UNITED STATES GOVERNMENT
MEMORANDUM

November 19, 2026

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

Subject: Public Information copy of plan

Control #	-	Control N-10276
Type	-	Initial Development Operations Coordination Document
Lease(s)	-	OCS-G 35821 Block - 385 Mississippi Canyon Area
Operator	-	Murphy Exploration & Production Company - USA
Description	-	Wells 002 and 004
Rig Type	-	DP Semisubmersible or Drillship

Attached is a copy of the subject plan.

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

Nicole Reaux
Plan Coordinator

MURPHY
EXPLORATION & PRODUCTION CO.

October 20, 2026

United States Department of Interior
Gulf of America OCS Region
Marine Minerals Administration
1201 Elmwood Park Boulevard
New Orleans, LA 70123-2394

Attn: Michelle Uli Picou
Chief, Plans Section

Subject: Murphy Exploration & Production Company - USA
Initial Development Operations Coordination Document
Lease OCS-G 35821, Mississippi Canyon Block 385

In accordance with 30 CFR 550.200 Subpart B and NTL 2009-G27, Murphy Exploration & Production - USA (Murphy) hereby submits for your review and approval an Initial Development Operations Coordination Document for the installation of a Right-of-Way (ROW) pipeline, jumpers and associated umbilical, and the commencement of production from Wells No. 002 (to be renamed SS002) and 004 (to be renamed SS004) in Lease OCS-G 35821, all located in Mississippi Canyon Block 385.

Enclosed for your review and approval are one Proprietary Copy and one Public Copy.

If you should have any questions or concerns, please contact [Insert Contact] by phone at (281) 798-0481 or by e-mail at brenda_montalvo@murphyoilcorp.com .

Sincerely,

Brenda Montalvo
Regulatory Supervisor, Environmental & Regulatory

9805 Katy Freeway, Suite G-200, Houston, Texas 77024
281.675.9000

INITIAL
DEVELOPMENT OPERATIONS
COORDINATION DOCUMENT

MISSISSIPPI CANYON BLOCK 385
LEASE OCS-G 35821

PUBLIC INFORMATION COPY

Submitted by:

MURPHY
EXPLORATION & PRODUCTION CO.

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PLAN CONTENTS

(a) Description, objectives, and schedule

This Initial Development Operations Coordination Document (DOCD) being submitted for Murphy Exploration & Production Company - USA (Murphy) provides for the installation of a Right-of-Way (ROW) pipeline, jumpers, and associated umbilical, and commencement of production from Lease OCS-G 38521, Well No.'s 002 (to be renamed SS002) and 004 (to be renamed SS004).

Murphy is planning to further develop the Son of Bluto II field area located in Mississippi Canyon Block 431 by adding production from the String Music wells, Cello (MC 385 Well No. 002, to be renamed SS002) and Banjo (MC 385 Well No. 004, to be renamed SS004), both located in Mississippi Canyon Block 385. Banjo and Cello are located 5.5 miles and 4.4 miles, respectively, Northwest from the existing MC 431 manifold and will be connected via a 5.5-mile single infield flowline to the Son of Bluto II drill center manifold. From MC 431 manifold, production will flow to the A-Delta House facility located in Mississippi Canyon Block 254 through one of the existing 15-mile Son of Bluto II flowlines. Field water depths range from 6,000 ft to 6,400 ft.

Well No. 002 to be renamed SS002 was spudded on November 8, 2025. This well was drilled, completed and temporarily abandoned on January 4, 2026, under a previously approved Supplemental Exploration Plan, Control No. S-8182.

Well No. 004 to be renamed SS004 (ST00BP01) was spudded on February 6, 2026, and temporarily abandoned on February 19, 2026. This well was drilled, completed and temporarily abandoned under a previously approved Revised Exploration Plan, Control No. R-7402.

OCS Plan Information Forms – Form BOEM-137, showing the activity schedule are enclosed under this section.

(b) Location

A Well Location Map showing the proposed surface and bottom-hole locations of Well No. 002 (to be renamed SS002) and Well No. 004 (to be renamed SS004) is included in this plan along with a Bathymetry Map showing the water depths across the lease block.

(c) Drilling unit

Murphy will not be conducting any drilling operations under this Initial DOCD. Therefore, this section does not apply.

(d) Production facilities

Murphy will be adding production from existing Wells No. 002 (to be renamed SS002) and 004 (to be renamed SS004) which will be equipped with a wellhead and manifold, connected via a proposed Right-of-Way jumper to a proposed Right-of-Way infield pipeline. The Right-of-Way pipeline will then be connected to the existing Right-of-Way pipeline Segments No. 18812 and No. 18813 to Murphy's existing platform A-Delta House located in Lease OCS-G 35324, Mississippi Canyon Block 254.

The proposed Right-of-Way pipeline will be installed using a DP2 (Dynamic Positioning Class 2) reel-lay vessel. The proposed Right-of-Way jumpers will be installed using a DP2 LCV (light construction vessel) installation vessel. Therefore, no anchors will be associated with these development activities.

Murphy will comply with all the regulations of ABS, IMO and USCG. All operations will be conducted under the provisions of 30 CFR, Part 250, and other applicable regulations and notice to lessees, including those regarding the avoidance of potential hazards and safety and pollution prevention control.

Pollution prevention measures include installation of curbs, gutters, drip pans, and drains on drilling deck areas to collect all contaminants and debris. All discharges will be in accordance with applicable EPA NPDES permits.

Light construction vessels that will be used for the Right-of-Way pipeline installation do not have storage tanks.

Storage Tanks and/or Production Vessels:

Type of Storage Tank	Type of Facility	Number of Tanks	Tank Capacity (bbl.)	Total Capacity (bbl.)	Fluid Gravity (API)
N/A	N/A	0	0	0	0

All facility tanks of 25 barrels or more.

(e) Service fee

A Pay.gov receipt in the amount of *$ 11,130.00* is enclosed to cover the cost and processing fee for the proposed operations being conducted under this plan

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

OMB Control Number: 1010-0151
OMB Approval Expires: 10/31/2027

OCS PLAN INFORMATION FORM

GENERAL INFORMATION

Type of OCS Plan:		Exploration Plan (EP)	X	**Development Operations Coordination Document (DOCD)**			
Company Name: Murphy Exploration & Production Company - USA.				BOEM Operator Number: 02647			
Address: 9805 Katy Fwy., Suite G-200				Contact Person: Brenda Montalvo			
Houston, Texas 77024				Phone Number: 281-798-0481			
				e-mail address: brenda_montalvo@murphyoilcorp.com			
If a service fee is required under 30 CFR 550.125(a) provide the				Amount paid	$11,130.00	Receipt No.	286LI4AG

Project and Worst Case Discharge (WCD) Information

Lease: G35821	Area: MC	Block: 385	Project Name (If Applicable): Banjo/Cello		
Objective(s): ☒Oil	☐Gas	☐Sulphur	☐Salt	Onshore Support Base(s): Fourchon, LA	
Platform/Well Name: 002 (SS002)/ 004 (SS004)	Total Volume of WCD: 11,231			API Gravity: 26.0	
Distance to Closest Land (Miles): 55	Volume from uncontrolled blowout: 11,231				

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	S-8182			
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 Scheduled (Mark all that apply)

Proposed Activity	Start Date	End Date	No. of Days
Installation of ROW pipelines	09/01/2027	10/01/2027	30
Commence production	12/01/2027		

Description of Drilling Rig

	Jackup		Drillship		Caisson		Tension leg platform
	Gorilla Jackup		Platform rig		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 Structure

Description of ROW Pipelines

From (Facility/Area/Block)	To (Facility/Area/Block)	Diameter (Inches)	Length (Feet)
MC385	MC431	6”	30,183 ft

OCS PLAN INFORMATION FORM

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 (ST00BP00) [SS002]**					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.	**608174151900**			
Do you plan to use a subsea BOP or surface BOP on a floating facility to conduct your proposed activities?							YES	**X**	NO
WCD info	For wells, volume of uncontrolled blowout (Bbls/day): 11,231				For structures, volume of all storage and pipelines (Bbls):		API Gravity of fluid:		26.0

	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	**OCS-G 35821**		
Area Name	**Mississippi Canyon**		
Block No.	**385**		
Blockline Departures (in feet)	4077.42’ FEL		
	2897.19’ FSL		
Lambert X-Y Coordinates	X: 1,215,602.58		
	Y: 10,378,097.19		
Latitude/ Longitude	28° 35’ 28.743”		
	88° 19’ 26.890”		
Water Depth (Feet): 6,038			
Anchor Radius (if applicable) in 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 or Seafloor**

OCS PLAN INFORMATION FORM (CONTINUED)

Provide the following information for the well with the highest Worst Case Discharge volume:

Proposed Well/Structure Location								
Well or Structure Name/Number (If renaming well or structure, reference previous name): **004 (ST00BP01) [SS004]**					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.	**608174152001**			
Do you plan to use a subsea BOP or surface BOP on a floating facility to conduct your proposed activities?							YES	**X**	NO
WCD info	For wells, volume of uncontrolled blowout (Bbls/day): 11,231				For structures, volume of all storage and pipelines (Bbls):		API Gravity of fluid:		26.0

	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	**OCS-G 35821**		
Area Name	**Mississippi Canyon**		
Block No.	**385**		
Blockline Departures (in feet)	6,057.27’ FWL		
	4,250.30’ FSL		
Lambert X-Y Coordinates	X: 1,209,897.27		
	Y: 10,379,450.30		
Latitude/ Longitude	28° 35’ 41.513”		
	88° 20’ 31.066”		
Water Depth (Feet): 6038			
Anchor Radius (if applicable) in 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 or Seafloor

NOTES:

1. DP RIG *NOBLE STANLEY LAFOSSE* SPUDDED WELL ON NOV. 09, 2025.
2. FINAL SURFACE LOCATION REPRESENTS AFT(MAIN) ROTARY POSITION AT TIME OF SPUD IN.
3. OBSERVED ITRF COORDINATES (C-NAV, CURRENT REALIZATION AND EPOCH) TRANSFORMED TO NAD83(2011) VIA HTDP PROCESS EQUIVALENT TO "EPSG:7807, ITRF2008 TO NAD83(2011) (1)".
4. NAD83(2011) COORDINATES TRANSFORMED TO NAD27 VIA NADCON 2.1, EQUIVALENT TO "EPSG:1241, NAD27 TO NAD83 (1)" WHERE NAD83(2011) AND NAD83(86) ARE CONSIDERED FUNCTIONALLY THE SAME. GEODETIC COORDINATES COMPUTED FROM GRID XY COORDINATES.
5. THE NUMBER OF SIGNIFICANT FIGURES OF THE COORDINATE VALUES AND DISTANCES SHOWN HEREON IS FOR THE SAKE OF MAINTAINING COMPUTATIONAL PRECISION/INTER CONVERTIBILITY AND SHOULD NOT BE CONSTRUED AS AN EXPRESSION OF ABSOLUTE SPATIAL ACCURACY.

Y=10,391,040.00'

X=1,219,680.00'

N

NAD27
ZONE 16 NORTH
UTM GRID NORTH
EPSG: 32066

MC385

OCS-G-35821

MURPHY

MISSISSIPPI CANYON AREA

OCS-G-35821
Well No. 001

OCS-G-35821 Well 002 ST00BP00
FINAL SURFACE LOCATION

X=	1,215,602.58'
Y=	10,378,097.19'
Lat=	28°35'28.743"N
Lon=	88°19'26.890"W

NAD83

Lat=	28°35'29.610"N
Lon=	88°19'26.896"W

OCS-G-35821
Well No. 003

4,077.42'

2,897.19'

X=1,203,840.00'

Y=10,375,200.00'

PUBLIC INFORMATION

I, ROBERT M. FROST, HEREBY CERTIFY THAT THE ABOVE FINAL SURFACE LOCATION IS CORRECT.

STATE OF LOUISIANA
ROBERT M. FROST
LICENSE NO. 4573
PROFESSIONAL LAND SURVEYOR
NOT CERTIFIED UNLESS SIGNED AND SEALED

ROBERT M. FROST
License No. 4573
ROBERT M. FROST
PROFESSIONAL LAND SURVEYOR
LOUISIANA REGISTRATION No. 4573

MURPHY

OCS-G-35821 Well 002 ST00BP00

Block 385 - Mississippi Canyon Area

2,000 0 2,000

U.S. SURVEY FEET (1"=2,000')

PREPARED BY: OCEANEERING

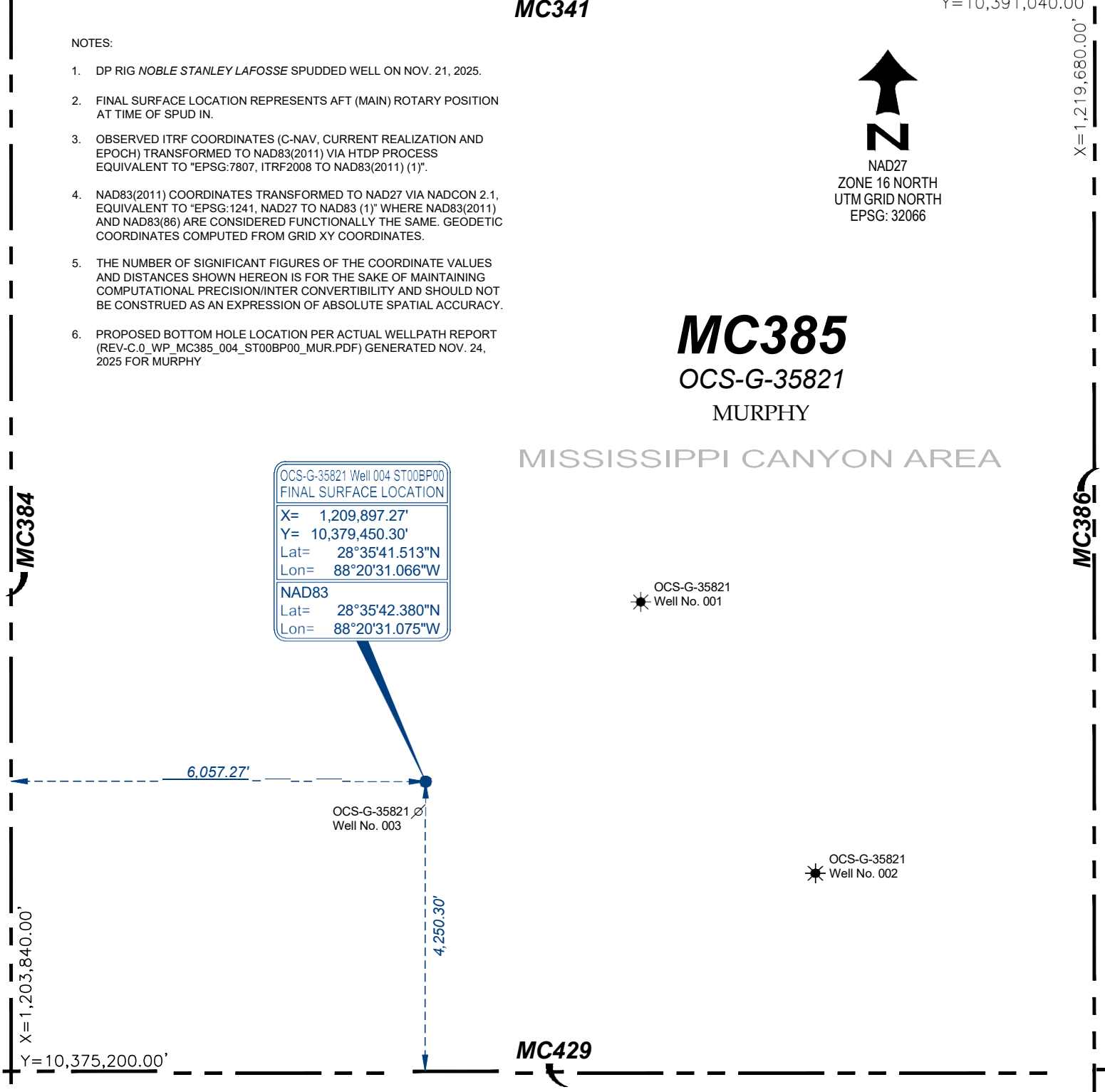
OCEANEERING INTERNATIONAL, INC.
202 STANTON STREET
BROUSSARD, LA 70518
(337) 210-0000
LA Reg. No. 747

JOB: 211345	DRW: M.Quattrochi	DATE: November 17, 2025	
CKD: Z. Smith	APP: R. Frost	SHEET 1 of 1	REV. 0
DOC: 211345-OII-DRW-ASD-012-01			

SIZE: 8.5" X 11" DATE: 11/17/2025 TIME: 13:12 FILENAME: M:\211345\MC385-2\01_OFFICE\MAPPING\211345-OII-DRW-ASD-012.DWG

NOTES:

1. DP RIG *NOBLE STANLEY LAFOSSE* SPUDDED WELL ON NOV. 21, 2025.
2. FINAL SURFACE LOCATION REPRESENTS AFT (MAIN) ROTARY POSITION AT TIME OF SPUD IN.
3. OBSERVED ITRF COORDINATES (C-NAV, CURRENT REALIZATION AND EPOCH) TRANSFORMED TO NAD83(2011) VIA HTDP PROCESS EQUIVALENT TO "EPSG:7807, ITRF2008 TO NAD83(2011) (1)".
4. NAD83(2011) COORDINATES TRANSFORMED TO NAD27 VIA NADCON 2.1, EQUIVALENT TO "EPSG:1241, NAD27 TO NAD83 (1)" WHERE NAD83(2011) AND NAD83(86) ARE CONSIDERED FUNCTIONALLY THE SAME. GEODETIC COORDINATES COMPUTED FROM GRID XY COORDINATES.
5. THE NUMBER OF SIGNIFICANT FIGURES OF THE COORDINATE VALUES AND DISTANCES SHOWN HEREON IS FOR THE SAKE OF MAINTAINING COMPUTATIONAL PRECISION/INTER CONVERTIBILITY AND SHOULD NOT BE CONSTRUED AS AN EXPRESSION OF ABSOLUTE SPATIAL ACCURACY.
6. PROPOSED BOTTOM HOLE LOCATION PER ACTUAL WELLPATH REPORT (REV-C.0_WP_MC385_004_ST00BP00_MUR.PDF) GENERATED NOV. 24, 2025 FOR MURPHY.



I, ROBERT M. FROST, HEREBY CERTIFY THAT THE ABOVE FINAL SURFACE LOCATION IS CORRECT.

STATE OF LOUISIANA
NOT CERTIFIED UNLESS SIGNED IN BLUE INK
ROBERT M. FROST
License No. 4573
PROFESSIONAL LAND SURVEYOR

Digitally signed by: Robert M. Frost, PLS
Date: 2025.11.24 17:07:14 -06'00'

ROBERT M. FROST
PROFESSIONAL LAND SURVEYOR
LOUISIANA REGISTRATION No. 4573

MURPHY

OCS-G-35821 Well 004 ST00BP00

Block 385 - Mississippi Canyon Area

2,000 0 2,000

U.S. SURVEY FEET (1"=2,000')

PREPARED BY: OCEANEERING

OCEANEERING INTERNATIONAL, INC.
202 STANTON STREET
BROUSSARD, LA 70518
(337) 210-0000
LA Reg. No. 747

JOB: 211345	DRW: M.Quattrochi	DATE: November 24, 2025	
CKD: E.Breaux	APP: R. Frost	SHEET 1 of 1	REV. 0
DOC: 211345-OII-DRW-ASD-013-02			

SIZE: 8.5" X 11" DATE: 11/24/2025 TIME: 17:01 FILENAME: M:\211345\MC385-4 (BANJO)\01_OFFICE\MAPPING\211345-OII-DRW-ASD-013.DWG

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Form Name: BOEM Development Operations Coordination Document or DPP

Application Name: BOEM Development/DOCD Plan - BD

Payment Information

Payment Type: Debit or credit card

Payment Amount: $11,130.00

Transaction Date: 10/06/2026 02:48:47 PM EDT

Payment Date: 10/06/2026

Region: Gulf of America

Contact: Kelli Pratt (832) 316-8430

Company Name/No: Murphy Exploration and Production - USA, 02647

Lease Number(s): 35821

Area-Block: Mississippi Canyon MC, 385

Type-Wells: Initial Plan, 2

Account Information

Cardholder Name: Kelli Pratt

Card Type: Master Card

Card Number: **********1951

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SECTION A
GENERAL INFORMATION

(a) Applications and Permits

Listed in the table below are additional permits/applications to be filed before operations can commence under this DOCD:

Application/Permit	*Issuing Agency*	*Status*
ROW Modification for (3) Jumpers and (2) Umbilicals	MMA	Not yet filed
APM for Completion	MMA	Not yet filed

(b) Drilling Fluids

Well No. 002, to be renamed SS002, was drilled and temporarily abandoned on January 4, 2026, and Well No. 004 to be renamed SS004 (ST00BP01), was drilled and temporarily abandoned on February 19, 2026; therefore, no drilling fluids will be used under this plan.

(c) Production

Proprietary Information.

(d) Chemical products

There is no drilling being proposed under this plan therefore there will be no chemical discharges. Murphy is, however including Table 2 "Wastes you will transport and/or dispose of onshore".

(e) New or unusual technology

Murphy does not plan to use new or unusual technology to carry out the proposed development and production activities under this plan.

(f) Bonds, oil spill financial responsibility, and well control statements

The bond requirements for the activities and facilities proposed in this DOCD are satisfied by *areawide development* bond, furnished and maintained according to 30 CFR 556, Subpart I; and if determined by the Regional Director, provide additional under 30 CFR 556.901(d).

Oil Spill Financial Responsibility

Murphy Exploration & Production Company – USA is of sound financial strength and reliability and has demonstrated oil spill financial responsibility (OSFR) according to 30 CFR 553 for the activities planned in this DOCD. In accordance with 30 CFR 553.29(a), Murphy is insured for *$150,000,000*. This financial reliability ensures that Murphy has the capability to deal with emergency situations such as blowout control, including relief well drilling and kill operations, if such an unlikely event should occur.

(g) Suspensions of production or operations

A Suspension of Production (SOP) application was submitted on August 19, 2026, on TIMS Web ID 583044273, to extend lease obligations beyond the current lease expiration date of February 19, 2027. If approved, the SOP would extend the lease term through January 31, 2028, or until production commences, whichever occurs first. Consistent with 30 CFR § 250.170, the SOP will automatically terminate upon the commencement of production.

The requested SOP is necessary to preserve the lease while Murphy advances two previously drilled wells, Well No. 002 (ST00BP00), API No. 608174151900, and Well No. 004 (ST00BP01), API No. 608174152001, toward near-term production. The suspension period will provide sufficient time to secure remaining regulatory approvals, complete well completion activities, finalize production-readiness work, and perform first-oil preparations necessary to initiate production safely and in compliance with MMA requirements.

(h) Blowout scenario

There is no drilling being proposed under this Initial DOCD; therefore, this section does not apply.

(i) Contact information

Name	Title	Phone Number	Email
Kelli Pratt	Offshore HSE Regulatory Specialist	(832) 326-8430	Kelli_Pratt@murphyoilcorp.com

TABLE 2
WASTES TO BE TRANSPORTED AND/OR DISPOSED OF ONSHORE

	Projected generated waste	Solid and Liquid Wastes transportation	Waste Disposal		
Type of Waste	**Composition**	**Transport Method**	**Name/Location of Facility**	**Amount**	**Disposal Method**
Will drilling occur? If yes, fill in the muds and cuttings					
Oil-based drilling fluid or mud	N/A	N/A	N/A	N/A	N/A
Synthetic-based drilling fluid or mud	Internal olefin based	Below deck storage tanks on offshore support vessels	MI Drilling Fluids in Fourchon, LA	600 bbls/well	Recycled
Cuttings wetted with Water-based fluid	Clay, sand, containing NaCl, barite and xanthan gum	N/A	Discoverer Deep Seas	280 bbls/well	At seabed after being circulated out of well.
Cuttings wetted with synthetic-based fluid	Claystone, sand, fluid containing internal olefin	N/A	Discoverer Deep Seas	1000 bbls/well	Discharged overboard after being treated to meet regulations.
Cuttings wetted with oil-based fluid	N/A	N/A	N/A	N/A	N/A
Will you produce hydrocarbons? If yes fill in for produced sand.					
Produced sand	N/A	N/A	N/A	N/A	N/A
Will you have additional wastes that are not permitted for discharge? If yes, fill in the appropriate rows.					
Trash and debris	trash and debris	storage bins on supply boat	Newpark Environmental in Fourchon, LA	500 cu. ft. total	landfill & recycled
Used oil	spent oil from machinery	USCG approved tote tanks	Newpark Environmental in Fourchon, LA	200 bbls/well	Recycled
Wash water	wash water with SBM residue	barged in cutting boxes or mud tanks	Newpark Environmental in Fourchon, LA	2000 bbls/well	disposal well injection or land farm
Chemical product wastes	spent treatment and/or damaged chemicals	barged in cutting boxes	Newpark Environmental in Fourchon, LA	15 bbls/well	Recycled
Displacement spacers	xanthan/biopolymer/solvent/ surfactant/barite	MPTs	Newpark Environmental in Fourchon, LA	1000 bbls/well	disposal well
SBM interface from displacement	Synthetic based mud/spacer	MPTs	Newpark Environmental in Fourchon, LA	100 bbls/well	disposal well
SBM displaced from well for completion operation	Synthetic based mud	storage tanks on supply boat	MI Swaco in Fourchon, LA	7000 bbls/well	reconditioned for later use
Completion brine	CaBr2/MEG	storage tanks on supply boat	MI Swaco in Fourchon, LA	2500 bbls/well	stored for later use
Will you be covered by an individual or general NPDES permit?					
NPDES ID: GMG29062K					

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

SECTION B
GEOLOGICAL AND GEOPHYSICAL INFORMATION

(a) Geological description
Proprietary Information.

(b) Structure contour Map(s)
Proprietary Information.

(c) Two dimensional (2-D) or three-dimensional (3-D) seismic lines
Proprietary Information.

(d) Geological cross-sections
Proprietary Information.

(e) Shallow hazards report
The proposed operations will be conducted from a previously approved surface location as provided for in Initial Exploration Plan (Control No. N-9970); therefore, a shallow hazards report is not being provided.

(f) Shallow hazards assessment
The proposed operations will be conducted from the Bureau of Ocean Energy Management previously approved surface location in Supplemental Exploration Plan Control No. S-8182 and Revised Exploration Plan Control R-7402; therefore, a shallow hazards assessment is not being provided.

(g) High resolution seismic lines
The proposed operations will be from a previously approved surface location in Supplemental Exploration Plan Control No. S-8182 and Revised Exploration Plan Control R-7402; therefore, annotated high-resolution survey lines are not being included in this plan.

(h) Stratigraphic column
Proprietary Information.

(i) Time-versus-depth chart
Proprietary Information.

(j) Geochemical information.
Proprietary Information.

(k) Future G&G activities
Proprietary Information.

SECTION C
HYDROGEN SULFIDE

(a) Concentration

Murphy does not anticipate encountering any H_2S during the proposed operations being conducted under this Initial DOCD.

(b) Classification

In accordance with Title 30 CFR 250.490, Mississippi Canyon Block 385 has been classified as H_2S absent. The basis for this determination is the evaluation of offset wells drilled to the stratigraphic equivalent of the reservoirs of the proposed development plan.

(c) H_2S contingency plan

H_2S is neither recorded in the project area, nor anticipated based on subsurface modeling (temperature, sulfate availability). Based on this, there is likely no need for contingencies beyond the use of H2S inhibitors in the mud system and the presence of standard emergency equipment. It is not anticipated that additional H_2S contingency plans will be required.

(d) Modeling report

No H_2S documented in the offset wells in and around the project area, nor in nearby producing fields. Expected temperatures are too low for two of four main sources of H2S (thermal cracking, thermochemical sulfate reduction), vertical migrations distance prevents a third (direct change), and inadequate sulfate is present for the fourth (bacterial sulfate reduction). Therefore, no further model reports are needed.

SECTION D
MINERAL RESOURCE CONSERVATION INFORMATION

(a) Technology and reservoir engineering practices and procedures
Proprietary Information.

(b) Technology and recovery practices and procedures
To ensure optimum recovery, Murphy will implement standard reservoir management practices to these wells. These include continuous reservoir surveillance using high resolution downhole gauge pressure and multiphase flowmeter at the wellhead, complemented by frequent well testing procedures at the separator. Regular performance reviews (ie PTA and performance) will be conducted to identify opportunities for drilling and operational adjustments to maximize hydrocarbon recovery in a safe and efficient manner.

(c) Reservoir Development
Proprietary Information.

SECTION E
BIOLOGICAL, PHYSICAL AND SOCIOECONOMIC INFORMATION

(a) Biological environment reports

The proposed operations will be conducted from the Bureau of Ocean Energy Management previously approved surface location in Supplemental Exploration Plan Control No. S-8182 and Revised Exploration Plan Control R-7402; therefore, this section is not being provided.

(b) Physical environment reports

The proposed operations will be conducted from the Bureau of Ocean Energy Management previously approved surface location in Supplemental Exploration Plan Control No. S-8182 and Revised Exploration Plan Control R-7402; therefore, this section is not being provided.

Topographic Features Statement

Activities proposed under this Initial DOCD will be conducted outside all Topographic Feature Protective Zones, therefore this section is not required.

Live bottoms (pinnacle trend) map

Mississippi Canyon Block 385 are not located within 100 feet of any live-bottom (low-relief) features.

Potentially sensitive biological features

Mississippi Canyon Block 385 are not located within 30 meters (100 feet) of potentially sensitive biological features.

(c) Socioeconomic study reports

There is no socioeconomic information related to the proposed development and production activities under this Initial DOCD.

SECTION F
WASTES AND DISCHARGES INFORMATION

(a) Projected generated wastes and (b) Projected Ocean discharges

Please see Table 2 "Wastes you will transport and/or dispose of onshore". There is no drilling being proposed under this plan therefore there will be no ocean discharges.

(c) National Pollutant Discharge Elimination System (NPDES) permit

All discharges will be in accordance with Murphy's Region 6 EPA NPDES permit No. GMG29062K.

(d) Modeling Report

Murphy did not conduct any modeling of discharges for the projected solid or liquid wastes; therefore, one is not included in this Initial DOCD.

(e) Projected cooling water intake

The String Music project will not add or alter the design of any new or existing cooling water intake structures.

(Existing) Seawater Lift Pumps 2 x 100% (No new intake equipment / structures)	Cooling Water Intake Structure	Daily Water Intake Rate	Water Intake Through-Screen Velocity	Percentage of Water Intake Used for Cooling Water	Mitigation Measures for Reducing Impingement and Entrainment of Aquatic Organisms	Biofouling Prevention Measures
PBE-7001	Column-supported submersible pump caisson	Operating 1250 GPM (1,800,000 gallons/day)	Designed for less 2,000,000 gallons per day to not be subject to 40 CFR 125.131, Subpart N requirements.	100% Exception: Can also be used for ballast water when needed.	Slotted Caisson	Basket strainers on the discharge side of the pump for protection of downstream coolers
PBE-7002	Column-supported submersible pump caisson	Operating 1250 GPM (1,800,000 gallons/day)	Designed for less 2,000,000 gallons per day to not be subject to 40 CFR 125.131, Subpart N requirements.	100% Exception: Can also be used for ballast water when needed.	Slotted Caisson	Basket strainers on the discharge side of the pump for protection of downstream coolers

SECTION G
AIR EMISSIONS

(a) Projected emissions

If there are no existing facilities or activities co-located with Murphy's currently proposed activities, therefore the Complex Total Emissions are the same as the Plan Emissions.

Enclosed is one set of emissions worksheets showing the emissions calculations for the Plan Emissions, and if different, a set of worksheets showing the emissions calculations for the Complex Total emissions.

This information calculated by: Kelli Pratt
(832) 316-84630
Kelli_Pratt@murphyoilcorp.com

COMPANY	Murphy Exploration & Production Company - USA
AREA	Mississippi Canyon
BLOCK	385
LEASE	OCS-G 35821
FACILITY	A-Delta House, Mississippi Canyon 254
WELL	002 (SS002) and 004 (SS004)
COMPANY CONTACT	Brenda Montalvo
TELEPHONE NO.	(281) 798-0481
REMARKS	Installation of ROW and commencement of production.

LEASE TERM PIPELINE CONSTRUCTION INFORMATION:		
YEAR	NUMBER OF PIPELINES	TOTAL NUMBER OF CONSTRUCTION DAYS
2027	1	5
2028		
2029		
2030		
2031		
2032		
2033		
2034		
2035		
2036		

AIR EMISSIONS COMPUTATION FACTORS

Fuel Usage Conversion Factors	Natural Gas Turbines				Natural Gas Engines		Diesel Recip. Engine		Diesel Turbines			
	SCF/hp-hr	9.524			SCF/hp-hr	7.143	GAL/hp-hr	0.0514	GAL/hp-hr	0.0514		

Equipment/Emission Factors	units	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	REF.	DATE
Natural Gas Turbine	g/hp-hr		0.0086	0.0086	0.0026	1.4515	0.0095	N/A	0.3719	N/A	AP42 3.1-1& 3.1-2a	4/00
RECIP. 2 Cycle Lean Natural Gas	g/hp-hr		0.1293	0.1293	0.0020	6.5998	0.4082	N/A	1.2009	N/A	AP42 3.2-1	7/00
RECIP. 4 Cycle Lean Natural Gas	g/hp-hr		0.0002	0.0002	0.0020	2.8814	0.4014	N/A	1.8949	N/A	AP42 3.2-2	7/00
RECIP. 4 Cycle Rich Natural Gas	g/hp-hr		0.0323	0.0323	0.0020	7.7224	0.1021	N/A	11.9408	N/A	AP42 3.2-3	7/00
Diesel Recip. < 600 hp	g/hp-hr	1	1	1	0.0279	14.1	1.04	N/A	3.03	N/A	AP42 3.3-1	10/96
Diesel Recip. > 600 hp	g/hp-hr	0.32	0.182	0.178	0.0055	10.9	0.29	N/A	2.5	N/A	AP42 3.4-1 & 3.4-2	10/96
Diesel Boiler	lbs/bbl	0.0840	0.0420	0.0105	0.0089	1.0080	0.0084	5.14E-05	0.2100	0.0336	AP42 1.3-6; Pb and NH3: WebFIRE (08/2018)	9/98 and 5/10
Diesel Turbine	g/hp-hr	0.0381	0.0137	0.0137	0.0048	2.7941	0.0013	4.45E-05	0.0105	N/A	AP42 3.1-1 & 3.1-2a	4/00
Dual Fuel Turbine	g/hp-hr	0.0381	0.0137	0.0137	0.0048	2.7941	0.0095	4.45E-05	0.3719	0.0000	AP42 3.1-1& 3.1-2a; AP42 3.1-1 & 3.1-2a	4/00
Vessels – Propulsion	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19
Vessels – Drilling Prime Engine, Auxiliary	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19
Vessels – Diesel Boiler	g/hp-hr	0.0466	0.1491	0.1417	0.4400	1.4914	0.0820	3.73E-05	0.1491	0.0003	USEPA 2017 NEI;TSP (units converted) refer to Diesel Boiler Reference	3/19
Vessels – Well Stimulation	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19
Natural Gas Heater/Boiler/Burner	lbs/MMscf	7.60	1.90	1.90	0.60	190.00	5.50	5.00E-04	84.00	3.2	AP42 1.4-1 & 1.4-2; Pb and NH3: WebFIRE (08/2018)	7/98 and 8/18
Combustion Flare (no smoke)	lbs/MMscf	0.00	0.00	0.00	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18
Combustion Flare (light smoke)	lbs/MMscf	2.10	2.10	2.10	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18
Combustion Flare (medium smoke)	lbs/MMscf	10.50	10.50	10.50	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18
Combustion Flare (heavy smoke)	lbs/MMscf	21.00	21.00	21.00	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18
Liquid Flaring	lbs/bbl	0.42	0.0966	0.0651	5.964	0.84	0.01428	5.14E-05	0.21	0.0336	AP42 1.3-1 through 1.3-3 and 1.3-5	5/10
Storage Tank	tons/yr/tank						4.300				2014 Gulfwide Inventory; Avg emiss (upper bound of 95% CI)	2017
Fugitives	lbs/hr/component						0.0005				API Study	12/93
Glycol Dehydrator	tons/yr/dehydrator						19.240				2011 Gulfwide Inventory; Avg emiss (upper bound of 95% CI)	2014
Cold Vent	tons/yr/vent						44.747				2014 Gulfwide Inventory; Avg emiss (upper bound of 95% CI)	2017
Waste Incinerator	lb/ton		15.0	15.0	2.5	2.0	N/A	N/A	20.0	N/A	AP 42 2.1-12	10/96
On-Ice – Loader	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009
On-Ice – Other Construction Equipment	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009
On-Ice – Other Survey Equipment	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009
On-Ice – Tractor	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009
On-Ice – Truck (for gravel island)	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009
On-Ice – Truck (for surveys)	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009
Man Camp - Operation (max people/day)	tons/person/day		0.0004	0.0004	0.0004	0.006	0.001	N/A	0.001	N/A	BOEM 2014-1001	2014
Vessels - Ice Management Diesel	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19
Vessels - Hovercraft Diesel	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19

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

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

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

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

AIR EMISSIONS CALCULATIONS - 1ST YEAR

COMPANY	AREA		BLOCK	LEASE	FACILITY	WELL					CONTACT	PHONE	REMARKS
Murphy Exploration & Production C	Mississippi Canyon		385	OCS-G 35821	use, Mississippi	002 (SS002) and 004 (SS004)					Brenda Montalvo	(281) 798-0481	Installation of ROW and commencement of production.

OPERATIONS	EQUIPMENT	EQUIPMENT ID	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR									ESTIMATED TONS								
	Diesel Engines		HP	GAL/HR	GAL/D																				
	Nat. Gas Engines		HP	SCF/HR	SCF/D																				
	Burners		MMBTU/HR	SCF/HR	SCF/D	HR/D	D/YR	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
DRILLING	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels - Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels – Drilling Prime Engine, Auxiliary		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Pipeline Laying Vessel - Diesel		27035	1390.84261	33380.22	24	5	19.07	11.51	11.16	0.28	456.96	13.14	0.00	71.67	0.13	1.14	0.69	0.67	0.02	27.42	0.79	0.00	4.30	0.01
	VESSELS - Pipeline Burying - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Heavy Lift Vessel/Derrick Barge Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	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	0.00	0.00	0.00	--	0.00	--
	VESSELS - Shuttle Tankers		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Well Stimulation		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Turbine		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	Diesel Turbine		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--
	Dual Fuel Turbine		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	RECIP. 2 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Rich Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	Diesel Boiler					0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Heater/Boiler/Burner		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.		**BPD**	**SCF/HR**	**COUNT**																				
	STORAGE TANK				0	0	0	--	--	--	--	--	#DIV/0!	--	--	--	--	--	--	--	--	0.00	--	--	--
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COLD VENT				0	0	0	--	--	--	--	--	#DIV/0!	--	--	--	--	--	--	--	--	0.00	--	--	--
	FUGITIVES				0	0	0	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	GLYCOL DEHYDRATOR				0	0	0	--	--	--	--	--	#DIV/0!	--	--	--	--	--	--	--	--	0.00	--	--	--
	WASTE INCINERATOR		0			0	0	--	0.00	0.00	0.00	0.00	--	--	0.00	--	--	0.00	0.00	0.00	0.00	--	--	0.00	--
DRILLING WELL TEST	Liquid Flaring		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
ALASKA-SPECIFIC SOURCES	**VESSELS**		**kW**			**HR/D**	**D/YR**																		
	VESSELS - Ice Management Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
2027	**Facility Total Emissions**							**19.07**	**11.51**	**11.16**	**0.28**	**456.96**	**#DIV/0!**	**0.00**	**71.67**	**0.13**	**1.14**	**0.69**	**0.67**	**0.02**	**27.42**	**0.79**	**0.00**	**4.30**	**0.01**
EXEMPTION CALCULATION	**DISTANCE FROM LAND IN MILES**																**1,831.50**			**1,831.50**	**1,831.50**	**1,831.50**		**49,172.32**	
	55.0																								
DRILLING	VESSELS- Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Tugs Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Support Diesel, Laying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Support Diesel, Burying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		13750	707.382501	16977.18	24	5	9.70	5.85	5.68	0.14	232.41	6.68	0.00	36.45	0.07	0.58	0.35	0.34	0.01	13.94	0.40	0.00	2.19	0.00
FACILITY INSTALLATION	VESSELS - Material Tug Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	VESSELS - Support Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALASKA-SPECIFIC SOURCES	**On-Ice Equipment**			**GAL/HR**	**GAL/D**																				
	Man Camp - Operation (maximum people per day)		**PEOPLE/DAY**																						
	VESSELS		**kW**			**HR/D**	**D/YR**																		
	On-Ice – Loader			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Construction Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Survey Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Tractor			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for gravel island)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for surveys)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	Man Camp - Operation		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	
	VESSELS - Hovercraft Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	**Non-Facility Total Emissions**							**9.70**	**5.85**	**5.68**	**0.14**	**232.41**	**6.68**	**0.00**	**36.45**	**0.07**	**0.58**	**0.35**	**0.34**	**0.01**	**13.94**	**0.40**	**0.00**	**2.19**	**0.00**

AIR EMISSIONS CALCULATIONS - 2ND YEAR

COMPANY	AREA		BLOCK	LEASE	FACILITY	WELL					CONTACT	PHONE	REMARKS											
Murphy Exploration & Production C	Mississippi Canyon		385	OCS-G 35821	use, Mississippi	002 (SS002) and 004 (SS004)					Brenda Montalvo	(281) 798-0481	Installation of ROW and commencement of production.											
OPERATIONS	EQUIPMENT	EQUIPMENT ID	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR									ESTIMATED TONS								
	Diesel Engines		HP	GAL/HR	GAL/D																				
	Nat. Gas Engines		HP	SCF/HR	SCF/D																				
	Burners		MMBTU/HR	SCF/HR	SCF/D	HR/D	D/YR	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
DRILLING	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels - Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels – Drilling Prime Engine, Auxiliary		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Pipeline Laying 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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Pipeline Burying - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Heavy Lift Vessel/Derrick Barge Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	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	0.00	0.00	0.00	--	0.00	--
	VESSELS - Shuttle Tankers		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Well Stimulation		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Turbine		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	Diesel Turbine		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--
	Dual Fuel Turbine		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	RECIP. 2 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Rich Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Heater/Boiler/Burner		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.		BPD	SCF/HR	COUNT																				
	STORAGE TANK				0	1	1	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COLD VENT				0	1	1	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	FUGITIVES				0	0	0	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	GLYCOL DEHYDRATOR				0	1	1	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	WASTE INCINERATOR		0			0	0	--	0.00	0.00	0.00	0.00	--	--	0.00	--	--	0.00	0.00	0.00	0.00			0.00	
DRILLING WELL TEST	Liquid Flaring		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
ALASKA-SPECIFIC SOURCES	VESSELS		kW			HR/D	D/YR																		
	VESSELS - Ice Management Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
2028	Facility Total Emissions							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES																1,831.50			1,831.50	1,831.50	1,831.50		49,172.32	
	55.0																								
DRILLING	VESSELS- Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Tugs Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Support Diesel, Laying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Support Diesel, Burying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Material Tug Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	VESSELS - Support Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALASKA-SPECIFIC SOURCES	On-Ice Equipment			GAL/HR	GAL/D																				
	Man Camp - Operation (maximum people per day)		PEOPLE/DAY																						
	VESSELS		kW			HR/D	D/YR																		
	On-Ice – Loader			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Construction Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Survey Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Tractor			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for gravel island)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for surveys)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	Man Camp - Operation		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	
	VESSELS - Hovercraft Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	Non-Facility Total Emissions							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AIR EMISSIONS CALCULATIONS - 3RD YEAR

COMPANY	AREA		BLOCK	LEASE	FACILITY	WELL					CONTACT	PHONE	REMARKS											
Murphy Exploration & Production C	Mississippi Canyon		385	OCS-G 35821	use, Mississippi	002 (SS002) and 004 (SS004)					Brenda Montalvo	(281) 798-0481	Installation of ROW and commencement of production.											
OPERATIONS	EQUIPMENT	EQUIPMENT ID	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR									ESTIMATED TONS								
	Diesel Engines		HP	GAL/HR	GAL/D																				
	Nat. Gas Engines		HP	SCF/HR	SCF/D																				
	Burners		MMBTU/HR	SCF/HR	SCF/D	HR/D	D/YR	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
DRILLING	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels - Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels – Drilling Prime Engine, Auxiliary		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Pipeline Laying 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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Pipeline Burying - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Heavy Lift Vessel/Derrick Barge Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	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	0.00	0.00	0.00	--	0.00	--
	VESSELS - Shuttle Tankers		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Well Stimulation		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Turbine		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	Diesel Turbine		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--
	Dual Fuel Turbine		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	RECIP. 2 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Rich Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Heater/Boiler/Burner		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.		BPD	SCF/HR	COUNT																				
	STORAGE TANK				0	1	1	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COLD VENT				0	1	1	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	FUGITIVES				0	0	0	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	GLYCOL DEHYDRATOR				0	1	1	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	WASTE INCINERATOR		0			0	0	--	0.00	0.00	0.00	0.00	--	--	0.00	--	--	0.00	0.00	0.00	0.00			0.00	
DRILLING WELL TEST	Liquid Flaring		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
ALASKA-SPECIFIC SOURCES	VESSELS		kW			HR/D	D/YR																		
	VESSELS - Ice Management Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
2029	Facility Total Emissions							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES																1,831.50			1,831.50	1,831.50	1,831.50		49,172.32	
	55.0																								
DRILLING	VESSELS- Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Tugs Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Support Diesel, Laying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Support Diesel, Burying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Material Tug Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	VESSELS - Support Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALASKA-SPECIFIC SOURCES	On-Ice Equipment			GAL/HR	GAL/D																				
	Man Camp - Operation (maximum people per day)		PEOPLE/DAY																						
	VESSELS		kW			HR/D	D/YR																		
	On-Ice – Loader			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Construction Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Survey Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Tractor			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for gravel island)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for surveys)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	Man Camp - Operation		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	
	VESSELS - Hovercraft Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2029	Non-Facility Total Emissions							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AIR EMISSIONS CALCULATIONS - 4TH YEAR

COMPANY	AREA		BLOCK	LEASE	FACILITY	WELL					CONTACT	PHONE	REMARKS
Murphy Exploration & Production C	Mississippi Canyon		385	OCS-G 35821	use, Mississippi	002 (SS002) and 004 (SS004)					Brenda Montalvo	(281) 798-0481	Installation of ROW and commencement of production.

OPERATIONS	EQUIPMENT	EQUIPMENT ID	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR									ESTIMATED TONS								
	Diesel Engines		HP	GAL/HR	GAL/D																				
	Nat. Gas Engines		HP	SCF/HR	SCF/D																				
	Burners		MMBTU/HR	SCF/HR	SCF/D	HR/D	D/YR	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
DRILLING	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels - Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels – Drilling Prime Engine, Auxiliary		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Pipeline Laying 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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Pipeline Burying - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Heavy Lift Vessel/Derrick Barge Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	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	0.00	0.00	0.00	--	0.00	--
	VESSELS - Shuttle Tankers		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Well Stimulation		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Turbine		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	Diesel Turbine		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--
	Dual Fuel Turbine		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	RECIP. 2 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Rich Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Heater/Boiler/Burner		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.		**BPD**	**SCF/HR**	**COUNT**																				
	STORAGE TANK				0	1	1	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COLD VENT				0	1	1	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	FUGITIVES				0	0	0	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	GLYCOL DEHYDRATOR				0	1	1	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	WASTE INCINERATOR		0			0	0	--	0.00	0.00	0.00	0.00	--	--	0.00	--	--	0.00	0.00	0.00	0.00			0.00	
DRILLING WELL TEST	Liquid Flaring		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
ALASKA-SPECIFIC SOURCES	**VESSELS**		**kW**			**HR/D**	**D/YR**																		
	VESSELS - Ice Management Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
2030	**Facility Total Emissions**							**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
EXEMPTION CALCULATION	**DISTANCE FROM LAND IN MILES**																**1,831.50**			**1,831.50**	**1,831.50**	**1,831.50**		**49,172.32**	
	55.0																								
DRILLING	VESSELS- Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Tugs Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Support Diesel, Laying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Support Diesel, Burying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Material Tug Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	VESSELS - Support Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALASKA-SPECIFIC SOURCES	**On-Ice Equipment**			**GAL/HR**	**GAL/D**																				
	Man Camp - Operation (maximum people per day)		**PEOPLE/DAY**																						
	VESSELS		**kW**			**HR/D**	**D/YR**																		
	On-Ice – Loader			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Construction Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Survey Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Tractor			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for gravel island)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for surveys)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	Man Camp - Operation		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	
	VESSELS - Hovercraft Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2030	**Non-Facility Total Emissions**							**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

AIR EMISSIONS CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	FACILITY	WELL	
Murphy Exploration & Production Company - USA	Mississippi Canyo	385	OCS-G 35821	A-Delta House, Mississ	002 (SS002) and 004 (SS004)	

Year	Facility Emitted Substance								
	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
2027	1.14	0.69	0.67	0.02	27.42	0.79	0.00	4.30	0.01
2028	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2029	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2030	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2031	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2032	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2033	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2034	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2035	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Allowable	1831.50			1831.50	1831.50	1831.50		49172.32	

COMPANY	Murphy Oil & Gas Company
AREA	Mississippi Canyon
BLOCK	254
LEASE	G30242
FACILITY	Delta House
WELL	
COMPANY CONTACT	Shilpi Desai
TELEPHONE NO.	713-822-1350
REMARKS	Storage tanks are controlled by the VRU and/or Flare. Assume 100% control. Any emissions will be accounted for at the metered flare. Glycol Still Column is controlled by the VRU and/or Flare. Assume 100% control. Any emissions will be accounted for at the metered flare. Factors are adjusted to account for these operations.

LEASE TERM PIPELINE CONSTRUCTION INFORMATION:		
YEAR	NUMBER OF PIPELINES	TOTAL NUMBER OF CONSTRUCTION DAYS
2026		
2027		
2028		
2029		
2030		
2031		
2032		
2033		
2034		
2035		

AIR EMISSIONS COMPUTATION FACTORS

Fuel Usage Conversion Factors	Natural Gas Turbines				Natural Gas Engines		Diesel Recip. Engine		Diesel Turbines			
	SCF/hp-hr	9.524			SCF/hp-hr	7.143	GAL/hp-hr	0.0514	GAL/hp-hr	0.0514		

Equipment/Emission Factors	units	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	REF.	DATE	Reference Links
Natural Gas Turbine	g/hp-hr		0.0086	0.0086	0.0026	1.4515	0.0095	N/A	0.3719	N/A	AP42 3.1-1& 3.1-2a	4/00	https://www3.epa.gov/ttnchie1/ap42/ch03/final/c03s01.pdf
RECIP. 2 Cycle Lean Natural Gas	g/hp-hr		0.1293	0.1293	0.0020	6.5998	0.4082	N/A	1.2009	N/A	AP42 3.2-1	7/00	https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s02.pdf
RECIP. 4 Cycle Lean Natural Gas	g/hp-hr		0.0002	0.0002	0.0020	2.8814	0.4014	N/A	1.8949	N/A	AP42 3.2-2	7/00	https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s02.pdf
RECIP. 4 Cycle Rich Natural Gas	g/hp-hr		0.0323	0.0323	0.0020	7.7224	0.1021	N/A	11.9408	N/A	AP42 3.2-3	7/00	https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s02.pdf
Diesel Recip. < 600 hp	g/hp-hr	1	1	1	0.0279	14.1	1.04	N/A	3.03	N/A	AP42 3.3-1	10/96	https://www3.epa.gov/ttnchie1/ap42/ch03/final/c03s03.pdf
Diesel Recip. > 600 hp	g/hp-hr	0.32	0.182	0.178	0.0055	10.9	0.29	N/A	2.5	N/A	AP42 3.4-1 & 3.4-2	10/96	https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s04.pdf
Diesel Boiler	lbs/bbl	0.0840	0.0420	0.0105	0.0089	1.0080	0.0084	5.14E-05	0.2100	0.0336	AP42 1.3-6; Pb and NH3: WebFIRE (08/2018)	9/98 and 5/10	https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s03.pdf https://cfpub.epa.gov/webfire/
Diesel Turbine	g/hp-hr	0.0381	0.0137	0.0137	0.0048	2.7941	0.0013	4.45E-05	0.0105	N/A	AP42 3.1-1 & 3.1-2a	4/00	https://www3.epa.gov/ttnchie1/ap42/ch03/final/c03s01.pdf
Dual Fuel Turbine	g/hp-hr	0.0381	0.0137	0.0137	0.0048	2.7941	0.0095	4.45E-05	0.3719	0.0000	AP42 3.1-1& 3.1-2a; AP42 3.1-1 & 3.1-2a	4/00	https://cfpub.epa.gov/webfire/
Vessels – Propulsion	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19	
Vessels – Drilling Prime Engine, Auxiliary	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19	https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data
Vessels – Diesel Boiler	g/hp-hr	0.0466	0.1491	0.1417	0.4400	1.4914	0.0820	3.73E-05	0.1491	0.0003	USEPA 2017 NEI;TSP (units converted) refer to Diesel Boiler Reference	3/19	
Vessels – Well Stimulation	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19	
Natural Gas Heater/Boiler/Burner	lbs/MMscf	7.60	1.90	1.90	0.60	190.00	5.50	5.00E-04	84.00	3.2	AP42 1.4-1 & 1.4-2; Pb and NH3: WebFIRE (08/2018)	7/98 and 8/18	https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s04.pdf https://cfpub.epa.gov/webfire/
Combustion Flare (no smoke)	lbs/MMscf	0.00	0.00	0.00	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18	
Combustion Flare (light smoke)	lbs/MMscf	2.10	2.10	2.10	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18	https://www3.epa.gov/ttn/chief/ap42/ch13/final/C13S05_02-05-18.pdf
Combustion Flare (medium smoke)	lbs/MMscf	10.50	10.50	10.50	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18	
Combustion Flare (heavy smoke)	lbs/MMscf	21.00	21.00	21.00	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18	
Liquid Flaring	lbs/bbl	0.42	0.0966	0.0651	5.964	0.84	0.01428	5.14E-05	0.21	0.0336	AP42 1.3-1 through 1.3-3 and 1.3-5	5/10	https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s03.pdf
Storage Tank	tons/yr/tank						0.000				2014 Gulfwide Inventory; Avg emiss (upper bound of 95% CI)	2017	https://www.boem.gov/environment/environmental-studies/2014-gulfwide-emission-inventory
Fugitives	lbs/hr/component						0.0005				API Study	12/93	https://www.apiwebstore.org/publications/item.cgi?9879d38a-8bc0-4abe-bb5c-9b623870125d
Glycol Dehydrator	tons/yr/dehydrator						0.000				2011 Gulfwide Inventory; Avg emiss (upper bound of 95% CI)	2014	https://www.boem.gov/environment/environmental-studies/2011-gulfwide-emission-inventory
Cold Vent	tons/yr/vent						44.747				2014 Gulfwide Inventory; Avg emiss (upper bound of 95% CI)	2017	https://www.boem.gov/environment/environmental-studies/2014-gulfwide-emission-inventory
Waste Incinerator	lb/ton		15.0	15.0	2.5	2.0	N/A	N/A	20.0	N/A	AP 42 2.1-12	10/96	https://www3.epa.gov/ttnchie1/ap42/ch02/final/c02s01.pdf
On-Ice – Loader	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	
On-Ice – Other Construction Equipment	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	
On-Ice – Other Survey Equipment	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	
On-Ice – Tractor	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	https://www.epa.gov/moves/nonroad2008a-installation-and-updates
On-Ice – Truck (for gravel island)	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	
On-Ice – Truck (for surveys)	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	
Man Camp - Operation (max people/day)	tons/person/day		0.0004	0.0004	0.0004	0.006	0.001	N/A	0.001	N/A	BOEM 2014-1001	2014	https://www.boem.gov/sites/default/files/uploadedFiles/BOEM/BOEM_Newsroom/Library/Publications/2014-1001.pdf
Vessels - Ice Management Diesel	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19	inventory-nei-data
Vessels - Hovercraft Diesel	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19	inventory-nei-data

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

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

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

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

AIR EMISSIONS CALCULATIONS - 2ND YEAR

COMPANY	AREA		BLOCK	LEASE	FACILITY	WELL					CONTACT	PHONE	REMARKS
Murphy Oil & Gas Company	Mississippi Canyon		254	G30242	Delta House						Shilpi Desai	713-822-1350	Storage tanks are controlled by the VRU and/or Flare. Assume 100% control. Any emissions will be accounted for at the metered flare.Glycol Still Column is controlled by the VRU and/or f

OPERATIONS	EQUIPMENT	EQUIPMENT ID	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR								ESTIMATED TONS								
	Diesel Engines		HP	GAL/HR	GAL/D																			
	Nat. Gas Engines		HP	SCF/HR	SCF/D																			
	Burners		MMBTU/HR	SCF/HR	SCF/D	HR/D	D/YR	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
DRILLING	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels - Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels – Drilling Prime Engine, Auxiliary		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Pipeline Laying Vessel - Diesel		27035	1390.8426	33380.22	24	5	19.07	11.51	11.16	0.28	456.96	13.14	0.00	71.67	0.13	1.14	0.69	0.67	0.02	27.42	0.79	0.00	4.30	0.01
	VESSELS - Pipeline Burying - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Heavy Lift Vessel/Derrick Barge Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	RECIP.<600hp Diesel	CR-01	580	29.83868	716.13	6	365	1.28	1.28	1.28	0.04	18.03	1.33	--	3.87	--	1.40	1.40	1.40	0.04	19.74	1.46	--	4.24	--
	RECIP.<600hp Diesel	CR-02	580	29.83868	716.13	6	365	1.28	1.28	1.28	0.04	18.03	1.33	--	3.87	--	1.40	1.40	1.40	0.04	19.74	1.46	--	4.24	--
	RECIP.<600hp Diesel	DE-02	96	4.938816	118.53	12	365	0.21	0.21	0.21	0.01	2.98	0.22	--	0.64	--	0.46	0.46	0.46	0.01	6.54	0.48	--	1.40	--
	RECIP.<600hp Diesel	LBE-01	36	1.852056	44.45	1	52	0.08	0.08	0.08	0.00	1.12	0.08	--	0.24	--	0.00	0.00	0.00	0.00	0.03	0.00	--	0.01	--
	RECIP.<600hp Diesel	LBE-02	36	1.852056	44.45	1	52	0.08	0.08	0.08	0.00	1.12	0.08	--	0.24	--	0.00	0.00	0.00	0.00	0.03	0.00	--	0.01	--
	RECIP.>600hp Diesel	DE-01	1680	86.42928	2074.30	12	365	1.19	0.67	0.66	0.02	40.37	1.07	--	9.26	--	2.60	1.48	1.44	0.04	88.41	2.35	--	20.28	--
	RECIP.>600hp Diesel	DP-01	834	42.905964	1029.74	1	52	0.59	0.33	0.33	0.01	20.04	0.53	--	4.60	--	0.02	0.01	0.01	0.00	0.52	0.01	--	0.12	--
	RECIP.>600hp Diesel	DP-02	834	42.905964	1029.74	1	52	0.59	0.33	0.33	0.01	20.04	0.53	--	4.60	--	0.02	0.01	0.01	0.00	0.52	0.01	--	0.12	--
	VESSELS - Shuttle Tankers		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Well Stimulation		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Turbine	CE-01	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	CE-02	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	ZAN-9000-NG	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	ZAN-9100	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	ZAN-9200	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Diesel Turbine	ZAN-9000-D	7700	396.1342	9507.22	12	365	0.65	0.23	0.23	0.08	47.43	0.02	0.00	0.18	--	1.42	0.51	0.51	0.18	103.88	0.05	0.00	0.39	--
	Dual Fuel Turbine		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	RECIP. 2 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Rich Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Heater/Boiler/Burner		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.		**BPD**	**SCF/HR**	**COUNT**																				
	STORAGE TANK	OST-01			1	24	365	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke	FL-01, FL-02		20000		24	365	0.04	0.04	0.04	0.01	1.43	0.72	--	6.51	--	0.18	0.18	0.18	0.05	6.25	3.15	--	28.51	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COLD VENT				0	1	1	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	--	0.00	--	--	--
	FUGITIVES	FE-01			9097	24	365	--	--	--	--	--	4.55	--	--	--	--	--	--	--	--	--	19.92	--	--	--
	GLYCOL DEHYDRATOR	GV-01			1	24	365	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	--	0.00	--	--	--
	WASTE INCINERATOR		0			0	0	--	0.00	0.00	0.00	0.00	--	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00		0.00	
DRILLING WELL TEST	Liquid Flaring		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
ALASKA-SPECIFIC SOURCES	**VESSELS**		**kW**			**HR/D**	**D/YR**																		
	VESSELS - Ice Management Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
2027	**Facility Total Emissions**							**25.05**	**16.78**	**16.41**	**0.71**	**750.76**	**24.42**	**0.00**	**137.26**	**0.13**	**8.64**	**9.35**	**9.29**	**1.34**	**812.70**	**33.23**	**0.00**	**201.90**	**0.01**
EXEMPTION CALCULATION	**DISTANCE FROM LAND IN MILES**																**1,998.00**			**1,998.00**	**1,998.00**	**1,998.00**		**52,109.04**	
	60.0																								
DRILLING	VESSELS- Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Tugs Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Support Diesel, Laying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Support Diesel, Burying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		13750	707.3825	16977.18	24	5	9.70	5.85	5.68	0.14	232.41	6.68	0.00	36.45	0.07	0.58	0.35	0.34	0.01	13.94	0.40	0.00	2.19	0.00
FACILITY INSTALLATION	VESSELS - Material Tug Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	VESSELS - Support Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALASKA-SPECIFIC SOURCES	**On-Ice Equipment**			**GAL/HR**	**GAL/D**																				
	Man Camp - Operation (maximum people per day)		**PEOPLE/DAY**																						
	VESSELS		**kW**			**HR/D**	**D/YR**																		
	On-Ice – Loader			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Construction Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Survey Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Tractor			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for gravel island)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for surveys)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	Man Camp - Operation		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	
	VESSELS - Hovercraft Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	**Non-Facility Total Emissions**							**9.70**	**5.85**	**5.68**	**0.14**	**232.41**	**6.68**	**0.00**	**36.45**	**0.07**	**0.58**	**0.35**	**0.34**	**0.01**	**13.94**	**0.40**	**0.00**	**2.19**	**0.00**

AIR EMISSIONS CALCULATIONS - 3RD YEAR

COMPANY	AREA		BLOCK	LEASE	FACILITY	WELL					CONTACT	PHONE	REMARKS
Murphy Oil & Gas Company	Mississippi Canyon		254	G30242	Delta House						Shilpi Desai	713-822-1350	Storage tanks are controlled by the VRU and/or Flare. Assume 100% control. Any emissions will be accounted for at the metered flare.Glycol Still Column is controlled by the VRU and/or f

OPERATIONS	EQUIPMENT	EQUIPMENT ID	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR								ESTIMATED TONS								
	Diesel Engines		HP	GAL/HR	GAL/D																			
	Nat. Gas Engines		HP	SCF/HR	SCF/D																			
	Burners		MMBTU/HR	SCF/HR	SCF/D	HR/D	D/YR	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
DRILLING	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels - Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels – Drilling Prime Engine, Auxiliary		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Pipeline Laying 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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Pipeline Burying - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Heavy Lift Vessel/Derrick Barge Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	RECIP.<600hp Diesel	CR-01	580	29.83868	716.13	6	365	1.28	1.28	1.28	0.04	18.03	1.33	--	3.87	--	1.40	1.40	1.40	0.04	19.74	1.46	--	4.24	--
	RECIP.<600hp Diesel	CR-02	580	29.83868	716.13	6	365	1.28	1.28	1.28	0.04	18.03	1.33	--	3.87	--	1.40	1.40	1.40	0.04	19.74	1.46	--	4.24	--
	RECIP.<600hp Diesel	DE-02	96	4.938816	118.53	12	365	0.21	0.21	0.21	0.01	2.98	0.22	--	0.64	--	0.46	0.46	0.46	0.01	6.54	0.48	--	1.40	--
	RECIP.<600hp Diesel	LBE-01	36	1.852056	44.45	1	52	0.08	0.08	0.08	0.00	1.12	0.08	--	0.24	--	0.00	0.00	0.00	0.00	0.03	0.00	--	0.01	--
	RECIP.<600hp Diesel	LBE-02	36	1.852056	44.45	1	52	0.08	0.08	0.08	0.00	1.12	0.08	--	0.24	--	0.00	0.00	0.00	0.00	0.03	0.00	--	0.01	--
	RECIP.>600hp Diesel	DE-01	1680	86.42928	2074.30	12	365	1.19	0.67	0.66	0.02	40.37	1.07	--	9.26	--	2.60	1.48	1.44	0.04	88.41	2.35	--	20.28	--
	RECIP.>600hp Diesel	DP-01	834	42.905964	1029.74	1	52	0.59	0.33	0.33	0.01	20.04	0.53	--	4.60	--	0.02	0.01	0.01	0.00	0.52	0.01	--	0.12	--
	RECIP.>600hp Diesel	DP-02	834	42.905964	1029.74	1	52	0.59	0.33	0.33	0.01	20.04	0.53	--	4.60	--	0.02	0.01	0.01	0.00	0.52	0.01	--	0.12	--
	VESSELS - Shuttle Tankers		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Well Stimulation		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Turbine	CE-01	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	CE-02	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	ZAN-9000-NG	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	ZAN-9100	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	ZAN-9200	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Diesel Turbine	ZAN-9000-D	7700	396.1342	9507.22	12	365	0.65	0.23	0.23	0.08	47.43	0.02	0.00	0.18	--	1.42	0.51	0.51	0.18	103.88	0.05	0.00	0.39	--
	Dual Fuel Turbine		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	RECIP. 2 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Rich Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Heater/Boiler/Burner		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.		**BPD**	**SCF/HR**	**COUNT**																				
	STORAGE TANK	OST-01			1	24	365	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke	FL-01, FL-02		20000		24	365	0.04	0.04	0.04	0.01	1.43	0.72	--	6.51	--	0.18	0.18	0.18	0.05	6.25	3.15	--	28.51	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COLD VENT				0	1	1	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	FUGITIVES	FE-01			9097	24	365	--	--	--	--	--	4.55	--	--	--	--	--	--	--	--	19.92	--	--	--
	GLYCOL DEHYDRATOR	GV-01			1	24	365	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	WASTE INCINERATOR		0			0	0	--	0.00	0.00	0.00	0.00	--	--	0.00	--	--	0.00	0.00	0.00	0.00			0.00	
DRILLING WELL TEST	Liquid Flaring		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
ALASKA-SPECIFIC SOURCES	**VESSELS**		**kW**			**HR/D**	**D/YR**																		
	VESSELS - Ice Management Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
2028	**Facility Total Emissions**							**5.98**	**5.28**	**5.25**	**0.43**	**293.79**	**11.28**	**0.00**	**65.58**	**0.00**	**7.49**	**8.66**	**8.62**	**1.32**	**785.28**	**32.44**	**0.00**	**197.60**	**0.00**
EXEMPTION CALCULATION	**DISTANCE FROM LAND IN MILES**																**1,998.00**			**1,998.00**	**1,998.00**	**1,998.00**		**52,109.04**	
	60.0																								
DRILLING	VESSELS- Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Tugs Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Support Diesel, Laying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Support Diesel, Burying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Material Tug Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	VESSELS - Support Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALASKA-SPECIFIC SOURCES	**On-Ice Equipment**			**GAL/HR**	**GAL/D**																				
	Man Camp - Operation (maximum people per day)		**PEOPLE/DAY**																						
	VESSELS		**kW**			**HR/D**	**D/YR**																		
	On-Ice – Loader			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Construction Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Survey Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Tractor			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for gravel island)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for surveys)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	Man Camp - Operation		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	
	VESSELS - Hovercraft Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	**Non-Facility Total Emissions**							**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

AIR EMISSIONS CALCULATIONS - 4TH YEAR

COMPANY	AREA		BLOCK	LEASE	FACILITY	WELL					CONTACT	PHONE	REMARKS
Murphy Oil & Gas Company	Mississippi Canyon		254	G30242	Delta House						Shilpi Desai	713-822-1350	Storage tanks are controlled by the VRU and/or Flare. Assume 100% control. Any emissions will be accounted for at the metered flare.Glycol Still Column is controlled by the VRU and/or f

OPERATIONS	EQUIPMENT	EQUIPMENT ID	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR								ESTIMATED TONS								
	Diesel Engines		HP	GAL/HR	GAL/D																			
	Nat. Gas Engines		HP	SCF/HR	SCF/D																			
	Burners		MMBTU/HR	SCF/HR	SCF/D	HR/D	D/YR	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
DRILLING	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels - Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels – Drilling Prime Engine, Auxiliary		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Pipeline Laying 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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Pipeline Burying - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Heavy Lift Vessel/Derrick Barge Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	RECIP.<600hp Diesel	CR-01	580	29.83868	716.13	6	365	1.28	1.28	1.28	0.04	18.03	1.33	--	3.87	--	1.40	1.40	1.40	0.04	19.74	1.46	--	4.24	--
	RECIP.<600hp Diesel	CR-02	580	29.83868	716.13	6	365	1.28	1.28	1.28	0.04	18.03	1.33	--	3.87	--	1.40	1.40	1.40	0.04	19.74	1.46	--	4.24	--
	RECIP.<600hp Diesel	DE-02	96	4.938816	118.53	12	365	0.21	0.21	0.21	0.01	2.98	0.22	--	0.64	--	0.46	0.46	0.46	0.01	6.54	0.48	--	1.40	--
	RECIP.<600hp Diesel	LBE-01	36	1.852056	44.45	1	52	0.08	0.08	0.08	0.00	1.12	0.08	--	0.24	--	0.00	0.00	0.00	0.00	0.03	0.00	--	0.01	--
	RECIP.<600hp Diesel	LBE-02	36	1.852056	44.45	1	52	0.08	0.08	0.08	0.00	1.12	0.08	--	0.24	--	0.00	0.00	0.00	0.00	0.03	0.00	--	0.01	--
	RECIP.>600hp Diesel	DE-01	1680	86.42928	2074.30	12	365	1.19	0.67	0.66	0.02	40.37	1.07	--	9.26	--	2.60	1.48	1.44	0.04	88.41	2.35	--	20.28	--
	RECIP.>600hp Diesel	DP-01	834	42.905964	1029.74	1	52	0.59	0.33	0.33	0.01	20.04	0.53	--	4.60	--	0.02	0.01	0.01	0.00	0.52	0.01	--	0.12	--
	RECIP.>600hp Diesel	DP-02	834	42.905964	1029.74	1	52	0.59	0.33	0.33	0.01	20.04	0.53	--	4.60	--	0.02	0.01	0.01	0.00	0.52	0.01	--	0.12	--
	VESSELS - Shuttle Tankers		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Well Stimulation		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Turbine	CE-01	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	CE-02	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	ZAN-9000-NG	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	ZAN-9100	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	ZAN-9200	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Diesel Turbine	ZAN-9000-D	7700	396.1342	9507.22	12	365	0.65	0.23	0.23	0.08	47.43	0.02	0.00	0.18	--	1.42	0.51	0.51	0.18	103.88	0.05	0.00	0.39	--
	Dual Fuel Turbine		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	RECIP. 2 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Rich Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Heater/Boiler/Burner		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.		**BPD**	**SCF/HR**	**COUNT**																				
	STORAGE TANK	OST-01			1	24	365	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke	FL-01, FL-02		20000		24	365	0.04	0.04	0.04	0.01	1.43	0.72	--	6.51	--	0.18	0.18	0.18	0.05	6.25	3.15	--	28.51	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COLD VENT				0	1	1	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	FUGITIVES	FE-01			9097	24	365	--	--	--	--	--	4.55	--	--	--	--	--	--	--	--	19.92	--	--	--
	GLYCOL DEHYDRATOR	GV-01			1	24	365	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	WASTE INCINERATOR		0			0	0	--	0.00	0.00	0.00	0.00	--	--	0.00	--	--	0.00	0.00	0.00	0.00			0.00	
DRILLING WELL TEST	Liquid Flaring		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
ALASKA-SPECIFIC SOURCES	**VESSELS**		**kW**			**HR/D**	**D/YR**																		
	VESSELS - Ice Management Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
2029	**Facility Total Emissions**							**5.98**	**5.28**	**5.25**	**0.43**	**293.79**	**11.28**	**0.00**	**65.58**	**0.00**	**7.49**	**8.66**	**8.62**	**1.32**	**785.28**	**32.44**	**0.00**	**197.60**	**0.00**
EXEMPTION CALCULATION	**DISTANCE FROM LAND IN MILES**																**1,998.00**			**1,998.00**	**1,998.00**	**1,998.00**		**52,109.04**	
	60.0																								
DRILLING	VESSELS- Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Tugs Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Support Diesel, Laying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Support Diesel, Burying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Material Tug Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	VESSELS - Support Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALASKA-SPECIFIC SOURCES	**On-Ice Equipment**			**GAL/HR**	**GAL/D**																				
	Man Camp - Operation (maximum people per day)		**PEOPLE/DAY**																						
	VESSELS		**kW**			**HR/D**	**D/YR**																		
	On-Ice – Loader			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Construction Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Survey Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Tractor			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for gravel island)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for surveys)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	Man Camp - Operation		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	
	VESSELS - Hovercraft Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2029	**Non-Facility Total Emissions**							**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

AIR EMISSIONS CALCULATIONS - 5TH YEAR

COMPANY	AREA		BLOCK	LEASE	FACILITY	WELL					CONTACT	PHONE	REMARKS
Murphy Oil & Gas Company	Mississippi Canyon		254	G30242	Delta House						Shilpi Desai	713-822-1350	Storage tanks are controlled by the VRU and/or Flare. Assume 100% control. Any emissions will be accounted for at the metered flare.Glycol Still Column is controlled by the VRU and/or f

OPERATIONS	EQUIPMENT	EQUIPMENT ID	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR									ESTIMATED TONS								
	Diesel Engines		HP	GAL/HR	GAL/D																				
	Nat. Gas Engines		HP	SCF/HR	SCF/D																				
	Burners		MMBTU/HR	SCF/HR	SCF/D	HR/D	D/YR	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
DRILLING	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels - Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels – Drilling Prime Engine, Auxiliary		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Pipeline Laying 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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Pipeline Burying - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Heavy Lift Vessel/Derrick Barge Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	RECIP.<600hp Diesel	CR-01	580	29.83868	716.13	6	365	1.28	1.28	1.28	0.04	18.03	1.33	--	3.87	--	1.40	1.40	1.40	0.04	19.74	1.46	--	4.24	--
	RECIP.<600hp Diesel	CR-02	580	29.83868	716.13	6	365	1.28	1.28	1.28	0.04	18.03	1.33	--	3.87	--	1.40	1.40	1.40	0.04	19.74	1.46	--	4.24	--
	RECIP.<600hp Diesel	DE-02	96	4.938816	118.53	12	365	0.21	0.21	0.21	0.01	2.98	0.22	--	0.64	--	0.46	0.46	0.46	0.01	6.54	0.48	--	1.40	--
	RECIP.<600hp Diesel	LBE-01	36	1.852056	44.45	1	52	0.08	0.08	0.08	0.00	1.12	0.08	--	0.24	--	0.00	0.00	0.00	0.00	0.03	0.00	--	0.01	--
	RECIP.<600hp Diesel	LBE-02	36	1.852056	44.45	1	52	0.08	0.08	0.08	0.00	1.12	0.08	--	0.24	--	0.00	0.00	0.00	0.00	0.03	0.00	--	0.01	--
	RECIP.>600hp Diesel	DE-01	1680	86.42928	2074.30	12	365	1.19	0.67	0.66	0.02	40.37	1.07	--	9.26	--	2.60	1.48	1.44	0.04	88.41	2.35	--	20.28	--
	RECIP.>600hp Diesel	DP-01	834	42.905964	1029.74	1	52	0.59	0.33	0.33	0.01	20.04	0.53	--	4.60	--	0.02	0.01	0.01	0.00	0.52	0.01	--	0.12	--
	RECIP.>600hp Diesel	DP-02	834	42.905964	1029.74	1	52	0.59	0.33	0.33	0.01	20.04	0.53	--	4.60	--	0.02	0.01	0.01	0.00	0.52	0.01	--	0.12	--
	VESSELS - Shuttle Tankers		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Well Stimulation		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Turbine	CE-01	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	CE-02	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	ZAN-9000-NG	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	ZAN-9100	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Natural Gas Turbine	ZAN-9200	7700	73333.333	1760000.00	24	365	--	0.15	0.15	0.04	24.64	0.16	--	6.31	--	--	0.64	0.64	0.19	107.92	0.71	--	27.66	--
	Diesel Turbine	ZAN-9000-D	7700	396.1342	9507.22	12	365	0.65	0.23	0.23	0.08	47.43	0.02	0.00	0.18	--	1.42	0.51	0.51	0.18	103.88	0.05	0.00	0.39	--
	Dual Fuel Turbine		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	RECIP. 2 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Rich Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Heater/Boiler/Burner		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.		**BPD**	**SCF/HR**	**COUNT**																				
	STORAGE TANK	OST-01			1	24	365	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke	FL-01, FL-02		20000		24	365	0.04	0.04	0.04	0.01	1.43	0.72	--	6.51	--	0.18	0.18	0.18	0.05	6.25	3.15	--	28.51	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COLD VENT				0	1	1	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	FUGITIVES	FE-01			9097	24	365	--	--	--	--	--	4.55	--	--	--	--	--	--	--	--	19.92	--	--	--
	GLYCOL DEHYDRATOR	GV-01			1	24	365	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	0.00	--	--	--
	WASTE INCINERATOR		0			0	0	--	0.00	0.00	0.00	0.00	--	--	0.00	--	--	0.00	0.00	0.00	0.00			0.00	
DRILLING WELL TEST	Liquid Flaring		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
ALASKA-SPECIFIC SOURCES	**VESSELS**		**kW**			**HR/D**	**D/YR**																		
	VESSELS - Ice Management Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
2030	**Facility Total Emissions**							**5.98**	**5.28**	**5.25**	**0.43**	**293.79**	**11.28**	**0.00**	**65.58**	**0.00**	**7.49**	**8.66**	**8.62**	**1.32**	**785.28**	**32.44**	**0.00**	**197.60**	**0.00**
EXEMPTION CALCULATION	**DISTANCE FROM LAND IN MILES**																**1,998.00**			**1,998.00**	**1,998.00**	**1,998.00**		**52,109.04**	
	60.0																								
DRILLING	VESSELS- Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Tugs Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Support Diesel, Laying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Support Diesel, Burying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Material Tug Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	VESSELS - Support Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALASKA-SPECIFIC SOURCES	**On-Ice Equipment**			**GAL/HR**	**GAL/D**																				
	Man Camp - Operation (maximum people per day)		**PEOPLE/DAY**																						
	VESSELS		**kW**			**HR/D**	**D/YR**																		
	On-Ice – Loader			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Construction Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Survey Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Tractor			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for gravel island)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for surveys)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	Man Camp - Operation		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	
	VESSELS - Hovercraft Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2030	**Non-Facility Total Emissions**							**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

AIR EMISSIONS CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	FACILITY	WELL	
Murphy Oil & Gas Company	Mississippi Can	254	G30242	Delta House		

Year	Facility Emitted Substance								
	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
2027	8.64	9.35	9.29	1.34	812.70	33.23	0.00	201.90	0.01
2028	7.49	8.66	8.62	1.32	785.28	32.44	0.00	197.60	0.00
2029	7.49	8.66	8.62	1.32	785.28	32.44	0.00	197.60	0.00
2030	7.49	8.66	8.62	1.32	785.28	32.44	0.00	197.60	0.00
2031	7.49	8.66	8.62	1.32	785.28	32.44	0.00	197.60	0.00
2032	7.49	8.66	8.62	1.32	785.28	32.44	0.00	197.60	0.00
2033	7.49	8.66	8.62	1.32	785.28	32.44	0.00	197.60	0.00
2034	7.49	8.66	8.62	1.32	785.28	32.44	0.00	197.60	0.00
2035	7.49	8.66	8.62	1.32	785.28	32.44	0.00	197.60	0.00
Allowable	1998.00			1998.00	1998.00	1998.00		52109.04	

SECTION H
OIL AND HAZARDOUS SUBSTANCE SPILLS

(a) Oil Spill Response Planning

(2)(i) All proposed activities in this Supplemental DOCD will be covered under Murphy Exploration & Production Company – USA Oil Spill Response Plan, BOEM/BSEE Operator Number 02647, found in compliance with 30 CFR 254 on April 1, 2026.

(a)(2)(ii) Spill Response Sites

Murphy's primary equipment providers are Clean Gulf Associates (CGA) and Marine Spill Response Corporation (MSRC). Clean Gulf Associates Services, LLC (CGAS) will provide closest available personnel, as well as a CGAS supervisor to operate the equipment. MSRC personnel are responsible for operating MSRC response equipment.

Primary Response Equipment Location	Preplanned Staging Location(s)
Houma, LA	Houma, LA
Leeville, LA	Port Fourchon, LA
Venice, LA	Venice, LA

(a)(2)(iii) OSRO Information

Clean Gulf Associates (CGA) is the primary equipment provider and National Response Corporation (NRC) is a secondary equipment provider for Murphy in the Gulf of America Region. CGA maintains a dedicated fleet of vessels and other equipment permanently located at designated ports. CGA and NRC has the capability to plan the mobilization and rapid deployment of spill response resources on a 24 hour, 7 days a week basis. The Incident Commander (IC) may use other service companies if additional equipment, materials, and personnel are needed. Refer to **Appendix F of our OSRP** for a list of potential support services.

(a)(2)(iv) WORST-CASE SCENARIO COMPARISON

Category	Regional OSRP WCD	DOCD WCD
Type of Activity	Production Operations >10 Miles Seaward of the Coastline	Production Operations >10 Miles Seaward of the Coastline
Facility Location (Area/Block)	GC 433	MC 385
Facility Designation	001 (ST00BP00)	004 (ST00BP01)
Distance to Nearest Shoreline (miles)	103	55
Volume Storage tanks (total) Uncontrolled blowout Pipelines Total Volume	78,445	11,231
Type of Oil(s) (crude, condensate, diesel)	Condensate	Crude
API Gravity	35.7	26.0

Since Murphy has the capability to respond to the worst-case spill scenario included in our Regional OSRP found in compliance on April 1, 2026; the worst-case scenario determined for our Initial DOCD does not replace the worst-case scenario in our Regional OSRP, therefore Murphy hereby certifies that we have the capability to respond, to the maximum extent practicable, to a worst-case spill scenario included in our Regional OSRP resulting from the activities proposed in our Initial DOCD.

(b) Spill Response Discussion for NEPA Analysis

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 production operations, estimated to be 11,231 barrels of crude oil with an API gravity of 26°.

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 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 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

Murphy 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.**

Murphy's OSRP 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 the conditions are favorable for dispersants/in-situ burning, the proper approvals have been obtained and the proper planning is in place, dispersant application/in-situ burning may be attempted

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.

Natural Weathering Data: MC 385, 004	**Barrels of Oil**
WCD Volume	11,231
Less 16% natural evaporation/dispersion	1,797
Remaining Volume	9,434

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. Please note that **Figure 2** is a list of contractually available equipment, which may be called out in the event of an exercise or spill. However, operations and specific equipment are situationally dependent and may change according to product specifications, weather, and environmental conditions, etc.

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 and MSRC's spill response equipment, with a total derated skimming capacity of 122,055 barrels. Temporary storage associated with skimming equipment equals 4,498 barrels. If additional storage is needed, various tank barges with a total of 130,000 barrels of storage capacity may be mobilized and centrally located to provide temporary storage and minimize off-loading time. **Safety is first priority. Air monitoring will be accomplished and operations deemed safe prior to any containment/skimming attempts.**

If the spill went unabated, shoreline impact 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 18,845 barrels. Temporary storage associated with skimming equipment equals 99 barrels. If additional storage is needed, one tank barge with a total of 35,000 barrels of storage capacity may be mobilized and centrally located to provide temporary storage and minimize off-loading time. Onshore response may include the deployment of shoreline boom on beach areas, or protection and sorbent boom on vegetated areas. A Master Service Agreement with AMPOL and Letter of Intent from E3 OMI will ensure access to 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. 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. Murphy's contract Incident Management Team has access to the applicable ACP(s) and GRP(s).

Based on the anticipated worst case discharge scenario, Murphy 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 57 hours (based on the equipment's Effective Daily Recovery Capacity (EDRC)).

https://cleangulfassoc.com/training/tactics-manual/

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

- 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

Murphy 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, but in coordination to complete a common objective, in a small area and in close coordination and support of each other. This group must also monitor the subsurface activities of each vessel (ROV, dispersant application, well control support, etc.). The SIMOPS group leader reports to the Source Control Section Chief.

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

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

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

Offshore Response Actions

Equipment Deployment

Surveillance

- Surveillance Aircraft: within two hours of QI notification, or at first light
- Provide trained observer to provide onsite 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 Aero-AG 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
- MSRC OSRVs and OSRBs have on-board ocean boom inventories and additional significant stockpiles are available in MSRC warehouses

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 offshore 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 offshore as safely possible

CGA FRUs

- To the area of the thickest oil
- Use as far offshore as allowed

Koseq Skimming Systems

- To the area of the thickest oil
- PIDVs with a minimum of 6,000 bbls storage capacity
- PIDVs at least 220' in length
- PIDVs with deck space of 100' x 50' to provide space for arms, tanks, and crane
- PIDVs for shallow water should be deck barges with a draft of <10 feet when fully loaded

MSRC Responder Class Vessels/Oil Spill Response Vessels (OSRV)

- Use in areas with heaviest oil concentrations
- Use as near-shore as allowed by draft of vessel
- Use as far off-shore as needed
- Consider for use in areas of known debris (seaweed and other floating materials)

MSRC Oil Spill Response Barges (OSRB)

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

MSRC PSV-VOO Skimming Systems

- Use in areas with heaviest oil concentrations
- Use as near-shore as allowed by draft of vessel
- Use as far off-shore as needed
- Expected 24-hour mobilization
- Expected length of 200 foot or greater
- PSV-VOO with deck space of 150' x 40' to provide space for skimmer, marine storage tanks and boom
- PSV-VOO with 2,000-20,000 bbl below deck storage supplemented with two or more 500 bbl marine portable tanks depending on below deck storage compatibility with flashpoint of recovered product

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 Murphy'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

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	Offshore Supply Vessel	Utility Boat
Operating parameters			
Sea State	2-4 ft max	9.8 ft max	3-5 ft max
Skimming speed	≤1 kt	≤3 kts	≤1 kt
Vessel size			
Minimum Length	100-165 ft	200 ft	100 ft
Deck space for: • Tank(s) • Crane(s) • Boom Reels	18x32 ft	100x40 ft	18x32 ft
Communication Assets	Marine Band Radio	Marine Band Radio	Marine Band Radio

Tactical use of Vessels of Opportunity (VOO): Murphy 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): The 502 FRU is designed to provide an advancing fast response skimming capability in the offshore and nearshore environment. To tow the FRU alongside the vessel, the rigid sweeping arm is connected to the ship by a tow line to a bow bollard or forward bit. The range and sustainability offshore are determined by the PIDV the unit is placed on but generally can stay offshore for extended periods. The FRU works well independently or assigned in a task force with other skimming assets and is more efficient when UAS or aircraft are assigned to direct into 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.

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 220' with at least 100' x 50' of free deck space. On one 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 or brush skimmer by the Arm face. The weir or brush is adjusted to maximize the oil encounter rate. 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 the vessels liquid mud tanks in accordance with the vessel COI. Once the vessel is full, oil can be offloaded 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. 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. Additionally, 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), for an approximate total storage capability of at least 6,000 bbls. All storage can be offloaded utilizing the vessels liquid transfer system.

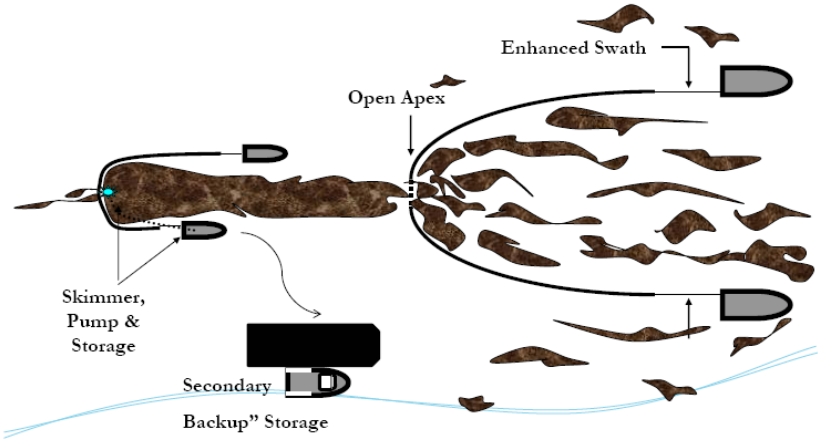
Maximum Sea Conditions – Under most circumstances the larger OSVs are capable of remaining on scene well past the Skimming Arms maximum sea state of 9.8'. Ultimately, it will be the decision of the VOO

Captain, with input from the on-deck 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 – > 220' Offshore Supply Vessels (OSV) per Koseq Arm
2 to 4 portable storage tanks (500 bbl)
1 – Modular Crane Pedestal System set (MCPS) or 30 cherry picker (crane) for deployment
1 – Tank barge (offshore) for temporary storage
1 – Utility/Crewboat (supply)
1 – Designated spotter aircraft
4 – Personnel (4 T&T OSRO)

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



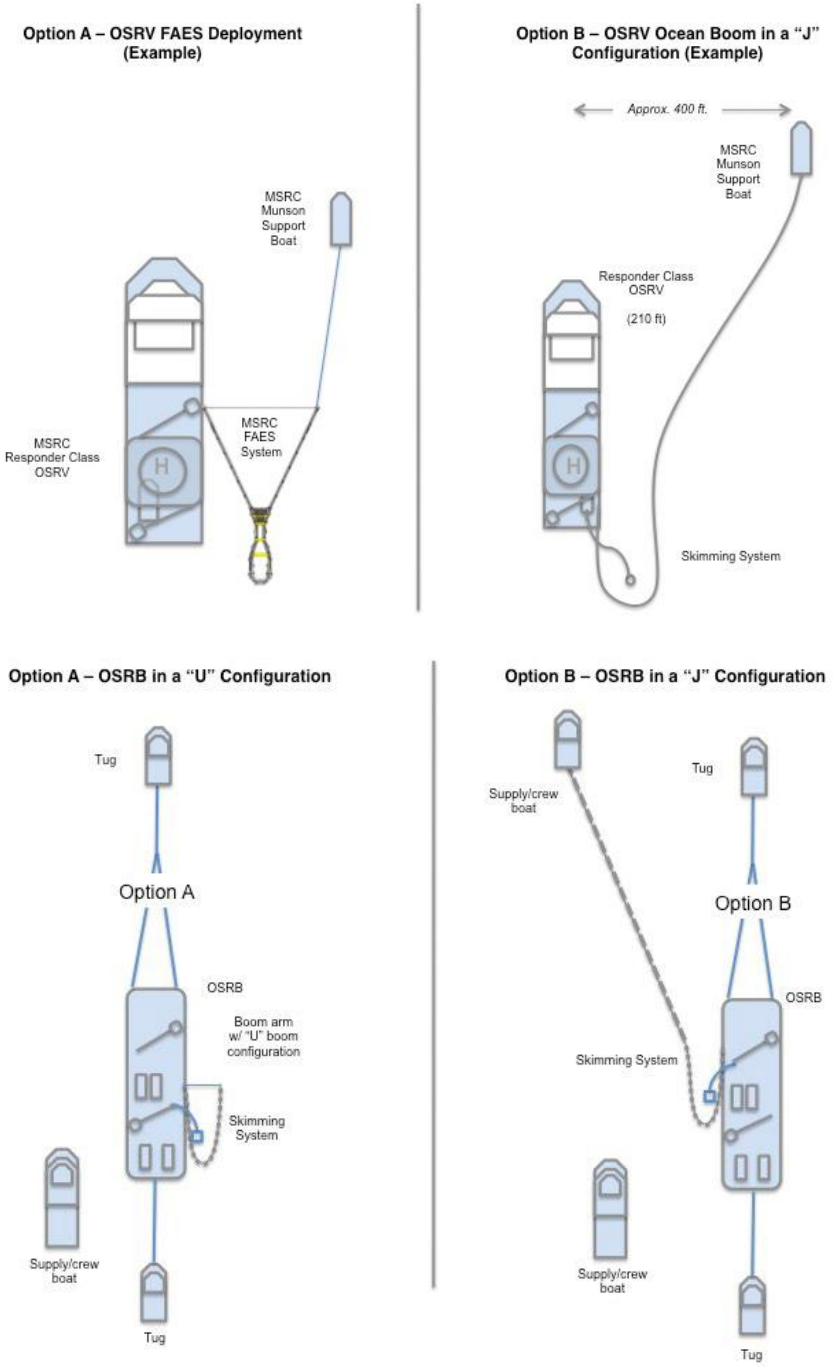
Clean Gulf Associates (CGA) Procedure for Accessing Member-Contracted and other Vessels of Opportunity (VOOs) for Spill Response

- 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).

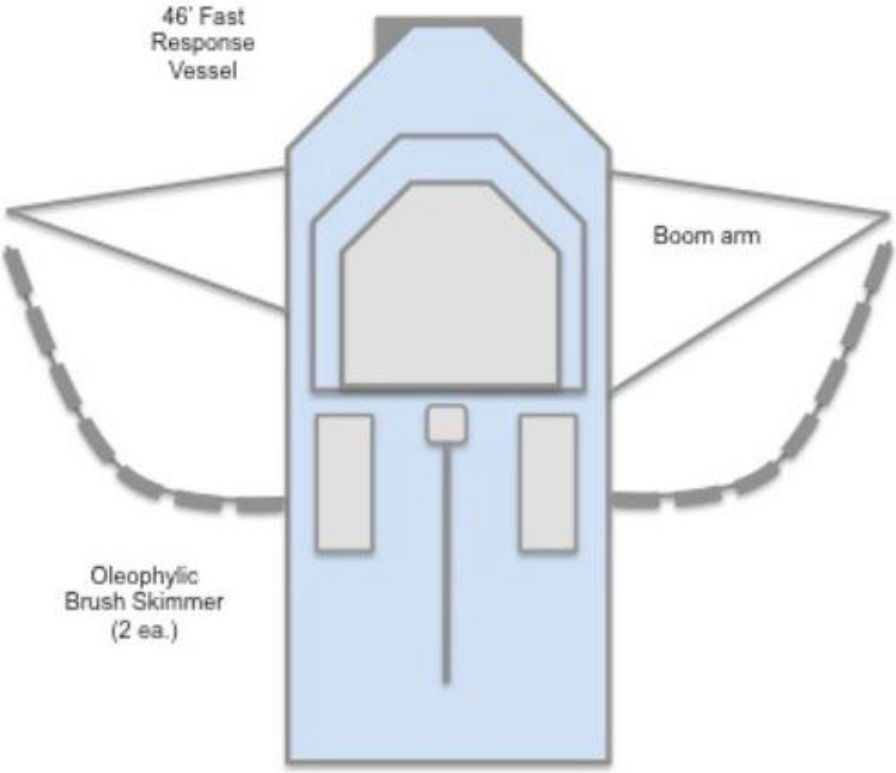
- CGA uses Port Vision, a web-based vessel and terminal interface that empowers CGA to track vessels through Automatic Identification System (AIS) and terminal activities using a Geographic Information System (GIS). It provides live AIS/GIS views of waterways showing current vessel positions, terminals, 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

Typical On-Water Oil Recovery and Removal Tactics *(See MSRC Gulf Area Tactics Guidebook for more information)*

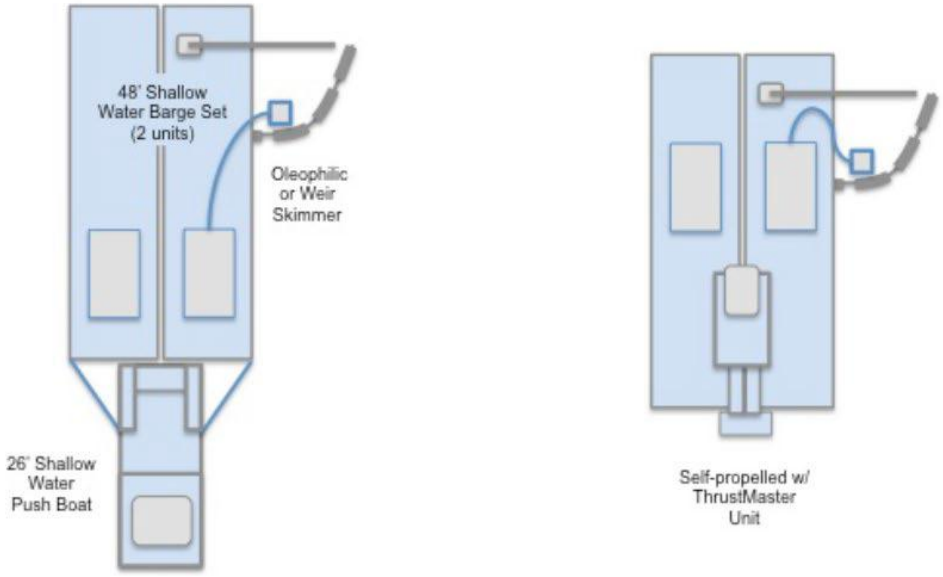
Mechanical Recovery
Large Scale Resources



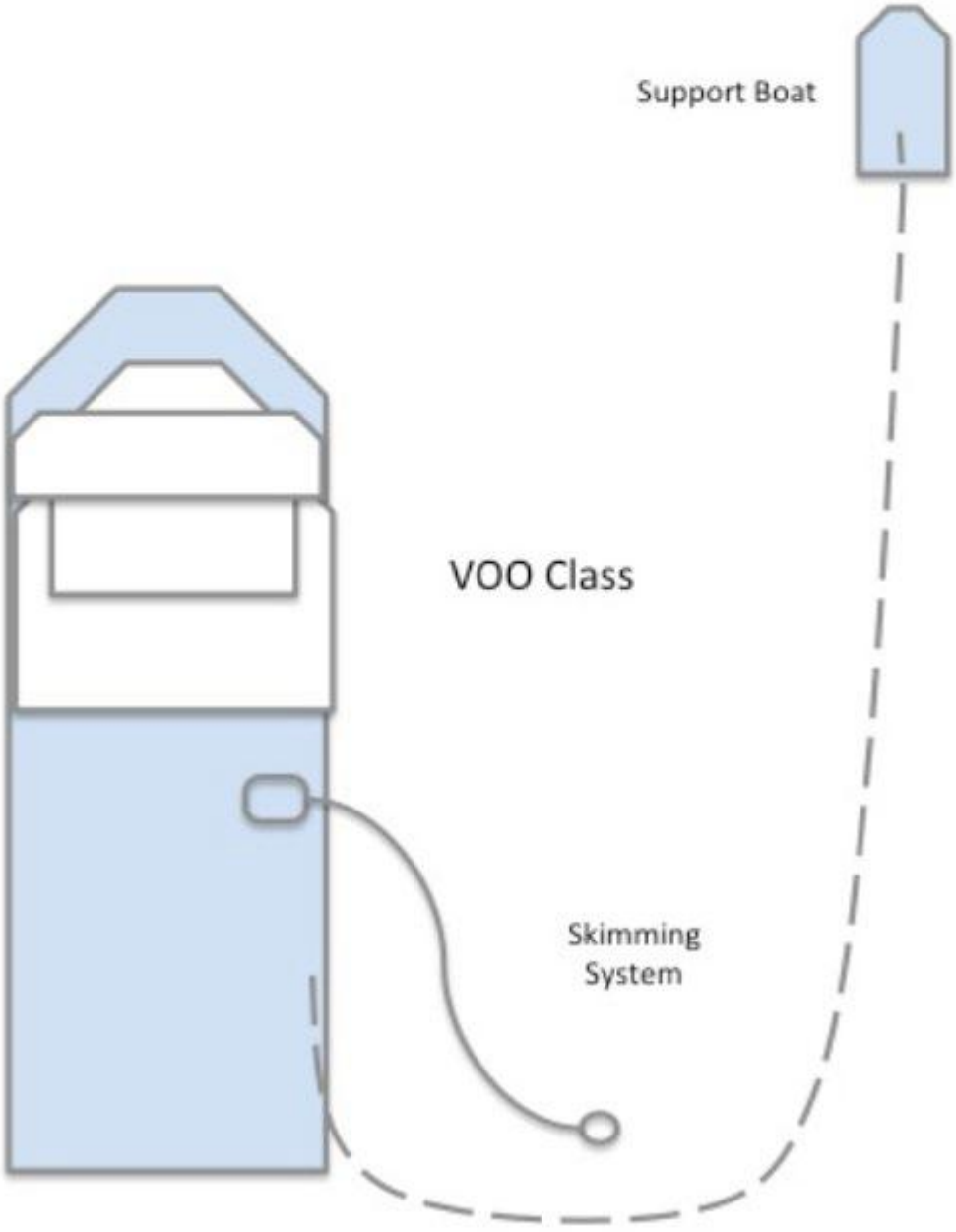
TACTIC DIAGRAM (EXAMPLE)
NOT TO SCALE



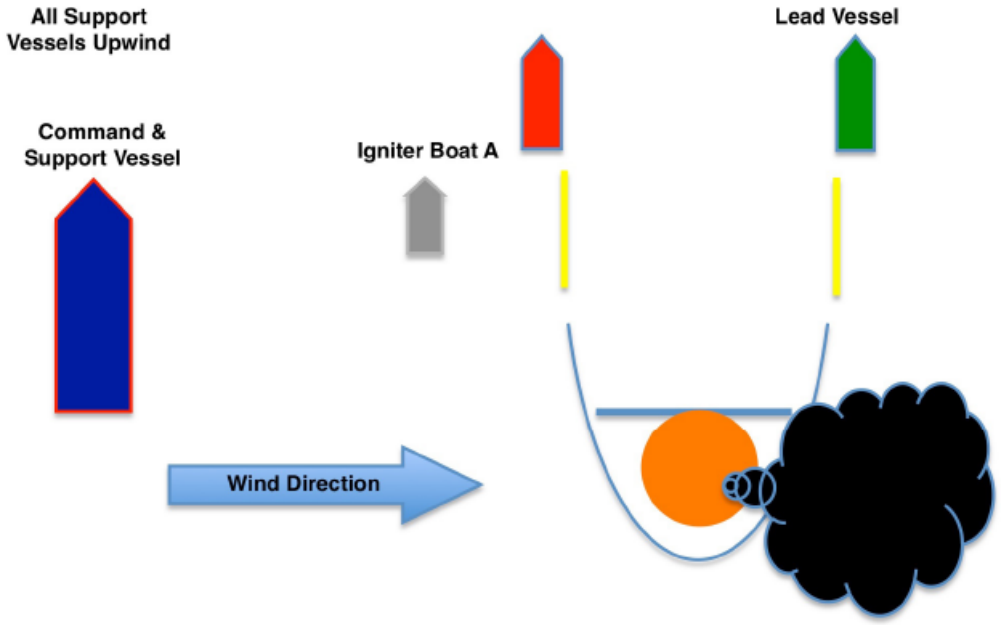
TACTIC DIAGRAM (EXAMPLE)
OPTION A
NOT TO SCALE



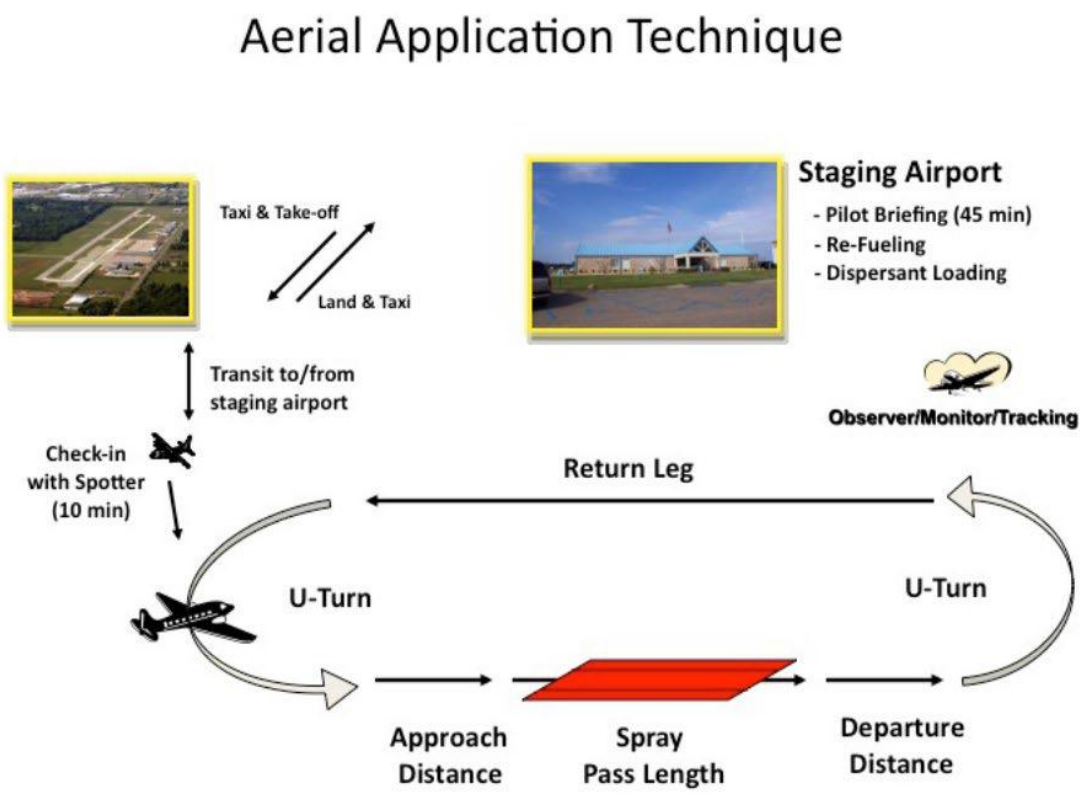
TACTIC DIAGRAM (EXAMPLE)
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TACTICAL DIAGRAM (EXAMPLE)



TACTICAL DIAGRAM (EXAMPLE)



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

Equipment Deployment

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)

Vessel Deployment

Dedicated Near Shore skimming systems

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

VOO

- Use Murphy'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
- Aerial surveillance of oil movement
- Pre-impact beach cleaning and debris removal
- Shoreline Cleanup Assessment Team (SCAT) operations and reporting procedures
- Boom type, size and length requirements and availability
- Possibility of need for In-situ burning in near shore areas
- Current wildlife situation, especially status of migratory birds and endangered species in the area
- Check for Archeological sites and arrange assistance for the appropriate state agency when planning operations the may impact these areas

Placement of boom

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

Beach Preparation
Considerations and Actions

- Use of a 10 mile go/no go line to determine timing of beach cleaning
- SCAT reports and recommendations
- Determination of archeological sites and gaining authority to enter
- Monitoring of tide tables and weather to determine extent of high tides
- Pre cleaning of beaches by moving waste above high tide lines to minimize waste
- Determination of logistical requirements and arranging of waste removal and disposal
- Staging of equipment and housing of response personnel as close to the job site as possible to maximize on-site work time
- Boom tending, repair, replacement and security (use of local assets may be advantageous)
- Constant awareness of weather and oil movement for resource re-deployment as necessary
- Earthen berms and shoreline protection boom may be considered to protect sensitive inland areas
- Requisitioning of earth moving equipment

- Plan for efficient and safe use of personnel, ensuring:
    - A continual supply of the proper Personal Protective Equipment
    - Heating or cooling areas when needed
    - Medical coverage
    - Command and control systems (i.e. communications)

    - Personnel accountability measures
- Remediation requirements, i.e., replacement of sands, rip rap, etc.
- Availability of surface washing agents and associated protocol requirements for their use (see National Contingency Plan Product Schedule for list of possible agents)
- Discussions with all stakeholders, i.e., land owners, refuge/park managers, and others as appropriate, covering the following:
    - Access to areas
    - Possible response measures and impact of property and ongoing operations
    - Determination of any specific safety concerns
    - Any special requirements or prohibitions
    - Area security requirements
    - Handling of waste
    - Remediation expectations
    - Vehicle traffic control
    - Domestic animal safety concerns
    - Wildlife or exotic game concerns/issues

Inland and Coastal Marsh Protection and Response
Considerations and Actions

- All considered response methods will be weighed against the possible damage they may do to the marsh. Methods will be approved by the Unified Command only after discussions with local Stakeholder, as identified above.
    - In-situ burn may be considered when marshes have been impacted
- Passive clean up of marshes should considered and appropriate stocks of sorbent boom and/or sweep obtained.
- Response personnel must be briefed on methods to traverse the marsh, i.e.,
    - use of appropriate vessel
    - use of temporary walkways or road ways
- Discuss and gain approval prior cutting or moving vessels through vegetation
- Discuss use of vessels that may disturb wildlife, i.e, airboats
- Safe movement of vessels through narrow cuts and blind curves
- Consider the possibility that no response in a marsh may be best
- In the deployment of any response asset, actions will be taken to ensure the safest, most efficient operations possible. This includes, but is not limited to:
    - Placement of recovered oil or waste storage as near to vessels or beach cleanup crews as possible.
    - Planning for stockage of high use items for expeditious replacement
    - Housing of personnel as close to the work site as possible to minimize travel time
    - Use of shallow water craft
    - Use of communication systems appropriate ensure command and control of assets
    - Use of appropriate boom in areas that I can offer effective protection
    - Planning of waste collection and removal to maximize cleanup efficiency
- Consideration or on-site remediation of contaminated soils to minimize replacement operations and impact on the area

Decanting Strategy

Recovered oil and water mixtures will typically separate into distinct phases when left in a quiescent state. When separation occurs, the relatively clean water phase can be siphoned or decanted back to the recovery point with minimal, if any, impact. Decanting therefore increases the effective on-site oil

storage capacity and equipment operating time. FOSC/SOSC approval will be requested prior to decanting operations. This practice is routinely used for oil spill recovery.

CGA Equipment Limitations

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

Boom	3 foot seas, 20 knot winds
Dispersants	Winds more than 25 knots Visibility less than 3 nautical miles Ceiling less than 1,000 feet.
FRU	2-4 foot seas
HOSS Barge/OSRB	7 foot seas
Koseq Arms	9.8 foot seas
OSRV	3-5 foot seas

Environmental Conditions in the GOA

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

FIGURE 1
TRAJECTORY BY LAND SEGMENT

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

Area/Block	OCS-G	Launch Area	Land Segment and/or Resource	Conditional Probability (%)
Installation of a Right-of-Way (ROW) pipeline, jumpers and associated umbilical, and the commencement of production from Wells No. 002 and 004 **MC 385, 004** *55 miles from shore*	G35821	C57	Cameron, LA Vermilion, LA Terrebonne, LA Lafourche, LA **Plaquemines, LA** St. Bernard, LA Hancock & Harrison, MS Jackson, MS Mobile, AL Baldwin, AL Escambia, AL Okaloosa, FL Walton, FL Bay, FL	1 1 2 2 **21** 3 1 1 1 1 1 1 1 1

WCD Scenario– BASED ON WELL BLOWOUT DURING PRODUCTION OPERATIONS (55 miles from shore)
17,474 bbls of crude oil (Volume considering natural weathering)
API Gravity 26°

FIGURE 2 – Equipment Response Time to MC 385, 004

Dispersants/Surveillance

Dispersant/Surveillance	Dispersant Capacity (gal)	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Travel to site	Total Hrs
ASI							
Cessna 408 SkyCourier	650	2	New Iberia, LA	2	1	0.8	3.8
Embraer EMB 110 P1	NA	2	New Iberia, LA	2	1	0.8	3.8
MSRC							
737-500	4,125	3	Weyers Cave, VA	2	0.5	2	4.5
737-500	4,125	3	Moses Lake, WA	2	0.5	4.3	6.8

Offshore Response

Offshore Equipment	EDRC	Storage Capacity	VOO	Persons Required	From	Hrs to Procure	Hrs to Loadout	Hrs to Gulf	Travel to Spill Site	Hrs to Deploy	Total Hrs
CGA											
HOSS Barge	76285	4000	3 Tugs	12	Harvey	6	0	12	9	2	29
95' FRV	22885	249	NA	4	Venice	2	0	3	3.5	1	9.5
95' FRV	22885	249	NA	4	Leeville	2	0	2	6.5	1	11.5
Boom Barge (CGA-300) 42" Auto Boom (25000')	NA	NA	1 Tug 50 Crew	4 (Barge) 2 (Per Crew)	Leeville	8	0	4	17	2	31
Genesis Marine (available through contract with CGA)											
GM 6507	NA	65000	1 Tug	6	New Orleans	24	12	0	21	0	57
GM 6508	NA	650000	1 Tug	6	New Orleans	24	12	0	21	0	57

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											
Hydro-Fire Boom	NA	NA	8 Utility	40	Harvey	0	24	2.1	5	6	37.1
MSRC											
67" Curtain Pressure Boom (53570')	NA	NA	14*	28	Houston	1	2	12	5	1	21
1000' Fire Resistant Boom	NA	NA	3*	6	Galveston	1	4	13	5	6	29
16000' Fire Resistant Boom	NA	NA	3*	6	Houston	1	4	12	5	6	28
2000' Fire Resistant Boom	NA	NA	3*	6	Lake Charles	1	4	8	5	6	24

Nearshore / Shoreline Response

Nearshore Equipment	EDRC	Storage Capacity	VOO	Persons Required	From	Hrs to Procure	Hrs to Loadout	Hrs to Gulf	Travel to Spill Site	Hrs to Deploy	Total Hrs
CGA											
46` FRV	15257	65	NA	4	Venice	2	0	2	2	1	7
Kirby Offshore (Available through contract with CGA)											
Chesapeake	NA	35000	1 Tug	6	New Orleans	24	12	0	12	0	48

Staging Area: Venice

Nearshore and Inland Skimmers With Staging	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											
SWS Marco	3588	34	NA	3	Leeville	2	2	4.4	2	1	11.4

Staging Area: Venice

18" 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 MSA)									
34,050' 18" Boom	13 Crew	26	New Iberia, LA	2	2	6	2	12	24
16,000' 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
11,800' 18" Boom	5 Crew	10	Gonzales, LA	2	2	0	2	2	8
16,000' 18" Boom	7 Crew	14	Port Arthur, TX	2	2	10	2	6	22
2,700' 18" Boom	2 Crew	4	Decatur, GA	2	2	16	2	6	28
E3 OMI (available through LOI)									
3,000' 18" Boom	1 Crew	2	Memphis, TN	1	1	14	2	3	21
2,000' 18" Boom	1 Crew	2	Little Rock, AR	1	1	14	2	3	21
4,000' 18" Boom	2 Crew	4	Paducah, KY	1	1	19	2	3	26
11,500' 18" Boom	5 Crew	10	Lake Charles, LA	1	1	8	2	3	15
2,000' 18" Boom	1 Crew	2	Shreveport, LA	1	1	12	2	3	19
9,600' 18" Boom	5 Crew	10	Baton Rouge, LA	1	1	5	2	3	12
12,800' 18" Boom	6 Crew	12	Lafayette, LA	1	1	6	2	3	13
4,200' 18" Boom	2 Crew	4	New Orleans, LA	1	1	2	2	3	9
53,600' 18" Boom	24 Crew	72	Jackson, MS	1	1	7.5	2	3	14.5
14,000' 18" Boom	6 Crew	12	Mobile, AL	1	1	6	2	3	13
4,000' 18" Boom	2 Crew	4	Pensacola, FL	1	1	8	2	3	15
1,000' 18" Boom	1 Crew	2	Corpus Christi, TX	1	1	18	2	3	25
400' 18" Boom	1 Crew	2	Laredo, TX	1	1	21	2	3	28
1,000' 18" Boom	1 Crew	2	DFW, TX	1	1	17	2	3	24
5,000' 18" Boom	3 Crew	6	Deer Park, TX	1	1	12	2	3	19
12,000' 18" Boom	6 Crew	12	La Marque, TX	1	1	13	2	3	20
12,000' 18" Boom	6 Crew	12	Port Arthur, TX	1	1	10	2	3	17

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	1	2	9.1
Bird Scare Guns (24)	NA	NA	NA	2	Harvey	2	2	2.1	1	2	9.1
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	17.8	1	2	24.8
Bird Scare Guns (24)	NA	NA	NA	2	Vermilion	2	2	8	1	2	15
Bird Scare Guns (24)	NA	NA	NA	2	Leeville	2	2	4.6	1	2	11.6

Response Asset	Total
Offshore EDRC (bbls)	122,055
Offshore Recovered Oil Storage (bbls)	134,498
Nearshore / Shallow Water EDRC (bbls)	18,845
Nearshore / Shallow Water Recovered Oil Storage (bbls)	35,099

(c) Modeling Report

Not required for the location of the activities proposed in this plan.

SECTION I
ALASKA PLANNING INFORMATION

The activities being proposed under this plan are not located in the Alaska OCS Region; therefore, this section does not apply.

SECTION J
ENVIRONMENTAL MONITORING INFORMATION

(a) Monitoring Systems and (b) Incidental Takes

No incidental takes are anticipated. Murphy implements the mitigation measures and monitors for incidental takes of protected species according to the following notices to lessees and operators from BOEM/BSEE:

- NTL 2015-G03 "Marine Trash and Debris Awareness and Elimination"
- BOEM NTL 2016-G01 "Vessel Strike Avoidance and Injured/Dead Protected Species Reporting"

In addition to complying with the notices to lessees and operators, Murphy will comply with the Reasonable and Prudent Measures and implementing Terms and Conditions of the Biological Opinion issued by the National Marine Fisheries Service on May 20, 2025. This includes mitigation, particularly any Terms and Conditions applicable to the plan, as well as record-keeping and reporting sufficient to allow BOEM and BSEE to comply with reporting and monitoring requirements under the BiOp; and any additional reporting required by BOEM or BSEE developed as a result of BiOp implementation. The NMFS Biological Opinion may be found here: https://www.fisheries.noaa.gov/resource/document/biological-and-conference-opinion-bureau-ocean-energy-management-and-bureau. The BiOp Attachments and Appendices may be found here: BOEM-BSEE-Review-Attachments-and-Appendices-for-Biological-Opinion.pdf.

- Murphy will follow the protocols provided under Attachment 2 (A.2): Marine Debris Protocol found in the Biological Opinion issued by the National Marine Fisheries Service on May 20, 2025. The protocols can be accessed on NOAA Fisheries internet website at BOEM-BSEE-Review-Attachments-and-Appendices-for-Biological-Opinion.pdf

- Murphy will follow the protocols provided under Attachment 3 (A.3); Vessel Strike Avoidance and Injured and/or Dead Aquatic Protected Species Reporting Protocols found in the Biological Opinion issued by the National Marine Fisheries Service on May 20, 2025. The protocols can be accessed on NOAA Fisheries internet website at BOEM-BSEE-Review-Attachments-and-Appendices-for-Biological-Opinion.pdf .

- Murphy will follow the protocols provided under Attachment 5 (A.4): In-water Line Precaution Protocol found in the Biological Opinion issued by the National Marine Fisheries Service on May 20, 2025. The protocols can be accessed on NOAA Fisheries internet website at BOEM-BSEE-Review-Attachments-and-Appendices-for-Biological-Opinion.pdf.

- Murphy will follow the protocols provided under Attachment 4 (A.6): Vessel Transit within the Rice's Whale Area as identified in the 2020 Biological Opinion's Reasonable and Prudent Alternative (2020 RWA) found in the Biological Opinion issued by the National Marine Fisheries Service on May 20, 2025. The protocols can be accessed on NOAA Fisheries internet website at BOEM-BSEE-Review-Attachments-and-Appendices-for-Biological-Opinion.pdf.

- Murphy will follow the protocols provided under Attachment 10 (A.7): Sea Turtle Resuscitation Guidelines Protocol found in the Biological Opinion issued by the National Marine Fisheries Service on May 20, 2025. The protocols can be accessed on NOAA Fisheries internet website at BOEM-BSEE-Review-Attachments-and-Appendices-for-Biological-Opinion.pdf

- Murphy will also follow the protocols provided under Attachment 6 (A.5): Moon Pool Monitoring Protocol found in the Biological Opinion issued by the National Marine Fisheries Service on May 20, 2025. The protocols can be accessed on NOAA Fisheries internet website at BOEM-BSEE-Review-Attachments-and-Appendices-for-Biological-Opinion.pdf.

- Monitor video from cameras that are focused on the moonpool area 24 hours a day.
- If endangered marine life is seen in the area, a live video feed will be streamed real-time for additional coverage.
- A marine observer will be used if endangered marine life is seen in the area for additional monitoring.
- If marine life is entrapped or entangled, we can safely lower someone into the moonpool to free it.

In addition, as described above, vessel personnel will maintain a vigilant watch for marine mammals and sea turtles and slow down or stop their vessel to avoid striking protected species. If whales are sighted, maintain a distance of 100 yards (91 meters) or greater from the whale. If the whale is believed to be a North Atlantic right whale, vessel personnel will maintain a minimum distance of 500 yards (460 meters) from the animal. If sea turtles or small cetaceans are sighted, maintain a distance of 50 yards (45 meters) or greater whenever possible. When cetaceans are sighted while a vessel is underway, attempt to remain parallel to the animal's course. Avoid excessive speed or abrupt changes in direction until the cetacean has left the area. Reduce vessel speed to 10 knots or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near an underway vessel when safety permits. A single cetacean at the surface may indicate the presence of submerged animals in the vicinity of the vessel; therefore, precautionary measures will always be exercised.

Whales may surface in unpredictable locations or approach slowly moving vessels. When vessel personnel sight animals in the vessel's path or in close proximity to a moving vessel, reduce speeds and shift the engine to neutral. Do not engage the engines until the animals are clear of the area. Injured/Dead Protected Species Reporting Vessel personnel will report sightings of any injured or dead protected species (marine mammals and sea turtles) immediately, regardless of whether the injury or death is caused by the vessel in use. Marine mammal's reports will be made to the NMFS Southeast Marine Mammal Stranding Hotline at 1-877-433-8299 and sea turtles to the State Coordinators for the Sea Turtle Stranding and Salvage Network (STSSN). Any injured or dead protected species will be reported to takereport.nmfsser@noaa.gov.

In addition, if the injury or death was caused by a collision with a vessel, BSEE will be notified within 24 hours of the strike by email to protectedspecies@bsee.gov and protectedspecies@boem.gov. The initial report will include time, date, water depth, and location (latitude/longitude) of the strike, vessel name, type, and call sign, equipment being utilized, and the species identification or a description of the animal to include size, photographs or video footage, general timeline describing events that took place.

Species	Scientific Name	Status	Potential Presence		Critical Habitat Designated in the Gulf of Mexico
			Lease Area	Coastal	
Marine Mammals					
Manatee, West Indian	*Trichechus manatus latirostris*	E	--	X	Florida (peninsular)
Giant Manta Ray	*Manta birostris*	E	X	--	None
Whale, Blue	*Balaenoptera masculus*	E	X*	--	None
Whale, Finback	*Balaenoptera physalus*	E	X*	--	None
Whale, Humpback	*Megaptera novaeangliae*	E	X*	--	None
Whale, North Atlantic Right	*Eubalaena glacialis*	E	X*	--	None
Whale, Sei	*Balaenopiera borealis*	E	X*	--	None
Whale, Sperm	*Physeter catodon (=macrocephalus)*	E	X	--	None
Whale, Bryde's	*Balaenoptera edeni*	E	X	--	None
Terrestrial Mammals					
Mouse, Beach (Alabama, Choctawatchee, Perdido Key, St. Andrew)	*Peromyscus polionotus*	E	-	X	Alabama, Florida (panhandle) beaches
Birds					
Plover, Piping	*Charadrius melodus*	T	-	X	Coastal Texas, Louisiana, Mississippi, Alabama and Florida (panhandle)
Crane, Whooping	*Grus Americana*	E	-	X	Coastal Texas

- NTL 2016-G02 "Implementation of Seismic Survey Mitigation Measure & Protected Species Observer Program"

SECTION K
LEASE STIPULATIONS INFORMATION

Mississippi Canyon Block 385 is subject to the lease stipulation that is attached to Lease OCS-G 35821.

Marine protected species

Lease Stipulation No. 8 is meant to reduce the potential taking of marine protected species. Murphy will operate in accordance with NTL 2015-G03 "Marine Trash and Debris Awareness and Elimination", NTL 2016-G01 "Vessel Strike Avoidance and Injured/Dead Protected Species Reporting" and NTL 2016-G02 "Implementation of Seismic Survey Mitigation Measure & Protect Species Observer Program", to minimize the risk of vessel strikes to protected species and report observations of injured or dead protected species, and the prevention of intentional and/or accidental introduction of debris into the marine environment.

SECTION L
MITIGATION MEASURES

(a) Measures taken to minimize or mitigate environmental impacts

Murphy does not plan to use any additional measures beyond those required by the regulations.

(b) Incidental Takes

Murphy Exploration & Production Company - USA does not anticipate any incidental takes related to the proposed operations. Murphy implements the mitigation measures and monitors for incidental takes of protected species according to the following notices to lessees and operators from both BOEM and BSEE:

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

SECTION M
DECOMMISSIONING INFORMATION

Murphy Exploration & Production Company – USA will perform the decommissioning activities in accordance with 30 CFR 250.1703, by performing the following:

(a) Request approval from the appropriate District Manager before decommissioning wells and from the Regional Supervisor before decommissioning platforms and pipelines or other facilities;
(b) Permanently plug all wells.
(c) Remove all platforms and other facilities, except as provided in §§ 250.1725(a) and 250.1730.
(d) Decommission all pipelines;
(e) Clear the seafloor of all obstructions created by your lease, pipeline right-of-way, or right-of-use and easement operations;
(f) Follow all applicable requirements of subpart G; and
(g) Conduct all decommissioning activities in a manner that is safe, does not unreasonably interfere with other uses of the OCS, and does not cause undue or serious harm or damage to the human, marine, or coastal environment.

SECTION N
RELATED FACILITIES AND OPERATIONS INFORMATION

(a) Related OCS Facilities and Operations

Murphy will be adding production from existing Wells No. 002 (to be renamed SS002) and 004 (to be renamed SS004) which will be equipped with a wellhead and manifold, connected via a proposed Right-of-Way jumper to a proposed Right-of-Way infield pipeline. The Right-of-Way pipeline will then be connected to the existing Right-of-Way pipeline Segments No. 18812 and No. 18813 to Murphy's existing platform A-Delta House located in Lease OCS-G 35324, Mississippi Canyon Block 254.

Mississippi Canyon Block 254, A-Delta House is a manned platform processing hydrocarbons from existing incoming subsea wells designated as:

Lease No.	Area Block	Well Name	API No.	Status
G24055	MC 209	SS001	608174126100	COM
G22868	MC 300	SS002	608174129500	COM
G22873	MC 387	SS001	608174138900	COM
G24069	MC 301	SS001	608174135400	COM
G32303	MC 208	SS001	608174128801	COM
G22877	MC 431	SS002	608174120301	COM
G24062	MC 253	SS001	608174124500	COM
G24064	MC 255	SS002	608174130500	COM
G22868	MC 300	SS001	608174120600	COM
G24064	MC 255	003	608174148901	COM

Murphy anticipates installing minimal processing equipment on this structure. All hydrocarbon handling equipment installed for testing and production operations will be designed, installed and operated to prevent pollution.

The anticipated flow rates and shut-in times for the umbilical/jumper/flowline are as follows:

Origination Point	Termination Point	Flow Rate(s)
MC385	MC431	13,000 BOPD; 13,000 mmcf/day; 15,000 BOEPD

(b) Transportation System

The proposed ROW pipeline will cross MC 386 and MC 430 to transport production from the MC 385 wells to the existing manifold and pipeline termination located in MC 431.

(c) Produced Liquid Hydrocarbons Transportation Vessels

There will not be any transfers of liquid hydrocarbons other than via pipeline.

SECTION O
SUPPORT VESSELS AND AIRCRAFT INFORMATION

(a) General

Murphy will utilize the most practical, direct route from the shore base as permitted by weather and traffic conditions.

Air emissions

The table below describes the support vessels, offshore vehicles, and aircraft Murphy uses.

Type of Vessel	Maximum Fuel Tank Storage Capacity	Maximum Number of Vessels in Area at Any Time	Trip Frequency or Duration
Crew Boat	45,000 gallons	1 vessel	3 trips per week
Supply Boat	85,000 gallons	2 vessels	2 trips per week

(b) Diesel Oil Supply Vessels

Size of Fuel Supply Vessel	Capacity of Fuel Supply Vessel	Frequency of Fuel Transfers	Route Fuel Supply Vessel Will Take
240 Foot	2500 Barrels	3 per month	Port Fourchon to MC 385

(c) Drilling Fluid Transportation

Drilling operations are not being conducted under this plan, therefore this section does not apply.

(d) Solid and Liquid Waste Transportation

A description of solid and liquid waste transportation is included on *Table 2: "Wastes you will transport and/or dispose of onshore".*

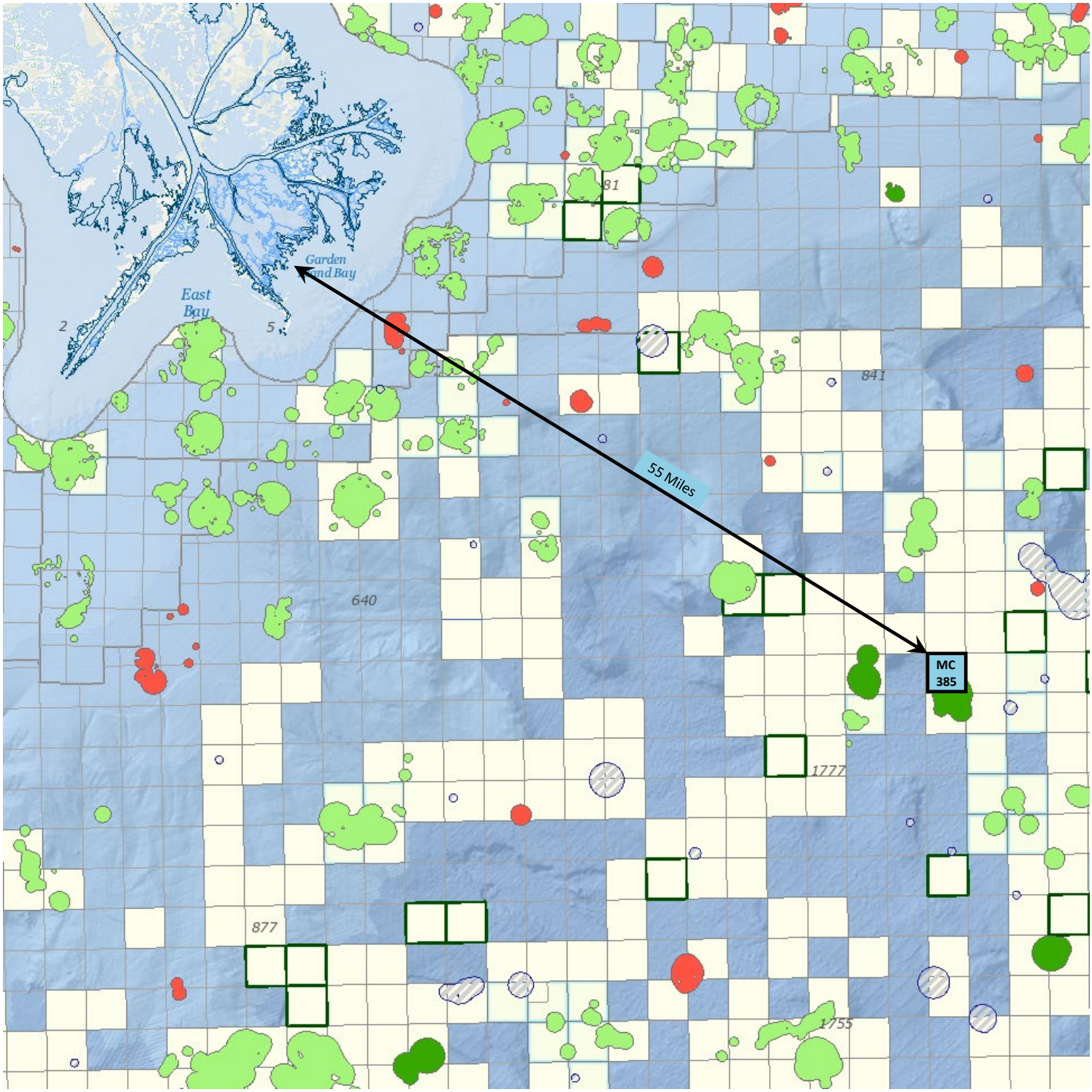
(e) Vicinity Map

Enclosed is a vicinity map showing the location of the activities proposed herein relative to the shoreline with the distance of the proposed activities from the shoreline and the primary route(s) of the support vessels and aircraft that will be used when traveling between the onshore support facilities and the drilling unit.

TABLE 2
WASTES TO BE TRANSPORTED AND/OR DISPOSED OF ONSHORE

	Projected generated waste	Solid and Liquid Wastes transportation	Waste Disposal		
Type of Waste	**Composition**	**Transport Method**	**Name/Location of Facility**	**Amount**	**Disposal Method**
Will drilling occur? If yes, fill in the muds and cuttings					
Oil-based drilling fluid or mud	N/A	N/A	N/A	N/A	N/A
Synthetic-based drilling fluid or mud	Internal olefin based	Below deck storage tanks on offshore support vessels	MI Drilling Fluids in Fourchon, LA	600 bbls/well	Recycled
Cuttings wetted with Water-based fluid	Clay, sand, containing NaCl, barite and xanthan gum	N/A	Discoverer Deep Seas	280 bbls/well	At seabed after being circulated out of well.
Cuttings wetted with synthetic-based fluid	Claystone, sand, fluid containing internal olefin	N/A	Discoverer Deep Seas	1000 bbls/well	Discharged overboard after being treated to meet regulations.
Cuttings wetted with oil-based fluid	N/A	N/A	N/A	N/A	N/A
Will you produce hydrocarbons? If yes fill in for produced sand.					
Produced sand	N/A	N/A	N/A	N/A	N/A
Will you have additional wastes that are not permitted for discharge? If yes, fill in the appropriate rows.					
Trash and debris	trash and debris	storage bins on supply boat	Newpark Environmental in Fourchon, LA	500 cu. ft. total	landfill & recycled
Used oil	spent oil from machinery	USCG approved tote tanks	Newpark Environmental in Fourchon, LA	200 bbls/well	Recycled
Wash water	wash water with SBM residue	barged in cutting boxes or mud tanks	Newpark Environmental in Fourchon, LA	2000 bbls/well	disposal well injection or land farm
Chemical product wastes	spent treatment and/or damaged chemicals	barged in cutting boxes	Newpark Environmental in Fourchon, LA	15 bbls/well	Recycled
Displacement spacers	xanthan/biopolymer/solvent/ surfactant/barite	MPTs	Newpark Environmental in Fourchon, LA	1000 bbls/well	disposal well
SBM interface from displacement	Synthetic based mud/spacer	MPTs	Newpark Environmental in Fourchon, LA	100 bbls/well	disposal well
SBM displaced from well for completion operation	Synthetic based mud	storage tanks on supply boat	MI Swaco in Fourchon, LA	7000 bbls/well	reconditioned for later use
Completion brine	CaBr2/MEG	storage tanks on supply boat	MI Swaco in Fourchon, LA	2500 bbls/well	stored for later use
Will you be covered by an individual or general NPDES permit?					
NPDES ID: GMG29062K					

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



MURPHY

Mississippi Canyon Area
Block 385 OCS-G35821

String Music
MC385
Vicinity Map

SECTION P
ONSHORE SUPPORT FACILITIES INFORMATION

(a) General

The table below is the onshore facilities that will be used to provide supply and service support for the proposed activities under this plan:

Name of Shorebase	*Location*	*Existing/New/Modified*
Fourchon, LA – Gulf Offshore Logistics	300 AT Gisclair Road Fourchon, LA 70357	Existing
PHI Heliport	Houma, LA	Existing

(b) Support Base Construction or Expansion

There will be no new construction of an onshore support base, nor will we expand the existing shorebase as a result of the operations proposed in this plan.

(c) Support Base Construction or Expansion Timetable

Murphy will not expand the existing shorebase as a result of the operations proposed in this DOCD.

(d) Waste Disposal

Table 2: "Wastes you will transport and/or dispose of onshore".

TABLE 2
WASTES TO BE TRANSPORTED AND/OR DISPOSED OF ONSHORE

	Projected generated waste	Solid and Liquid Wastes transportation	Waste Disposal		
Type of Waste	**Composition**	**Transport Method**	**Name/Location of Facility**	**Amount**	**Disposal Method**
Will drilling occur? If yes, fill in the muds and cuttings					
Oil-based drilling fluid or mud	N/A	N/A	N/A	N/A	N/A
Synthetic-based drilling fluid or mud	Internal olefin based	Below deck storage tanks on offshore support vessels	MI Drilling Fluids in Fourchon, LA	600 bbls/well	Recycled
Cuttings wetted with Water-based fluid	Clay, sand, containing NaCl, barite and xanthan gum	N/A	Discoverer Deep Seas	280 bbls/well	At seabed after being circulated out of well.
Cuttings wetted with synthetic-based fluid	Claystone, sand, fluid containing internal olefin	N/A	Discoverer Deep Seas	1000 bbls/well	Discharged overboard after being treated to meet regulations.
Cuttings wetted with oil-based fluid	N/A	N/A	N/A	N/A	N/A
Will you produce hydrocarbons? If yes fill in for produced sand.					
Produced sand	N/A	N/A	N/A	N/A	N/A
Will you have additional wastes that are not permitted for discharge? If yes, fill in the appropriate rows.					
Trash and debris	trash and debris	storage bins on supply boat	Newpark Environmental in Fourchon, LA	500 cu. ft. total	landfill & recycled
Used oil	spent oil from machinery	USCG approved tote tanks	Newpark Environmental in Fourchon, LA	200 bbls/well	Recycled
Wash water	wash water with SBM residue	barged in cutting boxes or mud tanks	Newpark Environmental in Fourchon, LA	2000 bbls/well	disposal well injection or land farm
Chemical product wastes	spent treatment and/or damaged chemicals	barged in cutting boxes	Newpark Environmental in Fourchon, LA	15 bbls/well	Recycled
Displacement spacers	xanthan/biopolymer/solvent/ surfactant/barite	MPTs	Newpark Environmental in Fourchon, LA	1000 bbls/well	disposal well
SBM interface from displacement	Synthetic based mud/spacer	MPTs	Newpark Environmental in Fourchon, LA	100 bbls/well	disposal well
SBM displaced from well for completion operation	Synthetic based mud	storage tanks on supply boat	MI Swaco in Fourchon, LA	7000 bbls/well	reconditioned for later use
Completion brine	CaBr2/MEG	storage tanks on supply boat	MI Swaco in Fourchon, LA	2500 bbls/well	stored for later use
Will you be covered by an individual or general NPDES permit?					
NPDES ID: GMG29062K					

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

SECTION Q
COASTAL ZONE MANAGEMENT (CZMA) INFORMATION

CONSISTENCY CERTIFICATION

INITIAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT
MISSISSIPPI CANYON BLOCK 385
LEASE OCS-G 35821

The proposed activities described in detail in this OCS Plan will comply with all enforceable policies as Louisiana's approved Coastal Management Program and will be conducted in a manner consistent with such program

Murphy Exploration & Production Company - USA
Lessee or Operator



_____
Certifying Official

October 20, 2026

_____
Date

ALABAMA COASTAL ZONE MANAGEMENT
CONSISTENCY CERTIFICATION

INITIAL DEVELOPMENT OPRATIONS COORDINATION DOCUMENT
MISSISSIPPI CANYON BLOCK 385

The OCS related oil and gas development activities having potential impact on the Alabama Coast Zone are based on the location of the proposed facilities, access to those sites, best practical techniques for operations and production equipment, guidelines for the prevention of adverse environmental affects, effective environmental protection, emergency plans and contingency plans. Alabama policies have been addressed below or are cross referenced to the appropriate sections of the plan:

Alabama Enforceable Policies	
A. **Coastal Resource Use Policies**	
1. Coastal Development	Dock and port facilities in Louisiana will be used. There will be no new construction, dredging, or filling in Alabama state waters. There will be no new commercial development, capital improvements nor employment effects in Alabama's coastal zone.
2. Mineral Resource Exploration and Extraction	Section D
3. Commercial Fishing	Section H
4. Hazard Management	Section B
5. Shoreline Erosion	Section H
6. Recreation	Section H
7. Transportation	Section N
A. **Natural Resource Protection Policies**	
1. Biological Productivity	Section H
2. Water Quality	Section H
3. Water Resources	Section H
4. Air Quality	Section G
5. Wetlands and Submerged Grass beds	Section H
6. Beach and Dune Protection	Section H
7. Wildlife Habitat Protection	Section H
8. Endangered Species	Section H
9. Cultural Resources Protection	Section H

COASTAL ZONE MANAGEMENT (CZMA) INFORMATION

ALABAMA CONSISTENCY CERTIFICATION

INITIAL DEVELOPMENT OPRATIONS COORDINATION DOCUMENT

MISSISSIPPI CANYON BLOCK 385

LEASE OCS-G 35821

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

Murphy Exploration & Production Company – USA
Lessee or Operator



_____
Certifying Official

October 20, 2026

_____
Date

Mississippi Enforceable Policies	
GOAL 1 To provide for reasonable industrial expansion in the coastal area and to ensure the efficient utilization of waterfront industrial sites so that suitable sites are conserved for water dependent industry.	The activities proposed in this plan are based out of Fourchon, LA. The activities will not provide any industrial expansion on the coastal area of Mississippi. Therefore, Mississippi coastal areas will be conserved for water dependent industry.
GOAL 2 To favor the preservation of the coastal wetlands and ecosystems, except where a specific alteration of specific coastal wetlands would serve a higher public interest in compliance with the public purposes of the public trust in which the coastal wetlands are held.	Goal 2 is addressed in Section R, Environmental Impact Analysis.
GOAL 3 To protect, propagate, and conserve the state's seafood and aquatic life in connection with the revitalization of the seafood industry of the State of Mississippi.	Goal 3 is addressed in Section H, Environmental Impact Analysis. Little to no impact to the seafood industry can be expected.
GOAL 4 To conserve the air and waters of the state, and to protect, maintain, and improve the quality thereof for public use, for the prorogation of wildlife, fish, and aquatic life, and for domestic, agricultural, industrial, recreational, and other legitimate beneficial uses.	Goal 4 is addressed in Section A, General Information, Section G, Air Emissions Information, and Section R, Environmental Impact Analysis.
GOAL 5 To put to beneficial use to the fullest extent of which they are capable the water resources of the state, and to prevent the waste, unreasonable use, or unreasonable method of use of water.	The activities proposed in this plan are based in Fourchon, LA. As such, Mississippi's water resources should not be impacted by the proposed activities. Activities occurring at the sites in the OCS will be conducted in accordance with Murphy's Regional Oil Spill Response Plan referenced in Section H of this plan.
GOAL 6 To preserve the state's historical and archaeological resources, to prevent their destruction,	Goal 6 is addressed in Section B, Geological and Geophysical Information and Section R, Environmental Impact Analysis.
GOAL 7 To encourage the preservation of natural scenic qualities in the coastal area	Goal 7 is addressed in Section F, Waste Discharges Information, Section H, Oil Spill Information, Section G, Air Emissions Information, and Section R, Environmental Impact Analysis.
GOAL 8 To assist local governments in the provision of public facilities services in a manner consistent with the coastal program.	Since the proposed activities are not located near the Mississippi coast and are based out of a shorebase in Fourchon, LA, local governments should not be affected.

COASTAL ZONE MANAGEMENT INFORMATION

MISSISSIPPI CONSISTENCY CERTIFICATION

INITIAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT

MISSISSIPPI CANYON BLOCK 385

OCS-G 35821

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

Murphy Exploration & Production Company - USA
Lessee or Operator



Certifying Official

October 20, 2026

Date

SECTION R
ENVIRONMENTAL IMPACT ANALYSIS (EIA)

In accordance with the requirements of 30 CFR 250.227 and 250.261 an Environmental Impact Analysis (EIA) is attached.

Attachments:
Environmental Report

Murphy Exploration and Production Company – USA

Initial Development Operations Coordination Document

Mississippi Canyon Block 385

OCS-G 35821

(A) Impact Producing Factors

ENVIRONMENTAL IMPACT ANALYSIS WORKSHEET

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

Footnotes for Environmental Impact Analysis Matrix

1) Activities that may affect a marine sanctuary or topographic feature. Specifically, if the well or platform site or any anchors will be on the seafloor within the:
   - 4-mile zone of the Flower Garden Banks, or the 3-mile zone of Stetson Bank;
   - 1000-m, 1-mile or 3-mile zone of any topographic feature (submarine bank) protected by the Topographic Features Stipulation attached to an Outer Continental Shelf (OCS) lease;
   - Essential Fish Habitat (EFH) criteria of 500 feet. from any no-activity zone; or
   - Proximity of any submarine bank (500 feet. buffer zone) with relief greater than two meters that is not protected by the Topographic Features Stipulation attached to an OCS lease.
2) Activities with any bottom disturbance within an OCS lease block protected through the Live Bottom (Pinnacle Trend) Stipulation attached to an OCS lease.
3) Activities within any Eastern Gulf OCS block where seafloor habitats are protected by the Live Bottom (Low-Relief) Stipulation attached to an OCS lease.
4) Activities on blocks designated by the MMA as being in water depths 300 meters or greater.
5) Exploration or production activities where H_2S concentrations greater than 500 ppm might be encountered.
6) All activities that could result in an accidental spill of produced liquid hydrocarbons or diesel fuel that you determine would impact these environmental resources. If the proposed activity is located a sufficient distance from a resource that no impact would occur, the EIA can note that in a sentence or two.
7) All activities that involve seafloor disturbances, including anchor emplacements, in any OCS block designated by the MMA as having high probability for the occurrence of shipwrecks or prehistoric sites, including such blocks that will be affected that are adjacent to the lease block in which your planned activity will occur. If the proposed operations are located a sufficient distance from a shipwreck or a prehistoric site that no impact would occur, the EIA can note that in a sentence or two.
8) All activities that you determine might have an adverse effect on endangered or threatened marine mammals or sea turtles or their critical habitats.
9) Production activities that involve transportation of produced fluids to shore using shuttle tankers or barges.

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

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

Species	Scientific Name	Status	Potential Presence		Critical Habitat Designated in the Gulf of America	Gulf of America Range
			Lease Area	Coastal		
Marine Mammals						
Manatee, West Indian	*Trichechus manatus latirostris*	T	--	X	Florida (peninsular)	Coastal Louisiana, Mississippi, Alabama, and Florida
Whale, Blue	*Balaenoptera masculus*	E	X[1]	--	None	GOA
Whale, Bryde's[4]	*Balaenoptera brydei/edeni*	E	X	--	None	Eastern GOA
Whale, Fin	*Balaenoptera physalus*	E	X[1]	--	None	GOA
Whale, Humpback	*Megaptera novaeangliae*	E	X[1]	--	None	GOA
Whale, North Atlantic Right	*Eubalaena glacialis*	E	X[1]	--	None	GOA
Whale, Rice's[4]	*Balaenoptera ricei*	E	X	--	None	GOA
Whale, Sei	*Balaenopiera borealis*	E	X[1]	--	None	GOA
Whale, Sperm	*Physeter catodon (=macrocephalus)*	E	X	--	None	GOA
Terrestrial Mammals						
Mouse, Alabama Beach	*Peromyscus polionotus ammobates*	E	-	X	Alabama beaches	Alabama beaches
Mouse, Choctawatchee Beach	*Peromyscus polionotus allophrys*	E	-	X	Florida panhandle beaches	Florida panhandle beaches
Mouse, Perdido Key Beach	*Peromyscus polionotus trissyllepsis*	E	-	X	Alabama, Florida (panhandle) beaches	Alabama, Florida (panhandle) beaches
Mouse, St. Andrew Beach	*Peromyscus polionotus peninsularis*	E	-	X	Florida panhandle beaches	Florida panhandle beaches
Jaguarundi, Gulf Coast	*Puma yagouaroundi cacomitli*	E	-	X	None	Texas
Ocelot	*Leopardus (=Felis) pardalis*	E	-	X	None	Texas

Species	Scientific Name	Status	Potential Presence		Critical Habitat Designated in the Gulf of America	Gulf of America Range
			Lease Area	Coastal		
Bat, Florida Bonneted	*Eumops floridanus*	E	-	X	None	Florida
Panther, Florida	*Puma (=Felis) concolor coryi*	E	-	X	None	Florida
Vole, Florida Salt Marsh	*Microtus pennsylvanicus dukecampbelli*	E	-	X	None	Florida
Deer, Key	*Odocoileus virginianus clavium*	E	-	X	None	Florida Keys
Rabbit, Lower Keys Marsh	*Sylvilagus palustris hefneri*	E	-	X	None	Florida Keys
Rat, Silver Rice	*Oryzomys palustris natator*	E	-	X	None	Florida Keys
Birds						
Plover, Piping	*Charadrius melodus*	T	-	X	Coastal Texas, Louisiana, Mississippi, Alabama, and Florida (panhandle)	Coastal GOA
Crane, Whooping	*Grus Americana*	E	-	X	Coastal Texas	Coastal Texas and Louisiana
Crane, Mississippi sandhill	*Grus canadensis pulla*	E	-	X	Coastal Mississippi	Coastal Mississippi
Caracara, Audubon's Crested	*Polyborus plancus audubonii*	T	-	X	None	Coastal Florida Peninsula
Curlew, Eskimo	*Numenius borealis*	E	-	X	None	Coastal Texas
Falcon, Northern Aplomado	*Falco femoralis septentrionalis*	E	-	X	None	Coastal Texas
Prairie-chicken, Attwater's Greater	*Tympanuchus cupido attwateri*	E	-	X	None	Coastal Texas
Scrub-jay, Florida	*Aphelocoma coerulescens*	T	-	X	None	Coastal Florida
Kite, Everglade Snail	*Rostrhamus sociabilis plumbeus*	E	-	X	None	Coastal Southern Florida
Knot, Red	*Calidris canutus rufa*	T	-	X	None	Coastal GOA
Rail, Eastern Black	*Laterallus jamaicensis ssp. jamaicensis*	T	-	X	None	Coastal GOA
Sparrow, Cape Sable Seaside	*Ammodramus maritimus mirabilis*	E	-	X	Everglades	Coastal Florida

Species	Scientific Name	Status	Potential Presence		Critical Habitat Designated in the Gulf of America	Gulf of America Range
			Lease Area	Coastal		
Stork, Wood	*Mycteria americana*	T	-	X	None	Coastal Alabama and Florida
Tern, Roseate	*Sterna dougallii dougallii*	T	-	X	None	Coastal Southern Florida
Warbler, Bachman's	*Vermivora bachmanii*	E	-	X	None	Coastal Southern Florida
Woodpecker, Red-cockaded	*Picoides borealis*	E	-	X	None	Coastal Louisiana and Florida
Marine Reptiles						
Sea Turtle, Green	*Chelonia mydas*	T/E[3]	X	X	None	GOA
Sea Turtle, Hawksbill	*Eretmochelys imbricata*	E	X	X	None	GOA
Sea Turtle, Kemp's Ridley	*Lepidochelys kempli*	E	X	X	None	GOA
Sea Turtle, Leatherback	*Dermochelys coriacea*	E	X	X	None	GOA
Sea Turtle, Loggerhead	*Caretta caretta*	T	X	X	Texas, Louisiana, Mississippi, Alabama, Florida	GOA
Terrestrial Reptiles						
Turtle, Alabama Red-bellied	*Pseudemys alabamensis*	E	-	X	None	Coastal Mississippi and Alabama
Crocodile, American	*Crocodylus acutus*	T	-	X	Everglades and Florida Keys	Coastal Florida
Snake, Eastern Indigo	*Drymarchon couperi*	T	-	X	None	Coastal Mississippi, Alabama, and Florida
Tortoise, Gopher	*Gopherus polyphemus*	T	-	X	None	Coastal Louisiana, Mississippi, and Alabama
Turtle, Ringed Map	*Graptemys oculifera*	T	-	X	None	Coastal Louisiana and Mississippi
Turtle, Yellow-blotched Map	*Graptemys flavimaculata*	T	-	X	None	Coastal Mississippi
Fish						
Sturgeon, Gulf	*Acipenser oxyrinchus (=oxyrhynchus) desotoi*	T	X	X	Coastal Louisiana, Mississippi, Alabama, and Florida (panhandle)	Coastal Louisiana, Mississippi, Alabama, and Florida (panhandle)
Shark, Oceanic Whitetip	Carcharhinus longimanus	T	X	_	None	GOA
Sawfish, Smalltooth	Pristis pectinate	E	-	X	None	Florida
Grouper, Nassau	Epinephelus striatus	T	-	X	Florida[5]	Florida

Species	Scientific Name	Status	Potential Presence		Critical Habitat Designated in the Gulf of America	Gulf of America Range
			Lease Area	Coastal		
Ray, Giant Manta	Manta birostris	T	X	--	None	GOA
Sturgeon, Pallid	Scaphirhynchus albus	E	-	X	None	Louisiana Coastal Rivers
Corals						
Coral, Elkhorn	*Acopora palmate*	T	X[2]	X	Florida[5]	Flower Garden Banks and Florida
Coral, Staghorn	*Acopora cervicornis*	T	X	X	Florida[5]	Florida
Coral, Boulder Star	*Orbicella franksi*	T	X	X	Flower Garden Banks and Florida	Flower Garden Banks and Florida
Coral, Lobed Star	*Orbicella annularis*	T	X	X	Flower Garden Banks and Florida	Flower Garden Banks and Florida
Coral, Mountainous Star	*Orbicella faveolate*	T	X	X	Flower Garden Banks and Florida	Flower Garden Banks and Florida
Coral, Rough Cactus	*Mycetophyllia ferox*	T	-	X	Florida[5]	Florida and Southern Gulf of America
Coral, Pillar	*Dendrogyra cylindrus*	T	-	X	Florida[5]	Florida

Abbreviations: E = Endangered; T = Threatened

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

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

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

4 The Bryde's whale, also known as the Bryde's whale complex, is a collection of baleen whales that are still being researched to determine if they are the same species or if they are individual species of whales. In 2021, the Rice's whale, formerly known as the Gulf of America Bryde's whale, was determined to be a separate species. There are less than 100 Rice's whales living in the Gulf of America year-round. These whales retain all the protections of the Gulf of America Bryde's whale under the Endangered Species Act while the regulations are being updated to reflect the name change. Other Bryde's whales are migratory and may enter the Gulf of America; however, the migratory Bryde's whales are rare or extralimital in the Gulf of America and are unlikely to be present in the lease area.

5 Critical habitat is in the Gulf of America, but outside of planning area. Species may still occur in the Gulf of America.

(B) Analysis

Site-Specific at Mississippi Canyon Block 385

Proposed operations consist of the installation of a Right-of-Way (ROW) pipeline, jumpers and associated umbilical, and the commencement of production from Wells No. 002 (to be renamed SS002) and 004 (to be renamed SS004). Operations will be conducted with a pipelay vessel.

There are no seismic surveys, pile driving, or pipelines making landfall associated with the operations covered by this Plan.

1. Designated Topographic Features

Potential IPFs on topographic features include physical disturbances to the seafloor and accidents.

Physical disturbances to the seafloor: Mississippi Canyon Block 385 is 73.6 miles from the closest designated Topographic Features Stipulation Block (Sackett Bank); therefore, no adverse impacts are expected.

Accidents: It is unlikely that an accidental surface or subsurface spill would occur from the proposed operations (refer to statistics in **Item 5**, Water Quality). Oil spills cause damage to benthic organisms only if the oil contacts the organisms. Oil from a surface spill can be driven into the water column; measurable amounts have been documented down to a 10-meter depth. At this depth, the oil is found only at concentrations several orders of magnitude lower than the amount shown to have an effect on corals. Because the crests of topographic features in the Northern Gulf of America are found below 10 meters, oil from a surface spill is not expected to reach their sessile biota. Oil from a subsurface spill is not applicable due to the distance of these blocks from a topographic area. The activities proposed in this plan will be covered by Murphy's Regional OSRP (refer to information submitted in **Appendix I**).

If dispersants were utilized as a response method, the fate and effects of spilled oil would be impacted. Dispersants have been utilized in previous spill response efforts and were used extensively in the response to the Deepwater Horizon oil spill, with both surface and sub-surface applications. Reports on dispersant usage on surface oil indicate that a majority of the dispersed oil remains in the top 10 meters of the water column, with 60 percent of the oil in the top two meters of water (McAuliffe et al, 1981; Lewis and Aurand, 1997; OCS Report MMA 2017-007). Lubchenco et al. (2010) report that most chemically dispersed surface oil from the Deepwater Horizon explosion and oil spill remained in the top six meters of the water column where it mixed with surrounding waters and biodegraded (MMA 2017-007). None of the topographic features or potentially sensitive biological features in the GOA are shallower than 10 meters (33 feet), and only the Flower Garden Banks are shallower than 20 meters (66 feet).

In one extraordinary circumstance with an unusual combination of meteorological and oceanographic conditions, a tropical storm forced a large volume of Deepwater Horizon oil spill-linked surface oil/dispersant mixture to as deep as 75 meters (246 feet), causing temporary exposure to mesophotic corals in the Pinnacle Trend area and leading to some coral mortality and sublethal impacts (Silva et al., 2015; MMA 2017-007).

Additionally, concentrations of dispersed and dissolved oil in the Deepwater Horizon oil-spill subsea plume were reported to be in the parts per million range or less and were generally lower away from the water's surface and away from the well head (Adcroft et al., 2010; Haddad and Murawski, 2010; Joint Analysis Group, 2010; Lubchenco et al, 2010; MMA 2017-007).

In the case of subsurface spills like a blowout or pipeline leak, dispersants may be injected at the seafloor. This will increase oil concentrations near the source but tend to decrease them further afield, especially at the surface. Marine organisms in the lower water column will be exposed to an initial increase of water-soluble oil compounds that will dilute in the water column over time (Lee et al., 2013a; NAS 2020).

Dispersant application involves a trade-off between decreasing the risk to the surface and shoreline habitat and increasing the risk beneath the surface. The optimal trade-off must account for various factors, including the type of oil spilled, the spill volume, the weather and sea state, the water depth, the degree of turbulence, and the relative abundance and life stages of organisms (NRC, 2005; NAS 2020).

Chemical dispersants may increase the risk of toxicity to subsurface organisms by increasing bioavailability of the oil. However, it is important to note that at the 1:20 dispersant-to-oil ratio recommended for use during response operations, the dispersants currently approved for use are far less acutely toxic than oil is. Toxicity of chemically dispersed oil is primarily due to the oil itself and its enhanced bioavailability (Lee et al., 2015; NAS 2020).

With the exception of special Federal management areas or designated exclusion areas, dispersants have been preapproved for surface use, which provides the USCG On-Scene Coordinator with the authority to approve the use of dispersants. However, that approval would only be granted upon completion of the protocols defined in the appropriate Area Contingency Plan (ACP) and the Regional Response Team (RRT) Dispersant Plan. The protocols include conducting an environmental benefit analysis to determine if the dispersant use will prevent a substantial threat to the public health or welfare or minimize serious environmental damage. The Regional Response Team would be notified immediately to provide technical support and guidance in determining if the dispersant use meets the established criteria and provide an environmental benefit. Additionally, there is currently no preapproval for subsea dispersant injection and the USCG On-Scene Coordinator must approve use of this technology before any subsea application. Due to the unprecedented volume of dispersants applied for an extended period of time, the U.S. National Response Team has developed guidance for atypical dispersant operations to ensure that planning and response activities will be consistent with national policy (MMA 2017-007).

Dispersants were used extensively in the response to the Deepwater Horizon oil spill, both surface and sub-surface applications. However, during a May 2016 significant oil spill (approximately 1,926 barrels) in the Gulf of America dispersants were not utilized as part of the response. The Regional Response Team was consulted and recommended that dispersants not be used, despite acknowledging the appropriate protocols were correctly followed and that there was a net environmental benefit in utilizing dispersants. This demonstrates that the federal authorities (USCG and RRT) will be extremely prudent in their decision-making regarding dispersant use authorizations.

Due to the distance of these blocks from a topographic area and the coverage of the activities proposed in this plan by Murphy's Regional OSRP (refer to information submitted in **Appendix I**), impacts to topographic features from surface or sub-surface oil spills are not expected.

There are no other IPFs (including emissions, effluents, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact topographic features.

2. Pinnacle Trend Area Live Bottoms

Potential IPFs on pinnacle trend area live bottoms include physical disturbances to the seafloor, emissions (noise / sound), and accidents.

Physical disturbances to the seafloor: Mississippi Canyon Block 385 is 41.2 miles from the closest live bottom (pinnacle trend) area; therefore, no adverse impacts are expected.

Emissions (noise / sound): All routine OCS oil-and gas-related activities have some element of sound generation. Common sound sources include propeller cavitation, rotating machinery, and reciprocating machinery, which are associated with routine OCS oil-and gas-related activities such as vessel traffic, construction, oil and gas production, processing, and transport. Sound introduced into the marine environment as a result of human activities has the potential to affect marine organisms. Although there is little information available on sound detection and sound-mediated behaviors for marine invertebrates, the overall impacts on pinnacle and low-relief feature communities from anthropogenic noise are expected to be negligible (MMA 2017-009). Additionally, Mississippi Canyon Block 385 is 41.2 miles from the closest live bottom (pinnacle trend) area; therefore, no adverse impacts are expected.

Accidents: It is unlikely that an accidental surface or subsurface spill would occur from the proposed operations (refer to statistics in **Item 5**, Water Quality). Oil spills have the potential to foul benthic communities and cause lethal and sublethal effects on live bottom organisms. Oil from a surface spill can be driven into the water column; measurable amounts have been documented down to a 10-meter depth. At this depth, the oil is found only at concentrations several orders of magnitude lower than the amount shown to have an effect on marine organisms. Oil from a subsurface spill is not expected to impact pinnacle trend area live bottoms due to the distance of

these blocks from a live bottom (pinnacle trend) area. The activities proposed in this plan will be covered by Murphy's Regional OSRP (refer to information submitted in **Appendix I**).

If dispersants were utilized as a response method, the fate and effects of spilled oil would be impacted. A detailed discussion on dispersants, their usage during the Deepwater Horizon oil spill, and their impacts on different levels of benthic communities can be found in **Item 1**.

There are no other IPFs (including effluents and wastes sent to shore for treatment or disposal) from the proposed operations which could impact a live bottom (pinnacle trend) area.

3. Eastern Gulf Live Bottoms

Potential IPFs on Eastern Gulf live bottoms include physical disturbances to the seafloor, emissions (noise / sound), and accidents.

Physical disturbances to the seafloor: Mississippi Canyon Block 385 is not located in an area characterized by the existence of live bottoms, and this lease does not contain a Live-Bottom Stipulation requiring a photo documentation survey and survey report.

Emissions (noise / sound): All routine OCS oil-and gas-related activities have some element of sound generation. Common sound sources include propeller cavitation, rotating machinery, and reciprocating machinery, which are associated with routine OCS oil-and gas-related activities such as vessel traffic, construction, oil and gas production, processing, and transport. Sound introduced into the marine environment as a result of human activities has the potential to affect marine organisms. Although there is little information available on sound detection and sound-mediated behaviors for marine invertebrates, the overall impacts on pinnacle and low-relief feature communities from anthropogenic noise are expected to be negligible (MMA 2017-009). Additionally, Mississippi Canyon Block 385 is not located in an area characterized by the existence of live bottoms; therefore, no adverse impacts are expected.

Accidents: It is unlikely that an accidental surface or subsurface spill would occur from the proposed operations (refer to statistics in **Item 5**, Water Quality). Oil spills cause damage to live bottom organisms only if the oil contacts the organisms. Oil from a surface spill can be driven into the water column; measurable amounts have been documented down to a 10-meter depth. At this depth, the oil is found only at concentrations several orders of magnitude lower than the amount shown to have an effect on marine invertebrates. Oil from a subsurface spill is not expected to impact Eastern Gulf live bottoms due to the distance of these blocks from a live bottom area and coverage of the activities proposed in this plan by Murphy's Regional OSRP (refer to information submitted in **Appendix I**).

If dispersants were utilized as a response method, the fate and effects of spilled oil would be impacted. A detailed discussion on dispersants, their usage during the Deepwater Horizon oil spill, and their impacts on different levels of benthic communities can be found in **Item 1**.

There are no other IPFs (including effluents and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact an Eastern Gulf live bottom area.

4. Deepwater Benthic Communities

There are no IPFs (including emissions (noise / sound), effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal, and accidents) from the proposed operations that could impact deepwater benthic communities.

Mississippi Canyon Block 385 is located in water depths of 984 feet (300 meters) or greater. At such depth high-density, deepwater benthic communities may sometimes be found. However, Mississippi Canyon Block 385 is approximately 7.6 miles from a known deepwater benthic community site (Mississippi Canyon Block 426), listed in NTL 2009-G40. Therefore, Murphy's proposed operations in Mississippi Canyon Block 385 would not impact deepwater benthic communities.

Deepwater benthic communities would potentially be subject to detrimental effects from a catastrophic seafloor blowout due to sediment and oiled sediment from the initial event (MMA 2017-007). However, this is unlikely due to the distancing requirements described in NTL 2009-G40. Additionally, the potential impacts would be localized due to the directional movement of oil plumes by water currents and the scattered, patchy distribution of sensitive habitats. Although widely dispersed, biodegraded particles of a passing oil plume might impact patchy habitats, no significant impacts would be expected to the Gulfwide population. Most deepwater benthic communities are expected to experience no impacts from a catastrophic seafloor blowout due to the directional movement of oil plumes by the water currents and their scattered, patchy distribution. Impacts may be expected if a spill were to occur close to a deepwater benthic habitat, however, beyond the localized area of impact particles would become increasingly biodegraded and dispersed. Localized impacts to deepwater benthic organisms would be expected to be mostly sublethal (MMA 2017-007).

If dispersants were utilized as a response method, the fate and effects of spilled oil would be impacted. A detailed discussion on dispersants, their usage during the Deepwater Horizon oil spill, and their impacts on different levels of benthic communities can be found in **Item 1**.

5. Water Quality

Potential IPFs that could result in water quality degradation from the proposed operations in Mississippi Canyon Block 385 include disturbances to the seafloor, and accidents.

Physical disturbances to the seafloor: Bottom area disturbances resulting from the emplacement of rigs and the installation of platforms and pipelines would increase water-column turbidity and re-suspension of any accumulated pollutants, such as trace metals and excess nutrients. This would cause short-lived impacts on water quality conditions in the immediate vicinity of the emplacement

operations. There are no bottom disturbing activities (emplacement or removal of structures, etc.) associated with the proposed operations in this plan.

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

Chemical Spills

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

Oil Spills

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

If a spill were to occur, the water quality of marine waters would be temporarily affected by the dissolved components and small oil droplets. Dispersion by currents and microbial degradation would remove the oil from the water column and dilute the constituents to background levels. Historically, changes in offshore water quality from oil spills have only been detected during the life of the spill and up to several months afterwards. Most of the components of oil are insoluble in water and therefore float. Dispersants will only be used if approved by the Regional Response Team in coordination with the RRT Dispersant Plan and RRT Biological Assessment for Dispersants.

Oil spills, regardless of size, may allow hydrocarbons to partition into the water column in a dissolved, emulsion, and/or particulate phase. Therefore, impacts from reasonably foreseeable oil

spills are considered moderate. Mitigation efforts for oil spills may include booming, burning, and the use of dispersants (MMA 2017-009).

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

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

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

The activities proposed in this plan will be covered by Murphy's Regional Oil Spill Response Plan, which discusses potential response actions in more detail (refer to information submitted in **Appendix I**).

There are no other IPFs (including emissions, effluents, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact water quality.

6. Fisheries

There are multiple species of fish in the Gulf of America, including the endangered and threatened species listed in **Table 1** at the beginning of this Environmental Impact Assessment. More information regarding the endangered Gulf sturgeon (**Item 20.2**), oceanic whitetip shark (**Item 20.3**), and giant manta ray (**Item 20.4**) can be found below. Potential IPFs that could impact fisheries as a result of the proposed operations in Mississippi Canyon Block 385 include physical disturbances to the seafloor, emissions (noise / sound), and accidents.

Physical disturbances to the seafloor: The emplacement of a structure or rig results in minimal loss of bottom trawling area to commercial fishermen. Pipelines cause gear conflicts which result in losses of trawls and shrimp catch, business downtime, and vessel damage. Most financial losses from gear conflicts are covered by the Fishermen's Contingency Fund (FCF). The emplacement and removal of facilities are not expected to cause significant adverse impacts to fisheries. There are no bottom disturbing activities (emplacement or removal of structures, etc.) associated with the proposed operations in this plan.

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

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

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

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

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

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

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

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

Should an ESA-listed fish (e.g., giant manta ray, oceanic whitetip shark, or Gulf sturgeon) be entrapped, entangled, or injured, personnel should contact the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov) and report all incidents to takereport.nmfsser@noaa.gov. After making the appropriate notifications, Murphy may call MMA at (985) 722-7902 for

questions or additional guidance on recovery assistance needs, continued monitoring requirements, and incidental report information which at minimum is detailed below. Additional information may be found at the following website: https://www.fisheries.noaa.gov/report. Any injured or dead protected species should also be reported to takereport.nmfsser@noaa.gov. In addition, if the injury or death was caused by a collision with the operator's vessel, an entrapment within the operator's equipment or vessel (e.g. moon pool), or an entanglement within the operator's equipment, the operator must further notify MMA within 24 hours of the strike or entrapment/entanglement by email to protectedspecies@boem.gov and protectedspecies@bsee.gov. If the vessel is the responsible party, it is required to remain available to assist the respective salvage and stranding network as needed.

An accidental oil spill has the potential to cause some detrimental effects on fisheries; however, it is unlikely that such an event would occur from the proposed operations (refer to **Item 5**, Water Quality). The effects of oil on mobile adult finfish or shellfish would likely be sublethal and the extent of damage would be reduced to the capacity of adult fish and shellfish to avoid the spill, to metabolize hydrocarbons, and to excrete both metabolites and parent compounds. The activities proposed in this plan will be covered by Murphy's Regional OSRP (refer to information submitted in **Appendix I**).

There are no other IPFs (including effluents and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact fisheries.

7. Marine Mammals

The latest population estimates for the Gulf of America revealed that cetaceans of the continental shelf and shelf-edge were almost exclusively bottlenose dolphin and Atlantic spotted dolphin. Squid eaters, including dwarf and pygmy killer whale, Risso's dolphin, rough-toothed dolphin, and Cuvier's beaked whale, occurred most frequently along the upper slope in areas outside of anticyclones. The Rice's whale (née Gulf of America Bryde's whale) is the only commonly occurring baleen whale in the northern Gulf of America and has been sighted off western Florida and in the De Soto Canyon region. Florida manatees have been sighted along the entire northern GOA but are mainly found in the shallow coastal waters of Florida, which are unassociated with the proposed operations. A complete list of all endangered and threatened marine mammals in the GOA may be found in **Table 1** at the beginning of this Environmental Impact Assessment. More information regarding the endangered Rice's whale can be found in **Item 20.1** below. Potential IPFs that could impact marine mammals as a result of the proposed operations in Mississippi Canyon Block 385 include emissions, discarded trash and debris, and accidents.

Emissions (noise / sound): Noises from construction activities, support vessels and helicopters (i.e., non-impulsive anthropogenic sound) may elicit a startle reaction from marine mammals. This reaction may lead to disruption of marine mammals' normal activities. Stress may make them more vulnerable to parasites, disease, environmental contaminants, and/or predation (Majors and Myrick, 1990). Responses to sound exposure may include lethal or nonlethal injury, temporary hearing impairment, behavioral harassment and stress, or no apparent response. Noise-induced stress is possible, but it is little studied in marine mammals. Tyack (2008) suggests that a more

significant risk to marine mammals from sound are these less visible impacts of chronic exposure. There is little conclusive evidence for long-term displacements and population trends for marine mammals relative to noise.

Vessels are the greatest contributors to increases in low-frequency ambient sound in the sea (Andrew et al. 2011). Sound levels and tones produced are generally related to vessel size and speed. Larger vessels generally emit more sound than smaller vessels, and vessels underway with a full load, or those pushing or towing a load, are noisier than unladen vessels. Cetacean responses to aircraft depend on the animals' behavioral state at the time of exposure (e.g., resting, socializing, foraging, or traveling) as well as the altitude and lateral distance of the aircraft to the animals (Luksenburg and Parsons 2009). The underwater sound intensity from aircraft is less than produced by vessels, and visually, aircraft are more difficult for whales to locate since they are not in the water and move rapidly (Richter et al. 2006). Perhaps not surprisingly then, when aircraft are at higher altitudes, whales often exhibit no response, but lower flying aircraft (e.g., approximately 500 meters or less) have been observed to elicit short-term behavioral responses (Luksenburg and Parsons 2009; NMFS 2017b; NMFS 2017f; Patenaude et al. 2002; Smultea et al. 2008a; Wursig et al. 1998). Thus, aircraft flying at low altitude, at close lateral distances and above shallow water elicit stronger responses than aircraft flying higher, at greater lateral distances and over deep water (Patenaude et al. 2002; Smultea et al. 2008a). Routine OCS helicopter traffic would not be expected to disturb animals for extended periods, provided pilots do not alter their flight patterns to more closely observe or photograph marine mammals. Helicopters, while flying offshore, generally maintain altitudes above 700 feet during transit to and from a working area, and at an altitude of about 500 feet between platforms. The duration of the effects resulting from a startle response is expected to be short-term during routine flights, and the potential effects will be insignificant to sperm whales and Rice's whales. Therefore, we find that any disturbance that may result from aircraft associated with the proposed operations is not likely to adversely affect ESA-listed whales.

Construction and production noise would contribute to increases in the ambient noise environment of the GOA, but they are not expected in amplitudes sufficient to cause either hearing or behavioral impacts (MMA 2017-009). There is the possibility of short-term disruption of movement patterns and/or behavior caused by vessel noise and disturbance; however, these are not expected to impact survival and growth of any marine mammal populations in the GOA. Additionally, the National Marine Fisheries Service published a final recovery plan for the sperm whale, which identified anthropogenic noise as either a low or unknown threat to sperm whales in the GOA (USDOC, NMFS, 2010b). Sirenians (i.e., manatees) are not located within the area of operations. Additionally, there were no specific noise impact factors identified in the latest MMA environmental impact statement for sirenians related to GOA OCS operations (MMA 2017-009). See **Item 20.1** for details on the Rice's whale.

The National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion Appendix C explains how operators must implement measures to minimize the risk of vessel strikes to protected species and report observations of injured or dead protected species. This guidance should also minimize the chance of marine mammals being subject to the increased noise level of a service vessel in very close proximity.

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

Noises from vessels and helicopters may elicit a startle reaction from marine mammals. This reaction may lead to disruption of marine mammals' normal activities. Stress may make them more vulnerable to parasites, disease, environmental contaminants, and/or predation (Majors and Myrick, 1990). There is little conclusive evidence for long-term displacements and population trends for marine mammals relative to noise.

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

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

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

Accidents: Collisions between support vessels and marine mammals, including cetaceans, would be unusual events, however, should one occur, death or injury to marine mammals is possible. Contract vessel operators can avoid marine mammals and reduce potential deaths by maintaining a vigilant watch for marine mammals and maintaining a safe distance of 500 meters or greater from baleen whales, 100 meters or greater from sperm whales, and a distance of 50 meters or greater from all other aquatic protected species, with the exception of animals that approach the

vessel. If unable to identify the marine mammal, the vessel will act as if it were a baleen whale and maintain a distance of 500 meters or greater. If a manatee is sighted, all vessels in the area will operate at "no wake/idle" speeds in the area, while maintaining proper distance. When assemblages of cetaceans are observed, including mother/calf pairs, vessel speeds will be reduced to 10 knots or less. Vessel personnel should use a Gulf of America reference guide that includes identifying information on marine mammals, sea turtles, and other marine protected species (i.e., Endangered Species Act listed species such as Gulf sturgeon, giant manta ray, or oceanic whitetip shark) that may be encountered in the Gulf of America OCS.

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

Vessel personnel must report sightings of any injured or dead protected marine mammal species immediately, regardless of whether the injury or death is caused by their vessel, to the NMFS Southeast Marine Mammal Stranding Hotline at (877) WHALE-HELP (877-942-5343). Additional information may be found at the following website: https://www.fisheries.noaa.gov/report. Any injured or dead protected species should also be reported to takereport.nmfsser@noaa.gov. In addition, if the injury or death was caused by a collision with the operator's vessel, an entrapment within the operator's equipment or vessel (e.g. moon pool), or an entanglement within the operator's equipment, the operator must further notify MMA within 24 hours of the strike or entrapment/entanglement by email to protectedspecies@boem.gov and protectedspecies@bsee.gov. If the vessel is the responsible party, it is required to remain available to assist the respective salvage and stranding network as needed.

These proposed operations will not utilize moon pools to conduct activities.

Oil spills have the potential to cause sublethal oil-related injuries and spill-related deaths to marine mammals. However, it is unlikely that an accidental oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). Oil spill response activities may increase vessel traffic in the area, which could impact cetacean behavior and/or distribution, thereby causing additional stress to the animals. The effect of oil dispersants on cetaceans is not known. Removing oil from the surface would reduce the likelihood of oil adhering to marine mammals. Laboratory experiments have shown that the dispersants used during the Deepwater Horizon response are cytotoxic to sperm whale cells; however, it is difficult to determine actual exposure levels in the GOA. Therefore, dispersants will only be used if approved by the Regional Response Team in coordination with the RRT Dispersant Plan and RRT Biological Assessment for Dispersants. The acute toxicity of oil dispersant chemicals included in Murphy's OSRP is considered to be low when compared with the constituents and fractions of crude oils and diesel products. The activities proposed in this plan will be covered by Murphy's OSRP (refer to information submitted in accordance with **Appendix I**).

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

NMFS Protected Resources Contacts for the Gulf of America:

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

There are no other IPFs (including physical disturbances to the seafloor and effluents) from the proposed operations that are likely to impact marine mammals.

8. Sea Turtles

GulfCet II studies sighted most loggerhead, Kemp's ridley and leatherback sea turtles over shelf waters. Historically these species have been sighted up to the shelf's edge. They appear to be more abundant east of the Mississippi River than they are west of the river (Fritts et al., 1983b; Lohoefener et al., 1990). Deep waters may be used by all species as a transitory habitat. A complete list of endangered and threatened sea turtles in the GOA may be found in **Table 1** at the beginning of this Environmental Impact Assessment. Additional details regarding the loggerhead sea turtle's critical habitat in the GOA are located in **Item 20.5**. Potential IPFs that could impact sea turtles as a result of the proposed operations include emissions, discarded trash and debris, and accidents.

Emissions (noise / sound): Noise from vessels, and helicopters may elicit a startle reaction from sea turtles, but this is a temporary disturbance. As a result, sound sources associated with vessel movement as part of the proposed operations are insignificant and therefore are not likely to adversely affect sea turtles. Exposure to sound from pile driving activities may result in hearing loss and temporary loss of available habitat for sea turtles, including some local displacement from the area for as long as the pile driving activity is occurring. The impact of this exposure is not anticipated to be significant for adult sea turtles because the continuous "banging" of a pile should provide ample warning to avoid the immediate pile-driving area. Juvenile sea turtles may be motivated to remain in *Sargassum* habitat and may not leave the area, which could cause hearing loss; the juveniles that do leave the area may be adversely affected by being displaced from *Sargassum* habitat. The annual number of predicted disturbances of oceanic juveniles is relatively low.

Discarded trash and debris: Both entanglement in, and ingestion of, debris have caused the death or serious injury of sea turtles (Balazs, 1985). The limited amount of marine debris, if any, resulting from the proposed operations is not expected to substantially harm sea turtles. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies,

including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

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

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

Accidents: Collisions between support vessels and sea turtles would be unusual events, however, should one occur, death or injury to sea turtles is possible. Contract vessel operators can avoid sea turtles and reduce potential deaths by maintaining a vigilant watch for sea turtles and maintaining a safe distance of 50 meters or greater when they are sighted, with the exception of sea turtles that approach the vessel. Vessel crews should use a reference guide to help identify the five species of sea turtles that may be encountered in the Gulf of America OCS as well as other marine protected species (i.e., Endangered Species Act listed species). Contract vessel operators will comply with the measures included in Appendix C of the NMFS Biological Opinion and requirements of the Protected Species Lease Stipulation, except under extraordinary circumstances when the safety of the vessel or crew is in doubt or the safety of life at sea is in question.

Vessel crews must report sightings of any injured or dead protected sea turtle species immediately, regardless of whether the injury or death is caused by their vessel, to the State Coordinators for the Sea Turtle Stranding and Salvage Network (STSSN) at http://www.sefsc.noaa.gov/species/turtles/stranding_coordinators.htm (phone numbers vary by state). Additional information may be found at the following website: https://www.fisheries.noaa.gov/report. Any injured or dead protected species should also be reported to takereport.nmfsser@noaa.gov. In addition, if the injury or death was caused by a collision with the operator's vessel, an entrapment within the operator's equipment or vessel (e.g. moon pool), or an entanglement within the operator's equipment, the operator must further notify MMA within 24 hours of the strike or entrapment/entanglement by email to protectedspecies@boem.gov and protectedspecies@bsee.gov. If the vessel is the responsible

party, it is required to remain available to assist the respective salvage and stranding network as needed.

These proposed operations will not utilize moon pools to conduct activities.

All sea turtle species and their life stages are vulnerable to the harmful effects of oil through direct contact or by fouling of their food. Exposure to oil can be fatal, particularly to juveniles and hatchlings. However, it is unlikely that an accidental oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). Oil spill response activities may increase vessel traffic in the area, which could add to the possibility of collisions with sea turtles. The activities proposed in this plan will be covered by Murphy's Regional Oil Spill Response Plan (refer to information submitted in accordance with **Appendix I**).

The NMFS Office of Protected Resources coordinates agency assessment of the need for response and leads response efforts for spills that may impact sea turtles. If a spill may impact sea turtles, the following NMFS Protected Resources Contacts should be notified, and they will initiate notification of other relevant parties.

- Dr. Brian Stacy at brian.stacy@noaa.gov and 352-283-3370 (cell); or
- Stacy Hargrove at stacy.hargrove@noaa.gov and 305-781-7453 (cell)

There are no other IPFs (including physical disturbances to the seafloor and effluents) from the proposed operations that are likely to impact sea turtles.

9. Air Quality

Potential IPFs that could impact air quality as a result of the proposed operations include accidents.

Mississippi Canyon Block 385 is located 78.4 miles from the Breton Wilderness Area and 55 miles from shore. Applicable emissions data is included in **Appendix H** of the Plan.

There would be a limited degree of air quality degradation in the immediate vicinity of the proposed operations. Plan Emissions for the proposed operations do not exceed the annual exemption levels as set forth by MMA. Accidents and blowouts can release hydrocarbons or chemicals, which could cause the emission of air pollutants. However, these releases would not impact onshore air quality because of the prevailing atmospheric conditions, emission height, emission rates, and the distance of Mississippi Canyon Block 385 from the coastline. There are no other IPFs (including effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact air quality.

10. Shipwreck Sites (known or potential)

In accordance with MMA NTL 2005-G07, Murphy will submit an archaeological resource report per 30 CFR 550.194 if directed to do so by the Regional Director.

Potential IPFs that could impact known or unknown shipwreck sites as a result of the proposed operations in Mississippi Canyon Block 385 include accidents and disturbances to the seafloor. Mississippi Canyon Block 385 is not located in or adjacent to an OCS block designated by MMA as having a high probability for occurrence of shipwrecks. Should Murphy discover any evidence of a shipwreck, they will immediately halt operations within a 1000-foot radius, report to MMA within 48 hours, and make every reasonable effort to preserve and protect that cultural resource.

Physical Disturbances to the seafloor: Mississippi Canyon Block 385 is not located in or adjacent to an OCS block designated by MMA as having a high probability for occurrence of shipwrecks; therefore, no adverse impacts are expected.

Accidents: An accidental oil spill has the potential to cause some detrimental effects to shipwreck sites if the release were to occur subsea. However, it is unlikely that an accidental oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). The activities proposed in this plan will be covered by Murphy's Regional Oil Spill Response Plan (refer to information submitted in accordance with **Appendix I**).

There are no other IPFs (including emissions, effluents, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact shipwreck sites.

11. Prehistoric Archaeological Sites

In accordance with MMA NTL 2005-G07, Murphy will submit an archaeological resource report per 30 CFR 550.194 if directed to do so by the Regional Director.

Potential IPFs that could impact prehistoric archaeological sites as a result of the proposed operations in Mississippi Canyon Block 385 are disturbances to the seafloor and accidents (oil spills). Should Murphy discover any object of prehistoric archaeological significance, they will immediately halt operations within a 1000-foot radius, report to MMA within 48 hours, and make every reasonable effort to preserve and protect that cultural resource.

Physical disturbances to the seafloor: Mississippi Canyon Block 385 is located inside the Archaeological Prehistoric high probability lines. Murphy will report to MMA the discovery of any object of prehistoric archaeological significance and make every reasonable effort to preserve and protect that cultural resource.

Accidents: An accidental oil spill has the potential to cause some detrimental effects to prehistoric archaeological sites if the release were to occur subsea. However, it is unlikely that an accidental oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). The activities

proposed in this plan will be covered by Murphy's Regional Oil Spill Response Plan (refer to information submitted in accordance with **Appendix I**).

There are no other IPFs (including emissions, effluents, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact prehistoric archaeological sites.

Vicinity of Offshore Location

12. Essential Fish Habitat (EFH)

Potential IPFs that could impact EFH as a result of the proposed operations in Mississippi Canyon Block 385 include physical disturbances to the seafloor and accidents. EFH includes all estuarine and marine waters and substrates in the Gulf of America.

Physical disturbances to the seafloor: Turbidity and sedimentation resulting from the bottom disturbing activities included in the proposed operations would be short term and localized. Fish are mobile and would avoid these temporarily suspended sediments. Additionally, the Live Bottom Low Relief Stipulation, the Live Bottom (Pinnacle Trend) Stipulation, and the Eastern Gulf Pinnacle Trend Stipulation have been put in place to minimize the impacts of bottom disturbing activities. Therefore, the bottom disturbing activities from the proposed operations would have a negligible impact on EFH. There are no bottom disturbing activities associated with the proposed operations in this plan.

Accidents: An accidental oil spill has the potential to cause some detrimental effects on EFH. Oil spills that contact coastal bays and estuaries, as well as OCS waters when pelagic eggs and larvae are present, have the greatest potential to affect fisheries. However, it is unlikely that an oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). The activities proposed in this plan will be covered by Murphy's Regional OSRP (refer to information submitted in **Appendix I**).

There are no other IPFs (including emissions, effluents, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact essential fish habitat.

13. Marine and Pelagic Birds

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

Emissions:

Air Emissions

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

Noise / Sound Emissions

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

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

Accidents: An oil spill would cause localized, low-level petroleum hydrocarbon contamination. However, it is unlikely that an oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). Marine and pelagic birds feeding at the spill location may experience chronic, nonfatal, physiological stress. It is expected that few, if any, coastal and marine birds would actually be affected to that extent. The activities proposed in this plan will be covered by Murphy's Regional OSRP (refer to information submitted in **Appendix I**).

Discarded trash and debris: Marine and pelagic birds could become entangled and snared in discarded trash and debris, or ingest small plastic debris, which can cause permanent injuries and death. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies, including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

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

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g., helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), *Think About It* (*previously All Washed Up: The Beach Litter Problem*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from Murphy management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-MMA. Debris, if any, from these proposed operations will seldom interact with marine and pelagic birds; therefore, the effects will be negligible.

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

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

14. Public Health and Safety Due to Accidents.

There are no IPFs (including emissions, effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal, and accidents, including an accidental H_2S release) from the proposed operations which could impact public health and safety. In accordance with NTL No.'s 2008-G04, 2009-G27, and 2009-G31, sufficient information is included in **Appendix D** to justify our request that our proposed operations be classified by MMA as H_2S absent.

Coastal and Onshore

15. Beaches

Potential IPFs from the proposed operations that could impact beaches include accidents and discarded trash and debris.

Accidents: Oil spills contacting beaches would have impacts on the use of recreational beaches and associated resources. Due to the distance from shore (55 miles) and the response capabilities that would be implemented, no significant adverse impacts are expected. The activities proposed in this plan will be covered by Murphy's Regional OSRP (refer to information submitted in **Appendix I**).

Discarded trash and debris: Trash on the beach is recognized as a major threat to the enjoyment and use of beaches. There will only be a limited amount of marine debris, if any, resulting from the proposed operations. Operators are prohibited from deliberately discharging debris as

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

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

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

There are no other IPFs (including emissions, effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact beaches.

16. Wetlands

Potential IPFs from the proposed operations that could impact wetlands include accidents and discarded trash and debris.

Accidents: Oil spills could impact wetlands; however, it is unlikely that an oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). Due to the distance from shore (55 miles) and the response capabilities that would be implemented, no impacts are expected. The activities proposed in this plan will be covered by Murphy's Regional OSRP (refer to information submitted in **Appendix I**).

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

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

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

There are no other IPFs (including emissions, effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact wetlands.

17. Shore Birds and Coastal Nesting Birds

Potential IPFs that could impact shore birds and coastal nesting birds as a result of the proposed operations include accidents and discarded trash and debris.

Accidents: Oil spills could impact shore birds and coastal nesting birds. However, it is unlikely that an oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). Given the distance from shore (55 miles) and the response capabilities that would be implemented, no impacts are expected. The activities proposed in this plan will be covered by Murphy's Regional OSRP (refer to information submitted in **Appendix I**).

Discarded trash and debris: Coastal and marine birds are highly susceptible to entanglement in floating, submerged, and beached marine debris: specifically, plastics. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies, including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

Murphy will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion

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

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

There are no other IPFs (including emissions, effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact shore birds and coastal nesting birds.

18. Coastal Wildlife Refuges

Potential IPFs that could impact coastal wildlife refuges as a result of the proposed operations include accidents and discarded trash and debris.

Accidents: An accidental oil spill from the proposed operations could impact coastal wildlife refuges. However, it is unlikely that an oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). Due to the distance from shore (55 miles) and the response capabilities that would be implemented, no impacts are expected. The activities proposed in this plan will be covered by Murphy's Regional OSRP (refer to information submitted in **Appendix I**).

Discarded trash and debris: Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act and regulations imposed by various agencies including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

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

environmentally persistent materials such as plastic or glass. Murphy will also collect and remove flotsam resulting from activities related to proposed operations.

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

There are no other IPFs (including emissions, effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact coastal wildlife refuges.

19. Wilderness Areas

Potential IPFs that could impact wilderness areas as a result of the proposed operations include accidents and discarded trash and debris.

Accidents: An accidental oil spill from the proposed operations could impact wilderness areas. However, it is unlikely that an oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). Due to the distance from the nearest designated Wilderness Area (78.4 miles) and the response capabilities that would be implemented, no significant adverse impacts are expected. The activities proposed in this plan will be covered by Murphy's Regional OSRP (refer to information submitted in **Appendix I).**

Discarded trash and debris: Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act and regulations imposed by various agencies including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

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

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

There are no other IPFs (including emissions, effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact wilderness areas.

20. Other Environmental Resources Identified

20.1 – Rice's Whale (née Gulf of America Bryde's Whale)

The Bryde's whale, also known as the Bryde's whale complex, is a collection of baleen whales that are still being researched to determine if they are the same species or if they are individual species of whales. In 2021, the Rice's whale, formerly known as the Gulf of America Bryde's whale, was determined to be a separate species from other Bryde's whales. There are less than 100 Rice's whales living in the Gulf of America year-round. These whales retain all the protections of the Gulf of America Bryde's whale under the Endangered Species Act while the regulations are being updated to reflect the name change.

The Rice's whale (née Gulf of America Bryde's whale) is the only commonly occurring baleen whale in the northern Gulf of America and has been sighted off western Florida and in the De Soto Canyon region. The Rice's whale area is over 30.8 miles from the proposed operations. Additionally, vessel traffic associated with the proposed operations will not flow through the Rice's whale area. Therefore, there are no IPFs from the proposed operations that are likely to impact the Rice's whale. Additional information on marine mammals may be found in **Item 7**.

20.2 – Gulf Sturgeon

The Gulf sturgeon resides primarily in inland estuaries and rivers from Louisiana to Florida and a small population of the species enters the Gulf of America seasonally in western Florida. Potential IPFs from the proposed operations that could impact the Gulf sturgeon include accidents, emissions (noise / sound), and discarded trash and debris. Additional information on ESA-listed fish may be found in **Item 6**.

Accidents: Collisions between support vessels and the Gulf sturgeon would be unusual events; however, should one occur, death or injury to the Gulf sturgeon is possible. Contract vessel operators can avoid protected aquatic species and reduce potential deaths by maintaining a vigilant watch and a distance of 50 meters or greater, with the exception of animals that approach the

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

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

Should an ESA-listed fish (e.g., giant manta ray, oceanic whitetip shark, or Gulf sturgeon) be entrapped, entangled, or injured, personnel should contact the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov) and report all incidents to takereport.nmfsser@noaa.gov. After making the appropriate notifications, Murphy may call MMA at (985) 722-7902 for questions or additional guidance on recovery assistance needs, continued monitoring requirements, and incidental report information which at minimum is detailed below. Additional information may be found at the following website: https://www.fisheries.noaa.gov/report. Any injured or dead protected species should also be reported to takereport.nmfsser@noaa.gov. In addition, if the injury or death was caused by a collision with the operator's vessel, an entrapment within the operator's equipment or vessel (e.g. moon pool), or an entanglement within the operator's equipment, the operator must further notify MMA within 24 hours of the strike or entrapment/entanglement by email to protectedspecies@boem.gov and protectedspecies@bsee.gov. If the vessel is the responsible party, it is required to remain available to assist the respective salvage and stranding network as needed.

Due to the distance from the nearest identified Gulf sturgeon critical habitat (108.7 miles) and the response capabilities that would be implemented during a spill, no significant adverse impacts are expected to the Gulf sturgeon. Considering the information from the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, the location of this critical habitat in relation to proposed operations, the likely dilution of oil reaching nearshore areas, and the on-going weathering and dispersal of oil over time, we do not anticipate the effects from oil spills will appreciably diminish the value of Gulf sturgeon designated critical habitat for the conservation of the species. The activities proposed in this plan will be covered by Murphy's Regional OSRP (refer to information submitted in **Appendix I)**.

Emissions (noise / sound): All routine OCS oil-and gas-related activities have some element of sound generation. Common sound sources include propeller cavitation, rotating machinery, and reciprocating machinery, which are associated with routine OCS oil-and gas-related activities such as vessel traffic, constructionoil and gas production, processing, and transport. Sound introduced into the marine environment as a result of human activities has the potential to affect marine organisms**.** The National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion found that construction and operational sounds other than pile driving will have insignificant effects on Gulf sturgeon (NMFS, 2020). There are no pile driving activities

associated with the proposed operations, therefore noise impacts are not expected to significantly affect Gulf sturgeon.

Discarded trash and debris: Trash and debris are not expected to impact the Gulf sturgeon. There will only be a limited amount of marine debris, if any, resulting from the proposed operations. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies, including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

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

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

There are no other IPFs (including effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact the Gulf sturgeon.

20.3 – Oceanic Whitetip Shark

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

whitetip sharks include vessel strike, emissions (noise / sound), discharges, entanglement and entrapment, and marine debris. IPFs that could impact oceanic whitetip sharks as a result of the proposed operations in Mississippi Canyon Block 385 include accidents. Additional information on ESA-listed fish may be found in **Item 6**.

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

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

Should an ESA-listed fish (e.g., giant manta ray, oceanic whitetip shark, or Gulf sturgeon) be entrapped, entangled, or injured, personnel should contact the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov) and report all incidents to takereport.nmfsser@noaa.gov. After making the appropriate notifications, Murphy may call MMA at (985) 722-7902 for questions or additional guidance on recovery assistance needs, continued monitoring requirements, and incidental report information which at minimum is detailed below. Additional information may be found at the following website: https://www.fisheries.noaa.gov/report. Any injured or dead protected species should also be reported to takereport.nmfsser@noaa.gov. In addition, if the injury or death was caused by a collision with the operator's vessel, an entrapment within the operator's equipment or vessel (e.g. moon pool), or an entanglement within the operator's equipment, the operator must further notify MMA within 24 hours of the strike or entrapment/entanglement by email to protectedspecies@boem.gov and protectedspecies@bsee.gov. If the vessel is the responsible party, it is required to remain available to assist the respective salvage and stranding network as needed.

There is little information available on the impacts of oil spills or dispersants on oceanic whitetip sharks. It is expected that exposure of oil or dispersants to oceanic whitetip sharks would likely result in effects similar to other marine species, including fitness reduction and the possibility of mortality (NMFS, 2020). Due to the sparse population in the Gulf of America, it is possible that a small number of oceanic whitetip sharks could be impacted by an oil spill. However, it is unlikely that such an event would occur from the proposed operations (refer to **Item 5**, Water Quality). The activities proposed in this plan will be covered by Murphy's Regional OSRP (refer to information submitted in **Appendix I**).

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

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

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

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

There are no other IPFs (including effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact oceanic whitetip sharks.

20.4 – Giant Manta Ray

According to the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, the giant manta ray lives in tropical, subtropical, and temperate oceanic waters and productive coastlines throughout the Gulf of America. While uncommon in the Gulf of America, there is a population of approximately 70 giant manta rays in the Flower Garden Banks National Marine Sanctuary (Miller and Klimovich 2017). Giant manta rays were listed as threated under the Endangered Species Act in 2018 due to worldwide overfishing. Giant manta rays had an abundant worldwide population, which has been threatened in recent years by inadequate

regulatory measures governing fisheries; therefore, there is little research regarding the impact of oil and gas operations on giant manta rays (NMFS, 2020). IPFs that have been determined by NMFS to be discountable to giant manta rays include vessel strike, emissions (noise / sound), discharges, entanglement and entrapment, and marine debris. IPFs that could impact giant manta rays as a result of the proposed operations in Mississippi Canyon Block 385 include accidents. Additional information on ESA-listed fish may be found in **Item 6**.

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

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

Should an ESA-listed fish (e.g., giant manta ray, oceanic whitetip shark, or Gulf sturgeon) be entrapped, entangled, or injured, personnel should contact the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov) and report all incidents to takereport.nmfsser@noaa.gov. After making the appropriate notifications, Murphy may call MMA at (985) 722-7902 for questions or additional guidance on recovery assistance needs, continued monitoring requirements, and incidental report information which at minimum is detailed below. Additional information may be found at the following website: https://www.fisheries.noaa.gov/report. Any injured or dead protected species should also be reported to takereport.nmfsser@noaa.gov. In addition, if the injury or death was caused by a collision with the operator's vessel, an entrapment within the operator's equipment or vessel (e.g. moon pool), or an entanglement within the operator's equipment, the operator must further notify MMA within 24 hours of the strike or entrapment/entanglement by email to protectedspecies@boem.gov and protectedspecies@bsee.gov. If the vessel is the responsible party, it is required to remain available to assist the respective salvage and stranding network as needed.

There is little information available on the impacts of oil spills or dispersants on giant manta rays. It is expected that exposure of oil or dispersants to giant manta rays would likely result in effects similar to other marine species, including fitness reduction and the possibility of mortality (NMFS, 2020). It is possible that a small number of giant manta rays could be impacted by an oil spill in the Gulf of America. However, due to the distance to the Flower Garden Banks (224.4 miles), the low population dispersed throughout the Gulf of America, and the response capabilities that would be implemented during a spill, no significant adverse impacts are expected to impact giant manta rays. Additionally, it is unlikely that such an event would occur from the proposed operations (refer

to **Item 5**, Water Quality). The activities proposed in this plan will be covered by Murphy's Regional OSRP (refer to information submitted in **Appendix I**).

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

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

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

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

There are no other IPFs (including effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact giant manta rays.

20.5 – Loggerhead Sea Turtle

The loggerhead sea turtles are large sea turtles that inhabit continental shelf and estuarine environments throughout the temperate and tropical regions of the Atlantic Ocean, with nesting beaches along the northern and western Gulf of America. NMFS issued a Final Rule in 2014 (79

FR 39855) designating a critical habitat including 38 marine areas within the Northwest Atlantic Ocean, with seven of those areas residing within the Gulf of America. These areas contain one or a combination of habitat types: nearshore reproductive habitats, winter areas, breeding areas, constricted migratory corridors, and/or *Sargassum* habitats.

There are multiple IPFs that may impact loggerhead sea turtles (see **Item 8**). However, the closest loggerhead critical habitat is located 109.9 miles from Mississippi Canyon Block 385; therefore, no adverse impacts are expected to the critical habitat. Additionally, considering the information from the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, we do not expect proposed operations to affect the ability of *Sargassum* to support adequate prey abundance and cover for loggerhead turtles.

20.6 - Protected Corals

Protected coral habitats, including designated critical habitats, are noncontiguous and occur in the Flower Garden Banks National Marine Sanctuary and Florida. Five banks in the Flower Garden Banks National Marine Sanctuary have been designated as critical habitats for boulder star (Orbicella franksi), lobed star (Orbicella annularis), and mountainous star (Orbicella faveolate) corals. Elkhorn coral can also be found in the Flower Garden Banks, though the area is not a designated critical habitat for this coral. Various coastal counties in Florida are also designated as critical habitats for protected coral species. These coral habitats are located outside of the planning area and are not expected to be impacted by the proposed operations. The following table comprehensively details the designated critical habitat for each protected coral species in the Flower Garden Banks National Marine Sanctuary and Florida.

		Protected Corals						
		Elkhorn Coral *Acopora palmate*	Staghorn Coral *Acopora cervicornis*	Boulder Star Coral *Orbicella franksi*	Lobed Star Coral *Orbicella annularis*	Mountainous Star Coral *Orbicella faveolate*	Rough Cactus Coral *Mycetophyllia ferox*	Pillar Coral *Dendrogyra cylindrus*
Designated Critical Habitat	**Flower Garden Banks National Marine Sanctuary**							
	East Flower Garden Bank			X	X	X		
	West Flower Garden Bank			X	X	X		
	Rankin Bank			X	X	X		
	Rankin Bank			X	X	X		
	Geyer Bank			X	X	X		
	McGrail Bank			X	X	X		
	Florida (outside of planning area)							
	Martin County					X		

	Palm Beach County	X	X	X	X	X		X
	Broward County	X	X	X	X	X	X	X
	Miami-Dade County	X	X	X	X	X	X	X
	Monroe County	X	X	X	X	X	X	X

Potential IPFs to protected corals from the proposed operations include accidents.

Accidents: It is unlikely that an accidental surface or subsurface spill would occur from the proposed operations (refer to statistics in **Item 5**, Water Quality). Oil spills cause damage to corals only if the oil contacts the organisms. Due to the distance from the Flower Garden Banks National Marine Sanctuary (224.4 miles) and other critical coral habitats, no adverse impacts are expected. The activities proposed in this plan will be covered by Murphy's Regional OSRP (refer to information submitted in **Appendix I**).

There are no other IPFs (including emissions, effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact protected corals.

20.7 - Endangered Beach Mice

There are four subspecies of endangered beach mouse that are found in the dune systems along parts of Alabama and northwest Florida. Due to the location of Mississippi Canyon Block 385 and the beach mouse critical habitat (above the intertidal zone), there are no IPFs that are likely to impact endangered beach mice.

20.8 - Navigation

The current system of navigation channels around the northern GOA is believed to be generally adequate to accommodate traffic generated by the future Gulfwide OCS Program. As exploration and development activities increase on deepwater leases in the GOA, port channels may need to be expanded to accommodate vessels with deeper drafts and longer ranges. However, current navigation channels will not be changed, and new channels will not be required as a result of the activities proposed in this plan.

(C) IMPACTS ON PROPOSED OPERATIONS

The site–specific environmental conditions have been taken into account for the proposed operations. No impacts are expected on the proposed operations from site-specific environmental conditions.

(D) ENVIRONMENTAL HAZARDS

During the hurricane season, June through November, the Gulf of America is impacted by an average of ten tropical storms (39-73 mph winds), of which six become hurricanes (> 74 mph winds). Due to its location in the Gulf, Mississippi Canyon Block 385 may experience hurricane and tropical storm force winds and related sea currents. These factors can adversely impact the integrity of the operations covered by this plan. A significant storm may present physical hazards to operators and vessels, damage exploration or production equipment, or result in the release of hazardous materials (including hydrocarbons). Additionally, the displacement of equipment may disrupt the local benthic habitat and pose a threat to local species.

The following preventative measures included in this plan may be implemented to mitigate these impacts:

1. Platform / structure Installation

   Operator will not conduct platform / structure installation operations during Tropical Storm or Hurricane threat.

2. Pipeline Installation

   Operator will not conduct pipeline installation operations during Tropical Storm or Hurricane threat.

(E) ALTERNATIVES

No alternatives to the proposed operations were considered to reduce environmental impacts.

(F) MITIGATION MEASURES

No mitigation measures other than those required by regulation will be employed to avoid, diminish, or eliminate potential impacts on environmental resources.

(G) CONSULTATION

No agencies or persons were consulted regarding potential impacts associated with the proposed operations. Therefore, a list of such entities has not been provided.

(H) PREPARER(S)

Stephen Depew
J. Connor Consulting, Inc.
19219 Katy Freeway, Suite 200
Houston, Texas 77094
(281) 578-3388
Stephen.depew@jccteam.com

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Authors:

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Although not cited, the following were utilized in preparing this EIA:

- Hazard Surveys

SECTION S
ADMINISTRATIVE INFORMATION

(a) Exempted Information Description

The proposed bottom-hole locations of the wells have been removed from the public information copy of the Initial DOCD as well as any discussions of the target objectives, geologic or geophysical data, and any interpreted geology.

(b) Bibliography

- Revised Exploration Plan, Control No. R-7402, approved on November 14, 2025
- Supplemental Exploration Plan, Control No. S-8182, approved on March 28, 2025