

UNITED STATES GOVERNMENT
MEMORANDUM

May 20, 2020

To: Public Information
From: Plan Coordinator, OLP, Plans Section (GM 235D)

Subject: Public Information copy of plan

Control # - Control R-6968

Type - Type of Plan - Development Operations Coordination Document

Lease(s) - OCS-G 04123 Block - 56 Breton Sound Area
OCS-G 04903 Block - 30 Main Pass Area
OCS-G 04125 Block - 37 Main Pass Area

Operator - TALOS PETROLEUM LLC

Description Wells Nos. 001, 002, 003, BD004, BD005, BD006 and Platform
BD Complex ID# 22565

Attached is a copy of the subject plan.

It has been deemed submitted and is under review for approval.

Chiquita Hill
Plan Coordinator

**REVISED DEVELOPMENT OPERATIONS
COORDINATION DOCUMENT**



Breton Sound Block 56
OCS-G 04123

Estimated Startup Date: August 1, 2020

SUBMITTED BY:

Cantium, LLC
111 Park Place Drive, Suite 100
Covington, LA 70433

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AUTHORIZED REPRESENTATIVE:

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SECTION 1

PLAN CONTENTS

1.1 PLAN INFORMATION

Lease OCS-G 04123, Breton Sound Block 56, was issued October 1, 1979. Lease OCS-G 04903, Main Pass Block 30, was issued December 1, 1981. Lease OCS-G 04125, Main Pass Block 37, was issued October 1, 1979. The leases are held by production. Platform BD was installed on January 1, 1981.

Cantium, LLC (Cantium) was designated operator of the following leases:

- OCS-G 01423, N1/2 of Block 56, Breton Sound Area, effective August 23, 2017.
- OCS-G 04903, All of Block 30, Main Pass Area, effective August 30, 2017.
- OCS-G 04125, That portion of Block 37 located in Zone 2 as that Zone is defined in the Interim Agreement (October 12, 1956) between the United States and the State of Louisiana; and that portion of Block 56 located in Zone 3 as that Zone is defined in the Interim Agreement (October 12, 1956) between the United States and the State of Louisiana, Main Pass and Breton Sound Areas, effective August 25, 2017.

Under this Revised DOCD, Cantium proposes to change the operator of the following wells and provide air emissions for future well maintenance, workovers, recompletions, sidetracks, interventions and abandonment activities:

- 001 (17-726-40010-00)
- 002 (17-726-40011-00)
- 003 (17-726-40013-00)
- BD004 (17-726-40032-00)
- BD005 (17-726-40045-00)
- BD006 (17-726-40038-00)

These development operations are in approximately 39-50 feet of water. The operations proposed will not utilize pile-driving, nor is Cantium proposing any new pipelines expected to make landfall.

The OCS Plan Information Form BOEM-137 is included as **Attachment 1-A**.

Attachment 1-A

U.S. Department of the Interior
Bureau of Ocean Energy Management

OMB Control Number: 1010-0151
OMB Approval Expires: 6/30/2021

OCS PLAN INFORMATION FORM

General Information												
Type of OCS Plan:		Exploration Plan (EP)			X		Development Operations Coordination Document (DOCD)					
Company Name: Cantium, LLC						BOEM Operator Number: 03481						
Address: 111 Park Place Drive, Suite 100						Contact Person: Dena Rodriguez						
Covington, LA 70433						Phone Number: 281-698-8512						
						E-Mail Address: dena.rodriguez@jccteam.com						
If a service fee is required under 30 CFR 550.125(a), provide the				Amount paid		N/A		Receipt No.		N/A		
Project and Worst Case Discharge (WCD) Information												
Leases: OCS-G 04123 / 04125 / 04903			Areas: BS / MP / MP			Blocks: 56 / 37 / 30			Project Name (If Applicable):			
Objective(s)		X	Oil	X	Gas	Sulphur	Salt	Onshore Support Base: Venice, LA				
Platform / Well Name: Well No. A008				Total Volume of WCD: 724,500 bbls				API Gravity: 35°				
Distance to Closest Land (Miles): 8.5						Volume from uncontrolled blowout: 16,100 bbl/day						
Have you previously provided information to verify the calculations and assumptions for your WCD?								X	Yes		No	
If so, provide the Control Number of the EP or DOCD with which this information was provided								R-6693				
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		
Future Activities Well Nos. 001, 002, 003, BD004, BD005, BD006				August 1, 2020			December 31, 2030			150 days/year		
Description of Drilling Rig						Description of Structure						
X	Jackup			Drillship				Caisson			Tension leg platform	
	Gorilla Jackup			Platform rig			X	Fixed platform			Compliant tower	
	Semisubmersible			Submersible				Spar			Guyed tower	
	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): BD				Previously reviewed under an approved EP or DOCD?		X	Yes		No
Is this an existing well or structure?		X	Yes	No	If this is an existing well or structure, list the Complex ID or API No.		22565		
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?							Yes	X	No
WCD Info	For wells, volume of uncontrolled blowout (Bbls/Day): 16,100			For structures, volume of all storage and pipelines (Bbls): 815.3		API Gravity of fluid		35°	
	Surface Location			Bottom-Hole Location (For Wells)		Completion (For multiple completions, enter separate lines)			
Lease No.	OCS-G 04123					OCS OCS			
Area Name	Breton Sound								
Block No.	56								
Blockline Departures (in feet)	N/S Departure: 2,047' FNL			N/S Departure:		N/S Departure		F __ L	
	E/W Departure: 4,167' FEL			E/W Departure:		N/S Departure		F __ L	
Lambert X-Y coordinates	X: 2,749,183			X:		X:		F __ L	
	Y: 290,783			Y:		E/W Departure		F __ L	
Latitude/ Longitude	Latitude: 29° 26' 42.4824" N			Latitude:		E/W Departure		F __ L	
	Longitude: 88° 58' 46.056" W			Longitude:		E/W Departure		F __ L	
Water Depth (Feet): 39'				MD (Feet):		TVD (Feet):		MD (Feet):	
Anchor Radius (if applicable) in feet: N/A								TVD (Feet):	
								TVD (Feet):	
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:				

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): 001				Previously reviewed under an approved EP or DOCD?		X	Yes		No
Is this an existing well or structure?		X	Yes	No	If this is an existing well or structure, list the Complex ID or API No.		17-726-40010-00		
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?							Yes	X	No
WCD Info	For wells, volume of uncontrolled blowout (Bbls/Day): 16,100			For structures, volume of all storage and pipelines (Bbls): 815.3		API Gravity of fluid		35°	
	Surface Location			Bottom-Hole Location (For Wells)		Completion (For multiple completions, enter separate lines)			
Lease No.	OCS-G 04123			OCS-G 04123		OCS OCS			
Area Name	Breton Sound			Breton Sound					
Block No.	56			56					
Blockline Departures (in feet)	N/S Departure: 2,047' FNL			N/S Departure:		N/S Departure		F __ L	
	E/W Departure: 4,167' FEL			E/W Departure:		E/W Departure		F __ L	
Lambert X-Y coordinates	X: 2,749,183			X:		X:		F __ L	
	Y: 290,783			Y:		Y:		F __ L	
Latitude/ Longitude	Latitude: 29° 26' 42.4824" N			Latitude:		Latitude		F __ L	
	Longitude: 88° 58' 46.056" W			Longitude:		Longitude		F __ L	
Water Depth (Feet): 40'				MD (Feet):		TVD (Feet):		MD (Feet):	
Anchor Radius (if applicable) in feet: N/A								TVD (Feet):	
								TVD (Feet):	
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:				

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): 002				Previously reviewed under an approved EP or DOCD?		X	Yes		No
Is this an existing well or structure?		X	Yes	No	If this is an existing well or structure, list the Complex ID or API No.		17-726-40011-00		
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?							Yes	X	No
WCD Info	For wells, volume of uncontrolled blowout (Bbls/Day): 16,100			For structures, volume of all storage and pipelines (Bbls): 815.3		API Gravity of fluid		35°	
	Surface Location			Bottom-Hole Location (For Wells)		Completion (For multiple completions, enter separate lines)			
Lease No.	OCS-G 04123			OCS-G 04123		OCS OCS			
Area Name	Breton Sound			Breton Sound					
Block No.	56			56					
Blockline Departures (in feet)	N/S Departure: 2,041' FNL			N/S Departure:		N/S Departure		F __ L	
	E/W Departure: 4,173' FEL			E/W Departure:		E/W Departure		F __ L	
Lambert X-Y coordinates	X: 2,749,177			X:		X:		X:	
	Y: 290,789			Y:		Y:		Y:	
Latitude/ Longitude	Latitude: 29° 26' 42.54" N			Latitude:		Latitude		Latitude	
	Longitude: 88° 58' 46.1244" W			Longitude:		Longitude		Longitude	
Water Depth (Feet): 40'				MD (Feet):		TVD (Feet):		MD (Feet):	
Anchor Radius (if applicable) in feet: N/A								TVD (Feet):	
								TVD (Feet):	
								TVD (Feet):	
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:				

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): 003				Previously reviewed under an approved EP or DOCD?		X	Yes		No
Is this an existing well or structure?		X	Yes	No	If this is an existing well or structure, list the Complex ID or API No.		17-726-40013-00		
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?							Yes	X	No
WCD Info	For wells, volume of uncontrolled blowout (Bbls/Day): 16,100			For structures, volume of all storage and pipelines (Bbls): 815.3		API Gravity of fluid		35°	
	Surface Location			Bottom-Hole Location (For Wells)		Completion (For multiple completions, enter separate lines)			
Lease No.	OCS-G 04123			OCS-G 04123		OCS OCS			
Area Name	Breton Sound			Breton Sound					
Block No.	56			56					
Blockline Departures (in feet)	N/S Departure: 2,035' FNL			N/S Departure:		N/S Departure		F __ L	
	E/W Departure: 4,168' FEL			E/W Departure:		E/W Departure		F __ L	
Lambert X-Y coordinates	X: 2,749,182			X:		X:		F __ L	
	Y: 290,795			Y:		Y:		F __ L	
Latitude/ Longitude	Latitude: 29° 26' 42.6012" N			Latitude:		Latitude		F __ L	
	Longitude: 88° 58' 46.0668" W			Longitude:		Longitude		F __ L	
Water Depth (Feet): 40'				MD (Feet):		TVD (Feet):		MD (Feet):	
Anchor Radius (if applicable) in feet: N/A								TVD (Feet):	
								TVD (Feet):	
								TVD (Feet):	
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:				

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): BD004				Previously reviewed under an approved EP or DOCD?		X	Yes		No
Is this an existing well or structure?		X	Yes	No	If this is an existing well or structure, list the Complex ID or API No.		17-726-40032-00		
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?							Yes	X	No
WCD Info	For wells, volume of uncontrolled blowout (Bbls/Day): 16,100			For structures, volume of all storage and pipelines (Bbls): 815.3		API Gravity of fluid		35°	
	Surface Location			Bottom-Hole Location (For Wells)		Completion (For multiple completions, enter separate lines)			
Lease No.	OCS-G 04123			OCS-G 04123		OCS OCS			
Area Name	Breton Sound			Breton Sound					
Block No.	56			56					
Blockline Departures (in feet)	N/S Departure: 2,042' FNL			N/S Departure:		N/S Departure		F __ L	
	E/W Departure: 4,162' FEL			E/W Departure:		E/W Departure		F __ L	
Lambert X-Y coordinates	X: 2,749,188			X:		X:		X:	
	Y: 290,788			Y:		Y:		Y:	
Latitude/ Longitude	Latitude: 29° 26' 42.5292" N			Latitude:		Latitude		Latitude	
	Longitude: 88° 58' 45.9984" W			Longitude:		Longitude		Longitude	
Water Depth (Feet): 50'				MD (Feet):		TVD (Feet):		MD (Feet):	
Anchor Radius (if applicable) in feet: N/A								TVD (Feet):	
								TVD (Feet):	
								TVD (Feet):	
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:				

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): BD005				Previously reviewed under an approved EP or DOCD?		X	Yes		No
Is this an existing well or structure?		X	Yes	No	If this is an existing well or structure, list the Complex ID or API No.		17-726-40045-00		
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?							Yes	X	No
WCD Info	For wells, volume of uncontrolled blowout (Bbls/Day): 16,100			For structures, volume of all storage and pipelines (Bbls): 815.3		API Gravity of fluid		35°	
	Surface Location			Bottom-Hole Location (For Wells)		Completion (For multiple completions, enter separate lines)			
Lease No.	OCS-G 04123			OCS-G 04903		OCS OCS			
Area Name	Breton Sound			Main Pass					
Block No.	56			30					
Blockline Departures (in feet)	N/S Departure: 2,038' FNL			N/S Departure:		N/S Departure		F __ L	
	E/W Departure: 4,164' FEL			E/W Departure:		E/W Departure		F __ L	
Lambert X-Y coordinates	X: 2,749,186			X:		X:		X:	
	Y: 290,792			Y:		Y:		Y:	
Latitude/ Longitude	Latitude: 29° 26' 42.5688" N			Latitude:		Latitude		Latitude	
	Longitude: 88° 58' 46.02" W			Longitude:		Longitude		Longitude	
Water Depth (Feet): 39'				MD (Feet):		TVD (Feet):		MD (Feet):	
Anchor Radius (if applicable) in feet: N/A								TVD (Feet):	
								TVD (Feet):	
								TVD (Feet):	
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:				

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): BD006				Previously reviewed under an approved EP or DOCD?		X	Yes		No
Is this an existing well or structure?		X	Yes	No	If this is an existing well or structure, list the Complex ID or API No.		17-726-40038-00		
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?							Yes	X	No
WCD Info	For wells, volume of uncontrolled blowout (Bbls/Day): 16,100			For structures, volume of all storage and pipelines (Bbls): 815.3		API Gravity of fluid		35°	
	Surface Location			Bottom-Hole Location (For Wells)		Completion (For multiple completions, enter separate lines)			
Lease No.	OCS-G 04123			OCS-G 04125		OCS OCS			
Area Name	Breton Sound			Main Pass					
Block No.	56			37					
Blockline Departures (in feet)	N/S Departure: 2,014' FNL			N/S Departure:		N/S Departure		F __ L	
	E/W Departure: 4,168' FEL			E/W Departure:		E/W Departure		F __ L	
Lambert X-Y coordinates	X: 2,749,182			X:		X:		F __ L	
	Y: 290,816			Y:		Y:		F __ L	
Latitude/ Longitude	Latitude: 29° 26' 42.81" N			Latitude:		Latitude		F __ L	
	Longitude: 88° 58' 46.0596" W			Longitude:		Longitude		F __ L	
Water Depth (Feet): 43'				MD (Feet):		TVD (Feet):		MD (Feet):	
Anchor Radius (if applicable) in feet: N/A								TVD (Feet):	
								TVD (Feet):	
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:				

SECTION 2 GENERAL INFORMATION

2.1 BONDING STATEMENT

The bond requirements for the activities and facilities proposed in this DOCD are satisfied by an area-wide bond, furnished and maintained according to 30 CFR 556.900 (a) and 30 CFR 556.901 (a) and (b) and NTL No. 2015-BOEM-N04, "General Financial Assurance"; and additional security under 30 CFR 556.901(d) – (f) and NTL No. 2016-BOEM-N01, "Requiring Additional Security" as required by BOEM.

2.2 OIL SPILL FINANCIAL RESPONSIBILITY (OSFR)

Cantium, LLC (Company No. 03481) has demonstrated oil spill financial responsibility for the facilities proposed in this DOCD according to 30 CFR Part 553.15 (a); and NTL No. 2008-N05, "Guidelines for Oil Spill Financial Responsibility for Covered Facilities".

2.3 BLOWOUT SCENARIO AND WORST CASE DISCHARGE CALCULATIONS

In accordance with NTL No. 2015-BOEM-N01, "Information Requirements for Exploration Plans, Development and Production Plans, and Development Operations Coordination Documents on the OCS for Worst Case Discharge and Blowout Scenarios," the Worst Case Discharge Assumptions and Calculations were submitted and approved on June 28, 2018 under DOCD Control No. R-6693.

Estimated initial flow rate: The calculated Worst Case Discharge estimate for Main Pass Block 30 Well No. A008 is 16,100 bbl of crude.

Maximum duration/total volume that could occur if the Main Pass Block 30 Well No. A008 sustained a blow out:

Scenario	Maximum Discharge Rate (bbl/day)	Discharge Duration (days)	Total Volume Crude (bbl)
Relief Well	16,100	45	724,500

Potential of wellbore to bridge over during a blowout: Due to the unconsolidated nature of the sand quality of the proposed target reservoir, the potential for the well to bridge over is very high within the first 5-10 days of a loss of control incident. The planned casing program exits existing casing at a depth where fracture gradient is high enough to hold in the event the wellbore has been fully evacuated with gas. Drilling techniques would likely experience an underground blowout as the path of least resistance preceded by bridging in the wellbore.

Likelihood for surface intervention to stop blowout: Most successful well kill operations are conducted via surface intervention by trained well control specialists. In the event of an actual blowout, intervention at the surface will be guided by well control specialists from Wild Well Control. The jack-up rig style offers good access to surface well control equipment for surface intervention.

Rig type capable of drilling relief well at water depth and to TD: The type of rig necessary to drill in water depths up to 50' would be either a mat jack-up or an independent leg rig. There are approximately 5 units of this type available in the Gulf of Mexico fleet. A relief well rig can be placed a safe distance from the affected rig and still reach intercept depths needed. Rigs we can use to drill a relief well are WFD #300, WFD #350, Enterprise #264, Ensco #68, and Spartan #202.

Rig package constraints: Some rigs may be restricted during hurricane season, but there are several rigs available that are not restricted.

Time to acquire rig, move onsite and drill relief well:

Activity	Duration (days)
Assess the situation and obtain the optimum MODU; secure well at current location of MODU	15
Mobilization time to relief well location	5
Drill the relief well, intersect and kill the well	25
Total anticipated time	45

Statement whether possibility of using nearby platform was considered: There are no platforms in the area capable of reaching this well.

Other measures to enhance ability to prevent a blowout: Target intervals range from 5500' to 6500' TVD. All targets are in the normal trend pressure profile. The fracture gradient of the window shoe is designed to be strong enough to allow for shut-in of the wellbore with full gas evacuation. In Main Pass, any open hole wellbore influx would also include contributions from significant, exposed water sands, so in a blowout scenario, there would always be a large volume of fluids associated with the flow stream. Cantium will adhere to and conduct all operations in compliance with all regulations. This would include, but not be limited to:

- Sufficient mud weight margin can be maintained without mud losses.
- Test and certify BOPs with proper working pressure.
- Maintain enough barite on location to weight up the mud system 0.5 ppg.
- Properly test TIW and BOP on rig floor.
- Monitor trip speeds to minimize surge and swab pressures.
- Check well for flow regularly especially following drilling breaks.
- Rig up and function test gas detectors properly.
- Earnestly conduct well control drills with each crew.
- Thoroughly review offset information to identify drilling hazards.
- Drilling information will be available for real-time display and reviewed by office engineers and rig superintendents. Drilling information will be available for monitoring 24/7 with geoscience team for accurate pore pressure analysis via MD Totco.

Measures to reduce the likelihood of a blowout:

- Perform offset-well history review. Most wells are drilled in known fields with established pressure profiles.
- Create proper mud design and maintain MW to control well as per the offset information.
- Design and maintain in proper functioning order the atmospheric degasser.
- Maintain stuck pipe spotting material on location.
- Maintain enough LCM material on location to mix two pills.
- Monitor pressures while making preparations to circulate the invading fluids out of the wellbore and regain hydrostatic pressure control of the formation pressure, should the well need to be shut it.
- Make routine short trips when warranted.
- Circulate bottoms up frequently.
- Run centralizers by normally accepted practices where applicable.
- Model cement jobs and drilling fluid hydraulics for rate and ecd effects.

Measures to enhance ability to conduct effective and early intervention in event of a blowout:

- Minimize the impact of an event by having well trained personnel at the well site.
- Be sure drillers understand it is always acceptable to shut-in a well to evaluate well conditions at any time.
- Make initial contact with surface intervention specialist.
- Perform hazard assessment and operations assessment to establish path forward.
- Set up firefighting equipment of vessels.
- Begin firewater application to cool the area or to prevent ignition while working in proximity to flow.
- Clear debris and move onto the rig.
- Cut off damaged wellhead and BOPs.
- Install new wellhead.
- Install diverter and capping stack.
- Rig up snubbing unit.
- Snub in and kill well.

Arrangements for drilling relief wells:

- Maintain awareness of the location of other rigs working in the Gulf Shelf.
- Build relations with other operators in the Shelf, like Arena, Cox, and Energy XXI who also support an active drilling program.
- The company that is providing the rig for the project has 1 additional rig at our call with a second expected in fourth quarter 2018.
- Other shelf operators understand we would seek the most readily and capable rig to respond and would work with other Operators as needed to make them available.
- The type of rig necessary to drill in water depths of 39' is either an independent leg jack-up rig or mat jack-up.

- There are approximately 5 rigs working on the shelf that are available in the Gulf of Mexico fleet.

Any other measures: N/A

SECTION 6

BIOLOGICAL, PHYSICAL AND SOCIOECONOMIC INFORMATION

6.1 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
			Lease Area	Coastal	
Marine Mammals					
Manatee, West Indian	<i>Trichechus manatus latirostris</i>	T	--	X	Florida (peninsular)
Whale, Blue	<i>Balaenoptera masculus</i>	E	X	--	None
Whale, Bryde's	<i>Balaenoptera edeni</i>	E	X	--	None
Whale, Fin	<i>Balaenoptera physalus</i>	E	X	--	None
Whale, Humpback	<i>Megaptera novaeangliae</i>	E	X	--	None
Whale, North Atlantic Right	<i>Eubalaena glacialis</i>	E	X	--	None
Whale, Sei	<i>Balaenoptera borealis</i>	E	X	--	None
Whale, Sperm	<i>Physeter catodon</i> (= <i>macrocephalus</i>)	E	X	--	None
Terrestrial Mammals					
Mouse, Beach (Alabama, Choctawatchee, Perdido Key, St. Andrew)	<i>Peromyscus polionotus</i>	E	-	X	Alabama, Florida (panhandle) beaches
Birds					
Plover, Piping	<i>Charadrius melodus</i>	T	-	X	Coastal Texas, Louisiana, Mississippi, Alabama and Florida (panhandle)
Crane, Whooping	<i>Grus Americana</i>	E	-	X	Coastal Texas
Mississippi sandhill crane	<i>Grus Canadensis pulla</i>	E	-	X	Coastal Mississippi
Eskimo curlew	<i>Numenius borealis</i>	E	-	X	None
Northern Aplomado Falcon	<i>Falco femoralis septentrionalis</i>	E	-	X	None
Red Knot	<i>Calidris canutus rufa</i>	T	-	X	None
Wood stork	<i>Mycteria americana</i>	T	-	X	None
Reptiles					
Sea Turtle, Green	<i>Chelonia mydas</i>	T	X	X	None
Sea Turtle, Hawksbill	<i>Eretmochelys imbricata</i>	E	X	X	None
Sea Turtle, Kemp's Ridley	<i>Lepidochelys kempli</i>	E	X	X	None

Sea Turtle, Leatherback	<i>Dermochelys coriacea</i>	E	X	X	None
Sea Turtle, Loggerhead	<i>Caretta caretta</i>	T	X	X	Texas, Louisiana, Mississippi, Alabama, Florida
Fish					
Sturgeon, Gulf	<i>Acipenser oxyrinchus (=oxyrinchus) desotoi</i>	T	X	X	Coastal Louisiana, Mississippi, Alabama and Florida (panhandle)
Oceanic Whitetip Shark	<i>Carcharhinus longimanus</i>	E	X	-	None
Smalltooth Sawfish	<i>Pristis pectinata</i>	E	-	X	None
Nassau Grouper	<i>Epinephelus striatus</i>	T	-	X	None
Giant Manta Ray	<i>Manta birostris</i>	E	X	-	None
Corals					
Coral, Elkhorn	<i>Acopora palmate</i>	T	X**	X	Florida Keys and Dry Tortugas
Coral, Staghorn	<i>Acopora cervicornis</i>	T	-	X	Florida
Boulder Star Coral	<i>Orbicella franksi</i>	T	X	X	None
Lobed Star Coral	<i>Orbicella annularis</i>	T	X	X	None
Mountainous Star Coral	<i>Orbicella faveolata</i>	T	X	X	None
Rough Cactus Coral	<i>Mycetophyllia ferox</i>	T	-	X	None

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)

SECTION 8 AIR EMISSIONS INFORMATION

8.1 EMISSIONS WORKSHEETS AND SCREENING QUESTIONS

Screen Questions for DOCD's	Yes	No
Is any calculated Complex Total (CT) Emission amount (tons) associated with your proposed development activities more than 90% of the amounts calculated using the following formulas: $CT = 3400D^{2/3}$ for CO, and $CT = 33.3D$ for the other air pollutants (where D = distance to shore in miles)?		X
Do your emission calculations include any emission reduction measures or modified emission factors?		X
Does or will the facility complex associated with your proposed development and production activities process production from eight or more wells?		X
Do you expect to encounter H ₂ S at concentrations greater than 20 parts per million (ppm)?		X
Do you propose to flare or vent natural gas for more than 48 continuous hours from any proposed well?		X
Do you propose to burn produced hydrocarbon liquids?		X
Are your proposed development and production activities located within 25 miles (40 kilometers) from shore?	X	
Are your proposed development and production activities located within 124 miles (200 kilometers) of the Breton Wilderness Area?	X	

8.2 SUMMARY INFORMATION

There are activities co-located with the proposed activities; however, the Plan Emissions and the Total Complex Emissions are the same. Included as **Attachment 8-A** are Air Emission Worksheets showing the emissions calculations for the activities.

This information was calculated by: Dena Rodriguez
(281) 698-8512
dena.rodriguez@jccteam.com

Air emissions were calculated using historical actual fuel usage for the Enterprise 264 with a 25% safety factor added.

DOCD AIR QUALITY SCREENING CHECKLIST

COMPANY	Cantium, LLC
AREA	Breton Sound
BLOCK	56
LEASE	OCS-G 04123
PLATFORM	BD
WELLS	001, 002, 003, BD004, BD005, BD006
COMPANY CONTACT	Dena Rodriguez
TELEPHONE NO.	281-698-8512
REMARKS	Emissions provide for future operations on Well Nos. 001, 002, 003, BD004, BD005, BD006 including contingency drilling days each year for maintenance, workovers, recompletions, sidetracks, interventions and abandonment activities; utilizing Enterprise 264 or equivalent jackup MODU; historical fuel usage included; no equipment on structure

LEASE TERM PIPELINE CONSTRUCTION INFORMATION:		
YEAR	NUMBER OF PIPELINES	TOTAL NUMBER OF CONSTRUCTION DAYS
2020	N/A	N/A
2021		
2022		
2023		
2024		
2025		
2026		
2027		
2028		
2029		
2030		

AIR EMISSIONS COMPUTATION FACTORS

Fuel Usage Conversion Factors	Natural Gas Turbines		Natural Gas Engines		Diesel Recip. Engine		REF.	DATE
	SCF/hp-hr	9.524	SCF/hp-hr	7.143	GAL/hp-hr	0.0483	AP42 3.2-1	4/76 & 8/84

Equipment/Emission Factors	units	PM	SOx	NOx	VOC	CO	REF.	DATE
NG Turbines	gms/hp-hr		0.00247	1.3	0.01	0.83	AP42 3.2-1& 3.1-1	10/96
NG 2-cycle lean	gms/hp-hr		0.00185	10.9	0.43	1.5	AP42 3.2-1	10/96
NG 4-cycle lean	gms/hp-hr		0.00185	11.8	0.72	1.6	AP42 3.2-1	10/96
NG 4-cycle rich	gms/hp-hr		0.00185	10	0.14	8.6	AP42 3.2-1	10/96
Diesel Recip. < 600 hp.	gms/hp-hr	1	0.1835	14	1.12	3.03	AP42 3.3-1	10/96
Diesel Recip. > 600 hp.	gms/hp-hr	0.32	0.1835	11	0.33	2.4	AP42 3.4-1	10/96
Diesel Boiler	lbs/bbl	0.084	0.3025	0.84	0.008	0.21	AP42 1.3-12,14	9/98
NG Heaters/Boilers/Burners	lbs/mmscf	7.6	0.593	100	5.5	84	AP42 1.4-1, 14-2, & 14	7/98
NG Flares	lbs/mmscf		0.593	71.4	60.3	388.5	AP42 11.5-1	9/91
Liquid Flaring	lbs/bbl	0.42	6.83	2	0.01	0.21	AP42 1.3-1 & 1.3-3	9/98
Tank Vapors	lbs/bbl				0.03		E&P Forum	1/93
Fugitives	lbs/hr/comp.				0.0005		API Study	12/93
Glycol Dehydrator Vent	lbs/mmscf				6.6		La. DEQ	1991
Gas Venting	lbs/scf				0.0034			

Sulphur Content Source	Value	Units
Fuel Gas	3.33	ppm
Diesel Fuel	0.05	% weight
Produced Gas(Flares)	3.33	ppm
Produced Oil (Liquid Flaring)	1	% weight

AIR EMISSIONS CALCULATIONS - FIRST YEAR

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL		CONTACT					PHONE	REMARKS			
Cantium, LLC	Breton Sound	56	OCS-G 04123	BD	001, 002, 003, BD004, BD005, BD006		Dena Rodriguez					281-698-8512	Emissions provide for future operations on Well Nos. 001, 002, 003, BD004, BD005, BD006 includi			
OPERATIONS	EQUIPMENT	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	PM	SOx	NOx	VOC	CO	PM	SOx	NOx	VOC	CO
DRILLING*	PRIME MOVER>600hp diesel	6905	333.5115	1964.00	24	150	4.87	2.79	167.30	5.02	36.50	2.15	1.23	73.89	2.22	16.12
	PRIME MOVER>600hp 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
	PRIME MOVER>600hp 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
	PRIME MOVER>600hp 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
	BURNER diesel	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	AUXILIARY EQUIP<600hp 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
	VESSELS>600hp diesel(support)	2065	99.7395	2393.75	8	150	1.46	0.83	50.03	1.50	10.92	0.87	0.50	30.02	0.90	6.55
	VESSELS>600hp diesel(tugs)	8400	405.72	9737.28	8	2	5.92	3.40	203.52	6.11	44.41	0.05	0.03	1.63	0.05	0.36
PIPELINE INSTALLATION	PIPELINE LAY 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
	SUPPORT VESSEL 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
	PIPELINE BURY 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
	SUPPORT VESSEL 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
	VESSELS>600hp diesel(crew)	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
	VESSELS>600hp diesel(supply)	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
FACILITY INSTALLATION	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
	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
	VESSELS>600hp diesel(crew)	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
	VESSELS>600hp diesel(supply)	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
PRODUCTION	RECIP.<600hp 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
	RECIP.>600hp 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
	SUPPORT VESSEL diesel	2065	99.7395	2393.75	8	62	1.46	0.83	50.03	1.50	10.92	0.36	0.21	12.41	0.37	2.71
	TURBINE nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.2 cycle lean nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle lean nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle rich nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	BURNER nat gas	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.	BPD	SCF/HR	COUNT												
	TANK-	0			0	0				0.00	0.00			0.00	0.00	0.00
	FLARE-		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	PROCESS VENT-		0		0	0				0.00	0.00			0.00	0.00	0.00
	FUGITIVES-			500.0		365				0.25	0.00			1.10	0.00	0.00
	GLYCOL STILL VENT-		0		0	0				0.00	0.00			0.00	0.00	0.00
DRILLING WELL TEST	OIL BURN	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GAS FLARE		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
2020-2030 YEAR TOTAL							13.70	7.86	470.89	14.38	102.74	3.43	1.97	117.95	4.63	25.73
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											299.70	299.70	299.70	299.70	14710.95
	9.0															

* This AQR includes contingency drilling days each year for maintenance, workovers, recompletions, sidetracks, interventions and abandonment activities. Facility is within 100 km of Breton Sound, however contingency activity emissions will not occur for consecutive three years.

AIR EMISSIONS CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL
Cantium, LLC	Breton Sound	56	OCS-G 04123	BD	001, 002, 003, BD004.
Year	Emitted Substance				
	PM	SOx	NOx	VOC	CO
2020-2030	3.43	1.97	117.95	4.63	25.73
Allowable	299.70	299.70	299.70	299.70	14710.95

Rig	Item description	Report Date	Used (bbls)	Used (gallons)
Enterprise 264	DIESEL FUEL	2/1/19	33	1386
Enterprise 264	DIESEL FUEL	2/2/19	41	1722
Enterprise 264	DIESEL FUEL	2/3/19	59	2478
Enterprise 264	DIESEL FUEL	2/4/19	70	2940
Enterprise 264	DIESEL FUEL	2/5/19	36	1512
Enterprise 264	DIESEL FUEL	2/6/19	25	1050
Enterprise 264	DIESEL FUEL	2/7/19	27	1134
Enterprise 264	DIESEL FUEL	2/8/19	33	1386
Enterprise 264	DIESEL FUEL	2/9/19	66	2772
Enterprise 264	DIESEL FUEL	2/10/19	62	2604
Enterprise 264	DIESEL FUEL	2/11/19	69	2898
Enterprise 264	DIESEL FUEL	2/12/19	72	3024
Enterprise 264	DIESEL FUEL	2/13/19	76	3192
Enterprise 264	DIESEL FUEL	2/14/19	78	3276
Enterprise 264	DIESEL FUEL	2/15/19	84	3528
Enterprise 264	DIESEL FUEL	2/16/19	75	3150
Enterprise 264	DIESEL FUEL	3/1/19	8	336
Enterprise 264	DIESEL FUEL	3/2/19	8	336
Enterprise 264	DIESEL FUEL	3/3/19	25	1050
Enterprise 264	DIESEL FUEL	3/4/19	33	1386
Enterprise 264	DIESEL FUEL	3/5/19	27	1134
Enterprise 264	DIESEL FUEL	3/6/19	34	1428
Enterprise 264	DIESEL FUEL	3/7/19	28	1176
Enterprise 264	DIESEL FUEL	3/8/19	22	924
Enterprise 264	DIESEL FUEL	3/9/19	28	1176
Enterprise 264	DIESEL FUEL	3/10/19	33	1386
Enterprise 264	DIESEL FUEL	3/11/19	34	1428
Enterprise 264	DIESEL FUEL	3/12/19	33	1386
Enterprise 264	DIESEL FUEL	3/13/19	30	1260
Enterprise 264	DIESEL FUEL	3/14/19	29	1218
Enterprise 264	DIESEL FUEL	3/15/19	33	1386
Enterprise 264	DIESEL FUEL	3/16/19	22	924
Enterprise 264	DIESEL FUEL	3/17/19	11	462
Enterprise 264	DIESEL FUEL	3/18/19	22	924
Enterprise 264	DIESEL FUEL	3/19/19	20	840
Enterprise 264	DIESEL FUEL	3/20/19	17	714
Enterprise 264	DIESEL FUEL	3/21/19	16	672
Enterprise 264	DIESEL FUEL	3/22/19	25	1050
Enterprise 264	DIESEL FUEL	3/23/19	17	714
Enterprise 264	DIESEL FUEL	3/24/19	22	924
Enterprise 264	DIESEL FUEL	3/25/19	25	1050
Enterprise 264	DIESEL FUEL	3/26/19	29	1218
Enterprise 264	DIESEL FUEL	3/27/19	33	1386
Enterprise 264	DIESEL FUEL	3/28/19	55	2310

Rig	Item description	Report Date	Used (bbls)	Used (gallons)
Enterprise 264	DIESEL FUEL	3/29/19	33	1386
Enterprise 264	DIESEL FUEL	3/30/19	37	1554
Enterprise 264	DIESEL FUEL	3/31/19	63	2646
Enterprise 264	DIESEL FUEL	TOTAL	1758	73836

SECTION 9 OIL SPILL INFORMATION

9.1 OIL SPILL RESPONSE PLANNING

All the proposed activities and facilities in this DOCD will be covered by the Oil Spill Response Plan (OSRP) filed by Cantium, LLC (Company No. 03481) dated September 2019 and last approved on March 27, 2020 (OSRP Control No. O-1011).

9.2 SPILL RESPONSE SITES

Primary Response Equipment Location	Preplanned Staging Location
Houma, LA	Houma, LA
Venice, LA	Venice, LA
Harvey, LA	Harvey, LA

9.3 OSRO INFORMATION

Cantium's primary equipment provider is Clean Gulf Associates. Clean Gulf Associates Services, LLC will provide closest available personnel, as well as a supervisor to operate the equipment.

9.4 WORST-CASE DISCHARGE SCENARIO DETERMINATION

Category	Drilling		Production	
	Regional OSRP WCD	DOCD WCD	Regional OSRP WCD	DOCD WCD
Type of Activity	<10 Miles Drilling	<10 Miles Drilling	<10 Miles Production	<10 Miles Production
Facility location (Area/Block)	BM2	MP30	ST24	BS56
Facility designation	CG072	A008	CM003	BD004
Distance to nearest shoreline (miles)	5.1	8.5	6.8	9
Storage tanks & flowlines (bbl)	0	192	0	2
Lease term pipelines (bbl)	0	0	0	813.3
Uncontrolled blowout (bbl)	42,509	16,100	9,400	0
Total Volume (bbl)	42,509	16,292	9,400	815.3
Type of oil(s) (crude, condensate, diesel)	Crude	Crude	Crude	Crude
API gravity	27°	35°	27°	39°

The WCD for wells on the Breton Sound 56 'BD' structure does not supersede the current WCD volume of 16,100 bbls/day for MP30 Well No. A008.

Cantium has determined that the worst-case scenario from the activities proposed in this DOCD does not supersede the worst-case scenario from our approved Regional OSRP.

Since Cantium, LLC has the capability to respond to the worst-case spill scenario included in our Regional OSRP approved on March 27, 2020, and since the worst-case scenario determined for our DOCD does not replace the worst-case scenario in our Regional OSRP, Cantium, LLC hereby certifies that Cantium, LLC 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 this DOCD.

9.5 OIL SPILL RESPONSE DISCUSSION

The Oil Spill Response Discussion is included as **Attachment 9-A**.

SPILL RESPONSE DISCUSSION

For the purpose of NEPA and Coastal Zone Management Act analysis, the largest spill volume originating from the proposed activity would be a well blowout during drilling operations, estimated to be 16,292 barrels of crude oil with an API gravity of 35°.

Land Segment and Resource Identification

Trajectories 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. The results are shown in **Figure 1**. The BOEM OSRAM identifies the highest probability of impact to the shorelines of Plaquemines Parish, Louisiana within 3, 10, and 30 days. Plaquemines Parish includes Barataria Bay, the Mississippi River Delta, Breton Sound and the affiliated islands and bays. This region is an extremely sensitive habitat and serves as a migratory, breeding, feeding and nursery habitat for numerous species of wildlife. Beaches in this area vary in grain particle size and can be classified as fine sand, shell or perched shell beaches. Sandy and muddy tidal flats are also abundant.

Response

Cantium, 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**.

Using the estimated chemical and physical characteristics of crude oil, an ADIOS weathering model was run on a similar product from the ADIOS oil database. The results indicate 27% or approximately 4,399 barrels of crude oil would be evaporated/dispersed within 24 hours, with approximately 11,893 barrels remaining.

Natural Weathering Data: MP 30, Well No. A-8	Barrels of Oil
WCD Volume	16,292
<i>Less</i> 27% natural evaporation/dispersion	4,399
Remaining volume	11,893

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.

Cantium, 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's response equipment, with a total derated skimming capacity of 139,059 barrels. Temporary storage associated with skimming equipment equals 5,298 barrels. If additional storage is needed, various storage barges with a total capacity 134,000 bbls 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 in Plaquemines Parish, Louisiana 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 67,636 barrels. Temporary storage associated with skimming equipment equals 1,019 barrels. If additional storage is needed, various storage barges with a total capacity 67,000 bbls 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. Letters of Intent from Ampol and OMI will ensure access to 164,600 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. Cantium, LLC's contract Spill Management Team has access to the applicable ACP(s) and GRP(s).

Based on the anticipated worst case discharge scenario, Cantium, 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 60 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

Cantium, 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 spill management team (SMT) 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 Cantium, 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 ≥ 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 (C³)

- Publish, implement, and fully test an appropriate communications plan
- Design an operational scheme, maintaining a manageable span of control
- Designate and mark C³ vessels for easy aerial identification
- Designate and employ C³ 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: <ul style="list-style-type: none"> • 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): Cantium, 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)

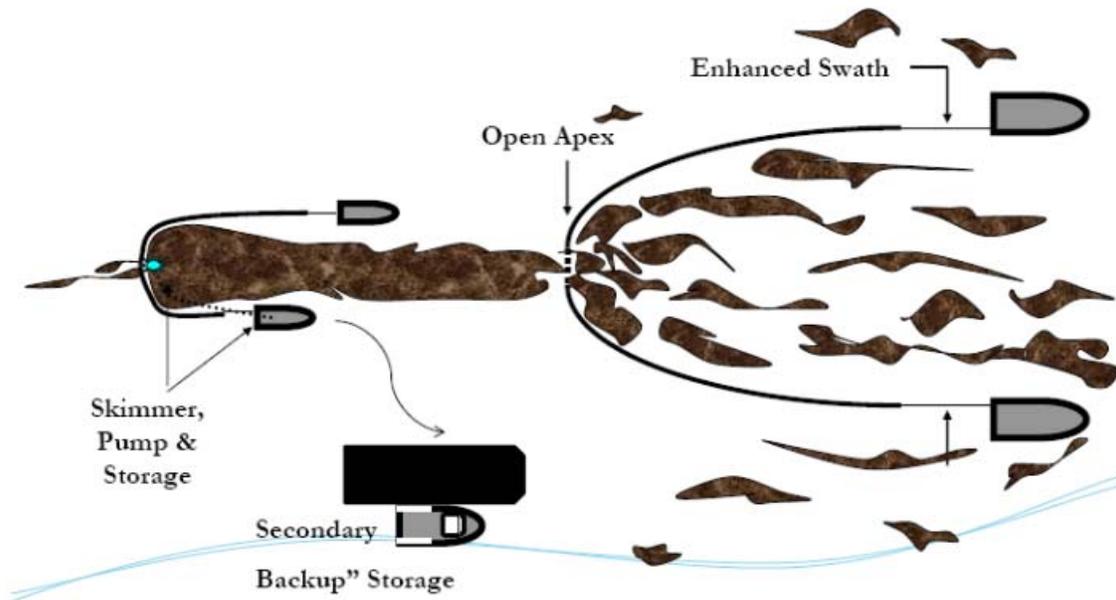
1 – Modular Crane Pedestal System set (MCPS) or 30 cherry picker (crane) for deployment

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 through 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
- Egmpol and Marco SWS
- Operate with aerial spotter directing systems to observed oil slicks

VOO

- Use Cantium, 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 that 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 be 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 to 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 is 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**

<p>Trajectory of a spill and the probability of it impacting a land segment have been projected utilizing Cantium, LLC's WCD and information in the BOEM Oil Spill Risk Analysis Model (OSRAM) for the Central and Western Gulf of Mexico available on the BOEM website using 3, 10, and 30 day impact. The results are tabulated below.</p>				
Area/Block	OCS-G	Launch Area	Land Segment and/or Resource	Conditional Probability (%)
<p>< 10 miles Drilling MP 30, Well No. A-8 <i>8.5 miles from shore</i></p>	G04903	C53	<p>Plaquemines, LA St. Bernard, LA</p>	<p><i>3 day</i> 11 2</p>
			<p>Lafourche, LA Plaquemines, LA St. Bernard, LA Hancock & Harrison, MS Jackson, MS Mobile, AL Baldwin, AL Escambia, FL</p>	<p><i>10 day</i> 1 25 9 1 2 2 2 1</p>
			<p>Terrebonne, LA Lafourche, LA Plaquemines, LA St. Bernard, LA Hancock & Harrison, MS Jackson, MS Mobile, AL Baldwin, AL Escambia, FL Okaloosa, FL Walton, FL Bay, FL Gulf, FL</p>	<p><i>30 day</i> 1 1 31 12 2 4 3 3 3 1 1 1 1</p>

WCD Scenario– BASED ON WELL BLOWOUT DURING DRILLING OPERATIONS (8.5 miles from shore)

11,893 bbls of crude oil (Volume considering natural weathering)

API Gravity 35°

FIGURE 2 – Equipment Response Time to MP 30, Well No. A-8

Dispersants/Surveillance

Dispersant/Surveillance	Dispersant Capacity (gal)	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Travel to site	Total Hrs
ASI							
Basler 67T	2000	2	Houma	2	2	0.6	2.6
DC 3	1200	2	Houma	2	2	0.7	2.7
DC 3	1200	2	Houma	2	2	0.7	2.7
Aero Commander	NA	2	Houma	2	2	0.6	2.6

Offshore Response

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
CGA											
HOSS Barge	76285	4000	3 Tugs	8	Harvey	7	0	5	10	1	23
95' FRV	22885	249	NA	6	Venice	2	0	2	4	0	8
95' FRV	22885	249	NA	6	Leeville	2	0	2	6	0	10
Boom Barge (CGA-300) 42" Auto Boom (25000')	NA	NA	1 Tug 50 Crew	4 (Barge) 2 (Per Crew)	Leeville	4	0	6	16	2	28
Enterprise Marine Services LLC (Available through contract with CGA)											
CTCo 2603	NA	25000	1 Tug	6	Amelia	18	12	4	25	1	60
CTCo 2605	NA	20000	1 Tug	6	Amelia	18	12	4	25	1	60
CTCo 2606	NA	20000	1 Tug	6	Amelia	18	12	4	25	1	60
CTCo 2607	NA	23000	1 Tug	6	Amelia	18	12	4	25	1	60
CTCo 2608	NA	23000	1 Tug	6	Amelia	18	12	4	25	1	60
CTCo 2609	NA	23000	1 Tug	6	Amelia	18	12	4	25	1	60

Staging Area: Venice

Offshore Equipment With 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											
FRU (2) + 100 bbl Tank (4)	8502	400	2 Utility	12	Leeville	2	2	4.5	7	1	16.5
FRU (2) + 100 bbl Tank (4)	8502	400	2 Utility	12	Venice	2	2	0	7	1	12
Hydro-Fire Boom	NA	NA	8 Utility	40	Harvey	2	4	2	7	6	21

Nearshore Response

Nearshore 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
CGA											
Trinity SWS	21500	249	NA	4	Morgan City	2	6	N/A	48	0	56
46' FRV	15257	65	NA	4	Morgan City	2	0	2	5	0	9
46' FRV	15257	65	NA	4	Venice	2	0	2	2	0	6
Enterprise Marine Services LLC (Available through contract with CGA)											
CTCo 2604	NA	20000	1 Tug	6	Amelia	27	12	4	16	1	60
CTCo 5001	NA	47000	1 Tug	6	Amelia	27	12	4	16	1	60

Staging Area: Venice

Nearshore Equipment With Staging	EDRC	Storage Capacity	VOO	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	Morgan City	2	2	4.5	2	0	10.5
SWS Marco	3588	20	NA	3	Lake Charles	2	2	8	2	0	14
SWS Marco	3588	34	NA	3	Leeville	2	2	4.5	2	0	10.5
SWS Marco	3588	34	NA	3	Venice	2	2	0	2	0	6
Rope Mop	77	2	0	3	Harvey	2	2	2	2	0	8
Foilex Skim Package (TDS 150)	1131	50	NA	3	Harvey	2	2	2	2	0	8
4 Drum Skimmer (Magnum 100)	680	100	1 Crew	3	Lake Charles	2	2	8	2	0	14
4 Drum Skimmer (Magnum 100)	680	100	1 Crew	3	Harvey	2	2	2	2	0	8
2 Drum Skimmer (TDS 118)	240	100	1 Crew	3	Lake Charles	2	2	8	2	0	14
2 Drum Skimmer (TDS 118)	240	100	1 Crew	3	Harvey	2	2	2	2	0	8

Shoreline Protection

Staging Area: Venice

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
30,000' 18" Boom	13 Crew	26	Harvey, LA	2	2	2	2	12	20
1,700' 18" Boom	2 Crew	4	Venice, LA	2	2	0	2	2	8
14,750' 18" Boom	7 Crew	14	Port Arthur, TX	2	2	10	2	6	22
OMI Environmental (available through Letter of Intent)									
12,500' 18" Boom	6 Crew	12	New Iberia, LA	1	1	6	2	3	13
6,400' 18" Boom	3 Crew	6	Houston, TX	1	1	12	2	3	19
3,500' 18" Boom	2 Crew	4	Port Arthur, TX	1	1	10	2	3	17
4,000' 18" Boom	2 Crew	4	Longview, TX	1	1	13	2	3	20
4,850' 18" Boom	2 Crew	4	Belle Chasse, LA	1	1	2	2	3	9
8,000' 18" Boom	3 Crew	6	Port Allen, LA	1	1	5	2	3	12
2,000' 18" Boom	1 Crew	2	Houma, LA	1	1	4	2	3	11
2,500' 18" Boom	1 Crew	2	Morgan City, LA	1	1	5	2	3	12
1,600' 18" Boom	1 Crew	2	Gonzalez, LA	1	1	4	2	3	11
1,900' 18" Boom	1 Crew	2	St. James, LA	1	1	4	2	3	11
2,000' 18" Boom	1 Crew	2	Galliano, LA	1	1	4	2	3	11
1,000' 18" Boom	1 Crew	2	St. Rose, LA	1	1	3	2	3	10
1,000' 18" Boom	1 Crew	2	Hackberry, LA	1	1	9	2	3	16
5,800' 18" Boom	3 Crew	6	Venice, LA	1	1	0	2	3	7
13,300' 18" Boom	6 Crew	12	Harvey, LA	1	1	2	2	3	9

Wildlife Response	EDRC	Storage Capacity	VOO	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Travel to Staging	Travel to Deployment	Hrs to Deploy	Total Hrs
CGA											
Wildlife Support Trailer	NA	NA	NA	2	Harvey	2	2	2	1	2	9
Bird Scare Guns (24)	NA	NA	NA	2	Harvey	2	2	2	1	2	9
Bird Scare Guns (12)	NA	NA	NA	2	Galveston	2	2	13	1	2	20
Bird Scare Guns (12)	NA	NA	NA	2	Aransas Pass	2	2	18	1	2	25
Bird Scare Guns (48)	NA	NA	NA	2	Lake Charles	2	2	8	1	2	15
Bird Scare Guns (24)	NA	NA	NA	2	Leeville	2	2	4.4	1	2	11.4

Response Asset	Total
Offshore EDRC	139,059
Offshore Recovered Oil Capacity	139,298
Nearshore / Shallow Water EDRC	67,636
Nearshore / Shallow Water Recovered Oil Capacity	68,019

SECTION 10

ENVIRONMENTAL MONITORING INFORMATION

10.1 MONITORING SYSTEMS

There are no environmental monitoring systems currently in place or planned for the proposed activities.

Cantium will utilize a mat style Jack-up rig to perform operations associated with this plan and it's very atypical for marine life to become entangled or entrapped in this style of structure. As a precaution, lines extending into the water will be minimized. Any hoses extending to the water's surface will be configured to minimize the chances of entanglement by marine life. As part of daily pollutions observations, our HSE representative will be trained to look for entangled marine life and take appropriate action.

10.2 INCIDENTAL TAKES

There is no reason to believe that any of the endangered species or marine mammals as listed in the Endangered Species Act (ESA) will be "taken" as a result of the operations proposed under this plan.

It has been documented that the use of explosives and/or seismic devices can affect marine life. Operations proposed in this plan will not be utilizing either of these devices.

Cantium will adhere to the requirements as set forth in the following documents, as applicable, to avoid or minimize impacts to any of the species listed in the ESA as a result of the operations conducted herein:

- NTL No. 2015-BSEE-G03, "Marine Trash and Debris Awareness and Elimination"
- NTL No. 2016-BOEM-G01, "Vessel Strike Avoidance and Injured/Dead Protected Species Reporting"
- NTL No. 2016-BOEM-G02, "Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program"
- "Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico, Appendices to the Programmatic Biological Opinion on the Gulf of Mexico Oil and Gas Program", Appendices B and C

10.3 SEA TURTLE HANDLING AND RESUSCITATION GUIDELINES

Any sea turtles taken incidentally during the course of fishing or scientific research activities must be handled with due care to prevent injury to live specimens, observed for activity, and returned to the water according to the following procedures:

1. Sea turtles that are actively moving or determined to be dead (as described in paragraph (2)(d) below) must be released over the stern of the boat. In addition, they must be released only when fishing or scientific collection gear is not in use, when the engine

gears are in neutral position, and in areas where they are unlikely to be recaptured or injured by vessels.

2. Resuscitation must be attempted on sea turtles that are comatose or inactive by:
 - a. Placing the turtle on its bottom shell (plastron) so that the turtle is right side up and elevating its hindquarters at least 6 inches (15.2 cm) for a period of 4 to 24 hours. The amount of elevation depends on the size of the turtle; greater elevations are needed for larger turtles. Periodically, rock the turtle gently left to right and right to left by holding the outer edge of the shell (carapace) and lifting one side about 3 inches (7.6 cm) then alternate to the other side. Gently touch the eye and pinch the tail (reflex test) periodically to see if there is a response.
 - b. Sea turtles being resuscitated must be shaded and kept damp or moist but under no circumstance be placed into a container holding water. A water-soaked towel placed over the head, carapace, and flippers is the most effective method in keeping a turtle moist.
 - c. Sea turtles that revive and become active must be released over the stern of the boat only when fishing or scientific collection gear is not in use, when the engine gears are in neutral position, and in areas where they are unlikely to be recaptured or injured by vessels. Sea turtles that fail to respond to the reflex test or fail to move within 4 hours (up to 24, is possible), must be returned to the water in the same manner as that for actively moving turtles.
 - d. A turtle is determined to be dead if the muscles are stiff (rigor mortis) and/or the flesh has begun to rot; otherwise, the turtle is determined to be comatose or inactive and resuscitation attempts are necessary.

Any sea turtle so taken must not be consumed, sold, landed, offloaded, transshipped, or kept below deck.

SECTION 12

ENVIRONMENTAL MITIGATION MEASURES INFORMATION

12.1 MEASURES TAKEN TO AVOID, MINIMIZE, AND MITIGATE IMPACTS

Cantium will adhere to the requirements as set forth in the following BOEM/BSEE Notice to Lessees, as applicable, to avoid or minimize impacts to any marine and coastal environments and habitats, biota, and threatened and endangered species:

- NTL No. 2015-BSEE-G03, “Marine Trash and Debris Awareness and Elimination”
- NTL No. 2016-BOEM-G01, “Vessel Strike Avoidance and Injured/Dead Protected Species Reporting”
- NTL No. 2016-BOEM-G02, “Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program
- “Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico, Appendices to the Programmatic Biological Opinion on the Gulf of Mexico Oil and Gas Program”, Appendices B and C

12.2 INCIDENTAL TAKES

Cantium will adhere to the requirements set forth in the following documents, as applicable, to avoid or minimize impacts to any of the species listed in the Endangered Species Act (ESA) as a result of the operations conducted herein:

- NTL No. 2015-BSEE-G03, “Marine Trash and Debris Awareness and Elimination”
- NTL No. 2016-BOEM-G01, “Vessel Strike Avoidance and Injured/Dead Protected Species Reporting”
- NTL No. 2016-BOEM-G02, “Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program”
- “Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico, Appendices to the Programmatic Biological Opinion on the Gulf of Mexico Oil and Gas Program”, Appendices B and C

See **Section 6.1** for a list of Threatened and Endangered Species, Critical Habitat and Marine Mammal Information.

SECTION 14 SUPPORT VESSELS AND AIRCRAFT INFORMATION

14.1 GENERAL

The most practical, direct route from the shorebase as permitted by weather and traffic conditions will be utilized. The drilling unit, vessels, crew boats and supply boats associated with the operations proposed in this plan will not transit the Bryde's whale area. Information regarding the vessels and aircraft to be used to support the proposed activities is provided in the table below.

Type	Maximum Fuel Tank Capacity	Maximum Number in Area at Any Time (drlg / prod)	Trip Frequency or Duration (drlg / prod)
Tug boat	59,548 gal	2 / 0	2 total / 0
Support boat	7,240 gal	1 / 1	7 per week / 2 per week
Helicopter	560 gal	As Needed	As Needed