Deploy	Total Hrs
MSRC											
Louisiana Responder 1 Transrec 350 *2,640' 67" Curtain Pressure Boom*	10567	4000	NA	10	Fort Jackson, LA	2	1	4	6.5	1	14.5
MSRC 452 Offshore Barge 1 Crucial Disk 88/30 *2,640' 67" Curtain Pressure Boom*	11122	45000	3 Tugs	9	Fort Jackson, LA	4	1	6	11	1	23
Mississippi Responder 1 Transrec 350 *2,640' 67" Curtain Pressure Boom*	10567	4000	NA	10	Pascagoula, MS	2	1	2	8	1	14
MSRC 402 Offshore Barge 1 Crucial Disk 88/30 *2,640' 67" Curtain Pressure Boom*	11122	40300	3 Tugs	9	Pascagoula, MS	4	1	3	14	1	23
S.T. Benz Responder 1 LFF 100 Brush *2,640' 67" Curtain Pressure Boom*	18086	4000	NA	10	Grand Isle, LA	3	1	1	9	1	15
Gulf Coast Responder 1 Transrec 350 *2,640' 67" Curtain Pressure Boom*	10567	4000	NA	10	Lake Charles, LA	2	1	4	24	1	32
Texas Responder 1 Transrec 350 *2,640' 67" Curtain Pressure Boom*	10567	4000	NA	10	Galveston, TX	2	1	1	29	1	34
MSRC 570 Offshore Barge 1 Crucial Disk 88/30 *2,640' 67" Curtain Pressure Boom*	11122	56900	3 Tugs	9	Galveston, TX	4	1	2	50	1	58
Southern Responder 1 Transrec 350 *2,640' 67" Curtain Pressure Boom*	10567	4000	NA	10	Ingleside, TX	2	1	2	39	1	45
MSRC 403 Offshore Barge 1 Crucial Disk 88/30 *2,640' 67" Curtain Pressure Boom*	11122	40300	3 Tugs	9	Ingleside, TX	4	1	3	69	1	78

Offshore Equipment Pre-determined Staging	EDRC	Storage Capacity	VOO	Persons Required	From	Hrs to Procure	Hrs to Loadout	Hrs to GOM	Travel to Spill Site	Hrs to Deploy	Total Hrs
MSRC											
Florida Responder 1 Transrec 350 *2,640' 67" Curtain Pressure Boom*	10567	4000	NA	10	Miami, FL	2	1	1	47	1	52
MSRC 360 Offshore Barge 1 Crucial Disk 88/30 *1,320' 67" Curtain Pressure Boom*	11122	36000	3 Tugs	9	Tampa, FL	4	1	3	44	1	53

Offshore Recovered Oil Storage Pre-determined Staging	EDRC	Storage Capacity	Support Vessel(s)	Persons Required	From	Hrs to Procure	Hrs to Loadout	Hrs to GOM	Travel to Spill Site	Hrs to Deploy	Total Hrs
Kirby Offshore (available through contract with CGA and/or MSRC)											
RO Barge	NA	80000+	1 Tug	6	Venice, LA	45	0	4	10	1	60
RO Barge	NA	100000+	1 Tug	6	Venice, LA	45	0	4	10	1	60
RO Barge	NA	100000+	1 Tug	6	Venice, LA	45	0	4	10	1	60
RO Barge	NA	100000+	1 Tug	6	Venice, LA	45	0	4	10	1	60
RO Barge	NA	100000+	1 Tug	6	Venice, LA	45	0	4	10	1	60
RO Barge	NA	110000+	1 Tug	6	Venice, LA	45	0	4	10	1	60
RO Barge	NA	130000+	1 Tug	6	Venice, LA	45	0	4	10	1	60
RO Barge	NA	140000+	1 Tug	6	Venice, LA	45	0	4	10	1	60
RO Barge	NA	150000+	1 Tug	6	Venice, LA	45	0	4	10	1	60
RO Barge	NA	160000+	1 Tug	6	Venice, LA	45	0	4	10	1	60

Staging Area: Fourchon

Offshore Equipment Preferred Staging	EDRC	Storage Capacity	Support Vessel(s)	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Travel to Staging	Travel to Site	Hrs to Deploy	Total Hrs
CGA											
FRU (1) + 100 bbl Tank (2)	4251	200	1 Utility	6	Vermilion	2	6	5.5	11	1	25.5
FRU (1) + 100 bbl Tank (2)	4251	200	1 Utility	6	Galveston	2	6	12	11	1	32
FRU (1) + 100 bbl Tank (2)	4251	200	1 Utility	6	Aransas Pass	2	6	16.5	11	1	36.5
FRU (1) + 100 bbl Tank (2)	4251	200	1 Utility	6	Lake Charles	2	6	7	11	1	27
FRU (3) + 100 bbl Tank (6)	12753	600	3 Utility	18	Leeville	2	6	2	11	1	22
FRU (2) + 100 bbl Tank (4)	8502	400	2 Utility	12	Venice	2	6	5	11	1	25
T&T Marine (available through direct contract with CGA)											
Aqua Guard Triton RBS (1)	22323	2000	1 Utility	6	Galveston	4	12	12	11	2	41
Aqua Guard Triton RBS (1)	22323	2000	1 Utility	6	Harvey	4	12	3	11	2	32
Koseq Skimming Arms (10) Lamor Brush	228850	60000	10 OSV	60	Galveston	24	24	12	11	2	73
Koseq Skimming Arms (6) MariFlex 150 HF	108978	36000	6 OSV	36	Galveston	24	24	12	11	2	73
Koseq Skimming Arms (2) Lamor Brush	45770	12000	2 OSV	12	Harvey	24	24	3	11	2	64
Koseq Skimming Arms (4) MariFlex 150 HF	72652	24000	4 OSV	24	Harvey	24	24	3	11	2	64

Offshore Equipment Preferred Staging	EDRC	Storage Capacity	VOO	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Travel to Staging	Travel to Site	Hrs to Deploy	Total Hrs
CGA											
Hydro-Fire Boom	NA	NA	8 Utility	40	Harvey	0	24	3	11	6	44
MSRC											
67" Curtain Pressure Boom (53570')	NA	NA	80*	160	Houston	1	2	11	11	1	37
1000' Fire Resistant Boom	NA	NA	3*	6	Galveston	1	4	12	11	6	45
16000' Fire Resistant Boom	NA	NA	3*	6	Houston	1	4	11	11	6	44
2000' Hydro Fire Boom	NA	NA	8*	8	Lake Charles	1	4	7	11	6	40

** Utility Boats, Crew Boats, Supply Boats, or Fishing Vessels*

Staging Area: Fourchon

Offshore Equipment Preferred Staging	EDRC	Storage Capacity	VOO	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Travel to Staging	Travel to Site	Hrs to Deploy	Total Hrs
MSRC											
Crucial Disk 56/30 Skimmer (1) *330' 67" Curtain Pressure Boom*	5671	500	2 Utility	5	Ingleside	1	1	17	11	1	31
GT-185 Skimmer w Adaptor (1) *330' 67" Curtain Pressure Boom*	1371	500	2 Utility	5	Ingleside	1	1	17	11	1	31
Foilex 250 Skimmer (1) *330' 67" Curtain Pressure Boom*	3977	500	2 Utility	5	Ingleside	1	1	17	11	1	31
Stress I Skimmer (1) *330' 67" Curtain Pressure Boom*	15840	500	2 Utility	5	Ingleside	1	1	17	11	1	31
Walosep 4 Skimmer (1) *330' 67" Curtain Pressure Boom*	3017	500	2 Utility	5	Ingleside	1	1	17	11	1	31
Crucial Disk 88/30 Skimmer (1) *330' 67" Curtain Pressure Boom*	11122	500	2 Utility	5	Galveston	1	1	12	11	1	26
GT-185 Skimmer w Adaptor (2) *660' 67" Curtain Pressure Boom*	2742	1000	4 Utility	10	Galveston	1	1	12	11	1	26
Walosep 4 Skimmer (1) *330' 67" Curtain Pressure Boom*	3017	500	2 Utility	5	Galveston	1	1	12	11	1	26
Foilex 250 Skimmer (1) *330' 67" Curtain Pressure Boom*	3977	500	2 Utility	5	Galveston	1	1	12	11	1	26
Stress I Skimmer (1) *330' 67" Curtain Pressure Boom*	15840	500	2 Utility	5	Galveston	1	1	12	11	1	26
GT-185 Skimmer w Adaptor (1) *330' 67" Curtain Pressure Boom*	1371	500	2 Utility	5	Port Arthur	1	1	9	11	1	23
Desmi Skimmer (1) *330' 67" Curtain Pressure Boom*	3017	500	2 Utility	5	Lake Charles	1	1	7	11	1	21
Foilex 250 Skimmer (1) *330' 67" Curtain Pressure Boom*	3977	500	2 Utility	5	Lake Charles	1	1	7	11	1	21
GT-185 Skimmer w Adaptor (1) *330' 67" Curtain Pressure Boom*	1371	500	2 Utility	5	Lake Charles	1	1	7	11	1	21

Offshore Equipment Preferred Staging	EDRC	Storage Capacity	VOO	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Travel to Staging	Travel to Site	Hrs to Deploy	Total Hrs
MSRC											
Stress I Skimmer (2) *330' 67" Curtain Pressure Boom*	31680	1000	2 Utility	10	Lake Charles	1	1	7	11	1	21
LFF 100 Brush Skimmer (1) *1,320' 67" Curtain Pressure Boom*	18086	1000	1 PSV + 1 Support Vessel	9	Lake Charles	1	1	7	11	1	21
LFF 100 Brush Skimmer (1) *1,320' 67" Curtain Pressure Boom*	18086	1000	1 PSV + 1 Support Vessel	9	Lake Charles	1	1	7	11	1	21
LFF 100 Brush Skimmer (1) *1,320' 67" Curtain Pressure Boom*	18086	1000	1 PSV + 1 Support Vessel	9	Lake Charles	1	1	7	11	1	21
Transrec 350 Skimmer (1) *1,320' 67" Curtain Pressure Boom*	10567	1000	1 PSV + 1 Support Vessel	9	Lake Charles	1	1	7	11	1	21
Transrec 350 Skimmer (1) *1,320' 67" Curtain Pressure Boom*	10567	1000	1 PSV + 1 Support Vessel	9	Lake Charles	1	1	7	11	1	21
GT-185 Skimmer w Adaptor (1) *330' 67" Curtain Pressure Boom*	1371	500	2 Utility	5	Baton Rouge	1	1	4	11	1	18
Stress I Skimmer (1) *330' 67" Curtain Pressure Boom*	15840	500	2 Utility	5	Grand Isle	1	1	1	11	1	15
LFF 100 Brush Skimmer (1) *1,320' 67" Curtain Pressure Boom*	10567	1000	1 PSV + 1 Support Vessel	9	Houma	1	1	2	11	1	16
GT-185 Skimmer w Adaptor (1) *330' 67" Curtain Pressure Boom*	1371	500	2 Utility	5	Belle Chasse	1	1	3	11	1	17
Walosep W4 Skimmer (1) *330' 67" Curtain Pressure Boom*	3017	500	2 Utility	5	Belle Chasse	1	1	3	11	1	17
Foilex 250 Skimmer (1) *330' 67" Curtain Pressure Boom*	3977	500	2 Utility	5	Belle Chasse	1	1	3	11	1	17
Foilex 200 Skimmer (1) *330' 67" Curtain Pressure Boom*	1989	500	2 Utility	5	Belle Chasse	1	1	3	11	1	17
Crucial Disk 56/30 Skimmer (1) *330' 67" Curtain Pressure Boom*	5671	500	2 Utility	5	Belle Chasse	1	1	3	11	1	17

Offshore Equipment Preferred Staging	EDRC	Storage Capacity	VOO	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Travel to Staging	Travel to Site	Hrs to Deploy	Total Hrs
MSRC											
Desmi Skimmer (1) *330' 67" Curtain Pressure Boom*	3017	500	2 Utility	5	Fort Jackson	1	1	5	11	1	19
Stress I Skimmer (1) *330' 67" Curtain Pressure Boom*	15840	500	2 Utility	5	Fort Jackson	1	1	5	11	1	19
Crucial Disk 88/30 Skimmer (1) *1,320' 67" Curtain Pressure Boom*	11122	1000	1 PSV + 1 Support Vessel	9	Fort Jackson	1	1	5	11	1	19
Crucial Disk 88/30 Skimmer (1) *1,320' 67" Curtain Pressure Boom*	11122	1000	1 PSV + 1 Support Vessel	9	Fort Jackson	1	1	5	11	1	19
GT-185 Skimmer (1) *330' 67" Curtain Pressure Boom*	1371	500	2 Utility	5	Pascagoula	1	1	6	11	1	20
Crucial Disk 88/30 Skimmer (1) *330' 67" Curtain Pressure Boom*	11122	500	2 Utility	5	Pascagoula	1	1	6	11	1	20
Stress I Skimmer (1) *330' 67" Curtain Pressure Boom*	15840	500	2 Utility	5	Pascagoula	1	1	6	11	1	20
Stress II Skimmer (1) *330' 67" Curtain Pressure Boom*	3017	500	2 Utility	5	Pascagoula	1	1	6	11	1	20
Stress I Skimmer (1) *330' 67" Curtain Pressure Boom*	15840	500	2 Utility	5	Tampa	1	1	22	11	1	36
Crucial Disk 56/30 Skimmer (1) *330' 67" Curtain Pressure Boom*	5671	500	2 Utility	5	Tampa	1	1	22	11	1	36
GT-185 Skimmer w Adaptor (1) *330' 67" Curtain Pressure Boom*	1371	500	2 Utility	5	Tampa	1	1	22	11	1	36
GT-185 Skimmer w Adaptor (1) *330' 67" Curtain Pressure Boom*	1371	500	2 Utility	5	Miami	1	1	28	11	1	42
Walosep W4 Skimmer (1) *330' 67" Curtain Pressure Boom*	3017	500	2 Utility	5	Miami	1	1	28	11	1	42
Desmi Skimmer (1) *330' 67" Curtain Pressure Boom*	3017	500	2 Utility	5	Miami	1	1	28	11	1	42
Stress I Skimmer (1) *330' 67" Curtain Pressure Boom*	15840	500	2 Utility	5	Miami	1	1	28	11	1	42

Nearshore Response

Nearshore Equipment	EDRC	Storage Capacity	Support Vessel(s)	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Hrs to GOM	Travel to Staging	Hrs to Deploy	Total Hrs
CGA											
46 FRV	15257	65	NA	4	Aransas Pass	2	0	2	16	1	21
46 FRV	15257	65	NA	4	Leeville	2	0	2	3	1	8
46 FRV	15257	65	NA	4	Lake Charles	2	0	2	2.5	1	7.5
46 FRV	15257	65	NA	4	Venice	2	0	2	11	1	16
Mid-Ship SWS	22885	249	NA	4	Leeville	2	0	N/A	48	1	51
Mid-Ship SWS	22885	249	NA	4	Venice	2	0	N/A	48	1	51
Mid-Ship SWS	22885	249	NA	4	Galveston	2	0	N/A	48	1	51
Trinity SWS	21500	249	NA	4	Leeville	2	0	N/A	48	1	51
Trinity SWS	21500	249	NA	4	Lake Charles	2	0	N/A	48	1	51
Trinity SWS	21500	249	NA	4	Vermilion	2	0	N/A	48	1	51
Trinity SWS	21500	249	NA	4	Galveston	2	0	N/A	48	1	51
MSRC											
MSRC Lightning 2 LORI Brush Pack	5000	50	NA	3	Tampa. FL	2	0	1	36	1	40
MSRC Quick Strike 2 LORI Brush Pack	5000	50	NA	3	Lake Charles, LA	2	0	1	2	1	6

Nearshore Response, cont'd.

Nearshore Equipment	EDRC	Storage Capacity	Support Vessel(s)	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Hrs to GOM	Travel to Staging	Hrs to Deploy	Total Hrs
Enterprise Marine (available through contract with CGA)											
CTCo 2603	NA	25000	1 Tug	6	Amelia, LA	26	0	6	15	1	48
CTCo 2604	NA	20000	1 Tug	6	Amelia, LA	26	0	6	15	1	48
CTCo 2605	NA	20000	1 Tug	6	Amelia, LA	26	0	6	15	1	48
CTCo 2606	NA	20000	1 Tug	6	Amelia, LA	26	0	6	15	1	48
CTCo 2607	NA	23000	1 Tug	6	Amelia, LA	26	0	6	15	1	48
CTCo 2608	NA	23000	1 Tug	6	Amelia, LA	26	0	6	15	1	48
CTCo 2609	NA	23000	1 Tug	6	Amelia, LA	26	0	6	15	1	48
CTCo 5001	NA	47000	1 Tug	6	Amelia, LA	26	0	6	15	1	48
Kirby Offshore (available through contract with CGA and/or MSRC)											
RO Barge	NA	80000+	1 Tug	6	Venice, LA	24	0	4	31	1	60
RO Barge	NA	80000+	1 Tug	6	Venice, LA	24	0	4	31	1	60

Staging Area: Cameron

Nearshore and Inland Skimmers With Staging	EDRC	Storage Capacity	Support Vessel(s)	Persons Req.	From	Hrs to Procure	Hrs to Load Out	Travel to Staging	Travel to Deployment	Hrs to Deploy	Total Hrs
CGA											
SWS Egmopol	1810	100	NA	3	Galveston	2	2	5	2	1	12
SWS Egmopol	1810	100	NA	3	Leeville	2	2	7	2	1	14
SWS Marco	3588	20	NA	3	Lake Charles	2	2	2	2	1	9
SWS Marco	3588	34	NA	3	Leeville	2	2	7	2	1	14
SWS Marco	3588	34	NA	3	Venice	2	2	9.5	2	1	16.5
Foilex Skim Package (TDS 150)	1131	50	NA	3	Lake Charles	4	12	2	2	2	22
Foilex Skim Package (TDS 150)	1131	50	NA	3	Galveston	4	12	5	2	2	25
Foilex Skim Package (TDS 150)	1131	50	NA	3	Harvey	4	12	7	2	2	27
4 Drum Skimmer (Magnum 100)	680	100	1 Crew	3	Lake Charles	2	2	2	2	1	9
4 Drum Skimmer (Magnum 100)	680	100	1 Crew	3	Harvey	2	2	7	2	1	14
2 Drum Skimmer (TDS 118)	240	100	1 Crew	3	Lake Charles	2	2	2	2	1	9
2 Drum Skimmer (TDS 118)	240	100	1 Crew	3	Harvey	2	2	7	2	1	14
MSRC											
30 ft. Kvichak *Marco I Skimmer (1)*	3588	24	NA	2	Ingleside	1	1	9.5	2	1	14.5
30 ft. Kvichak *Marco I Skimmer (1)*	3588	24	NA	2	Galveston	1	1	5	2	1	10
30 ft. Kvichak *Marco I Skimmer (1)*	3588	24	NA	2	Belle Chasse	1	1	7	2	1	12
30 ft. Kvichak *Marco I Skimmer (1)*	3588	24	NA	2	Pascagoula	1	1	9.5	2	1	14.5
AardVac Skimmer (1)	3840	500	1 Utility	5	Lake Charles	1	1	1	2	1	6
AardVac Skimmer (1)	3840	500	1 Utility	5	Pascagoula	1	1	9.5	2	1	14.5
AardVac Skimmer (2)	7680	1000	2 Utility	10	Miami	1	1	31	2	1	36
Queensboro Skimmer (1)	905	400	1 Push Boat	4	Galveston	1	1	5	2	1	10
Queensboro Skimmer (5)	4525	2000	5 Push Boat	20	Lake Charles	1	1	1	2	1	6
Queensboro Skimmer (1)	905	400	1 Push Boat	4	Belle Chasse	1	1	7	2	1	12
Queensboro Skimmer (1)	905	400	1 Push Boat	4	Pascagoula	1	1	9.5	2	1	14.5

Shoreline Protection

Staging Area: Cameron

Shoreline Protection Boom	VOO	Persons Req.	Storage/Warehouse Location	Hrs to Procure	Hrs to Loadout	Travel to Staging	Travel to Deployment	Hrs to Deploy	Total Hrs
AMPOL (available through Letter of Intent)									
34,050' 18" Boom	13 Crew	26	New Iberia, LA	2	2	6	2	12	24
12,850' 18" Boom	7 Crew	14	Chalmette, LA	2	2	2.5	2	6	14.5
900' 18" Boom	1 Crew	2	Morgan City, LA	2	2	4.5	2	2	12.5
3,200' 18" Boom	2 Crew	4	Venice, LA	2	2	0	2	2	8
12,750' 18" Boom	7 Crew	14	Port Arthur, TX	2	2	10	2	6	22
ES&H (available through Letter of Intent)									
13,000' 18" Boom	6 Crew	12	Golden Meadow, LA	.5	.5	4	2	4	11
14,000' 18" Boom	6 Crew	12	LaPlace, LA	.5	.5	3	2	4	10
16,000' 18" Boom	6 Crew	12	Lake Charles, LA	.5	.5	8	2	4	15
500' 18" Boom	1 Crew	2	Lafayette, LA	.5	.5	6	2	1	10
100' 18" Boom	1 Crew	2	Morgan City, LA	.5	.5	5	2	1	9
1,000' 18" Boom	1 Crew	2	Fourchon, LA	.5	.5	5	2	1	9
10,100' 18" Boom	6 Crew	12	Belle Chasse, LA	.5	.5	2	2	4	7
52,000' 18" Boom	12 Crew	24	Houma, LA	.5	.5	4	2	4	11
2,100' 18" Boom	1 Crew	2	Venice, LA	.5	.5	0	2	4	7

Wildlife Response	EDRC	Storage Capacity	VOO	Persons	From	Hrs to Procure	Hrs to Loadout	Travel to Staging	Travel to Deploymen	Hrs to Deploy	Total Hrs
CGA											
Wildlife Support Trailer	NA	NA	NA	2	Harvey	2	2	7	1	2	14
Bird Scare Guns (24)	NA	NA	NA	2	Harvey	2	2	7	1	2	14
Bird Scare Guns (12)	NA	NA	NA	2	Galveston	2	2	5	1	2	12
Bird Scare Guns (12)	NA	NA	NA	2	Aransas Pass	2	2	9.5	1	2	16.5
Bird Scare Guns (48)	NA	NA	NA	2	Lake Charles	2	2	2	1	2	9
Bird Scare Guns (24)	NA	NA	NA	2	Leeville	2	2	7	1	2	14

Response Asset Totals	Total (bbls)
Offshore EDRC	1,189,841
Offshore Recovered Oil Storage	1,585,796+
Nearshore / Shallow Water EDRC	291,303
Nearshore / Shallow Water Recovered Oil Storage	370,737+

APPENDIX J
ENVIRONMENTAL MONITORING INFORMATION

A) MONITORING SYSTEMS

The proposed drilling units are equipped with Acoustic Doppler Current Profile (ADCP) monitoring equipment. Data from these meters are reported to the National Data Buoy Center website.

B) INCIDENTAL TAKES

Operations proposed in this plan may utilize a moon pool(s) to conduct various subsea activities.

Accordingly, BOE Exploration & Production and/or its contractor representatives will comply with the Reasonable and Prudent Measures and implementing Terms and Conditions of the Biological Opinion issued by the National Marine Fisheries Service (NMFS) on March 13, 2020.

Moon pool(s) will be regularly monitored while open to the water column and when the vessel is not underway. If water conditions are such that observers are unable to see within a meter of the surface, operations requiring lowering or retrieval of equipment through the moon pool will be conducted at a rate that will minimize potential harm, if safety allows.

Prior to and following hull door closure, the moon pool will be monitored continuously by a dedicated crew observer with no other tasks to ensure that no individual Endangered Species Act (ESA) listed species is trapped within the hull closed moon pool doors. If visibility is not clear to the hull door from above (e.g., turbidity or low light), 30 minutes of monitoring will be conducted prior to hull door closure. Prior to movement of the vessel and/or deployment/retrieval of equipment, the moon pool will be monitored continuously for a minimum of 30 minutes, by a dedicated crew observer with no other tasks, to ensure no ESA listed species are present in the moon pool area.

If an ESA listed species is observed in the moon pool, the vessel will not be moved and equipment will not be deployed or retrieved, to the extent practicable, unless the safety of crew or vessel requires otherwise. NMFS will be contacted immediately at nmfs.psoreview@noaa.gov. If the observed animal leaves the moon pool, activities will commence.

Should an ESA listed species be observed in a moon pool prior to activity commencement, recovery of the animal or other actions specific to the scenario may be required to prevent interaction with the animal. No action will be taken except at the direction of and after contact with NMFS.

Should an interaction with equipment or entanglement/entrapment of any ESA listed species occur (e.g., the animal cannot or does not leave the moon pool on its own volition), the interaction will be reported immediately. Any observation of a leatherback sea turtle within a moon pool, regardless of whether interaction with equipment or entanglement/entrapment is observed, will be reported immediately to the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov).

Further, any interaction with equipment or entanglement/entrapment of any ESA listed species (i.e., the animal cannot or does not leave the pool of its own volition) will be reported immediately. For

assistance with marine mammals and sea turtles, the stranding network listed at www.fisheries.noaa.gov/report and BSEE at protectedspecies@bsee.gov will be contacted for additional guidance on continued monitoring requirements, recovery assistance needs (if required), and incidental report information. Other ESA listed species (e.g., giant manta ray) will be reported to relevant state agency wildlife lines, the ESA Section 7 biologist, and BSEE at protectedspecies@bsee.gov. The vessel will not be moved and equipment will not be deployed or retrieved to/from the pool, to the extent practicable, until NMFS and BSEE are contacted and provide input on how to proceed.

Any ESA listed species observed within a moon pool that then leaves the moon pool of its own volition will be reported within 24 hours to NMFS at nmfs.psoreview@noaa.gov and BSEE at protectedspecies@bsee.gov. If the observed animal is no longer observed in the moon pool, monitoring will take place for at least 30 minutes to ensure it has left the moon pool. After 30 minutes, activities will commence.

Additionally, BOE Exploration & Production and/or its contractor representatives will follow guidance provided under various appendices found in the Biological Opinion issues by NMFS on March 13, 2020 regarding the following when conducting activity proposed in this plan:

- Appendix B, Gulf of Mexico Marine Trash and Debris Awareness and Elimination Survey Protocols
- Appendix C, Gulf of Mexico Vessel Strike Avoidance and Injured/Dead Aquatic Protected Species Reporting Protocols
- Appendix J, Sea Turtle Handling and Resuscitation Guidelines

There are no seismic surveys, pile driving, decommissioning activities, or pipelines making landfall associated with the activity proposed in this plan.

Vessels associated with and/or utilized to support activity proposed in this plan will take the most direct route when transiting from onshore support facilities to a well site(s). Vessels associated with and/or utilized to support activity proposed in this plan will not transit the Bryde's whale area.

BOE Exploration & Production and/or its contractor representatives and vessels associated with and/or utilized to support activity proposed in this plan will not utilize flexible, small diameter nylon, plastic or fiber lines to support operations proposed in this plan.

C) FLOWER GARDEN BANKS NATIONAL MARINE SANCTUARYaccordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. The subject area and block(s) are not located within the Protective Zones of the Flower Garden Banks and Stetson Bank.

APPENDIX K
LEASE STIPULATIONS INFORMATION

Stipulation 8 - Marine Protected Species
Lease Stipulation No. 8 is designed to reduce the potential taking of federally protected species in conjunction with activity conducted on the Outer Continental Shelf (OCS).

BOE Exploration & Production and its operators, personnel, contractors and subcontractors will operate in accordance with NTL BOEM 2016-G01, “Vessel Strike Avoidance and Injured/Dead Protected Species Reporting,” NTL 2015-G03, “Marine Trash and Debris Awareness and Elimination” and NTL BOEM 2016-G02, “Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program” and any additional measures in conditions of approval for corresponding plans and permits in satisfying this condition of the subject lease relating to its proposed activity.

APPENDIX L
ENVIRONMENTAL MITIGATION MEASURES INFORMATION

A) MEASURES TAKEN TO AVOID, MINIMIZE, AND MITIGATE IMPACTS

In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. The state of Florida is not an affected state.

B) INCIDENTAL TAKES

Operations proposed in this plan may utilize a moon pool(s) to conduct various subsea activities.

Accordingly, BOE Exploration & Production and/or its contractor representatives will comply with the Reasonable and Prudent Measures and implementing Terms and Conditions of the Biological Opinion issued by the National Marine Fisheries Service (NMFS) on March 13, 2020.

Moon pool(s) will be regularly monitored while open to the water column and when the vessel is not underway. If water conditions are such that observers are unable to see within a meter of the surface, operations requiring lowering or retrieval of equipment through the moon pool will be conducted at a rate that will minimize potential harm, if safety allows.

Prior to and following hull door closure, the moon pool will be monitored continuously by a dedicated crew observer with no other tasks to ensure that no individual Endangered Species Act (ESA) listed species is trapped within the hull closed moon pool doors. If visibility is not clear to the hull door from above (e.g., turbidity or low light), 30 minutes of monitoring will be conducted prior to hull door closure. Prior to movement of the vessel and/or deployment/retrieval of equipment, the moon pool will be monitored continuously for a minimum of 30 minutes, by a dedicated crew observer with no other tasks, to ensure no ESA listed species are present in the moon pool area.

If an ESA listed species is observed in the moon pool, the vessel will not be moved and equipment will not be deployed or retrieved, to the extent practicable, unless the safety of crew or vessel requires otherwise. NMFS will be contacted immediately at nmfs.psoreview@noaa.gov. If the observed animal leaves the moon pool, activities will commence.

Should an ESA listed species be observed in a moon pool prior to activity commencement, recovery of the animal or other actions specific to the scenario may be required to prevent interaction with the animal. No action will be taken except at the direction of and after contact with NMFS.

Should an interaction with equipment or entanglement/entrapment of any ESA listed species occur (e.g., the animal cannot or does not leave the moon pool on its own volition), the interaction will be reported immediately. Any observation of a leatherback sea turtle within a moon pool, regardless of whether interaction with equipment or entanglement/entrapment is observed, will be reported immediately to the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov).

Further, any interaction with equipment or entanglement/entrapment of any ESA listed species (i.e., the animal cannot or does not leave the pool of its own volition) will be reported immediately. For

assistance with marine mammals and sea turtles, the stranding network listed at www.fisheries.noaa.gov/report and BSEE at protectedspecies@bsee.gov will be contacted for additional guidance on continued monitoring requirements, recovery assistance needs (if required), and incidental report information. Other ESA listed species (e.g., giant manta ray) will be reported to relevant state agency wildlife lines, the ESA Section 7 biologist, and BSEE at protectedspecies@bsee.gov. The vessel will not be moved and equipment will not be deployed or retrieved to/from the pool, to the extent practicable, until NMFS and BSEE are contacted and provide input on how to proceed.

Any ESA listed species observed within a moon pool that then leaves the moon pool of its own volition will be reported within 24 hours to NMFS at nmfs.psoreview@noaa.gov and BSEE at protectedspecies@bsee.gov. If the observed animal is no longer observed in the moon pool, monitoring will take place for at least 30 minutes to ensure it has left the moon pool. After 30 minutes, activities will commence.

Additionally, BOE Exploration & Production and/or its contractor representatives will follow guidance provided under various appendices found in the Biological Opinion issues by NMFS on March 13, 2020 regarding the following when conducting activity proposed in this plan:

- Appendix B, Gulf of Mexico Marine Trash and Debris Awareness and Elimination Survey Protocols
- Appendix C, Gulf of Mexico Vessel Strike Avoidance and Injured/Dead Aquatic Protected Species Reporting Protocols
- Appendix J, Sea Turtle Handling and Resuscitation Guidelines

There are no seismic surveys, pile driving, decommissioning activities, or pipelines making landfall associated with the activity proposed in this plan.

Vessels associated with and/or utilized to support activity proposed in this plan will take the most direct route when transiting from onshore support facilities to a well site(s). Vessels associated with and/or utilized to support activity proposed in this plan will not transit the Bryde's whale area.

BOE Exploration & Production and/or its contractor representatives and vessels associated with and/or utilized to support activity proposed in this plan will not utilize flexible, small diameter nylon, plastic or fiber lines to support operations proposed in this plan.

Additionally, BOE Exploration & Production will adhere to the requirements as set forth in the following Notices to Lessees, as applicable, to avoid or minimize impacts to any of the species listed in the ESA as a result of the proposed operations:

- NTL BOEM 2016-G01, "Vessel Strike Avoidance and Injured/Dead Protected Species Reporting"
- NTL 2015-G03, "Marine Trash and Debris Awareness and Elimination"
- NTL BOEM 2016-G02, "Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program"

APPENDIX M
RELATED FACILITIES & OPERATIONS INFORMATION

A) RELATED OCS FACILITIES AND OPERATIONS
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this Exploration Plan.

B) TRANSPORTATION SYSTEM
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this Exploration Plan.

C) PRODUCED LIQUID HYDROCARBONS TRANSPORTATION VESSELS
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. No new production is being proposed for transport nor is existing production transporting methods being modified.

APPENDIX N
SUPPORT VESSELS AND AIRCRAFT INFORMATION

A) GENERAL
The most practical and direct route from the shorebase as permitted by weather and traffic conditions will be utilized. The table below provides information on vessels and aircraft that will be used to support the proposed activities.

Type	Maximum Fuel Tank Capacity	Maximum Number in Area at Any Time	Trip Frequency or Duration
Supply Boat	1900 bbls	1	6x/week
Crew Boat	1700 bbls	1	4x/week
Aircraft	250 gals	1	As Needed

B) DIESEL OIL SUPPLY VESSELS
The table below provides information on the vessels that will be used to supply diesel oil. It also includes all vessels that will transfer diesel oil that will be used for purposes other than fuel.

Size of Fuel Supply Vessel	Capacity of Fuel Supply Vessel	Frequency of Fuel Transfers	Route Fuel Supply Vessel Will Take
180 feet	1900 bbls	Weekly	Most direct route from shorebase to site

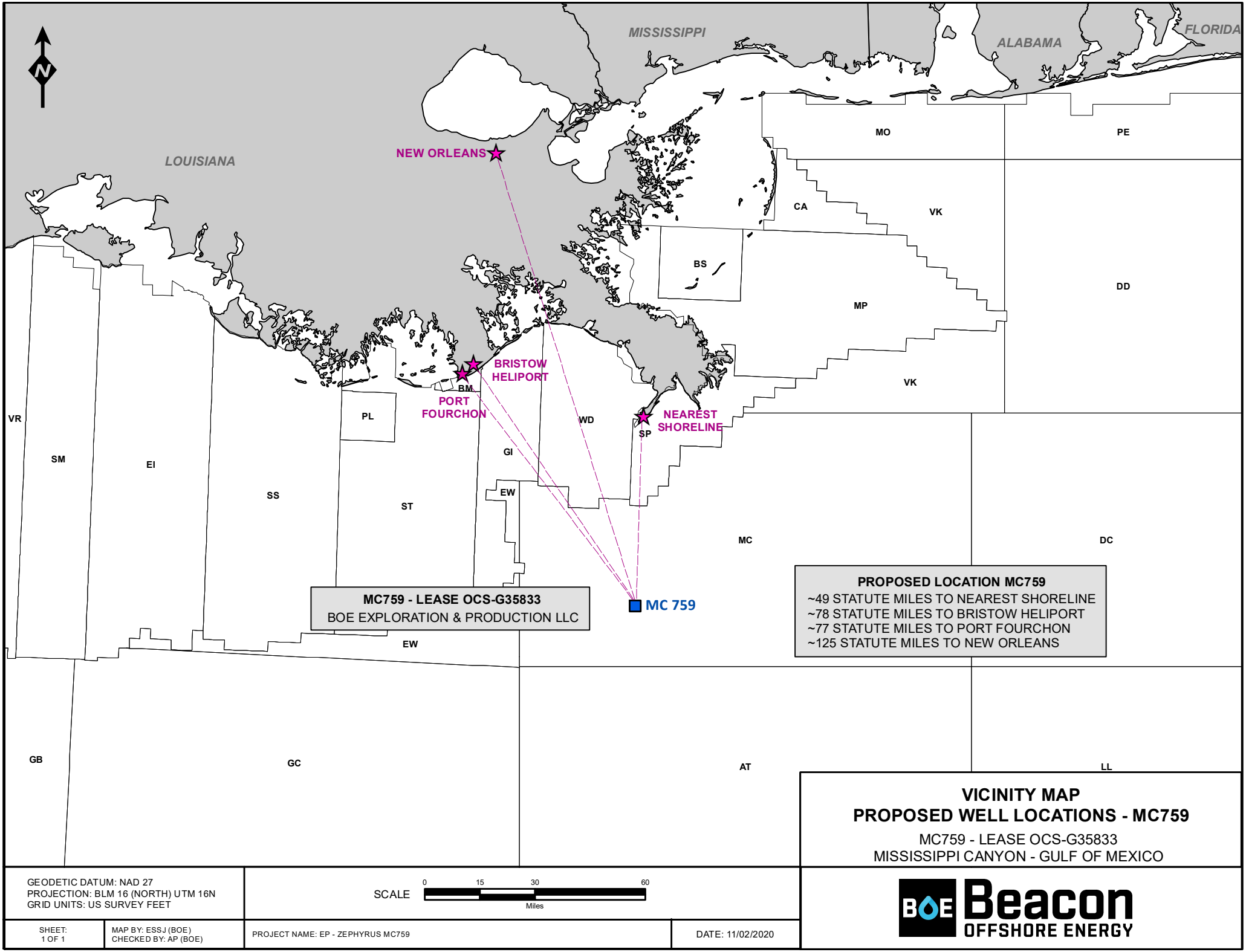
C) DRILLING FLUID TRANSPORTATION
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. The state of Florida is not an affected state.

D) SOLID AND LIQUID WASTE TRANSPORTATION35
In accordance with BOEM guidance, the required data regarding the solid and liquid waste which will be transported from the site of the activities proposed in this plan has been incorporated into the Waste & Discharge tables which are included in the attachment(s) to the Waste & Discharge Information appendix.

E) VICINITY MAP
Enclosed as an attachment to this appendix is a vicinity map for the activities proposed in this plan depicting the location of same relative to the shoreline with the distance of the proposed activities from the shoreline and the primary route(s) of the support vessels and aircraft which will be used when traveling between the onshore support facilities and the proposed operations.

Vessels associated with and/or utilized to support activity proposed in this plan will take the most direct route when transiting from onshore support facilities to a well site(s). Vessels associated with and/or utilized to support activity proposed in this plan will not transit the Bryde's whale area.

VICINITY MAP



VICINITY MAP
PROPOSED WELL LOCATIONS - MC759

MC759 - LEASE OCS-G35833
MISSISSIPPI CANYON - GULF OF MEXICO

GEODETIC DATUM: NAD 27
PROJECTION: BLM 16 (NORTH) UTM 16N
GRID UNITS: US SURVEY FEET

SCALE

SHEET: 1 OF 1

MAP BY: ESSJ (BOE)
CHECKED BY: AP (BOE)

PROJECT NAME: EP - ZEPHYRUS MC759

DATE: 11/02/2020

BOE Beacon OFFSHORE ENERGY

APPENDIX O
ONSHORE SUPPORT FACILITIES INFORMATION

A) GENERAL
The table below is a list of the onshore facilities that will be used to provide supply and service support for the activities proposed in this plan.

Name of Shorebase	Location	Existing/New/Modified
EPS Dock	Fourchon, LA	Existing
Bristow Heliport	Galliano, LA	Existing

B) SUPPORT BASE CONSTRUCTION OR EXPANSION
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. BOE Exploration & Production will use an existing onshore base facility and will not need to expand or modify those facilities to accommodate the operations proposed in this plan.

C) SUPPORT BASE CONSTRUCTION OR EXPANSION TIMETABLE
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. Land is not being acquired to construct or expand an onshore support base.

D) WASTE DISPOSAL
In accordance with BOEM guidance, the required data regarding the facilities that will be used to store and dispose of any solid and liquid wastes generated by the activities proposed in this plan has been incorporated into the Waste & Discharge tables which are included in the attachment(s) to the Waste & Discharge Information appendix.

E) AIR EMISSIONS
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. Air emissions information in this section is not required for plans where the activities being proposed are within the boundaries of the Gulf of Mexico Region.

F) UNUSUAL SOLID AND LIQUID WASTES
In accordance with NTL 2008-G04, this information is not applicable to the activities proposed in this plan. Unusual solid and liquid wastes information generated by onshore support facilities is not required for plans that propose activities that fall within the boundaries of the Gulf of Mexico Region.

APPENDIX P
COASTAL ZONE MANAGEMENT (CZMA) INFORMATION

Relevant enforceable policies were considered in certifying consistency for Louisiana.

A certificate of Coastal Zone Management Consistency for each of the states listed above is included in the attachments to this appendix.

COASTAL ZONE MANAGEMENT CONSISTENCY CERTIFICATION

COASTAL ZONE MANAGEMENT CONSISTENCY CERTIFICATION

INITIAL EXPLORATION PLAN

MISSISSIPPI CANYON 759
OCS-G 35833

The proposed activities described in detail in this OCS Plan comply with Louisiana's approved Coastal Management Program and will be conducted in a manner consistent with such program(s).

BOE Exploration & Production LLC
Lessee or Operator

Certifying Official

October 26, 2020

Date

APPENDIX Q
ENVIRONMETAL IMPACT ANALYSIS

An Environmental Impact Analysis is included in the attachments to this appendix.

ENVIRONMETAL IMPACT ANALYSIS

ENVIRONMENTAL IMPACT ANALYSIS WORKSHEET

Identify the IPF's that can cause impacts to the listed environmental resources by placing an "x" in the space under each IPF category associated with your proposed activities that may impact a particular environmental resource. If you determine an IPF would not impact a particular environmental resource, leave the space blank. For those cells that are footnoted, provide a statement as to the applicability to your proposed operations, and, where there may be an effect, provide an analysis of the effect. If you are aware of other environmental resources at or near your activity's site that are not included on the worksheet, address them too.

Environmental Resources	**Impact Producing Factors (IPFs) Categories and Examples Refer to a recent GOM OCS Lease Sale EIS for a more complete list of IPFs**					
	Emissions (air, noise, light, etc.)	**Effluents (muds, cuttings, other discharges to the water column or seafloor)**	**Physical disturbances to the seafloor (rig or anchor emplacements, etc.)**	**Wastes sent to shore for treatment or disposal**	**Accidents (e.g., oil spills, chemical spills, H_2S releases)**	**Other IPFs you identify**
Site-specific at Offshore Location						
Designated topographic features		(1)	(1)		(1)	
Pinnacle Trend area live bottoms		(2)	(2)		(2)	
Eastern Gulf live bottoms		(3)	(3)		(3)	
Chemosynthetic communities		**x**	**x**(4)		**x**	
Water quality		**x**	**x**	**x**	**x**	
Fisheries		**x**	**x**		**x**	
Marine mammals	**x**(8)	**x**	**x**		**x**(8)	
Sea turtles	**x**(8)	**x**	**x**		**x**(8)	
Air quality	**x**(9)				**x**	
Shipwreck sites (known or potential)			**x**(7)			
Prehistoric archaeological sites			**x**(7)			
Vicinity of Offshore Location						
Essential fish habitat		**x**	**x**		**x**(6)	
Marine and pelagic birds	**x**				**x**	
Public health and safety					(5)	
Coastal and Onshore						
Beaches					**x**(6)	
Wetlands					**x**(6)	
Shore birds and coastal nesting birds					**x**(6)	
Coastal wildlife refuges					**x**	
Wilderness areas					**x**	
Other Resources You Identify						

NOTE: The numbers in parentheses refer to the footnotes on page 2 of this form.

Footnotes for Environmental Impact Analysis Matrix

1. Activities that may affect a marine sanctuary or topographic feature. Specifically, if the well or platform site or any anchors will be on the seafloor within the:
   (a) 4-mile zone of the Flower Garden Banks, or the 3-mile zone of Stetson Bank;
   (b) 1000-m, 1-mile or 3-mile zone of any topographic feature (submarine bank) protected by the Topographic Features Stipulation attached to an OCS lease;
   (c) Essential Fish Habitat (EFH) criteria of 500 ft from any no-activity zone; or
   (d) Proximity of any submarine bank (500 ft buffer zone) with relief greater than 2 meters that is not protected by the Topographic Features Stipulation attached to an OCS lease.
2. Activities with any bottom disturbance within an OCS lease block protected through the Live Bottom (Pinnacle Trend) Stipulation attached to an OCS lease.
3. Activities within any Eastern Gulf OCS block where seafloor habitats are protected by the Live Bottom (Low- Relief) Stipulation attached to an OCS lease.
4. Activities on blocks designated by the BOEM as being in water depths 400 meters or greater.
5. Exploration or production activities where H_2S concentrations greater than 500 ppm might be encountered.
6. All activities that could result in an accidental spill of produced liquid hydrocarbons or diesel fuel that you determine would impact these environmental resources. If the proposed action is located a sufficient distance from a resource that no impact would occur, the EIA can note that in a sentence or two.
7. All activities that involve seafloor disturbances, including anchor emplacements, in any OCS block designated by the BOEM as having high-probability for the occurrence of shipwrecks or prehistoric sites, including such blocks that will be affected that are adjacent to the lease block in which your planned activity will occur. If the proposed activities are located a sufficient distance from a shipwreck or prehistoric site that no impact would occur, the EIA can note that in a sentence or two.
8. All activities that you determine might have an adverse effect on endangered or threatened marine mammals or sea turtles or their critical habitats.
9. Production activities that involve transportation of produced fluids to shore using shuttle tankers or barges.

Paperwork Reduction Act of 1995 (PRA) Statement: The PRA (44 U.S.C. 3501et seq.) requires us to inform you that BOEM collects this information as part of an applicant's Exploration Plan (EP) or Development Operations Coordination Document (DOCD) submitted for BOEM approval. We use the information in our review and data entry for OCS plans. Reponses are mandatory (43 U.S.C 1334). We will protect proprietary data according to the Freedom of Information Act and 30 CFR 550.197. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget Control Number. The public reporting burden for this form is included in the burden for preparing EPs and DOCDs. We estimate that burden to average 600 hours per response for EPs and 700 hours per response for DOCDs, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the forms associated with subpart B. Direct comments regarding the burden estimate or any other aspect of this form to the Information Collection Clearance Officer, Bureau of Ocean Energy Management, 381 Elden Street, Herndon, VA 20170.

TABLE 1: THREATENED AND ENDANGERED SPECIES, CRITICAL HABITAT, AND MARINE MAMMAL INFORMATION

The federally listed endangered and threatened species potentially occurring in the lease area and along the Gulf Coast are provided in the table below.

Species	Scientific Name	Status	Potential Presence		Critical Habitat Designated in the Gulf of Mexico	Gulf of Mexico Range
			Lease Area	Coastal		
Marine Mammals						
Manatee, West Indian	*Trichechus manatus latirostris*	T	--	X	Florida (peninsular)	Coastal Louisiana, Mississippi, Alabama, and Florida
Whale, Blue	*Balaenoptera masculus*	E	X*	--	None	GOM
Whale, Bryde's	*Balaenoptera edeni*	E	X	--	None	Eastern GOM
Whale, Fin	*Balaenoptera physalus*	E	X*	--	None	GOM
Whale, Humpback	*Megaptera novaeangliae*	E	X*	--	None	GOM
Whale, North Atlantic Right	*Eubalaena glacialis*	E	X*	--	None	GOM
Whale, Sei	*Balaenopiera borealis*	E	X*	--	None	GOM
Whale, Sperm	*Physeter catodon (=macrocephalus)*	E	X	--	None	GOM
Terrestrial Mammals						
Mouse, Beach (Alabama, Choctawatchee, Perdido Key, St. Andrew)	*Peromyscus polionotus*	E	-	X	Alabama, Florida (panhandle) beaches	Alabama, Florida (panhandle) beaches
Birds						
Plover, Piping	*Charadrius melodus*	T	-	X	Coastal Texas, Louisiana, Mississippi, Alabama and Florida (panhandle)	Coastal GOM
Crane, Whooping	*Grus Americana*	E	-	X	Coastal Texas	Coastal Texas and Louisiana
Crane, Mississippi sandhill	*Grus canadensis pulla*	E	-	X	Coastal Mississippi	Coastal Mississippi
Curlew, Eskimo	*Numenius borealis*	E	-	X	none	Coastal Texas
Falcon, Northern Aplomado	*Falco femoralis septentrionalis*	E	-	X	none	Coastal Texas
Knot, Red	*Calidris canutus rufa*	T	-	X	None	Coastal GOM
Stork, Wood	*Mycteria americana*	T	-	X	None	Coastal Alabama and Florida

Species	Scientific Name	Status	Potential Presence		Critical Habitat Designated in the Gulf of Mexico	Gulf of Mexico Range
			Lease Area	Coastal		
Reptiles						
Sea Turtle, Green	*Chelonia mydas*	T/E***	X	X	None	GOM
Sea Turtle, Hawksbill	*Eretmochelys imbricata*	E	X	X	None	GOM
Sea Turtle, Kemp's Ridley	*Lepidochelys kempli*	E	X	X	None	GOM
Sea Turtle, Leatherback	*Dermochelys coriacea*	E	X	X	None	GOM
Sea Turtle, Loggerhead	*Caretta caretta*	T	X	X	Texas, Louisiana, Mississippi, Alabama, Florida	GOM
Fish						
Sturgeon, Gulf	*Acipenser oxyrinchus (=oxyrhynchus) desotoi*	T	X	X	Coastal Louisiana, Mississippi, Alabama and Florida (panhandle)	Coastal Louisiana, Mississippi, Alabama and Florida (panhandle)
Shark, Oceanic Whitetip	Carcharhinus longimanus	E	X	_	None	GOM
Sawfish, Smalltooth	Pristis pectinata	E	-	X	None	Florida
Grouper, Nassau	Epinephelus striatus	T	-	X	None	Florida
Ray, Giant Manta	Manta birostris	E	X	--	None	GOM
Corals						
Coral, Elkhorn	*Acopora palmate*	T	X**	X	Florida Keys and Dry Tortugas	Flower Garden Banks, Florida, and the Caribbean
Coral, Staghorn	*Acopora cervicornis*	T	X	X	Florida	Flower Garden Banks, Florida, and the Caribbean
Coral, Boulder Star	*Orbicella franksi*	T	X	X	none	Flower Garden Banks and Florida
Coral, Lobed Star	*Orbicella annularis*	T	X	X	None	Flower Garden Banks and Caribbean
Coral, Mountainous Star	*Orbicella faveolata*	T	X	X	None	Flower Garden Banks and Gulf of Mexico
Coral, Rough Cactus	*Mycetophyllia ferox*	T	-	X	None	Florida and Southern Gulf of Mexico

Abbreviations: E = Endangered; T = Threatened

* The Blue, Fin, Humpback, North Atlantic Right, and Sei Whales are rare or extralimital in the Gulf of Mexico and are unlikely to be present in the lease area.

** According to the 2017 EIS, Elkhorn Coral, while uncommon, has been found in the Flower Garden Banks. (BOEM 2017-009)

*** Green Sea Turtles are considered threatened throughout the Gulf of Mexico; however, the breeding population off the coast of Florida is considered endangered.

Site-Specific at Mississippi Canyon 759
Activity proposed in this plan includes well operations at the subject area/block. Operations will be conducted via drillship or dynamically positioned semi-submersible.

- DESIGNATED TOPOGRAPHIC FEATURES

There are no impacts to designated topographic features expected from the proposed project including Impact Producing Factors (IPFs) such as emissions, effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal, accidents, or other factors or resources identified.

The proposed project location is not located in an area characterized by the existence of topographic features and associated no activity zones. The subject lease does not contain a topographic features stipulation. The nearest stipulated topographic features area is located a significant distance from the proposed project location.

- PINNACLE TREND AREA LIVE BOTTOMS

There are no impacts to a pinnacle trend area expected from the proposed project IPFs such as emissions, effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal, accidents, or other factors or resources identified.

The proposed project location is not located in an area characterized by the existence of live bottoms. The subject lease does not contain a live bottom stipulation. The nearest stipulated live bottom pinnacle trend area is located a significant distance from the proposed project location.

- EASTERN GULF LIVE BOTTOMS

There are no impacts to a live bottom low relief area expected from the proposed project including IPFs such as emissions, effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal, accidents, or other factors or resources identified.

The proposed project location is not located in an area characterized by the existence of live bottoms. The subject lease does not contain a live bottom stipulation. The nearest stipulated live bottom low relief area is located a significant distance from the proposed project location.

- CHEMOSYNTHETIC COMMUNITIES

IPFs that have the potential to cause impacts to high density deepwater benthic communities from the proposed project include effluents, physical disturbances to the seafloor, and accidents.

There is no evidence of fluid migration to the seafloor within 2,000 ft of the proposed locations. There are no seafloor amplitude anomalies or signs of gas migration within 2,000 ft of the proposed locations. There are no BSRs or other seismic indicators of gas hydrates within 2,000 ft of the proposed locations.

Features or areas that could support high-density chemosynthetic or other benthic communities are not anticipated within 2,000 ft of the proposed locations.

Effluents: Discharges from the proposed project will be in compliance with NPDES permit and NTL No. 2009-G40 conditions and are expected to have minimal impact on high density deepwater benthic communities in the area.

Physical Disturbances to the Seafloor: Bottom disturbances to the seafloor from the proposed project could include rig placement, drilling of wells, and installation of pipelines and platforms. Impacts to water column turbidity and distribution of disturbed sediments and associated nutrients could affect high density deepwater benthic communities in the area. The project will adhere to the requirements of NTL No. 2009-G40 to minimize impacts to high density deepwater benthic communities from seafloor disturbances.

Accidents: An accidental spill or well blowout from the proposed project could cause temporary and possibly long term impacts to high density deepwater benthic communities. Accidental spills would be expected to be small in in size, expeditiously recovered from the surface, and droplets in the water table microbiologically degraded, resulting in short term impacts. An accidental blowout of the well could have both short term and long term effects depending on the size and complexity of the event. In the event of a spill or blowout, the operator will immediately implement the Regional Oil Spill Response Plan and active controls and countermeasures to minimize the impact to high density deepwater benthic communities.

There are no other impacts to high density deepwater benthic communities expected from the proposed project including IPFs such as emissions, wastes sent to shore for treatment or disposal, or other factors or resources identified.

- WATER QUALITY

IPFs that have the potential to cause impacts to water quality from the proposed project include effluents, physical disturbances to the seafloor, wastes sent to shore for treatment and disposal, and accidents.

Physical disturbances to the seafloor: Bottom area disturbances resulting from the emplacement of drill rigs, the drilling of wells and the installation of platforms and pipelines would increase water-column turbidity and re-suspension of any accumulated pollutants, such as trace metals and excess nutrients. This would cause short-lived impacts on water quality conditions in the immediate vicinity of the emplacement operations. Additionally, a dynamically positioned semi-submersible or drillship is being used for the proposed activities; therefore, only an insignificant amount of seafloor will be disturbed.

Effluents: Levels of contaminants in drilling muds and cuttings and produced water discharges, discharge-rate restrictions and monitoring and toxicity testing are regulated by the EPA NPDES permit, thereby eliminating many significant biological or ecological effects. Operational discharges are not expected to cause significant adverse impacts to water quality. Additionally, an analysis of the best available information from the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico (NMFS, 2020) concludes that exposures to toxicants in discharges from oil and gas activities are not likely to adversely affect ESA-listed species.

Accidents: Impact-producing factors related to OCS oil- and gas-related accidental events primarily involve drilling fluid spills, chemical and waste spills, and oil spills.

Drilling Fluid Spills

Water-based fluid (WBF) and Synthetic-based fluid (SBF) spills may result in elevated turbidity, which would be short term, localized, and reversible. The WBF is normally discharged to the seafloor during riserless drilling, which is allowable due to its low toxicity. For the same reasons, a spill of WBF would have negligible impacts. The SBF has low toxicity, and the discharge of SBF is allowed to the extent that it adheres onto drill cuttings. Both USEPA Regions 4 and 6 permit the discharge of cuttings wetted with SBF as long as the retained SBF amount is below a prescribed percent, meets biodegradation and toxicity requirements, and is not contaminated with the formation oil or PAH. A spill of SBF may cause a temporary increase in biological oxygen demand and locally result in lowered dissolved oxygen in the water column. Also, a spill of SBF may release an oil sheen if formation oil is present in the fluid. Therefore, impacts from a release of SBF are considered to be minor. Spills of SBF typically do not require mitigation because SBF sinks in water and naturally biodegrades, seafloor cleanup is technically difficult, and SBF has low toxicity. (BOEM 2017-009)

Chemical Spills

Accidental chemical spills could result in temporary localized impacts on water quality, primarily due to changing pH. Chemicals spills are generally small volume compared with spills of oil and drilling fluids. During the period of 2007 to 2014, small chemical spills occurred at an average annual volume of 28 bbl, while large chemical spills occurred at an average annual volume of 758 bbl. These chemical spills normally dissolve in water and dissipate quickly through dilution with no observable effects. Also, many of these chemicals are approved to be commingled in produced water for discharge to the ocean, which is a permitted activity. Therefore, impacts from chemical spills are considered to be minor and do not typically require mitigation because of technical feasibility and low toxicity after dilution (BOEM 2017-009).

Oil Spills

Oil spills have the greatest potential of all OCS oil-and gas-related activities to affect water quality. Small spills (<1,000 bbl) are not expected to substantially impact water quality in coastal or offshore waters because the oil dissipates quickly through dispersion and weathering while still at sea. Reasonably foreseeable larger spills (≥1,000 bbl), however, could impact water quality in coastal and offshore waters (BOEM 2017-007). However, based on data provided in the BOEM 2016 Update of Occurrence Rates for Offshore Oil Spills, it is unlikely that an accidental surface or subsurface spill of a significant volume would occur from the proposed activities. Between 2001 and 2015 OCS operations produced 8 billion barrels of oil and spilled 0.062 percent of this oil, or 1 barrel for every 1,624 barrels produced. (The overall spill volume was almost entirely accounted for by the 2010 Deepwater Horizon blowout and subsequent discharge of 4.9 million barrels of oil. Additional information on unlikely scenarios and impacts from very large oil spills are discussed in the Catastrophic Spill Event Analysis white paper (BOEM 2017-007).

If a spill were to occur, the water quality of marine waters would be temporarily affected by the dissolved components and small oil droplets. Dispersion by currents and microbial degradation would remove the oil from the water column and dilute the constituents to background levels. Historically, changes in offshore water quality from oil spills have only been detected during the life of the spill and up to several months afterwards. Most of the components of oil are insoluble in water and therefore float. Dispersants

will only be used if approved by the Regional Response Team in coordination with the RRT Dispersant Plan and RRT Biological Assessment for Dispersants.

Oil spills, regardless of size, may allow hydrocarbons to partition into the water column in a dissolved, emulsion, and/or particulate phase. Therefore, impacts from reasonably foreseeable oil spills are considered moderate. Mitigation efforts for oil spills may include booming, burning, and the use of dispersants (BOEM 2017-009).

These methods may cause short-term secondary impacts to water quality, such as the introduction of additional hydrocarbon into the dissolved phase through the use of dispersants and the sinking of hydrocarbon residuals from burning. Since burning and the use of dispersants put additional hydrocarbons into the dissolved phase, impacts to water quality after mitigation efforts are still considered to be moderate, because dissolved hydrocarbons extend down into the water column resulting in additional exposure pathways via ingestion and gill respiration, and may result in acute or chronic effects to marine life (BOEM 2017-009).

Most oil-spill response strategies and equipment are based upon the simple principle that oil floats. However, as evident during the Deepwater Horizon explosion, oil spill, and response, this is not always true. Sometimes it floats and sometimes it suspends within the water column or sinks to the seafloor (BOEM 2017-009).

Oil that is chemically dispersed at the surface move into the top 20 ft (6 m) of the water column where it mixes with surrounding waters and begins to biodegrade (U.S. Congress, Office of Technology Assessment, 1990). Dispersant use, in combination with natural processes, breaks up oil into smaller components that allows them to dissipate into the water and degrade more rapidly (Nalco, 2010). Dispersant use must be in accordance with a Regional Response Team's (RRT) Preapproved Dispersant Use Manual and with any conditions outlined within a RRT's site- specific, dispersant approval given after a spill event. Consequently, dispersant use must be in accordance with the restrictions for specific water depths, distances from shore, and monitoring requirements. At this time, neither the Region IV nor the Region VI RRT dispersant use manuals, which cover the GOM region, give preapproval for the application of dispersant use subsea (BOEM 2017-009).

There are no other IPFs that have the potential to cause impact to water quality from the proposed project including emissions, or other factors or resources identified.

- FISHERIES

There are multiple species of fish in the Gulf of Mexico, including the endangered and threatened species listed at the beginning of this Environmental Impact Assessment. More information regarding the endangered gulf sturgeon, oceanic whitetip shark, and giant manta ray can be found below. IPFs that could cause impacts to fisheries as a result of the proposed operations include physical disturbances to the seafloor, emissions (noise / sound), effluents, and accidents.

Physical disturbances to the seafloor: The emplacement of a structure or drilling rig results in minimal loss of bottom trawling area to commercial fishermen. Pipelines cause gear conflicts which result in losses of trawls and shrimp catch, business downtime and vessel damage. Most financial losses from gear conflicts are covered by the Fishermen's Contingency Fund (FCF). The emplacement and removal of facilities are not expected to cause significant adverse impacts to fisheries. Additionally, a dynamically

positioned semi-submersible or drillship is being used for the proposed activities; therefore, only an insignificant amount of seafloor will be disturbed.

Emissions (noise / sound): All routine OCS oil-and gas-related activities have some element of sound generation. Common sound sources include propeller cavitation, rotating machinery, and reciprocating machinery, which are associated with routine OCS oil-and gas-related activities such as vessel traffic, drilling, construction, and oil and gas production, processing, and transport. Sound introduced into the marine environment as a result of human activities has the potential to affect marine organisms by stimulating behavioral response, masking biologically important signals, causing temporary or permanent hearing loss (Popper et al., 2005; Popper et al., 2014), or causing physiological injury (e.g., barotrauma) resulting in mortality (Popper and Hastings, 2009). The potential for anthropogenic sound to affect any individual organism is dependent on the proximity to the source, signal characteristics, received peak pressures relative to the static pressure, cumulative sound exposure, species, motivation, and the receiver's prior experience. In addition, environmental conditions (e.g., temperature, water depth, and substrate) affect sound speed, propagation paths, and attenuation, resulting in temporal and spatial variations in the received signal for organisms throughout the ensonified area (Hildebrand, 2009).

Sound detection capabilities among fish vary. For most fish species, it is reasonable to assume hearing sensitivity to frequencies below 500 Hertz (Hz) (Popper et al., 2003 and 2014; Popper and Hastings, 2009; Slabbekoorn et al., 2010; Radford et al., 2014). The band of greatest interest to this analysis, low-frequency sound (30-500 Hz), has come to be dominated by anthropogenic sources and includes the frequencies most likely to be detected by most fish species. For example, the noise generated by large vessel traffic typically results from propeller cavitation and falls within 40-150 Hz (Hildebrand, 2009; McKenna et al., 2012). This range is similar to that of fish vocalizations and hearing, and could result in a masking effect.

Masking occurs when background noise increases the threshold for a sound to be detected; masking can be partial or complete. If detection thresholds are raised for biologically relevant signals, there is a potential for increased predation, reduced foraging success, reduced reproductive success, or other effects. However, fish hearing and sound production may be adapted to a noisy environment (Wysocki and Ladich, 2005). There is evidence that fish are able to efficiently discriminate between signals, extracting important sounds from background noise (Popper et al., 2003; Wysocki and Ladich, 2005). Sophisticated sound processing capabilities and filtering by the sound sensing organs essentially narrows the band of masking frequencies, potentially decreasing masking effects. In addition, the low-frequency sounds of interest propagate over very long distances in deep water, but these frequencies are quickly lost in water depths between ½ and ¼ the wavelength (Ladich, 2013). This would suggest that the potential for a masking effect from low-frequency noise on behaviors occurring in shallow coastal waters may be reduced by the receiver's distance from sound sources, such as busy ports or construction activities.

Pulsed sounds generated by OCS oil-and gas-related activities (e.g., impact-driven piles and airguns) can potentially cause behavioral response, reduce hearing sensitivity, or result in physiological injury to fish and invertebrate resources. However, there are no pulsed sound generation activities proposed for these operations.

Support vessel traffic, drilling, production facilities, and other sources of continuous sounds contribute to a chronic increase in background noise, with varying areas of effect that may be influenced by the

sound level, frequencies, and environmental factors (Hildebrand, 2009; Slabbekoorn et al., 2010; McKenna et al., 2012). These sources have a low potential for causing physiological injury or injuring hearing in fish and invertebrates (Popper et al., 2014). However, continuous sounds have an increased potential for masking biologically relevant sounds than do pulsed signals. The potential effects of masking on fish and invertebrates is difficult to assess in the natural setting for communities and populations of species, but evidence indicates that the increase to background noise as a result of OCS oil and gas operations would be relatively minor. Therefore, it is expected that the cumulative impact to fish and invertebrate resources would be minor and would not extend beyond localized disturbances or behavioral modification.

Despite the importance of many sound-mediated behaviors and the potential biological costs associated with behavioral response to anthropogenic sounds, many environmental and biological factors limit potential exposure and the effects that OCS oil-and gas-related sounds have on fish and invertebrate resources. The overall impact to fish and invertebrate resources due to anthropogenic sound introduced into the marine environment by OCS oil-and gas- related routine activities is expected to be minor.

Effluents: Effluents such as drilling fluids and cuttings discharges contain components and properties which are detrimental to fishery resources. Moderate petroleum and metal contamination of sediments and the water column can occur out to several hundred meters down-current from the discharge point. Offshore discharges are expected to disperse and dilute to very near background levels in the water column or on the seafloor within 3,000 m of the discharge point, and are expected to have negligible effect on fisheries. Additionally, an analysis of the best available information from the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico (NMFS, 2020) concludes that exposures to toxicants in discharges from oil and gas activities are not likely to adversely affect ESA-listed species.

Accidents: Collisions between support vessels and ESA-listed fish, would be unusual events, however, should one occur, death or injury to ESA-listed fish is possible. Contract vessel operators can avoid protected aquatic species and reduce potential deaths by maintaining a vigilant watch and a distance of 50 meters or greater, with the exception of animals that approach the vessel. Vessel personnel should use a Gulf of Mexico reference guide that includes identifying information on marine mammals, sea turtles, and other marine protected species (i.e., Endangered Species Act listed species such as Gulf sturgeon, giant manta ray, or oceanic whitetip shark) that may be encountered in the Gulf of Mexico Outer Continental Shelf (OCS).

Operations proposed in this plan may utilize a moon pool(s) to conduct various subsea activities.

Accordingly, BOE Exploration & Production and/or its contractor representatives will comply with the Reasonable and Prudent Measures and implementing Terms and Conditions of the Biological Opinion issued by the National Marine Fisheries Service (NMFS) on March 13, 2020.

Moon pool(s) will be regularly monitored while open to the water column and when the vessel is not underway. If water conditions are such that observers are unable to see within a meter of the surface, operations requiring lowering or retrieval of equipment through the moon pool will be conducted at a rate that will minimize potential harm, if safety allows.

Prior to and following hull door closure, the moon pool will be monitored continuously by a dedicated crew observer with no other tasks to ensure that no individual Endangered Species Act (ESA) listed species is trapped within the hull closed moon pool doors. If visibility is not clear to the hull door from above (e.g., turbidity or low light), 30 minutes of monitoring will be conducted prior to hull door closure. Prior to movement of the vessel and/or deployment/retrieval of equipment, the moon pool will be monitored continuously for a minimum of 30 minutes, by a dedicated crew observer with no other tasks, to ensure no ESA listed species are present in the moon pool area.

If an ESA listed species is observed in the moon pool, the vessel will not be moved and equipment will not be deployed or retrieved, to the extent practicable, unless the safety of crew or vessel requires otherwise. NMFS will be contacted immediately at nmfs.psoreview@noaa.gov. If the observed animal leaves the moon pool, activities will commence.

Should an ESA listed species be observed in a moon pool prior to activity commencement, recovery of the animal or other actions specific to the scenario may be required to prevent interaction with the animal. No action will be taken except at the direction of and after contact with NMFS.

Should an interaction with equipment or entanglement/entrapment of any ESA listed species occur (e.g., the animal cannot or does not leave the moon pool on its own volition), the interaction will be reported immediately. Any observation of a leatherback sea turtle within a moon pool, regardless of whether interaction with equipment or entanglement/entrapment is observed, will be reported immediately to the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov).

Further, any interaction with equipment or entanglement/entrapment of any ESA listed species (i.e., the animal cannot or does not leave the pool of its own volition) will be reported immediately. For assistance with marine mammals and sea turtles, the stranding network listed at www.fisheries.noaa.gov/report and BSEE at protectedspecies@bsee.gov will be contacted for additional guidance on continued monitoring requirements, recovery assistance needs (if required), and incidental report information. Other ESA listed species (e.g., giant manta ray) will be reported to relevant state agency wildlife lines, the ESA Section 7 biologist, and BSEE at protectedspecies@bsee.gov. The vessel will not be moved and equipment will not be deployed or retrieved to/from the pool, to the extent practicable, until NMFS and BSEE are contacted and provide input on how to proceed.

Any ESA listed species observed within a moon pool that then leaves the moon pool of its own volition will be reported within 24 hours to NMFS at nmfs.psoreview@noaa.gov and BSEE at protectedspecies@bsee.gov. If the observed animal is no longer observed in the moon pool, monitoring will take place for at least 30 minutes to ensure it has left the moon pool. After 30 minutes, activities will commence.

Additionally, BOE Exploration & Production and/or its contractor representatives will follow guidance provided under various appendices found in the Biological Opinion issues by NMFS on March 13, 2020 regarding the following when conducting activity proposed in this plan:

- Appendix B, Gulf of Mexico Marine Trash and Debris Awareness and Elimination Survey Protocols
- Appendix C, Gulf of Mexico Vessel Strike Avoidance and Injured/Dead Aquatic Protected Species Reporting Protocols
- Appendix J, Sea Turtle Handling and Resuscitation Guidelines

There are no seismic surveys, pile driving, decommissioning activities, or pipelines making landfall associated with the activity proposed in this plan.

Vessels associated with and/or utilized to support activity proposed in this plan will take the most direct route when transiting from onshore support facilities to a well site(s). Vessels associated with and/or utilized to support activity proposed in this plan will not transit the Bryde's whale area.

BOE Exploration & Production and/or its contractor representatives and vessels associated with and/or utilized to support activity proposed in this plan will not utilize flexible, small diameter nylon, plastic or fiber lines to support operations proposed in this plan.

An accidental oil spill has the potential to cause some detrimental effects on fisheries; however, it is unlikely that such an event would occur from the proposed activities. The effects of oil on mobile adult finfish or shellfish would likely be sublethal and the extent of damage would be reduced to the capacity of adult fish and shellfish to avoid the spill, to metabolize hydrocarbons, and to excrete both metabolites and parent compounds.

There are no IPFs from wastes sent to shore for disposal from the proposed activities which could cause impacts to fisheries.

- MARINE MAMMALS

The latest population estimates for the Gulf of Mexico revealed that cetaceans of the continental shelf and shelf-edge were almost exclusively bottlenose dolphin and Atlantic spotted dolphin. Squid eaters, including dwarf and pygmy killer whale, Risso's dolphin, rough- toothed dolphin, and Cuvier's beaked whale, occurred most frequently along the upper slope in areas outside of anticyclones. The Bryde's whale is the only commonly occurring baleen whale in the northern Gulf of Mexico and has been sighted off western Florida and in the De Soto Canyon region. Florida manatees have been sighted along the entire northern GOM but are mainly found in the shallow coastal waters of Florida, which are unassociated with the proposed actions. A complete list of all endangered and threatened marine mammals in the GOM may be found at the beginning of this Environmental Impact Assessment.

Emissions (noise / sound): Noises from drilling activities, support vessels and helicopters (i.e. nonimpulsive anthropogenic sound) may elicit a startle reaction from marine mammals. This reaction may lead to disruption of marine mammals' normal activities. Stress may make them more vulnerable to parasites, disease, environmental contaminants, and/or predation (Majors and Myrick, 1990). Responses to sound exposure may include lethal or nonlethal injury, temporary hearing impairment, behavioral harassment and stress, or no apparent response. Noise-induced stress is possible, but it is little studied in marine mammals. Tyack (2008) suggests that a more significant risk to marine mammals from sound are these less visible impacts of chronic exposure. There is little conclusive evidence for long-term displacements and population trends for marine mammals relative to noise.

Vessels are the greatest contributors to increases in low-frequency ambient sound in the sea (Andrew et al. 2011). Sound levels and tones produced are generally related to vessel size and speed. Larger vessels generally emit more sound than smaller vessels, and vessels underway with a full load, or those pushing or towing a load, are noisier than unladen vessels. Cetacean responses to aircraft depend on the animals' behavioral state at the time of exposure (e.g., resting, socializing, foraging or traveling) as well

as the altitude and lateral distance of the aircraft to the animals (Luksenburg and Parsons 2009). The underwater sound intensity from aircraft is less than produced by vessels, and visually, aircraft are more difficult for whales to locate since they are not in the water and move rapidly (Richter et al. 2006). Perhaps not surprisingly then, when aircraft are at higher altitudes, whales often exhibit no response, but lower flying aircraft (e.g., approximately 500 m or less) have been observed to elicit short-term behavioral responses (Luksenburg and Parsons 2009; NMFS 2017b; NMFS 2017f; Patenaude et al. 2002; Smultea et al. 2008a; Wursig et al. 1998). Thus, aircraft flying at low altitude, at close lateral distances and above shallow water elicit stronger responses than aircraft flying higher, at greater lateral distances and over deep water (Patenaude et al. 2002; Smultea et al. 2008a). Routine OCS helicopter traffic would not be expected to disturb animals for extended periods, provided pilots do not alter their flight patterns to more closely observe or photograph marine mammals. Helicopters, while flying offshore, generally maintain altitudes above 700 ft during transit to and from a working area, and at an altitude of about 500 ft between platforms. The duration of the effects resulting from a startle response is expected to be short-term during routine flights, and the potential effects will be insignificant to sperm whales and Bryde's whales. Therefore, we find that any disturbance that may result from aircraft associated with the proposed action is not likely to adversely affect ESA-listed whales.

Drilling and production noise would contribute to increases in the ambient noise environment of the GOM, but they are not expected in amplitudes sufficient to cause either hearing or behavioral impacts (BOEM 2017-009). There is the possibility of short-term disruption of movement patterns and/or behavior caused by vessel noise and disturbance; however, these are not expected to impact survival and growth of any marine mammal populations in the GOM. Additionally, the National Marine Fisheries Service published a final recovery plan for the sperm whale, which identified anthropogenic noise as either a low or unknown threat to sperm whales in the GOM (USDOC, NMFS, 2010b). Sirenians (i.e. manatees) are not located within the area of operations. Additionally, there were no specific noise impact factors identified in the latest BOEM environmental impact statement for sirenians related to GOM OCS operations (BOEM 2017-009).

Impulsive sound impacts (i.e. pile driving, seismic surveys) are not included among the activities proposed under this plan.

Effluents: Drilling fluids and cuttings discharges contain components which may be detrimental to marine mammals. Most operational discharges are diluted and dispersed upon release. Any potential impact from drilling fluids would be indirect, either as a result of impacts on prey items or possibly through ingestion in the food chain (API, 1989).

Discarded trash and debris: Both entanglement in, and ingestion of debris have caused the death or serious injury of marine mammals (Laist, 1997; MMC, 1999). The limited amount of marine debris, if any, resulting from the proposed activities is not expected to substantially harm marine mammals. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V and the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

BOE Exploration & Production will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, and also avoid accidental loss of solid waste items by maintaining waste management plans,

manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non- biodegradable, environmentally persistent materials such as plastic or glass. BOE Exploration & Production will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g. helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), "Think About It" (*previously "All Washed Up: The Beach Litter Problem"*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from BOE Exploration & Production management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

Accidents: Collisions between support vessels and marine mammals, including cetaceans, would be unusual events, however, should one occur, death or injury to marine mammals is possible. Contract vessel operators can avoid marine mammals and reduce potential deaths by maintaining a vigilant watch for marine mammals and maintaining a safe distance of 500 meters or greater from baleen whales, 100 meters or greater from sperm whales, and a distance of 50 meters or greater from all other aquatic protected species, with the exception of animals that approach the vessel. If unable to identify the marine mammal, the vessel will act as if it were a baleen whale and maintain a distance of 500 meters or greater. If a manatee is sighted, all vessels in the area will operate at "no wake/idle" speeds in the area, while maintaining proper distance. When assemblages of cetaceans are observed, including mother/calf pairs, vessel speeds will be reduced to 10 knots or less. Vessel personnel should use a Gulf of Mexico reference guide that includes identifying information on marine mammals, sea turtles, and other marine protected species (i.e., Endangered Species Act listed species such as Gulf sturgeon, giant manta ray, or oceanic whitetip shark) that may be encountered in the Gulf of Mexico Outer Continental Shelf (OCS).

Contract vessel operators will comply with the measures included in Appendix C of the NMFS Biological Opinion and requirements of the Protected Species Lease Stipulation, except under extraordinary circumstances when the safety of the vessel or crew is in doubt or the safety of life at sea is in question.

Operations proposed in this plan may utilize a moon pool(s) to conduct various subsea activities.

Accordingly, BOE Exploration & Production and/or its contractor representatives will comply with the Reasonable and Prudent Measures and implementing Terms and Conditions of the Biological Opinion issued by the National Marine Fisheries Service (NMFS) on March 13, 2020.

Moon pool(s) will be regularly monitored while open to the water column and when the vessel is not underway. If water conditions are such that observers are unable to see within a meter of the surface, operations requiring lowering or retrieval of equipment through the moon pool will be conducted at a rate that will minimize potential harm, if safety allows.

Prior to and following hull door closure, the moon pool will be monitored continuously by a dedicated crew observer with no other tasks to ensure that no individual Endangered Species Act (ESA) listed

species is trapped within the hull closed moon pool doors. If visibility is not clear to the hull door from above (e.g., turbidity or low light), 30 minutes of monitoring will be conducted prior to hull door closure. Prior to movement of the vessel and/or deployment/retrieval of equipment, the moon pool will be monitored continuously for a minimum of 30 minutes, by a dedicated crew observer with no other tasks, to ensure no ESA listed species are present in the moon pool area.

If an ESA listed species is observed in the moon pool, the vessel will not be moved and equipment will not be deployed or retrieved, to the extent practicable, unless the safety of crew or vessel requires otherwise. NMFS will be contacted immediately at nmfs.psoreview@noaa.gov. If the observed animal leaves the moon pool, activities will commence.

Should an ESA listed species be observed in a moon pool prior to activity commencement, recovery of the animal or other actions specific to the scenario may be required to prevent interaction with the animal. No action will be taken except at the direction of and after contact with NMFS.

Should an interaction with equipment or entanglement/entrapment of any ESA listed species occur (e.g., the animal cannot or does not leave the moon pool on its own volition), the interaction will be reported immediately. Any observation of a leatherback sea turtle within a moon pool, regardless of whether interaction with equipment or entanglement/entrapment is observed, will be reported immediately to the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov).

Further, any interaction with equipment or entanglement/entrapment of any ESA listed species (i.e., the animal cannot or does not leave the pool of its own volition) will be reported immediately. For assistance with marine mammals and sea turtles, the stranding network listed at www.fisheries.noaa.gov/report and BSEE at protectedspecies@bsee.gov will be contacted for additional guidance on continued monitoring requirements, recovery assistance needs (if required), and incidental report information. Other ESA listed species (e.g., giant manta ray) will be reported to relevant state agency wildlife lines, the ESA Section 7 biologist, and BSEE at protectedspecies@bsee.gov. The vessel will not be moved and equipment will not be deployed or retrieved to/from the pool, to the extent practicable, until NMFS and BSEE are contacted and provide input on how to proceed.

Any ESA listed species observed within a moon pool that then leaves the moon pool of its own volition will be reported within 24 hours to NMFS at nmfs.psoreview@noaa.gov and BSEE at protectedspecies@bsee.gov. If the observed animal is no longer observed in the moon pool, monitoring will take place for at least 30 minutes to ensure it has left the moon pool. After 30 minutes, activities will commence.

Additionally, BOE Exploration & Production and/or its contractor representatives will follow guidance provided under various appendices found in the Biological Opinion issues by NMFS on March 13, 2020 regarding the following when conducting activity proposed in this plan:

- Appendix B, Gulf of Mexico Marine Trash and Debris Awareness and Elimination Survey Protocols
- Appendix C, Gulf of Mexico Vessel Strike Avoidance and Injured/Dead Aquatic Protected Species Reporting Protocols
- Appendix J, Sea Turtle Handling and Resuscitation Guidelines

There are no seismic surveys, pile driving, decommissioning activities, or pipelines making landfall associated with the activity proposed in this plan.

Vessels associated with and/or utilized to support activity proposed in this plan will take the most direct route when transiting from onshore support facilities to a well site(s). Vessels associated with and/or utilized to support activity proposed in this plan will not transit the Bryde's whale area.

BOE Exploration & Production and/or its contractor representatives and vessels associated with and/or utilized to support activity proposed in this plan will not utilize flexible, small diameter nylon, plastic or fiber lines to support operations proposed in this plan.

Oil spills have the potential to cause sublethal oil-related injuries and spill-related deaths to marine mammals. However, it is unlikely that an accidental oil spill would occur from the proposed activities. Oil spill response activities may increase vessel traffic in the area, which could add to changes in cetacean behavior and/or distribution, thereby causing additional stress to the animals. The effect of oil dispersants on cetaceans is not known. Removing oil from the surface would reduce the likelihood of oil adhering to marine mammals. Laboratory experiments have shown that the dispersants used during the Deepwater Horizon response are cytotoxic to sperm whale cells; however it is difficult to determine actual exposure levels in the GOM. Therefore, dispersants will only be used if approved by the Regional Response Team in coordination with the RRT Dispersant Plan and RRT Biological Assessment for Dispersants.

The NMFS Office of Protected Resources coordinates agency assessment of the need for response and leads response efforts for spills that may impact cetaceans. If a spill may impact cetaceans, NMFS Protected Resources Contacts should be notified (see contact details below), and they will initiate notification of other relevant parties.

NMFS Protected Resources Contacts for the Gulf of Mexico:

- Marine mammals – Southeast emergency stranding hotline 1-877-433-8299
- Other endangered or threatened species – ESA section 7 consulting biologist: nmfs.ser.emergency.consult@noaa.gov

There are no other IPFs (including physical disturbances to the seafloor) from the proposed activities which could impact marine mammals.

- SEA TURTLES

GulfCet II studies sighted most loggerhead, Kemp's ridley and leatherback sea turtles over shelf waters. Historically these species have been sighted up to the shelf's edge. They appear to be more abundant east of the Mississippi River than they are west of the river (Fritts et al., 1983b; Lohoefener et al., 1990). Deep waters may be used by all species as a transitory habitat. A complete list of endangered and threatened sea turtles in the GOM may be found at the beginning of this Environmental Impact Assessment. IPFs that could cause impacts to sea turtles as a result of the proposed operations include emissions (noise / sound), effluents, discarded trash and debris, and accidents.

Emissions (noise / sound): Noise from drilling activities, support vessels, and helicopters (i.e. nonimpulsive anthropogenic sound) may elicit a startle reaction from sea turtles, but this is a temporary disturbance. Responses to sound exposure may include lethal or nonlethal injury, temporary hearing impairment, behavioral harassment and stress, or no apparent response. Vessels are the greatest contributors to increases in low-frequency ambient sound in the sea (Andrew et al. 2011). Sound levels and tones produced are generally related to vessel size and speed. Larger vessels generally emit more sound than smaller vessels, and vessels underway with a full load, or those pushing or towing a load, are noisier than unladen vessels. Routine OCS helicopter traffic would not be expected to disturb animals for extended periods, provided pilots do not alter their flight patterns to more closely observe or photograph marine mammals. Helicopters, while flying offshore, generally maintain altitudes above 700 ft during transit to and from a working area, and at an altitude of about 500 ft between platforms. The duration of the effects resulting from a startle response is expected to be short-term during routine flights and the potential effects will be insignificant to sea turtles. Therefore, we find that any disturbance that may result from aircraft associated with the proposed action is not likely to adversely affect sea turtles. Construction and operational sounds other than pile driving should have insignificant effects on sea turtles; effects would be limited to short-term avoidance of construction activity itself rather than the sound produced. As a result, sound sources associated with support vessel movement as part of the proposed operations are insignificant and therefore are not likely to adversely affect sea turtles.

Overall noise impacts on sea turtles from the proposed activities are expected to be negligible to minor depending on the location of the animal(s) relative to the sound source and the frequency, intensity, and duration of the source. Appendix C of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion explains how operators must implement measures to minimize the risk of vessel strikes to protected species and report observations of injured or dead protected species. This guidance should also minimize the chance of sea turtles being subject to the increased noise level of a service vessel in very close proximity.

Effluents: Drilling fluids and cuttings discharges are not known to be lethal to sea turtles. Most operational discharges are diluted and dispersed upon release. Any potential impact from drilling fluids would be indirect, either as a result of impacts on prey items or possibly through ingestion in the food chain (API, 1989).

Discarded trash and debris: Both entanglement in, and ingestion of debris have caused the death or serious injury of marine mammals (Laist, 1997; MMC, 1999). The limited amount of marine debris, if any, resulting from the proposed activities is not expected to substantially harm marine mammals. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V and the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

BOE Exploration & Production will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non- biodegradable, environmentally

persistent materials such as plastic or glass. BOE Exploration & Production will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g. helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), "Think About It" (*previously "All Washed Up: The Beach Litter Problem"*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from BOE Exploration & Production management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

Accidents: Collisions between support vessels and marine mammals, including cetaceans, would be unusual events, however, should one occur, death or injury to marine mammals is possible. Contract vessel operators can avoid marine mammals and reduce potential deaths by maintaining a vigilant watch for marine mammals and maintaining a safe distance of 500 meters or greater from baleen whales, 100 meters or greater from sperm whales, and a distance of 50 meters or greater from all other aquatic protected species, with the exception of animals that approach the vessel. If unable to identify the marine mammal, the vessel will act as if it were a baleen whale and maintain a distance of 500 meters or greater. If a manatee is sighted, all vessels in the area will operate at "no wake/idle" speeds in the area, while maintaining proper distance. When assemblages of cetaceans are observed, including mother/calf pairs, vessel speeds will be reduced to 10 knots or less. Vessel personnel should use a Gulf of Mexico reference guide that includes identifying information on marine mammals, sea turtles, and other marine protected species (i.e., Endangered Species Act listed species such as Gulf sturgeon, giant manta ray, or oceanic whitetip shark) that may be encountered in the Gulf of Mexico Outer Continental Shelf (OCS).

Contract vessel operators will comply with the measures included in Appendix C of the NMFS Biological Opinion and requirements of the Protected Species Lease Stipulation, except under extraordinary circumstances when the safety of the vessel or crew is in doubt or the safety of life at sea is in question.

Operations proposed in this plan may utilize a moon pool(s) to conduct various subsea activities.

Accordingly, BOE Exploration & Production and/or its contractor representatives will comply with the Reasonable and Prudent Measures and implementing Terms and Conditions of the Biological Opinion issued by the National Marine Fisheries Service (NMFS) on March 13, 2020.

Moon pool(s) will be regularly monitored while open to the water column and when the vessel is not underway. If water conditions are such that observers are unable to see within a meter of the surface, operations requiring lowering or retrieval of equipment through the moon pool will be conducted at a rate that will minimize potential harm, if safety allows.

Prior to and following hull door closure, the moon pool will be monitored continuously by a dedicated crew observer with no other tasks to ensure that no individual Endangered Species Act (ESA) listed species is trapped within the hull closed moon pool doors. If visibility is not clear to the hull door from above (e.g., turbidity or low light), 30 minutes of monitoring will be conducted prior to hull door closure.

Prior to movement of the vessel and/or deployment/retrieval of equipment, the moon pool will be monitored continuously for a minimum of 30 minutes, by a dedicated crew observer with no other tasks, to ensure no ESA listed species are present in the moon pool area.

If an ESA listed species is observed in the moon pool, the vessel will not be moved and equipment will not be deployed or retrieved, to the extent practicable, unless the safety of crew or vessel requires otherwise. NMFS will be contacted immediately at nmfs.psoreview@noaa.gov. If the observed animal leaves the moon pool, activities will commence.

Should an ESA listed species be observed in a moon pool prior to activity commencement, recovery of the animal or other actions specific to the scenario may be required to prevent interaction with the animal. No action will be taken except at the direction of and after contact with NMFS.

Should an interaction with equipment or entanglement/entrapment of any ESA listed species occur (e.g., the animal cannot or does not leave the moon pool on its own volition), the interaction will be reported immediately. Any observation of a leatherback sea turtle within a moon pool, regardless of whether interaction with equipment or entanglement/entrapment is observed, will be reported immediately to the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov).

Further, any interaction with equipment or entanglement/entrapment of any ESA listed species (i.e., the animal cannot or does not leave the pool of its own volition) will be reported immediately. For assistance with marine mammals and sea turtles, the stranding network listed at www.fisheries.noaa.gov/report and BSEE at protectedspecies@bsee.gov will be contacted for additional guidance on continued monitoring requirements, recovery assistance needs (if required), and incidental report information. Other ESA listed species (e.g., giant manta ray) will be reported to relevant state agency wildlife lines, the ESA Section 7 biologist, and BSEE at protectedspecies@bsee.gov. The vessel will not be moved and equipment will not be deployed or retrieved to/from the pool, to the extent practicable, until NMFS and BSEE are contacted and provide input on how to proceed.

Any ESA listed species observed within a moon pool that then leaves the moon pool of its own volition will be reported within 24 hours to NMFS at nmfs.psoreview@noaa.gov and BSEE at protectedspecies@bsee.gov. If the observed animal is no longer observed in the moon pool, monitoring will take place for at least 30 minutes to ensure it has left the moon pool. After 30 minutes, activities will commence.

Additionally, BOE Exploration & Production and/or its contractor representatives will follow guidance provided under various appendices found in the Biological Opinion issues by NMFS on March 13, 2020 regarding the following when conducting activity proposed in this plan:

- Appendix B, Gulf of Mexico Marine Trash and Debris Awareness and Elimination Survey Protocols
- Appendix C, Gulf of Mexico Vessel Strike Avoidance and Injured/Dead Aquatic Protected Species Reporting Protocols
- Appendix J, Sea Turtle Handling and Resuscitation Guidelines

There are no seismic surveys, pile driving, decommissioning activities, or pipelines making landfall associated with the activity proposed in this plan.

Vessels associated with and/or utilized to support activity proposed in this plan will take the most direct route when transiting from onshore support facilities to a well site(s). Vessels associated with and/or utilized to support activity proposed in this plan will not transit the Bryde's whale area.

BOE Exploration & Production and/or its contractor representatives and vessels associated with and/or utilized to support activity proposed in this plan will not utilize flexible, small diameter nylon, plastic or fiber lines to support operations proposed in this plan.

- AIR QUALITY

The proposed activity is located 120 miles from the Breton Wilderness Area and 49 miles from shore. Applicable emissions data is included elsewhere in this plan.

There would be a limited degree of air quality degradation in the immediate vicinity of the proposed activities. Plan Emissions for the proposed activities do not exceed the annual exemption levels as set forth by BOEM. Accidents and blowouts can release hydrocarbons or chemicals, which could cause the emission of air pollutants. However, these releases would not impact onshore air quality because of the prevailing atmospheric conditions, emission height, emission rates, and the distance of proposed operations from the coastline. There are no other IPFs (including effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal) from the proposed activities which would impact air quality.

- SHIPWRECK SITES

IPFs that have the potential to cause impacts to known or possible shipwreck sites from the proposed project include physical disturbances to the seafloor.

Physical Disturbances to the Seafloor: An archaeological report incorporating Mississippi Canyon 759 is being submitted in conjunction with this plan (Echo Offshore Report No. 20-070-34).

A summary statement of that archaeological assessment indicates there are no sonar targets of potential archaeological interest identified on sidescan sonar data.

There are no physical disturbances to the seafloor which could impact known or potential shipwreck sites, as the review of high-resolution shallow hazards data indicate there are no known or potential shipwreck sites located within the survey area. Accordingly, BOE Exploration & Production does not anticipate any IPF's as a result of the proposed activities.

- PRE-HISTORIC ARCHAEOLOGICAL SITES

IPFs that have the potential to cause impacts to known or pre-historic archaeological sites from the proposed project include physical disturbances to the seafloor.

Physical Disturbances to the Seafloor: An archaeological report incorporating Mississippi Canyon 759 is being submitted in conjunction with this plan (Echo Offshore Report No. 20-070-34).

A summary statement of that archaeological assessment indicates there are no sonar targets of potential archaeological interest identified on sidescan sonar data.

There are no physical disturbances to the seafloor which could impact known or potential shipwreck sites, as the review of high-resolution shallow hazards data indicate there are no known or potential shipwreck sites located within the survey area. Accordingly, BOE Exploration & Production does not anticipate any IPF's as a result of the proposed activities.

VICINITY IMPACTS

- ESSENTIAL FISH HABITATS

IPFs that could cause impacts to EFH as a result of the proposed operations include physical disturbances to the seafloor, effluents, and accidents. EFH includes all estuarine and marine waters and substrates in the Gulf of Mexico.

Physical disturbances to the seafloor: Turbidity and sedimentation resulting from the bottom disturbing activities included in the proposed operations would be short term and localized. Fish are mobile and would avoid these temporarily suspended sediments. Additionally, the Live Bottom Low Relief Stipulation, the Live Bottom (Pinnacle Trend) Stipulation, and the Eastern Gulf Pinnacle Trend Stipulation have been put in place to minimize the impacts of bottom disturbing activities. Additionally, a dynamically positioned semi-submersible or drillship is being used for the proposed activities; therefore, only an insignificant amount of seafloor will be disturbed. Therefore, the bottom disturbing activities from the proposed operations would have a negligible impact on EFH.

Effluents: The Live Bottom Low Relief Stipulation, the Live Bottom (Pinnacle Trend) Stipulation, and the Eastern Gulf Pinnacle Trend Stipulation would prevent most of the potential impacts on live-bottom communities and EFH from operational waste discharges. Levels of contaminants in drilling muds and cuttings and produced-water discharges, discharge-rate restrictions, and monitoring and toxicity testing are regulated by the EPA NPDES permit, thereby eliminating many significant biological or ecological effects. Operational discharges are not expected to cause significant adverse impacts to EFH.

Accidents: An accidental oil spill has the potential to cause some detrimental effects on EFH. Oil spills that contact coastal bays and estuaries, as well as OCS waters when pelagic eggs and larvae are present, have the greatest potential to affect fisheries. However, it is unlikely that an oil spill would occur from the proposed activities.

There are no other IPFs (including emissions or wastes sent to shore for treatment or disposal) from the proposed activities which could impact essential fish habitat.

- MARINE AND PELAGIC BIRDS

IPFs that could impact marine birds as a result of the proposed activities include emissions (air, noise / sound), accidental oil spills, and discarded trash and debris from vessels and the facilities.

Emissions:
Air Emissions
Emissions of pollutants into the atmosphere from these activities are far below concentrations which could harm coastal and marine birds.

Noise / Sound Emissions

The OCS oil-and gas-related helicopters and vessels have the potential to cause noise and disturbance. However, flight altitude restrictions over sensitive habitat, including that of birds, may make serious disturbance unlikely. Birds are also known to habituate to noises, including airport noise. It is an assumption that the OCS oil-and gas-related vessel traffic would follow regular routes; if so, seabirds would find the noise to be familiar. Therefore, the impact of OCS oil-and gas-related noise from helicopters and vessels to birds would be expected to be negligible.

The use of explosives for decommissioning activities may potentially kill one or more birds from barotrauma if a bird (or several birds because birds may occur in a flock) is present at the location of the severance. For the impact of underwater sound, a threshold of 202 dB sound exposure level (SEL) for injury and 208 dB SEL for barotrauma was recommended for the Brahyramphus marmoratus, a diving seabird (USDOI, FWS, 2011). However, the use of explosive severance of facilities for decommissioning are not included in these proposed operations, therefore these impacts are not expected.

Accidents: An oil spill would cause localized, low-level petroleum hydrocarbon contamination. However, it is unlikely that an oil spill would occur from the proposed activities. Marine and pelagic birds feeding at the spill location may experience chronic, nonfatal, physiological stress. It is expected that few, if any, coastal and marine birds would actually be affected to that extent.

Discarded trash and debris: Both entanglement in, and ingestion of debris have caused the death or serious injury of marine mammals (Laist, 1997; MMC, 1999). The limited amount of marine debris, if any, resulting from the proposed activities is not expected to substantially harm marine mammals. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V and the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

BOE Exploration & Production will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non- biodegradable, environmentally persistent materials such as plastic or glass. BOE Exploration & Production will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g. helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), “Think About It” (*previously “All Washed Up: The Beach Litter Problem”*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from BOE Exploration & Production management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

ESA bird species: Seven species found in the GOM are listed under the ESA. BOEM consults on these species and requires mitigations that would decrease the potential for greater impacts due to small population size.

There are no other IPFs (including effluents, physical disturbances to the seafloor, or wastes sent to shore for treatment or disposal) from the proposed activities which could impact marine and pelagic birds.

- PUBLIC HEALTH AND SAFETY

There are no IPFs that have the potential to cause impact to public health and safety from the proposed project including emissions, effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal, accidents, or other factors or resources identified. The project location is located 49 miles from the nearest shoreline. A prior hydrogen sulfide determination has been performed in the area of the proposed drilling operations has been classified as hydrogen sulfide unknown.

COASTAL AND ONSHORE IMPACTS

- BEACHES

IPFs that have the potential to cause impact to beaches from the proposed project location include accidents.

Accidents: An accidental spill or well blowout from the proposed project could cause impacts to beaches. Accidental spills would be expected to be small in in size, expeditiously recovered from the surface, and droplets in the water table microbiologically degraded, resulting in short term impacts. An accidental blowout of the well could have both short term and long term effects on beaches depending on the size and complexity of the event. The worst discharge probability estimates the highest chances of catastrophic event making onshore impact at Plaquemines Parish at 0% based on 3 days from spill, 4% based on 10 days from spill, and 8% based on 30 days from spill. Due to the activity distance from shore and the capacity to respond to a worst case discharge, no significant impacts to beaches would be expected. In the event of a spill or blowout, the operator will immediately implement the Regional Oil Spill Response Plan and active controls and countermeasures to minimize the impact to beaches.

BOE Exploration & Production will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass. BOE Exploration & Production will also collect and remove flotsam resulting from activities related to proposed operations.

There are no other IPFs that have the potential to cause impact to beaches from the proposed project including emissions, effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal, or other factors or resources identified.

- WETLANDS

IPFs that have the potential to cause impact to wetlands from the proposed project location include accidents.

Accidents: An accidental spill or well blowout from the proposed project could cause impacts to wetlands. Accidental spills would be expected to be small in in size, expeditiously recovered from the surface, and droplets in the water table microbiologically degraded, resulting in short term impacts. An accidental blowout of the well could have both short term and long term effects on wetlands depending on the size and complexity of the event. The worst discharge probability estimates the highest chances of catastrophic event making onshore impact at Plaquemines Parish at 0% based on 3 days from spill, 4% based on 10 days from spill, and 8% based on 30 days from spill. Due to the activity distance from shore and the capacity to respond to a worst case discharge, no significant impacts to wetlands would be expected. In the event of a spill or blowout, the operator will immediately implement the Regional Oil Spill Response Plan and active controls and countermeasures to minimize the impact to beaches.

BOE Exploration & Production will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass. BOE Exploration & Production will also collect and remove flotsam resulting from activities related to proposed operations.

There are no other IPFs that have the potential to cause impact to beaches from the proposed project including emissions, effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal, or other factors or resources identified.

- SHORE AND COASTAL NESTING BIRDS

IPFs that have the potential to cause impacts to shore and nesting birds from the proposed project include accidents. Shore and coastal nesting birds found in the gulf coast include Terns, Pelicans, Plovers, Skimmers, Cranes and Gulls. Piping Plover (Charadrius melodus) and Whooping Crane (Grus americana) are listed by the Endangered Species Act (ESA) as threatened and have critical habitat designated in the coastal areas and beaches.

Accidents: An accidental spill or well blowout from the proposed project could cause impacts to shore and coastal nesting birds. Accidental spills would be expected to be small in in size, expeditiously recovered from the surface, and droplets in the water table microbiologically degraded, resulting in short term impacts. An accidental blowout of the well could have both short term and long term effects on birds depending on the size and complexity of the event. The worst discharge probability estimates the highest chances of catastrophic event making onshore impact at Plaquemines Parish at 0% based on 3 days from spill, 4% based on 10 days from spill, and 8% based on 30 days from spill. Due to the activity distance from shore and the capacity to respond to a worst case discharge, no significant impacts to shore and coastal nesting birds would be expected. In the event of a spill or blowout, the operator will immediately implement the Regional Oil Spill Response Plan and active controls and countermeasures to minimize the impact to birds.

Marine debris has the potential to impact shore and coastal nesting birds through entanglement or ingestion causing serious injury or death. To minimize the impact potential to birds, the proposed

project will abide by the guidelines of BSEE NTL No. 2015-G03 (Marine Trash and Debris Awareness and Elimination).

BOE Exploration & Production will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass. BOE Exploration & Production will also collect and remove flotsam resulting from activities related to proposed operations.

There are no other IPFs that have the potential to cause impact to shore and coastal nesting birds from the proposed project including emissions, effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal, or other factors or resources identified.

- COASTAL WILDLIFE REFUGES

IPFs that have the potential to cause impacts to coastal wildlife refuges from the proposed project include accidents. The nearest wildlife refuges to the proposed project location are the Delta National Wildlife Refuge and the Breton National Wildlife Refuge.

Accidents: An accidental spill or well blowout from the proposed project could cause impacts to wildlife refuges. Accidental spills would be expected to be small in in size, expeditiously recovered from the surface, and droplets in the water table microbiologically degraded, resulting in short term impacts. An accidental blowout of the well could have both short term and long term effects on refuges depending on the size and complexity of the event. The worst discharge probability estimates the highest chances of catastrophic event making onshore impact at Plaquemines Parish at 0% based on 3 days from spill, 4% based on 10 days from spill, and 8% based on 30 days from spill. Due to the activity distance from shore and the capacity to respond to a worst case discharge, no significant impacts to wildlife refuges would be expected. In the event of a spill or blowout, the operator will immediately implement the Regional Oil Spill Response Plan and active controls and countermeasures to minimize the impact to refuges.

BOE Exploration & Production will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass. BOE Exploration & Production will also collect and remove flotsam resulting from activities related to proposed operations.

There are no other IPFs that have the potential to cause impact to coastal wildlife refuges from the proposed project including effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal, or other factors or resources identified.

- WILDERNESS AREAS

IPFs that have the potential to cause impacts to coastal wilderness areas from the proposed project include accidents. The nearest designated wilderness area to the proposed project location is the Breton Wilderness Area.

Accidents: An accidental spill or well blowout from the proposed project could cause impacts to wilderness areas. Accidental spills would be expected to be small in in size, expeditiously recovered from the surface, and droplets in the water table microbiologically degraded, resulting in short term impacts. An accidental blowout of the well could have both short term and long term effects on wilderness areas depending on the size and complexity of the event. The worst discharge probability estimates the highest chances of catastrophic event making onshore impact at Plaquemines Parish at 0% based on 3 days from spill, 4% based on 10 days from spill, and 8% based on 30 days from spill. Due to the activity distance from shore and the capacity to respond to a worst case discharge, no significant impacts to wilderness areas would be expected. In the event of a spill or blowout, the operator will immediately implement the Regional Oil Spill Response Plan and active controls and countermeasures to minimize the impact to wilderness areas.

BOE Exploration & Production will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass. BOE Exploration & Production will also collect and remove flotsam resulting from activities related to proposed operations.

There are no other IPFs that have the potential to cause impact to wilderness areas from the proposed project including effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal, or other factors or resources identified.

OTHER ENVIRONMENTAL RESOURCES IDENTIFIED

Bryde's Whale

The Bryde's whale is the only commonly occurring baleen whale in the northern Gulf of Mexico and has been sighted off western Florida and in the De Soto Canyon region. Vessel traffic associated with the proposed operations will not transit the Bryde's whale area. Therefore, there are no IPFs from the proposed activities which should impact the Bryde's whale.

Gulf Sturgeon

The gulf sturgeon resides primarily in inland estuaries and rivers from Louisiana to Florida and a small population of the species enters the Gulf of Mexico seasonally in western Florida. IPFs from the proposed activities that could cause impacts to the gulf sturgeon include accidents (oil spills) and discarded trash and debris.

Accidents: Collisions between support vessels and the Gulf sturgeon would be unusual events, however, should one occur, death or injury to the Gulf sturgeon is possible. Contract vessel operators can avoid protected aquatic species and reduce potential deaths by maintaining a vigilant watch and a distance of

50 meters or greater, with the exception of animals that approach the vessel. Vessel personnel should use a Gulf of Mexico reference guide that includes identifying information on marine mammals, sea turtles, and other marine protected species (i.e., Endangered Species Act listed species such as Gulf sturgeon, giant manta ray, or oceanic whitetip shark) that may be encountered in the Gulf of Mexico Outer Continental Shelf (OCS).

Contract vessel operators will comply with the measures included in Appendix C of the NMFS Biological Opinion and requirements of the Protected Species Lease Stipulation, except under extraordinary circumstances when the safety of the vessel or crew is in doubt or the safety of life at sea is in question.

Operations proposed in this plan may utilize a moon pool(s) to conduct various subsea activities.

Accordingly, BOE Exploration & Production and/or its contractor representatives will comply with the Reasonable and Prudent Measures and implementing Terms and Conditions of the Biological Opinion issued by the National Marine Fisheries Service (NMFS) on March 13, 2020.

Moon pool(s) will be regularly monitored while open to the water column and when the vessel is not underway. If water conditions are such that observers are unable to see within a meter of the surface, operations requiring lowering or retrieval of equipment through the moon pool will be conducted at a rate that will minimize potential harm, if safety allows.

Prior to and following hull door closure, the moon pool will be monitored continuously by a dedicated crew observer with no other tasks to ensure that no individual Endangered Species Act (ESA) listed species is trapped within the hull closed moon pool doors. If visibility is not clear to the hull door from above (e.g., turbidity or low light), 30 minutes of monitoring will be conducted prior to hull door closure. Prior to movement of the vessel and/or deployment/retrieval of equipment, the moon pool will be monitored continuously for a minimum of 30 minutes, by a dedicated crew observer with no other tasks, to ensure no ESA listed species are present in the moon pool area.

If an ESA listed species is observed in the moon pool, the vessel will not be moved and equipment will not be deployed or retrieved, to the extent practicable, unless the safety of crew or vessel requires otherwise. NMFS will be contacted immediately at nmfs.psoreview@noaa.gov. If the observed animal leaves the moon pool, activities will commence.

Should an ESA listed species be observed in a moon pool prior to activity commencement, recovery of the animal or other actions specific to the scenario may be required to prevent interaction with the animal. No action will be taken except at the direction of and after contact with NMFS.

Should an interaction with equipment or entanglement/entrapment of any ESA listed species occur (e.g., the animal cannot or does not leave the moon pool on its own volition), the interaction will be reported immediately. Any observation of a leatherback sea turtle within a moon pool, regardless of whether interaction with equipment or entanglement/entrapment is observed, will be reported immediately to the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov).

Further, any interaction with equipment or entanglement/entrapment of any ESA listed species (i.e., the animal cannot or does not leave the pool of its own volition) will be reported immediately. For assistance with marine mammals and sea turtles, the stranding network listed at www.fisheries.noaa.gov/report and BSEE at protectedspecies@bsee.gov will be contacted for additional

guidance on continued monitoring requirements, recovery assistance needs (if required), and incidental report information. Other ESA listed species (e.g., giant manta ray) will be reported to relevant state agency wildlife lines, the ESA Section 7 biologist, and BSEE at protectedspecies@bsee.gov. The vessel will not be moved and equipment will not be deployed or retrieved to/from the pool, to the extent practicable, until NMFS and BSEE are contacted and provide input on how to proceed.

Any ESA listed species observed within a moon pool that then leaves the moon pool of its own volition will be reported within 24 hours to NMFS at nmfs.psoreview@noaa.gov and BSEE at protectedspecies@bsee.gov. If the observed animal is no longer observed in the moon pool, monitoring will take place for at least 30 minutes to ensure it has left the moon pool. After 30 minutes, activities will commence.

Additionally, BOE Exploration & Production and/or its contractor representatives will follow guidance provided under various appendices found in the Biological Opinion issues by NMFS on March 13, 2020 regarding the following when conducting activity proposed in this plan:

- Appendix B, Gulf of Mexico Marine Trash and Debris Awareness and Elimination Survey Protocols
- Appendix C, Gulf of Mexico Vessel Strike Avoidance and Injured/Dead Aquatic Protected Species Reporting Protocols
- Appendix J, Sea Turtle Handling and Resuscitation Guidelines

There are no seismic surveys, pile driving, decommissioning activities, or pipelines making landfall associated with the activity proposed in this plan.

Vessels associated with and/or utilized to support activity proposed in this plan will take the most direct route when transiting from onshore support facilities to a well site(s). Vessels associated with and/or utilized to support activity proposed in this plan will not transit the Bryde's whale area.

BOE Exploration & Production and/or its contractor representatives and vessels associated with and/or utilized to support activity proposed in this plan will not utilize flexible, small diameter nylon, plastic or fiber lines to support operations proposed in this plan.

Emissions (noise / sound): All routine OCS oil-and gas-related activities have some element of sound generation. Common sound sources include propeller cavitation, rotating machinery, and reciprocating machinery, which are associated with routine OCS oil-and gas-related activities such as vessel traffic, drilling, construction, and oil and gas production, processing, and transport. Sound introduced into the marine environment as a result of human activities has the potential to affect marine organisms**.** The National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion found that construction and operational sounds other than pile driving will have insignificant effects on Gulf sturgeon (NMFS, 2020). There are no pile driving activities associated with the proposed operations, therefore noise impacts are not expected to significantly affect Gulf Sturgeon.

Discarded trash and debris: Both entanglement in, and ingestion of debris have caused the death or serious injury of marine mammals (Laist, 1997; MMC, 1999). The limited amount of marine debris, if any, resulting from the proposed activities is not expected to substantially harm marine mammals. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V and the

Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

BOE Exploration & Production will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non- biodegradable, environmentally persistent materials such as plastic or glass. BOE Exploration & Production will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g. helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), "Think About It" (*previously "All Washed Up: The Beach Litter Problem"*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from BOE Exploration & Production management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

There are no other IPFs (emissions, effluents, physical disturbances to the seafloor, or wastes sent to shore for treatment or disposal) from the proposed activities which could impact the gulf sturgeon.

Oceanic Whitetip Shark

Oceanic whitetip sharks may be found in tropical and subtropical waters around the world, including the Gulf of Mexico (Young 2016). According to the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, Essential Fish Habitat (EFH) for the oceanic whitetip shark includes localized areas in the central Gulf of Mexico and Florida Keys. Oceanic whitetip sharks were listed under the Endangered Species Act in 2018 due to worldwide overfishing. Oceanic whitetip sharks had an abundant worldwide population, which has been threatened in recent years by inadequate regulatory measures governing fisheries; therefore, there is little research regarding the impact of oil and gas operations on oceanic whitetip sharks (NMFS, 2020). IPFs that have been determined by NMFS to be discountable to oceanic whitetip sharks include vessel strike, emissions (noise / sound), discharges, entanglement and entrapment, and marine debris. IPFs that could cause impacts to oceanic whitetip sharks as a result of the proposed operations.

Accidents: Collisions between support vessels and the oceanic whitetip shark would be unusual events, however, should one occur, death or injury to the oceanic whitetip shark is possible. Contract vessel operators can avoid protected aquatic species and reduce potential deaths by maintaining a vigilant watch and a distance of 50 meters or greater, with the exception of animals that approach the vessel. Vessel personnel should use a Gulf of Mexico reference guide that includes identifying information on marine mammals, sea turtles, and other marine protected species (i.e., Endangered Species Act listed species such as Gulf sturgeon, giant manta ray, or oceanic whitetip shark) that may be encountered in the Gulf of Mexico Outer Continental Shelf (OCS).

Contract vessel operators will comply with the measures included in Appendix C of the NMFS Biological Opinion and requirements of the Protected Species Lease Stipulation, except under extraordinary circumstances when the safety of the vessel or crew is in doubt or the safety of life at sea is in question.

Operations proposed in this plan may utilize a moon pool(s) to conduct various subsea activities.

Accordingly, BOE Exploration & Production and/or its contractor representatives will comply with the Reasonable and Prudent Measures and implementing Terms and Conditions of the Biological Opinion issued by the National Marine Fisheries Service (NMFS) on March 13, 2020.

Moon pool(s) will be regularly monitored while open to the water column and when the vessel is not underway. If water conditions are such that observers are unable to see within a meter of the surface, operations requiring lowering or retrieval of equipment through the moon pool will be conducted at a rate that will minimize potential harm, if safety allows.

Prior to and following hull door closure, the moon pool will be monitored continuously by a dedicated crew observer with no other tasks to ensure that no individual Endangered Species Act (ESA) listed species is trapped within the hull closed moon pool doors. If visibility is not clear to the hull door from above (e.g., turbidity or low light), 30 minutes of monitoring will be conducted prior to hull door closure. Prior to movement of the vessel and/or deployment/retrieval of equipment, the moon pool will be monitored continuously for a minimum of 30 minutes, by a dedicated crew observer with no other tasks, to ensure no ESA listed species are present in the moon pool area.

If an ESA listed species is observed in the moon pool, the vessel will not be moved and equipment will not be deployed or retrieved, to the extent practicable, unless the safety of crew or vessel requires otherwise. NMFS will be contacted immediately at nmfs.psoreview@noaa.gov. If the observed animal leaves the moon pool, activities will commence.

Should an ESA listed species be observed in a moon pool prior to activity commencement, recovery of the animal or other actions specific to the scenario may be required to prevent interaction with the animal. No action will be taken except at the direction of and after contact with NMFS.

Should an interaction with equipment or entanglement/entrapment of any ESA listed species occur (e.g., the animal cannot or does not leave the moon pool on its own volition), the interaction will be reported immediately. Any observation of a leatherback sea turtle within a moon pool, regardless of whether interaction with equipment or entanglement/entrapment is observed, will be reported immediately to the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov).

Further, any interaction with equipment or entanglement/entrapment of any ESA listed species (i.e., the animal cannot or does not leave the pool of its own volition) will be reported immediately. For assistance with marine mammals and sea turtles, the stranding network listed at www.fisheries.noaa.gov/report and BSEE at protectedspecies@bsee.gov will be contacted for additional guidance on continued monitoring requirements, recovery assistance needs (if required), and incidental report information. Other ESA listed species (e.g., giant manta ray) will be reported to relevant state agency wildlife lines, the ESA Section 7 biologist, and BSEE at protectedspecies@bsee.gov. The vessel will not be moved and equipment will not be deployed or retrieved to/from the pool, to the extent practicable, until NMFS and BSEE are contacted and provide input on how to proceed.

Any ESA listed species observed within a moon pool that then leaves the moon pool of its own volition will be reported within 24 hours to NMFS at nmfs.psoreview@noaa.gov and BSEE at protectedspecies@bsee.gov. If the observed animal is no longer observed in the moon pool, monitoring will take place for at least 30 minutes to ensure it has left the moon pool. After 30 minutes, activities will commence.

Additionally, BOE Exploration & Production and/or its contractor representatives will follow guidance provided under various appendices found in the Biological Opinion issues by NMFS on March 13, 2020 regarding the following when conducting activity proposed in this plan:

- Appendix B, Gulf of Mexico Marine Trash and Debris Awareness and Elimination Survey Protocols
- Appendix C, Gulf of Mexico Vessel Strike Avoidance and Injured/Dead Aquatic Protected Species Reporting Protocols
- Appendix J, Sea Turtle Handling and Resuscitation Guidelines

There are no seismic surveys, pile driving, decommissioning activities, or pipelines making landfall associated with the activity proposed in this plan.

Vessels associated with and/or utilized to support activity proposed in this plan will take the most direct route when transiting from onshore support facilities to a well site(s). Vessels associated with and/or utilized to support activity proposed in this plan will not transit the Bryde's whale area.

BOE Exploration & Production and/or its contractor representatives and vessels associated with and/or utilized to support activity proposed in this plan will not utilize flexible, small diameter nylon, plastic or fiber lines to support operations proposed in this plan.

Discarded trash and debris: There is little available information on the effects of marine debris on oceanic whitetip sharks. Since these sharks are normally associated with surface waters, they may be susceptible to entanglement. However, due to the small, widely dispersed, and highly mobile population in the Gulf of Mexico, and the localized and patchy distribution of marine debris, it is extremely unlikely that oceanic whitetip sharks would be impacted by marine debris.

There will only be a limited amount of marine debris, if any, resulting from the proposed activities. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V and the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

BOE Exploration & Production will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non- biodegradable, environmentally persistent materials such as plastic or glass. BOE Exploration & Production will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g. helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), "Think About It" (*previously "All Washed Up: The Beach Litter Problem"*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from BOE Exploration & Production management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

There are no other IPFs (emissions, effluents, physical disturbances to the seafloor, or wastes sent to shore for treatment or disposal) from the proposed activities which could impact the oceanic whitetip sharks.

Giant Manta Ray

According to the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, the giant manta ray lives in tropical, subtropical, and temperate oceanic waters and productive coastlines throughout the Gulf of Mexico. While uncommon in the Gulf of Mexico, there is a population of approximately 70 giant manta rays in the Flower Garden Banks National Marine Sanctuary (Miller and Klimovich 2017). Giant manta rays were listed under the Endangered Species Act in 2018 due to worldwide overfishing. Giant manta rays had an abundant worldwide population, which has been threatened in recent years by inadequate regulatory measures governing fisheries; therefore, there is little research regarding the impact of oil and gas operations on giant manta rays (NMFS, 2020). IPFs that have been determined by NMFS to be discountable to giant manta rays include vessel strike, emissions (noise / sound), discharges, entanglement and entrapment, and marine debris. IPFs that could cause impacts to giant manta rays as a result of the proposed operations.

Accidents: Collisions between support vessels and the giant manta ray would be unusual events, however, should one occur, death or injury to the giant manta ray is possible. Contract vessel operators can avoid protected aquatic species and reduce potential deaths by maintaining a vigilant watch and a distance of 50 meters or greater, with the exception of animals that approach the vessel. Vessel personnel should use a Gulf of Mexico reference guide that includes identifying information on marine mammals, sea turtles, and other marine protected species (i.e., Endangered Species Act listed species such as Gulf sturgeon, giant manta ray, or oceanic whitetip shark) that may be encountered in the Gulf of Mexico Outer Continental Shelf (OCS).

Contract vessel operators will comply with the measures included in Appendix C of the NMFS Biological Opinion and requirements of the Protected Species Lease Stipulation, except under extraordinary circumstances when the safety of the vessel or crew is in doubt or the safety of life at sea is in question.

Operations proposed in this plan may utilize a moon pool(s) to conduct various subsea activities.

Accordingly, BOE Exploration & Production and/or its contractor representatives will comply with the Reasonable and Prudent Measures and implementing Terms and Conditions of the Biological Opinion issued by the National Marine Fisheries Service (NMFS) on March 13, 2020.

Moon pool(s) will be regularly monitored while open to the water column and when the vessel is not underway. If water conditions are such that observers are unable to see within a meter of the surface, operations requiring lowering or retrieval of equipment through the moon pool will be conducted at a rate that will minimize potential harm, if safety allows.

Prior to and following hull door closure, the moon pool will be monitored continuously by a dedicated crew observer with no other tasks to ensure that no individual Endangered Species Act (ESA) listed species is trapped within the hull closed moon pool doors. If visibility is not clear to the hull door from above (e.g., turbidity or low light), 30 minutes of monitoring will be conducted prior to hull door closure. Prior to movement of the vessel and/or deployment/retrieval of equipment, the moon pool will be monitored continuously for a minimum of 30 minutes, by a dedicated crew observer with no other tasks, to ensure no ESA listed species are present in the moon pool area.

If an ESA listed species is observed in the moon pool, the vessel will not be moved and equipment will not be deployed or retrieved, to the extent practicable, unless the safety of crew or vessel requires otherwise. NMFS will be contacted immediately at nmfs.psoreview@noaa.gov. If the observed animal leaves the moon pool, activities will commence.

Should an ESA listed species be observed in a moon pool prior to activity commencement, recovery of the animal or other actions specific to the scenario may be required to prevent interaction with the animal. No action will be taken except at the direction of and after contact with NMFS.

Should an interaction with equipment or entanglement/entrapment of any ESA listed species occur (e.g., the animal cannot or does not leave the moon pool on its own volition), the interaction will be reported immediately. Any observation of a leatherback sea turtle within a moon pool, regardless of whether interaction with equipment or entanglement/entrapment is observed, will be reported immediately to the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov).

Further, any interaction with equipment or entanglement/entrapment of any ESA listed species (i.e., the animal cannot or does not leave the pool of its own volition) will be reported immediately. For assistance with marine mammals and sea turtles, the stranding network listed at www.fisheries.noaa.gov/report and BSEE at protectedspecies@bsee.gov will be contacted for additional guidance on continued monitoring requirements, recovery assistance needs (if required), and incidental report information. Other ESA listed species (e.g., giant manta ray) will be reported to relevant state agency wildlife lines, the ESA Section 7 biologist, and BSEE at protectedspecies@bsee.gov. The vessel will not be moved and equipment will not be deployed or retrieved to/from the pool, to the extent practicable, until NMFS and BSEE are contacted and provide input on how to proceed.

Any ESA listed species observed within a moon pool that then leaves the moon pool of its own volition will be reported within 24 hours to NMFS at nmfs.psoreview@noaa.gov and BSEE at protectedspecies@bsee.gov. If the observed animal is no longer observed in the moon pool, monitoring will take place for at least 30 minutes to ensure it has left the moon pool. After 30 minutes, activities will commence.

Additionally, BOE Exploration & Production and/or its contractor representatives will follow guidance provided under various appendices found in the Biological Opinion issues by NMFS on March 13, 2020 regarding the following when conducting activity proposed in this plan:

- Appendix B, Gulf of Mexico Marine Trash and Debris Awareness and Elimination Survey Protocols
- Appendix C, Gulf of Mexico Vessel Strike Avoidance and Injured/Dead Aquatic Protected Species Reporting Protocols
- Appendix J, Sea Turtle Handling and Resuscitation Guidelines

There are no seismic surveys, pile driving, decommissioning activities, or pipelines making landfall associated with the activity proposed in this plan.

Vessels associated with and/or utilized to support activity proposed in this plan will take the most direct route when transiting from onshore support facilities to a well site(s). Vessels associated with and/or utilized to support activity proposed in this plan will not transit the Bryde's whale area.

BOE Exploration & Production and/or its contractor representatives and vessels associated with and/or utilized to support activity proposed in this plan will not utilize flexible, small diameter nylon, plastic or fiber lines to support operations proposed in this plan.

Discarded trash and debris: There is little available information on the effects of marine debris on giant manta rays. Since these sharks are normally associated with surface waters, they may be susceptible to entanglement. However, due to the small, widely dispersed, and highly mobile population in the Gulf of Mexico, and the localized and patchy distribution of marine debris, it is extremely unlikely that oceanic whitetip sharks would be impacted by marine debris.

There will only be a limited amount of marine debris, if any, resulting from the proposed activities. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V and the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

BOE Exploration & Production will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non- biodegradable, environmentally persistent materials such as plastic or glass. BOE Exploration & Production will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g. helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), "Think About It" (*previously "All Washed Up: The Beach Litter Problem"*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from BOE Exploration & Production management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

There are no other IPFs (emissions, effluents, physical disturbances to the seafloor, or wastes sent to shore for treatment or disposal) from the proposed activities which could impact the giant manta ray.

Loggerhead Sea Turtle

The loggerhead sea turtles are large sea turtles that inhabit continental shelf and estuarine environments throughout the temperate and tropical regions of the Atlantic Ocean, with nesting beaches along the northern and western Gulf of Mexico. NMFS issued a Final Rule in 2014 (79 FR 39855) designating a critical habitat including 38 marine areas within the Northwest Atlantic Ocean, with seven of those areas residing within the Gulf of Mexico. These areas contain one or a combination of habitat types: nearshore reproductive habitats, winter areas, breeding areas, constricted migratory corridors, and/or *Sargassum* habitats.

Considering the information from the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, BOE Exploration & Production does not expect proposed operations to affect Sargassum's ability to support adequate prey abundance and cover for loggerhead turtles.

Protected Corals

Protected coral habitats in the Gulf of Mexico range from Florida, the Flower Garden Banks National Marine Sanctuary, and into the Caribbean, including Puerto Rico, the U.S. Virgin Islands, and Navassa Island. Four counties in Florida (Palm Beach, Broward, Miami-Dade, and Monroe Counties) were designated as critical habitats for elkhorn (Acropora palmata) and staghorn (Acropora cervicornis) corals. These coral habitats are located outside of the planning area and are not expected to be impacted by the proposed actions. Elkhorn coral can also be found in the Flower Garden Banks along with three additional coral species, boulder star coral (Orbicella franksi), lobed star coral (Orbicella annularis), and mountainous star coral (Orbicella faveolatta). IPFs from the proposed activities that could cause impacts to protected corals include accidents (oil spills).

Accidents: It is unlikely that an accidental surface or subsurface spill would occur from the proposed activities. Oil spills cause damage to corals only if the oil contacts the organisms. Accordingly, no adverse impacts are expected.

There are no other IPFs (including emissions, effluents, physical disturbances to the seafloor, and wastes sent to shore for disposal) from the proposed activities which could impact protected corals.

Endangered Beach Mice

There are four subspecies of endangered beach mouse that are found in the dune systems along parts of Alabama and northwest Florida. Due to the distance from shore of the activity proposed in this plan and the beach mouse critical habitat (above the intertidal zone), there are no IPFs that could impact endangered beach mice.

OTHER IDENTIFIED IMPACTS

No significant impacts are expected to environmental resources from the proposed project based on Impact Producing Factors identified in the Environmental Impact Analysis Worksheet discussed in this report and prior operations and development in the proposed project location.

POTENTIAL IMPACTS FROM ENVIRONMENTAL CONDITIONS

Potential impacts from environmental conditions for the proposed project include hazards to operations, equipment, and personnel from potential adverse weather conditions from significant storm systems during the hurricane season of June through November.

ALTERNATIVES CONSIDERED TO REDUCE IMPACTS

No alternatives to the proposed project to reduce impacts were considered beyond applicable requirements of Lease Sale Stipulations, Notice to Lessees and Operators, and Regulatory Authorities.

MITIGATION MEASURES

No mitigation measures to the proposed project to avoid or reduce impacts are to be implemented beyond applicable requirements of Lease Sale Stipulations, Notice to Lessees and Operators, and Regulatory Authorities.

AGENCIES AND PERSONS CONSULTED

No agencies or persons were consulted regarding potential impacts associated with the proposed project.

PREPARER

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APPENDIX R
ADMINISTRATIVE INFORMATION

A) EXEMPTED INFORMATION DESCRIPTION

Proprietary information included in the proprietary copy of this plan is listed below.

- BHL, TVD, and MD information on Form 137
- WCD sand and depth information on Form 137 and supporting documentation
- Certain items and enclosures under Geological and Geophysical information
- Correlative well information used to justify the H2S classification
- Casing summary information
- Charts containing sand tops and bases in the analog wells
- Directional Survey
- Wellbore Schematics

B) BIBLIOGRAPHY

Below is a listing of all referenced material used to development this plan.

- Notice to Lessees No. 2008-G04
- Notice to Lessees No. BOEM 2015-N01
- Notice to Lessees No. 2009-G40
- Notice to Lessees No. 2009-G39
- Notice to Lessees No. 2008-G06
- Notice to Lessees No. 2005-G07
- Notice to Lessees No. 2006-G07
- Notice to Lessees No. 2007-G04
- Notice to Lessees No. BOEM 2016-G01
- Notice to Lessees No. 2015-G03
- Notice to Lessees No. BOEM 2016-G02
- Notice to Lessees No. 2020-G01
- Echo Offshore, AUV Archaeological Investigation, Block 759, Mississippi Canyon Area, Offshore Louisiana, Gulf of Mexico, Job No. 20-070-34
- Berger Geosciences LLC, Shallow Hazards Assessment and Benthic Communities Evaluation, Zephryus Prospect, Block 759 (OCS-G 35833), Mississippi Canyon Area, Gulf of Mexico, Project No. 19-08-18
- Berger Geosciences LLC, Wellsite Evaluation, Zephryus Prospect, Block 759 (OCS-G 35833), Mississippi Canyon Area, Gulf of Mexico, Project No. 19-08-18