UNITED STATES GOVERNMENT June 6, 2019
MEMORANDUM

To: Public Information (MS 5030)
From: Plan Coordinator, FO, Plans Section (MS 5231)

Subject: Public Information copy of plan

Control #	-	S-07951
Type	-	Supplemental Exploration Plan
Lease(s)	-	OCS-G34551 Block - 511 Green Canyon Area
Operator	-	Hess Corporation
Description	-	Subsea Well FD002C and FD002D
Rig Type	-	Not Found

Attached is a copy of the subject plan.

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

Leslie Wilson
Plan Coordinator

Site Type/Name	Botm Lse/Area/Blk	Surface Location	Surf Lse/Area/Blk
WELL/FD002C	G34551/GC/511	4120 FSL, 4550 FWL	G34551/GC/511
WELL/FD002D	G34551/GC/511	3188 FSL, 4340 FWL	G34551/GC/511

HESS CORPORATION
1501 McKinney Street
Houston, TX 77010

April 8, 2019

VIA OVERNIGHT DELIVERY

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Ocean Energy Management
Gulf of Mexico Region Office
1201 Elmwood Park Boulevard
New Orleans, LA 70123-2394

Attn: **Plans Section (GM 235D)**

Re: **SUPPLEMENTAL EXPLORATION PLAN**
Flying Dutchman/Stampede Field – Green Canyon Area
Federal Waters, Gulf of Mexico, Offshore Louisiana

Please find enclosed for your review and consideration two proprietary and two public information copies of a Supplemental Exploration Plan for upcoming operations in Hess' Flying Dutchman/Stampede Field, located in the Green Canyon Area.

Under this Supplemental EP, Hess proposes to drill and complete two subsea wells within Green Canyon 511 OCS-G34551. Production and associated subsea infrastructure will be submitted under a separate Supplemental DOCD.

Hess anticipates activities under this plan to begin in September 2019.

Should you have any questions or require any additional information, please don't hesitate to contact me at any time.

Regards,

HESS CORPORATION

Brittany Gill
(713) 496-5866
bgill@hess.com

PUBLIC INFORMATION

Gill, Brittany

From: notification@pay.gov
Sent: Monday, April 08, 2019 1:51 PM
To: Gill, Brittany
Subject: Pay.gov Payment Confirmation: BOEM Exploration Plan - BF

An official email of the United States government

Pay.gov

Your payment has been submitted to Pay.gov and the details are below. If you have any questions regarding this payment, please contact Brenda Dickerson at (703) 787-1617 or BseeAccountsReceivable@bsee.gov.

Application Name: BOEM Exploration Plan - BF
Pay.gov Tracking ID: 26GKUGLI
Agency Tracking ID: 75720794664
Transaction Type: Sale
Transaction Date: 04/08/2019 02:51:27 PM EDT
Account Holder Name: Brittany Gill
Transaction Amount: $7,346.00
Card Type: Visa
Card Number: **********5955

Region: Gulf of Mexico
Contact: BRITTANY GILL 7134965866
Company Name/No: HESS, 00059
Lease Number(s): 34551, , , ,
Area-Block: Green Canyon GC, 511: , : , : , : ,
Surface Locations: 2

THIS IS AN AUTOMATED MESSAGE. PLEASE DO NOT REPLY.

Pay.gov is a program of the U.S. Department of the Treasury, Bureau of the Fiscal Service

Hess Corporation (00059)
Hess Tower, 1501 McKinney Street
Houston, TX 77010

SUPPLEMENTAL EXPLORATION PLAN

Flying Dutchman Field Development
Green Canyon Area

Brittany K. Gill
Sr. Regulatory Specialist
(713) 496-5866
bgill@hess.com

PUBLIC INFORMATION

Revision Log

Date	Page	Description
04/16/2019	10	Remove reference to "development"

Hess Corporation

Supplemental Exploration Plan
Flying Dutchman
Green Canyon Area

Table of Contents **Appendix**

Plan Contents....A

General Information....B

Geological & Geophysical Information....C

Hydrogen Sulfide Information....D

Biological, Physical & Socioeconomic Information....F

Waste and Discharge Information....G

Air Emissions Information....H

Oil Spills Information....I

Environmental Monitoring Information....J

Lease Stipulations Information....K

Environmental Mitigation Measures Information....L

Decommissioning Information....M

Related Facilities and Operations Information....N

Support Vessels and Aircraft Information....O

Onshore Support Facilities Information....P

Sulphur Operations Information....Q

Coastal Zone Management Act Information....R

Environmental Impact Analysis (EIA) ....S

Administrative Information....T

Appendix A
Plan Contents

(a) Plan Information Form

Under this Supplemental Exploration Plan, Hess proposes to drill and complete the FD002C and FD002D subsea well locations. The MODU used will be a dynamically-positioned drillship.

All operations will be conducted in accordance with applicable federal and state laws, regulations, lease, and permit requirements. Hess will have trained personnel and monitoring programs in place to ensure compliance.

The current lease ownership is as follows:

Owner	GWI
Hess Corporation (operator)	25%
Union Oil Company of California	25%
CNOOC Limited	25%
Equinor Gulf of Mexico LLC	25%

(b) Location

The Flying Dutchman field is located approximately 109 miles from nearest land. The activities proposed under this plan will be conducted using a dynamically-positioned drillship. Location plats showing the well locations and associated water depths are included under Appendix A Attachments.

(c) Safety and Pollution Prevention Features

Hess ensures that written operating procedures are available and implemented that provide instructions for conducting safe and environmentally sound activities. Safety features on the MODU will include well control, pollution prevention, welding procedure, and blowout prevention equipment as described in Title 30 CFR Part §250 and as further clarified by BOEM/BSEE Notices to Lessees and current policy-making invoked by BOEM/BSEE. BSEE is required to conduct onsite inspections of offshore facilities to confirm that operators are complying with lease stipulations, operating regulations, approved plans and other conditions, as well as to assure that safety and pollution prevention requirements are being met. The National Potential Incident of Noncompliance (PINC) List serves as the baseline for these inspections. BSEE also inspects the stockpiles of equipment listed in the operator's Regional Oil Spill Response Plan that would be used for the containment and cleanup of hydrocarbon spills. Appropriate life rafts, life jackets, rig buoys, etc. will be maintained on the facility at all times as mandated by the U.S. Coast Guard regulations contained in Title 33 CFR. The drilling rig and each of the marine vessels providing services for the exploration operations will be equipped with all U.S. Coast Guard required navigational safety aids to alert ships of its presence in all weather conditions. Supervisory and certain designated personnel on-board the facility will be familiar with the effluent limitations and guidelines for overboard discharge into

the receiving waters, as outlined in the NPDES General Permit GMG290003. No part the Flying Dutchman field development is located in a designated shipping fairway/anchorage area; therefore, no permit from the Department of Army Corps of Engineers New Orleans District will be required.

(d) Storage Tanks and Vessels

Type of Storage Tank	Type of Facility	Tank Capacity (bbls)	Number of Tanks	Total Capacity (bbls)	Fluid Gravity (API)
Fuel Oil (Marine Diesel)	Drillship	4,135	2	8,270	33°
		9,340	2	18,680	33°
		9,048	1	9,048	33°
		9,043	1	9,043	33°
		445	2	890	33°
		320	2	640	33°
		359	1	359	33°
		60	1	60	33°
Base Oil		3,683	1	3,683	31°
		3,687	1	3,687	33°
Lube Oil		430	1	430	26°
Waste Oil		132	1	132	33°
		44	1	44	33°
		143	1	143	33°
		1,366	1	1,366	6.5°

(e) Pollution Prevention and Additional Measures

Hess Corporation is committed to excellence in environmental, health and safety performance.

Hess Management will continue to support the American Petroleum Institute (API), the Offshore Operators' Committee (OOC) and the API-endorsed Center for Offshore Safety (COS) in order to maintain a high level of communication with other GoM Operators and safety organizations. Involvement with these organizations will ensure that Hess management and staff are not only aware of existing regulations, but also aware and involved with the frequent change in the regulatory environment in the GoM operating area.

Contractors performing work for Hess are required to have safety and environmental policies and practices that are consistent with the Hess SEMS program. Contractors may adopt appropriate sections of the Hess SEMS program through the use of a bridging document to indicate agreement between the contractor and Hess.

The MODU is designed and operated to meet or exceed acceptable environmental regulatory standards to ensure protection of human health and the environment. The vessel has been designed, built and classed in accordance with the rules of the International Maritime Organization (IMO) and complies with the regulations of the International Convention of the Prevention of

Pollution from Ships (MARPOL). The vessel has also been designed and constructed in accordance with United States Coast Guard (USCG) rules and regulations pertaining to foreign flagged vessels.

Attachment A-1

BOEM-0137: OCS Plan Information Forms

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

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

OCS PLAN INFORMATION FORM

General Information

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

Company Name: Hess Corporation	BOEM Operator Number: 00059
Address:	Contact Person: Brittany Gill
1501 McKinney Street	Phone Number: 713-496-5866
Houston, TX 77010	E-Mail Address: bgill@hess.com

If a service fee is required under 30 CFR 550.125(a), provide the	Amount paid	$7346	Receipt No.	75720794664

Project and Worst Case Discharge (WCD) Information

Lease(s): G34551	Area: GC	Block(s): 511	Project Name (If Applicable): Flying Dutchman

Objective(s)	X	Oil		Gas		Sulphur		Salt	Onshore Support Base(s): Fourchon, LA

Platform/Well Name: FD002D	Total Volume of WCD: 33.2 MMSTB (180 days)	API Gravity: 32.5°
Distance to Closest Land (Miles): 109	Volume from uncontrolled blowout: 364,925 BOPD (initial 24 hour period)	

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

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

Proposed Activity	Start Date	End Date	No. of Days
Drilling	09/01/2019	12/30/2019	120
Well completion	12/31/2019	03/20/2020	80
Drilling	03/21/2020	07/19/2020	120
Well completion	07/20/2020	10/08/2020	80

Description of Drilling Rig

	Jackup	X	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): DODI Ocean BlackRhino or BlackLion

Description of Lease Term Pipelines

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

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

Proposed Well/Structure Location										
Well or Structure Name/Number (If renaming well or structure, reference previous name): FD002D				Previously reviewed under an approved EP or DOCD?		Yes	X	No		
Is this an existing well or structure?		Yes		No X	If this is an existing well or structure, list the Complex ID or API No.					
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?						X	Yes		No	
WCD info	For wells, volume of uncontrolled blowout (Bbls/day): 364,925			For structures, volume of all storage and pipelines (Bbls):			API Gravity of fluid 32.5			
	Surface Location			**Bottom-Hole Location (For Wells)**			**Completion (For multiple completions, enter separate lines)**			
Lease No.	OCS G34551			OCS			OCS OCS			
Area Name	Green Canyon									
Block No.	511									
Blockline Departures (in feet)	N/S Departure: Fs___ L 3,188			N/S Departure: F___ L			N/S Departure: F___ L N/S Departure: F___ L N/S Departure: F___ L			
	E/W Departure: Fw___ L 4,340			E/W Departure: F___ L			E/W Departure: F___ L E/W Departure: F___ L E/W Departure: F___ L			
Lambert X-Y coordinates	X: 2412018			X:			X: X: X:			
	Y: 9966548			Y:			Y: Y: Y:			
Latitude/ Longitude	Latitude 27 26 42.09			Latitude			Latitude Latitude Latitude			
	Longitude 90 37 13.99			Longitude			Longitude Longitude Longitude			
Water Depth (Feet): 3,599				MD (Feet):		TVD (Feet):	MD (Feet): MD (Feet): MD (Feet):		TVD (Feet): TVD (Feet): TVD (Feet):	
Anchor Radius (if applicable) in feet:				NA						

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

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

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

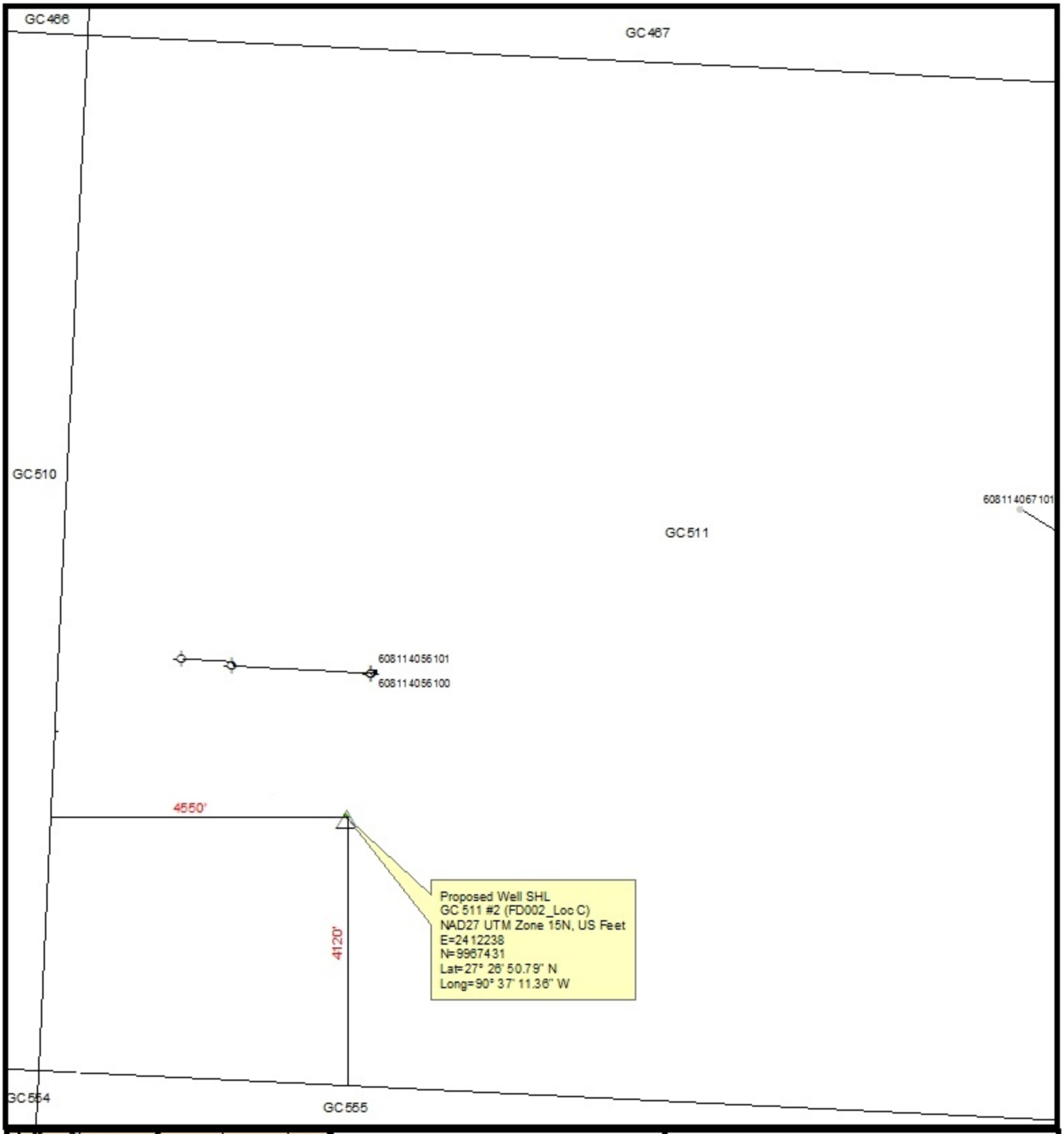
Proposed Well/Structure Location										
Well or Structure Name/Number (If renaming well or structure, reference previous name): FD002C					Previously reviewed under an approved EP or DOCD?		Yes	X	No	
Is this an existing well or structure?		Yes		No X	If this is an existing well or structure, list the Complex ID or API No.					
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?						X	Yes		No	
WCD info	For wells, volume of uncontrolled blowout (Bbls/day): 364,925				For structures, volume of all storage and pipelines (Bbls):		API Gravity of fluid 32.5			
	Surface Location				**Bottom-Hole Location (For Wells)**				**Completion (For multiple completions, enter separate lines)**	
Lease No.	OCS G34551				OCS		OCS OCS			
Area Name	GC									
Block No.	511									
Blockline Departures (in feet)	N/S Departure: Fs___ L 4120				N/S Departure: F___ L		N/S Departure: F___ L N/S Departure: F___ L N/S Departure: F___ L			
	E/W Departure: Fw___ L 4550				E/W Departure: F___ L		E/W Departure: FW___ L E/W Departure: F___ L E/W Departure: F___ L			
Lambert X-Y coordinates	X: 2412238				X:		X: X: X:			
	Y: 9967431				Y:		Y: Y: Y:			
Latitude/ Longitude	Latitude 27 28 50.79				Latitude		Latitude Latitude Latitude			
	Longitude 90 37 11.35				Longitude		Longitude Longitude Longitude			
Water Depth (Feet): 3,874					MD (Feet):	TVD (Feet):	MD (Feet): MD (Feet): MD (Feet):		TVD (Feet): TVD (Feet): TVD (Feet):	
Anchor Radius (if applicable) in feet:					NA					

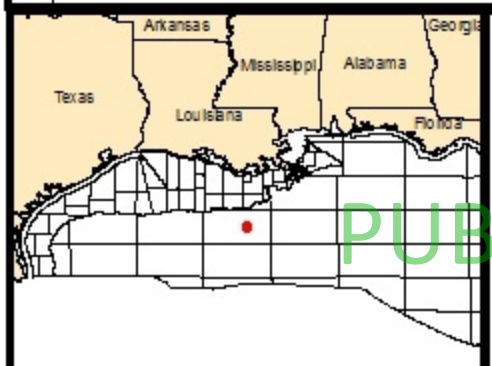
Anchor Locations for Drilling Rig or Construction Barge (If anchor radius supplied above, not necessary)

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

Attachment A-2

Location Plats





△ SURFACE HOLE LOCATION

○ BOTTOM HOLE LOCATION

2,000

Feet

HESS CORPORATION

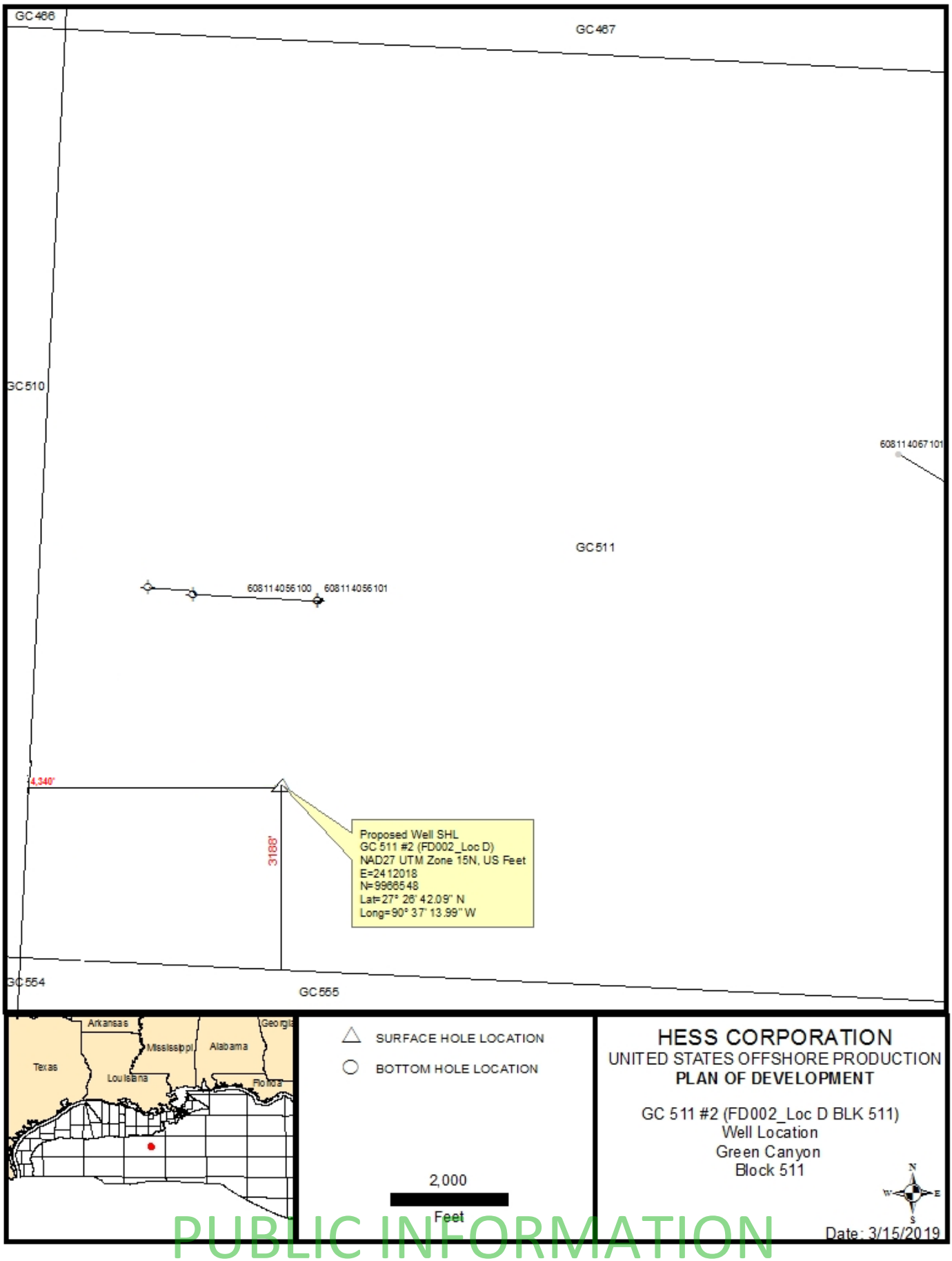
UNITED STATES OFFSHORE PRODUCTION

PLAN OF DEVELOPMENT

GC 511 #2 (FD002_Loc C BLK 511)
Well Location
Green Canyon
Block 511

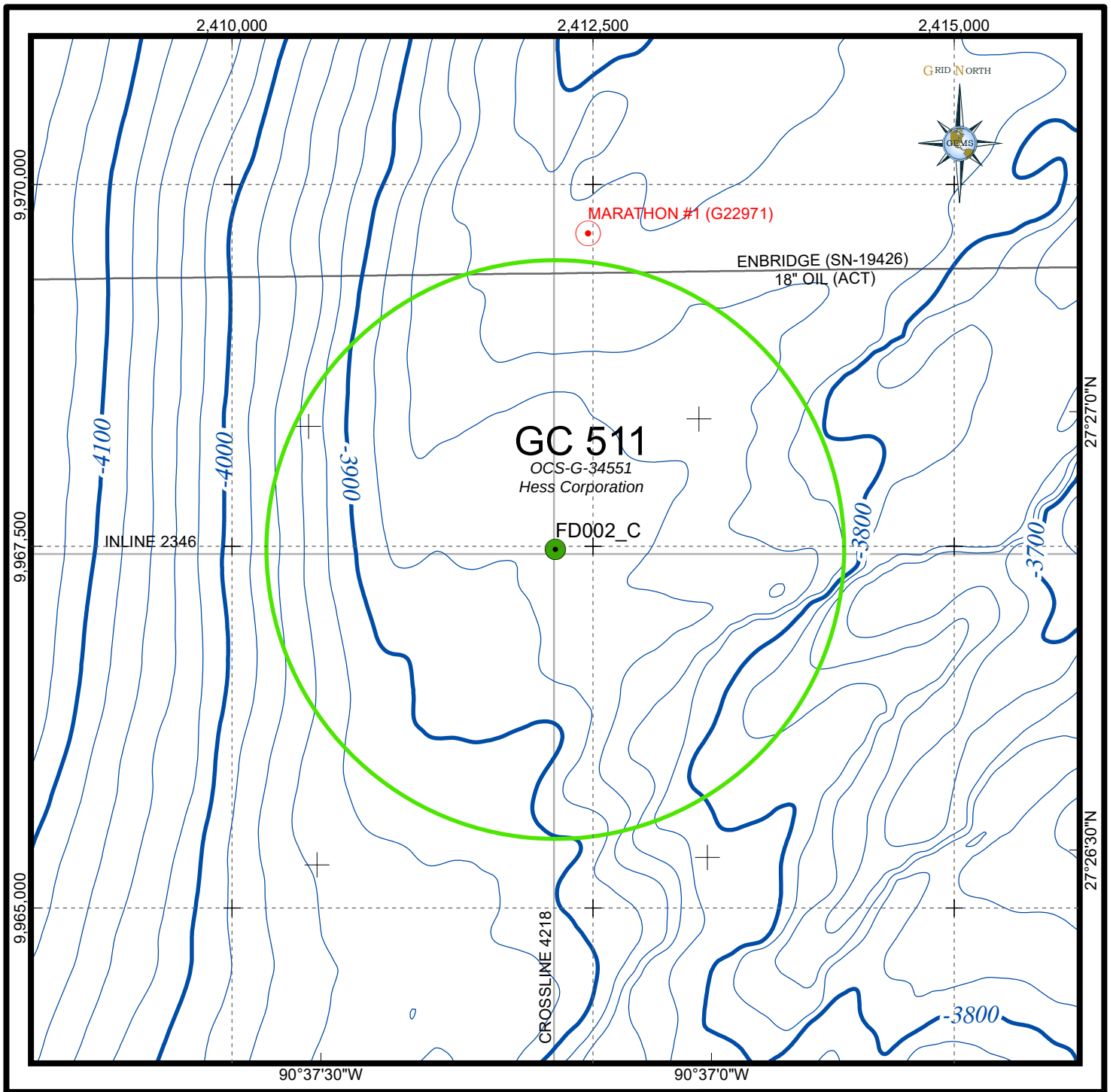
N
W E
S

Date: 3/15/2019



Attachment A-3

Bathymetry Maps



PROPOSED WELL.

CIRCLE REPRESENTS 2000 FT RADIUS AROUND PROPOSED WELLSITE.

EXISTING WELL LOCATION, AS REPORTED BY BOEM.

EXISTING PIPELINE LOCATION, AS PROVIDED BY CLIENT.

3-D SURVEY LINE.

WATER DEPTH CONTOUR IN FEET.

HESS

BATHYMETRY MAP

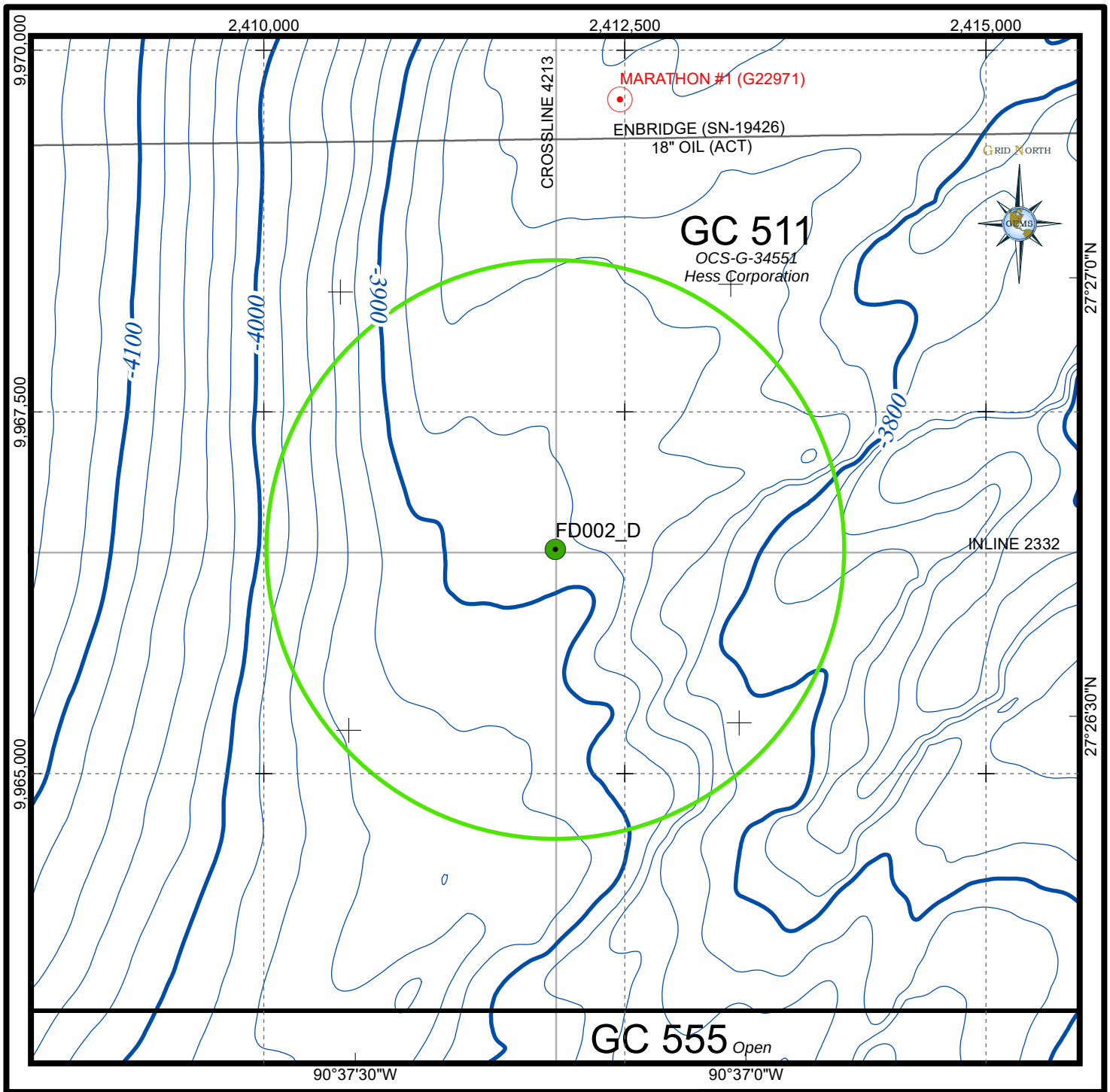
BLOCK 511
GREEN CANYON AREA
GULF OF MEXICO

1,000 500 0 1,000 Feet

GEOSCIENCE EARTH & MARINE SERVICES, INC.

DATE: 04 MARCH 2019
FILE NAME: 2822_WELL_FD002-C1.mxd
PROJECT NO.:0119-2822

MAP NO. FD002_C-1



PROPOSED WELL.

CIRCLE REPRESENTS 2000 FT RADIUS AROUND PROPOSED WELLSITE.

EXISTING WELL LOCATION, AS REPORTED BY BOEM.

EXISTING PIPELINE LOCATION, AS PROVIDED BY CLIENT.

3-D SURVEY LINE.

WATER DEPTH CONTOUR IN FEET.

HESS

BATHYMETRY MAP

BLOCK 511
GREEN CANYON AREA
GULF OF MEXICO

1,000 500 0 1,000 Feet

GEOSCIENCE EARTH & MARINE SERVICES, INC.

DATE: 04 MARCH 2019
FILE NAME: 2822_WELL_FD002-D1.mxd
PROJECT NO.:0119-2822

MAP NO. FD002_D-1

Appendix B
General Information

(a) Applications and Permits

Application/Permit	Agency	Status
Military Warning Area Activity Notifications	MWA 59A	Pending
Rig Move Reports	BSEE, USCG and NGIA	Pending
Application for Permits to Drill	BSEE	Pending
Pipeline Permit Applications	BSEE	Pending
NPDES	EPA	Pending

(b) Drilling Fluids

See Appendix G: *Water Quality Tables*

(c) New or Unusual Technology

Hess does not propose the utilization of any new or unusual technology as a result of the operations proposed under this plan.

(d) Bonding Statement

The bond requirements for the activities and facilities proposed in this EP are satisfied by a $3,000,000.00 area-wide bond, furnished and maintained in accordance with 30 CFR Part 256, subpart I; NTL No. 2000-G16, "Guidelines for Lease Surety Bonds;" ***and*** a current BOEM-approved deferment from providing additional security under 30 CFR 553.5 (d) and National NTL No. 2008-N07, "Supplemental Bond Procedures." If, at any point, Hess Corporation no longer qualifies for a Supplemental bonding deferment, Hess Corporation will either provide the required additional security or a third-party guarantee within 60 days after such qualification.

(e) Oil Spill Financial Responsibility

Hess Corporation, BOEM Company Number 00059, has demonstrated oil spill financial responsibility for the facilities proposed in this EP according to 30 CFR Part 253, and NTL No. 2008-N05, "Guidelines for Oil Spill Financial Responsibility (OSFR) for Covered Facilities."

(f) Deepwater Well Control Statement

Hess Corporation, BOEM Company Number 00059, has the financial capability to drill a relief well and to conduct other emergency well control operations.

(g) Suspensions of Production

There are no suspensions of production anticipated as a result of the activities proposed under this plan.

(h) Blowout Scenario

Although an uncontrolled blowout is considered extremely unlikely, the following is a response scenario of an uncontrolled blowout event at GC 511.

The scenario that presents the potential worst-case discharge rate for the proposed wellbore is expected to occur when the drill string has been pulled from the hole after having drilled the 12-1/4" open hole section through the objective sands. It is assumed the well has experienced a kick and attempts at initiating shut-in procedures have failed, thus rendering the BOPs ineffective. This situation presents an unrestricted flow of hydrocarbons to surface with an initial flow rate of 364,925 BOPD within the first 24-hour period.

The worst-case discharge volume at GC 511 was calculated by Hess as per the criteria in 30 CFR §254.44. This potential volume would be a rate of 364,925 BOPD within the first 24-hour period. Included under Appendix I-2 Attachments is a report prepared by The Response Group that discusses capabilities regarding mechanical recovery, in-situ burning, and/or chemical dispersion. Based on aerial overflights and trajectory modeling showing predicted shoreline impacts, environmental sensitivity and shoreline protection, maps and strategies are available for other areas with potential impact identified in the EIA.

If a blowout were to occur at GC 511, Cameron Parish is identified as the most probable impacted Parish on the coast of the Gulf of Mexico. Cameron Parish is located in the southwest corner of Louisiana and has a total area of 1,932 square miles, of which, 1,313 square miles of it is land and 619 square miles is water. Cameron Parish includes four National Wildlife Refuges including the Cameron Prairie National Wildlife Refuge, East Cove National Wildlife Refuge, Sabine National Wildlife Refuge and part of the Lacassine National Wildlife Refuge. Environmental Sensitivity maps for Cameron Parish are included under Appendix I-2 Attachments.

Maximum Duration of the Potential Blowout

Hess' multi-disciplinary team calculated that an initial worst-case blowout scenario with the FD A, FD E and FD G open would be a maximum of 364,925 barrels of 32.5° gravity oil. Should a blowout occur, formations in Gulf of Mexico deepwater wells do not necessarily bridge off. It is assumed that an uncontrolled blowout at FD002D will flow unrestricted at maximum rate until intercepted by a relief well.

The estimated cumulative discharge volume after 180 days is approximately 33.2 MMSTB oil (180 days is the assumed timing for drilling of a relief well).

Discussion of Likelihood for Surface Intervention to Stop Blowout

The Green Canyon 511 FD002D will be drilled as a subsea well in approximately 3,500' of water with the wellhead and BOP equipment located at the mudline. Surface intervention would be the preferred method of intervention pending an uncontrolled blowout, however the technique used would be contingent upon the condition of the rig, marine riser system and BOP equipment. Surface intervention is a quicker solution than drilling a relief well, but actual methodology of controlling the blowout would have to be determined pending an analysis of the site-specific conditions at the location.

A team of specialists would be mobilized to assess the situation and determine a corrective course of action to control the blowout. Well control specialists would perform either a fly-by via helicopter and/or surface vessel to assess conditions at the site. Hess Corporation has Master Service Agreements with Wild Well Control and Boots and Coots. An ROV spread capable of manipulating the rig's BOP hot-stab functions would be mobilized to location and, if appropriate, an attempt would be made to shut in the well by closing the blind shear rams. These actions would take place within 24 - 48 hours of the incident. Supplemental assessment activities are projected to take 3 – 5 days. During this period, the well control team would analyze the blowout situation, devise an intervention strategy and mobilize additional service company specialists, supplies and equipment. A field support base in Fourchon, LA and secondary command center near the coast would be arranged and would have communication established simultaneously during this assessment period.

Discussion of the Likelihood of Subsea Intervention to Stop the Blowout:

Subsea interference would be the likely method of intervention pending an uncontrolled blowout, however the technique used would be contingent upon the condition of the rig, marine riser system and BOP equipment. An ROV may be used to shift the blind/shear rams in the BOP stack to the closed position, thereby allowing the damaged riser system to be removed and a capping mechanism to be put in place, if applicable. Hess Corporation has contract in-place with Marine Well Containment Company (MWCC). In the event of a blowout, a capping stack may be mobilized to the location. If discharge is occurring at a rate that prevents the well from being shut in, hydrocarbon collection at the source would occur during relief well drilling operations.

Discussion of Drilling a Relief Well:

Hess Corporation (Company No. 00059) has the financial capability to drill a relief well and conduct other emergency well control operations. Should a relief well be necessary, there are rigs rated and equipped to drill in water depths of 3,500' or greater currently working in the Gulf of Mexico. Travel time to the location would be dependent upon current operations of the rig and the distance to the well location. The time required to drill the relief well will be dependent on many factors, chief among them is the required depth of the relief well. The deepest anticipated depth of the relief well would be in the situation where it was required to intersect the blown-out well at its final target depth. The probable directional nature of the relief well could nominally increase its measured depth compared to the blown-out well. In order to intersect the blown out well, numerous ranging runs will be required which will add approximately three weeks to the drilling program. The steps and time required to accomplish the dynamic kill are also dependent on the circumstances of the blown-out well.

Example Relief Well Timetable	
Activity	Duration (Days)
Assess the situation and choose the optimum rig	2
Secure that rig's current well	10
Travel time	3
Drill the relief well	131
Intersect the blown out well	20
Dynamically kill the well	14
TOTAL ANTICIPATED DAYS:	~180

It is assumed that a rig is not immediately available to mobilize to location to commence drilling a relief well. The estimated mobilization time of a rig to the wellsite location incorporates the suspension of activities by another operator before the rig can be released for relief well operations. Hess Corporation will support relief well drilling operations using in-house resources supplemented with diversified engineering consulting firms who would provide drilling operations, engineering, logistical and materials management, QA/QC, and well-site supervision support. In addition, Hess Corporation will select a well control specialty company and prepare a conceptual "Relief Well Plan" specific to the well. The plan will address the calculated blowout rate, selection of surface location, directional planning intercept strategy and dynamic kill design. Casing design, directional drilling, trajectory planning and magnetic ranging techniques, as well as multiphase simulation of the blowout will be considering factors in planning the relief well.

Rig Package Constraints:

- The rig chosen to drill the relief well must be capable of operating in water depths of 3,500' of water.
- The rig chosen to drill the relief well must have a BOP package acceptable and certified under current BOEM/BSEE regulations.
- There are no facilities within the surrounding area of the well locations; therefore, a relief well will be unable to be drilled from a nearby platform.
- Due to the proximity to shore (109 miles) a relief well cannot be drilled from an onshore location.

Rigs Capable of Drilling a Relief Well:

Rig Type	Contractor	Rig Name
Drillship	Diamond	Ocean Black Hornet
Drillship	Seadrill	West Auriga
Drillship	Seadrill	West Vela
Drillship	Seadrill	West Capricorn
Drillship	Pacific	Sharav
Drillship	Transocean	Deepwater Conqueror
Drillship	Transocean	Discoverer Inspiration
Drillship	Rowan	Relentless
Drillship	Diamond	Ocean BlackLion
Drillship	Diamond	Ocean BlackRhino
Drillship	Rowan	Resolute
Drillship	Seadrill	West Neptune
Drillship	Transocean	Deepwater Pontus
Drillship	Transocean	Deepwater Poseidon
Drillship	Transocean	Deepwater Proteus
Drillship	Transocean	Deepwater Thalassa
Drillship	Transocean	Deepwater Pontus

There are currently at least seventeen individual rigs currently working in the Gulf of Mexico that are capable of drilling a relief well at this location; one will be used to drill the wells under this plan, and another remains on contract to Hess.

Blowout Prevention Measures

In addition to 30 CFR §250, these additional measures will be taken in order to prevent and reduce the likelihood of a blowout, and conduct effective and early intervention in the event of a blowout.

- Hess Corporation will verify with contractor that all BOPs have been certified, maintained and are capable of operating in the anticipated conditions required for operations.
- Hess Corporation representative will witness and review all BOP tests, casing tests and formation integrity tests.
- Hess Corporation representative will review and witness the installation, testing, function testing and operation of the diverter system and diverter outlets.
- Key personnel on the rig will have a valid well control certificate.
- A liner top packer or equivalent expandable will be run on all liner laps as an additional barrier for well safety.
- Offset and seismic data will be reviewed in order to prepare a mud weight schedule that will allow for safe drilling margin without putting excess hydrostatic pressure on known zones that may have been previously encountered.
- Lost circulation material will be added to the mud system in order to assist the mud system's ability to prevent lost circulation. Sweeps and concentrated pills will be used to prevent uncontrolled mud losses.
- Wiper trips will be performed as hole conditions dictate in order to quantify the stability of the wellbore and to determine whether sufficient mud weights are being utilized.
- Connections will be simulated as needed while drilling into pressure transition areas in order to properly assess the current wellbore conditions.
- Mudloggers may be utilized during critical drilling operations to monitor gas content of mud returns, formation characteristics and abnormalities of cuttings and to estimate paleo aging of cuttings.
- Logging While Drilling (LWD) tools will be utilized as much as possible to evaluate formations, formation pressures and fluid content in the critical sections of the well.
- Log data will be monitored by Hess Corporation's drilling and geological departments.

Appendix C
Geological and Geophysical Information

(a) Geological Description

(b) Structure Contour Maps

(c) Interpreted 2-D and/or 3-D Seismic Lines

(d) Geological Structure Cross-Sections

(e) Shallow Hazards Report

A shallow hazards survey was conducted over Green Canyon Block 511. In accordance with NTL No. 2008-G05, "Shallow Hazards Program" (Extended by NTL No. 2014-G05, "Extension of Prior Notices to Lessees"), a shallow hazards survey evaluating seafloor and subsurface geological and manmade features and conditions that may adversely affect drilling operations, was conducted by Geoscience Earth and Marine Services, Inc. (GEMS). The Geoscience Earth and Marine Services, Inc., 2005, Geologic and Stratigraphic Assessment Blocks 424, 425, 467-470, 511 512 and 513, Green Canyon Area, Gulf of Mexico: GEMS Report No. 0205-953 was previously submitted to BOEM.

(f) Shallow Hazards Assessment

Attachment C-4

(g) High-resolution Seismic Lines

(h) Stratigraphic Column

(i) Time vs. Depth Tables

Sufficient well control data for the target areas proposed in this S-EP exists; therefore, seismic time versus depth tables for the proposed well location is not required.

15810 Park Ten Place, Suite 100
Houston, Texas 77084
832.603.4352
www.gemsinc.com

March 8, 2019

Project No.: 0119-2822

Hess Corporation
1501 McKinney Street
Houston, TX 77010

Attention: Dr. Aurélie Justwan

**Site Clearance Letter,
Proposed Wellsite FD002_C,
Block 511 (OCS-G-34551),
Green Canyon Area,
Gulf of Mexico**

Hess Corporation (Hess) contracted Geoscience Earth & Marine Services (GEMS) to provide an assessment of the seafloor and shallow geologic conditions to determine the favorability of drilling operations for the proposed location FD002_C in Block 511 (OCS-G-34551), Green Canyon Area, Gulf of Mexico. This letter addresses specific seafloor and subsurface conditions around the proposed location to the Top of Salt, a depth of about 1,436 ft below the mudline (bml).

Seafloor conditions appear favorable within the vicinity of the proposed surface location. There are no potential sites for deepwater benthic communities within 2,000 ft of the proposed wellsite. There is negligible to low potential for encountering overpressured sands or significant shallow gas between the seafloor and the Top of Salt based on seismic attributes and amplitude analysis.

This letter provides details specific to the well location, including available data, Notice to Lessees (NTL) requirements, man-made features, and wellsite conditions.

Proposed Well Location

The surface location for the Proposed Exploration Wellsite FD002_C lies in the southwestern portion of GC 511. Hess provided the following coordinates:

Table II-C-1. Proposed Location Coordinates

Proposed Wellsite FD002_C			
Spheroid & Datum: Clarke 1866 NAD27Projection: UTM Zone 15 North		Line Reference	Block Calls (GC 511)
X: 2,412,238 ft	Latitude: 27° 26′ 51.2463″ N	Inline 2346	4,558 ft FWL
Y: 9,967,477 ft	Longitude: 90° 37′ 11.3483″ W	Crossline 4218	4,117 ft FSL

Hess will drill this well using a dynamically positioned drilling vessel. Our assessment addresses the seafloor conditions within a 2,000-ft radius around the proposed wellsite location.

Available Data

The following discussion is based on the findings provided within Volume I of this report. The text, maps, and figures included in the report provide detail on the regional geology of the Study Area. Hess provided an exploration 3-D seismic time volume for the geohazard analysis, covering an approximate 194 square-mile area within the Green Canyon (GC) protraction area. The data volume includes 20 Federal Lease Blocks (GC 422-426, 466-470, 510-514, and 554-558). Seafloor mapping was limited to the "Seafloor Mapping Area", which encompassed Blocks GC 466-468, 510-512, and 554-556. Subsurface mapping was limited to a one-block "Study Area" covering GC 511 (Figure II-C-1).

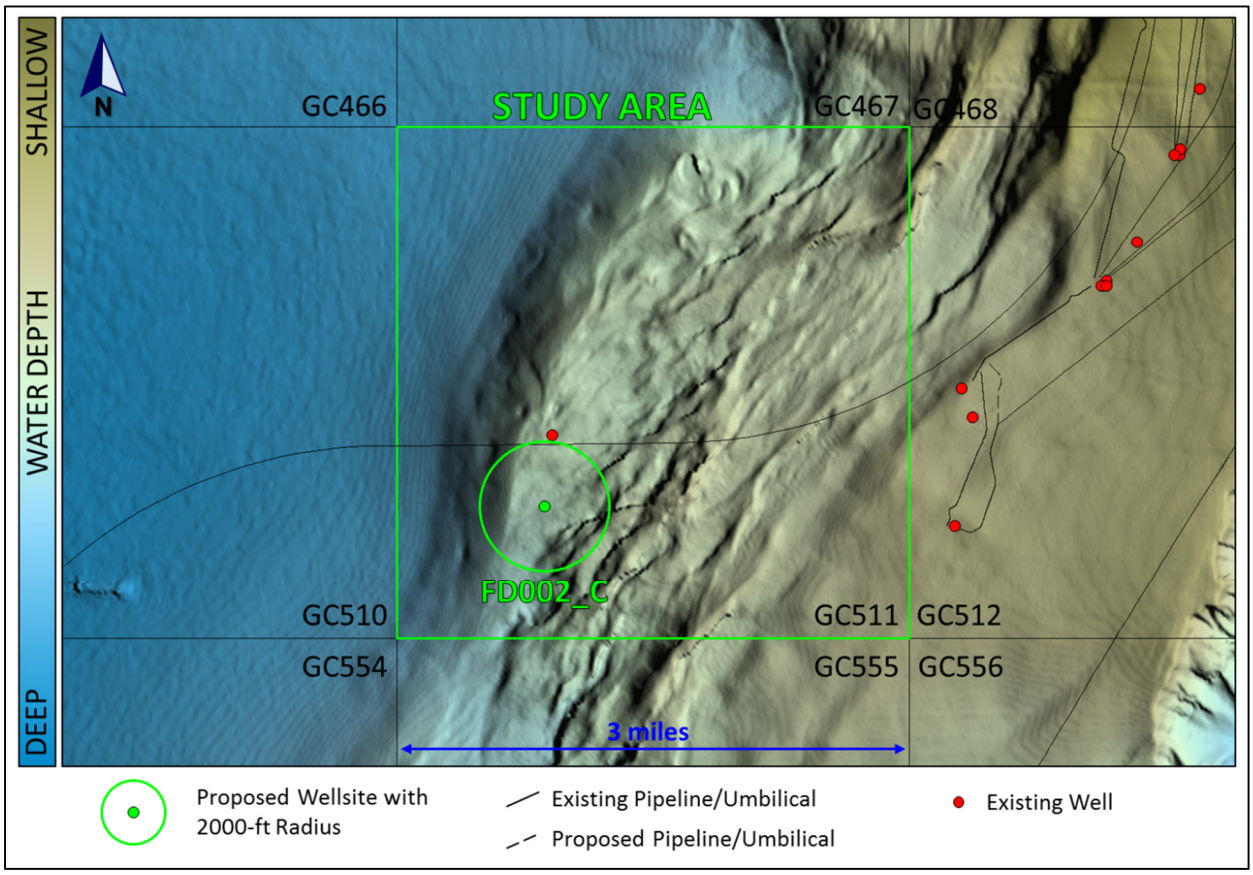


Figure II-C-1. Seafloor Rendering of the Green Canyon Study Area

Attachments

Wellsite maps are centered on the Proposed FD002_C location and are displayed at a 1 inch = 1,000 ft scale (1:12,000). The maps included in this letter are as follows:

Map No. FD002_C-1: Bathymetry Map

Map No. FD002_C-2: Seafloor Gradient Map

Map No. FD002_C-3: Seafloor Features Map

Map No. FD002_C-4: Seafloor Amplitude Rendering Map

Map No. FD002_C-5: Geologic Features Map

The accompanying illustrations were extracted from the available datasets and are listed below:

Illustration FD002_C-1: Portions of Inline 2346 and Crossline 4218 Showing Conditions Beneath Proposed Wellsite FD002_C

Illustration FD002_C-2: Tophole Prognosis Chart, Proposed Wellsite FD002_C, Green Canyon, Block 511

Illustration FD002_C-3: Seismic Correlation Between Existing Well No. 1 in GC 511, Nos. WI004, WI003, and SB003 in GC 512, and Proposed Wellsite FD002_C

NTL Requirements

The following report complies with the Bureau of Ocean Energy Management (BOEM) Notice to Lessees (NTLs) 2009-G40, 2008-G04, and 2008-G05 (MMS, 2010 and 2008a, b). BOEM's NTL 2015-N02 (BOEM, 2015) eliminates the expiration of all NTLs pending further review.

The Federal lease Block GC 511 is not considered archaeologically significant (NTL 2011-JOINT-G01, BOEM, 2011); however, mitigation guidelines released by BOEM, entitled "Pre-Seabed Disturbance Survey Mitigation", require an archaeological assessment of all surveyed blocks prior to any bottom disturbing activities (BOEMRE, 2011).

GC 511 is located within military warning area (MWA) W-92; therefore, drilling activities must be coordinated with the appropriate military command for this warning area. Military warning areas represent regions where the U.S. Department of Defense conducts various testing and training operations. Lessees within MWA's are required to enter into an agreement with the appropriate command headquarters concerning the control of electromagnetic emissions and the use of boats and aircraft within the warning area (NTL 2014-G04; BOEM, 2014).

As specified in NTL 2008-G04 (MMS, 2008a), GEMS extracted the power spectrum diagram from the 3-D seismic data cube provided by Hess at the proposed wellsite (Figure II-C-2). The extraction was generated within a 2,000-ft radius of the intersection of the inline and crossline at the proposed wellsite. The extraction time interval consisted of the seafloor to the Top of Salt. We converted the amplitude vs. frequency spectrum, generated by the IHS Kingdom software, to power vs. frequency by squaring the amplitude values as described by J. A. Coffeen, 1978. The frequency bandwidth at 50% power ranges between 8 and 72 Hz.

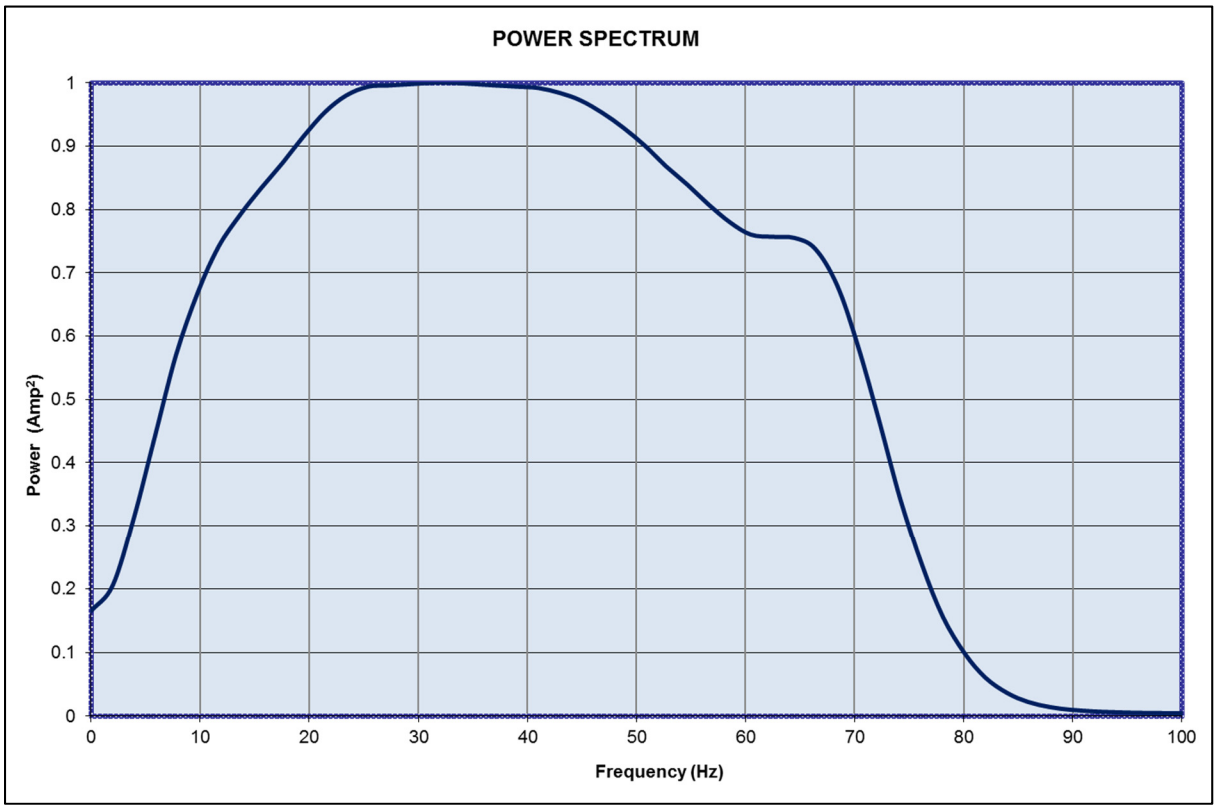


Figure II-C-2. Power Spectrum Curve, Proposed Wellsite FD002_C

Man-Made Features

One pipeline is within 2,000 ft of the proposed wellsite (Maps FD002_C-1 through FD00C-5; Figure II-C-1). Enbridge Offshore Facilities' 18" Oil pipeline trends west to east approximately 1,920 ft north of the proposed wellsite. There are no additional pipelines, wells, or other man-made infrastructure within a 2,000 ft radius. The nearest well, Marathon Oil Company's Well No. 1, is approximately 2,200 ft north of proposed wellsite FD002_C (BOEM, 2019a); Figure II-C-1. This well was spudded in 2010 and is permanently abandoned.

Wellsite Conditions

The proposed wellsite is located along the heavily faulted western margin of an uplifted, salt-cored plateau. The surface location is clear of any constraining seafloor conditions as defined by the 3-D seismic dataset. The shallow stratigraphy at the proposed well location consists of interbedded hemipelagic clays and silty-clays, turbidites, mass-transport deposits, and some possible sands. Sand-prone, slope-fan sediments of the "Red Unit" may be present. The following discussions on stratigraphy and lithology are based on seismic character and well logs from nearby Well No. 1.

Water Depth and Seafloor Conditions. The water depth at the proposed surface location is -3,874 ft (Map FD002_C-1). The seafloor slopes to the west at approximately 1.7° (Map FD002_C-2). The seafloor in the vicinity of the proposed wellsite is variable due to the seafloor expressions of buried faults. The seafloor gradient steepens, approximately 1,015 ft west of the proposed wellsite, to between 4° and 8° as the plateau margin slopes into Steward Basin (Map FD002_C-2; Figure II-C-1).

The nearest seafloor faults are located approximately 1,020 ft southeast and 1,200 ft northwest of the proposed wellsite (Map FD002_C-3). Both faults trend southwest to northeast, and are downthrown to the northwest and southwest, respectively. Three additional seafloor faults are located within a 2,000 ft radius of the wellsite. Seafloor offsets along the faults are up to 48 ft and gradients reach 31° (Maps FD002_C-1 and FD002_C-2). Any failures along the steep fault planes will likely be localized and should not affect the proposed wellsite.

Deepwater Benthic Communities. No features or areas were interpreted within 2,000 ft of the proposed location that are capable of supporting high-density chemosynthetic or other deepwater benthic communities. The seafloor amplitude rendering shows no elevated amplitudes in the vicinity of the wellsite indicating normal Gulf of Mexico sediments of clays and/or silty-clays (Map FD002_C-4). Additionally, there are no BOEM seabed anomalies located in the vicinity (BOEM, 2019b).

Stratigraphy. Stratigraphic conditions are shown on Illustrations FD002_C-1 through FD002_C-3. Four horizons (Horizons 2, 5, 10, and 12) and the Top of Salt were mapped to define the stratigraphic facies in the Study Area. Horizon 2 is not present at the proposed wellsite location.

The stratigraphy in Unit 1b, between the seafloor and Horizon 5 (191 ft bml), consists of low-amplitude, continuous to discontinuous reflectors. These sediments likely consist of a very soft, hemipelagic silty-clay drape overlying hemipelagic clays and silty-clays. Thin clay-prone mass-transport deposits may be interbedded with the stratified sediments (Illustrations FD002_C-1 and FD002_C-2).

The sediments within Unit 2, from Horizon 5 to Horizon 10 (191 ft to 415 ft bml), are generally low to moderate-amplitude continuous to semi-continuous reflectors representing silty-clays. Some thin, fine-grained mass-transport deposits may be interbedded with the stratified sediments.

Unit 3, between Horizon 10 and Horizon 12 (415 ft to 773 ft bml), consists of generally low-amplitude, chaotic sediments, likely indicating generally fine-grained mass-transport deposits. Well logs from Well No. 1 in GC 511 indicate that some sands may be present (Illustration FD002_C-3). This unit may correspond to the slope-fan sediments of the shallow water flow prone "Red Unit".

The sediments in Unit 4, from Horizon 12 to the Top of Salt (773 ft to 1,436 ft bml) are chaotic, low to moderate-amplitude reflectors. These sediments are likely alternating fine-grained mass-transport deposits and turbidites that have been heavily disturbed and faulted due to the emplacement of the shallow salt body. Some thin sands may be present. The Top of Salt at the proposed wellsite slopes to the west at 25° (Figure II-C-3).

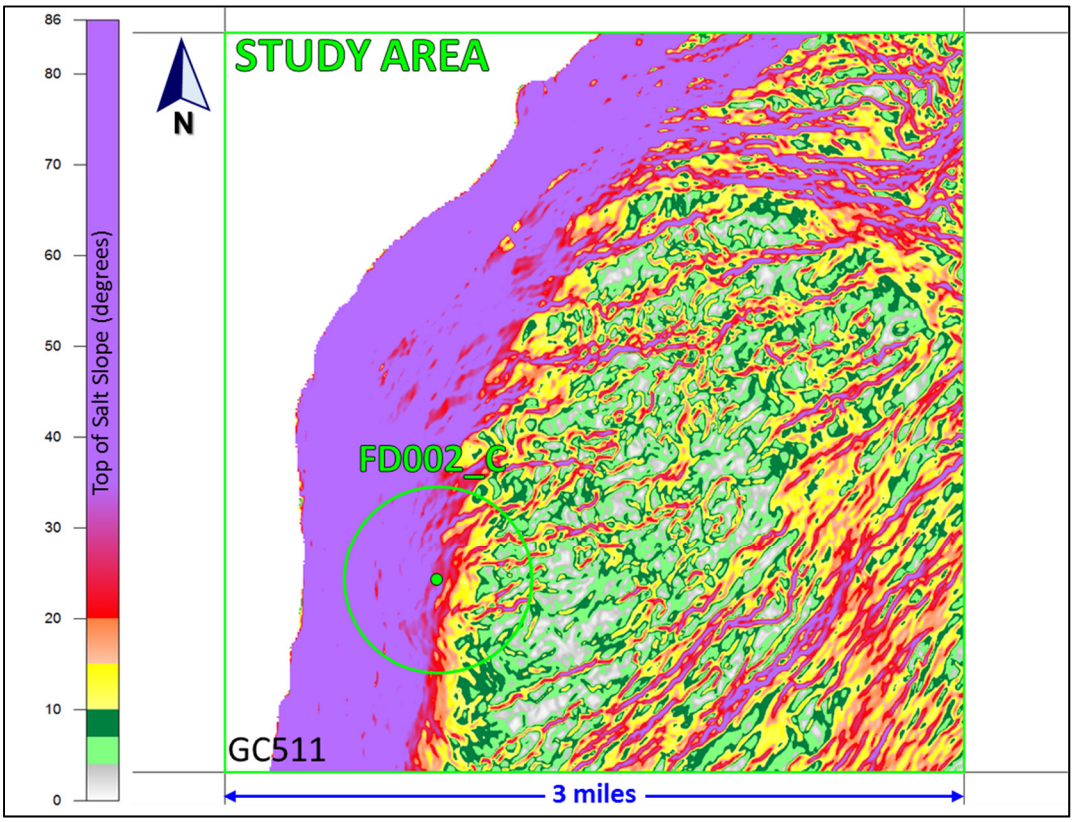


Figure II-C-3. Gradient Map showing the Slope of the Top of Salt at the Proposed Wellsite

Faults. No seafloor faults will be penetrated by the proposed wellsite (Illustrations FD002_C-1 and FD002_C-2). The nearest seafloor fault is approximately 1,020 ft southeast of the proposed wellsite, trends southwest to northeast, and is downthrown to the northwest (Maps FD002_C-3 and FD002_C-5). One buried fault will be encountered at a depth of 966 ft bml (Illustrations FD002_C-1 and FD002_C-2). The sediments above the shallow salt body are highly faulted. Additional buried faults may be encountered that are below the resolution of the 3-D seismic data, particularly beneath Horizon 10.

Shallow Gas and Shallow Water Flow. Significant shallow gas is not likely to be encountered within the shallow sediments from the seafloor to the Top of Salt (1,436 ft bml), Illustration FD002_C-2. The potential for shallow water flow is considered negligible to low.

Shallow Gas. There are no apparent high-amplitude anomalies or other direct hydrocarbon indicators directly below the proposed wellsite. The nearest high-amplitude anomaly is located approximately 1,945 ft southeast of the proposed wellsite (Map FD002_C-5). This anomaly is located near the Horizon 12 interface and likely indicates gas migration along a fault plane. This anomaly poses no threat to the proposed wellsite. A low potential for encountering shallow gas exists from Horizon 10 (415 ft bml) to the Top of Salt (1,436 ft bml); Illustration FD002_C-2. Minor amounts of gas may be encountered within thin sand layers. There is a negligible potential for encountering shallow gas within the upper 415 ft of sediment (seafloor to Horizon 10); Illustration FD002_C-2.

Shallow Water Flow. The potential for shallow water flow at this well location is considered negligible to low (Illustration FD002_C-2). Faulting in the vicinity of the proposed wellsite likely relieved any significant overpressures. In addition, nearby Well No. 1, approximately 2,200 ft north of the proposed wellsite, did not report any shallow water flow conditions (Illustration FD002_C-3). Drilling reports provided by Hess indicate that shallow water flow was observed at Well SB003 in Block GC 512 at a depth of 6,717 ft bml (Illustration

FD002_C-3). This shallow water flow occurred near the Top of Salt; however, the stratigraphy is deeper and cannot be correlated to the proposed wellsite location.

There is a low potential for shallow water flow between Horizon 10 and the Top of Salt (415 ft to 1,436 ft bml). Thin sands may be encountered; however, any fluids present are not likely to be significantly overpressured. A negligible potential for overpressured sands exists in the shallow fine-grained sediments from the seafloor to Horizon 10 (415 ft bml).

Relief Well Conditions

The seafloor and subsurface conditions are clear for relief wells within a 150 ft radius surrounding proposed wellsite FD002_C. No seafloor faults, amplitude anomalies, or other constraining features would be encountered. A relief well within 150 ft of the proposed wellsite would be at least 2,000 ft from any features or areas that may be capable of supporting deepwater benthic communities. The relief well location would encounter similar stratigraphy to proposed wellsite FD002_C.

Results

No areas with the potential for deepwater benthic communities are identified within 2,000 ft of the proposed location.

One pipeline is within 2,000 ft of the proposed wellsite, located approximately 1,920 ft to the north.

It is possible that thin sand layers will be encountered in the shallow section from Horizon 10 (415 ft bml) to the Top of Salt (1,436 ft bml). There is a negligible to low potential for encountering overpressured sands or shallow gas.

The well will penetrate one buried fault at a depth of 966 ft bml. Additional buried faults may be encountered that are below the resolution of the 3-D seismic data.

The Top of Salt is steep, sloping 25° to the west.

GC 511 is in Military Warning Area W-92. The appropriate military command will need to be notified prior to the commencement of drilling operations.

Closing

We appreciate the opportunity to be of service to Hess Corporation and look forward to working with Hess on future projects.

Sincerely,

GEOSCIENCE EARTH & MARINE SERVICES

Chelcy Berkey
Marine Geologist

Daniel Lanier
President

Erin Janes
Project Manager/Sr. Geoscientist

Attachments (5 Maps and 3 Figures)

Distribution:
Dr. Aurélie Justwan, Hess Corporation (3 copies)

REFERENCES

Bureau of Ocean Energy Management (BOEM), 2011, Notice to lessees and operators (NTL) of federal oil and gas leases and pipeline right-of-way (ROW) holders on the outer continental shelf (OCS), Revisions to the list of OCS lease blocks requiring archaeological resource surveys and reports: U. S. Department of the Interior, Bureau of Ocean Energy Management, Bureau of Safety and Environmental Enforcement Gulf of Mexico Region (GOMR), NTL 2011-JOINT-G01. Effective Date December 29, 2011.

Bureau of Ocean Energy Management (BOEM), 2014, Notice to lessees and operators of federal oil, gas, and sulphur leases in the outer continental shelf (OCS), Gulf of Mexico OCS region, Military warning and water test areas: U. S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico Region (GOMR), NTL 2014-G04. Effective Date June 1, 2014.

Bureau of Ocean Energy Management (BOEM), 2015, Notice to Lessees (NTL) and Operators of Federal Oil and Gas Leases in the Outer Continental Shelf (OCS) Elimination of expiration dates on certain notices to lessees and operators pending review and reissuance: U.S, Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, NTL 2015-N02. Effective Date February 6, 2015.

Bureau of Ocean Energy Management (BOEM), 2019a, ASCII data files, published on the BOEM Gulf of Mexico Region Homepage, http://www.data.boem.gov/homepg/data_center/index.asp, accessed February 2019.

Bureau of Ocean Energy Management (BOEM), 2019b, Seismic water bottom anomalies map gallery, published on the BOEM Gulf of Mexico Region web page, http://www.boem.gov/Oil-and-Gas-Energy-Program/Mapping-and-Data/Map-Gallery/Seismic-Water-Bottom-Anomalies-Map-Gallery.aspx, accessed February 2019.

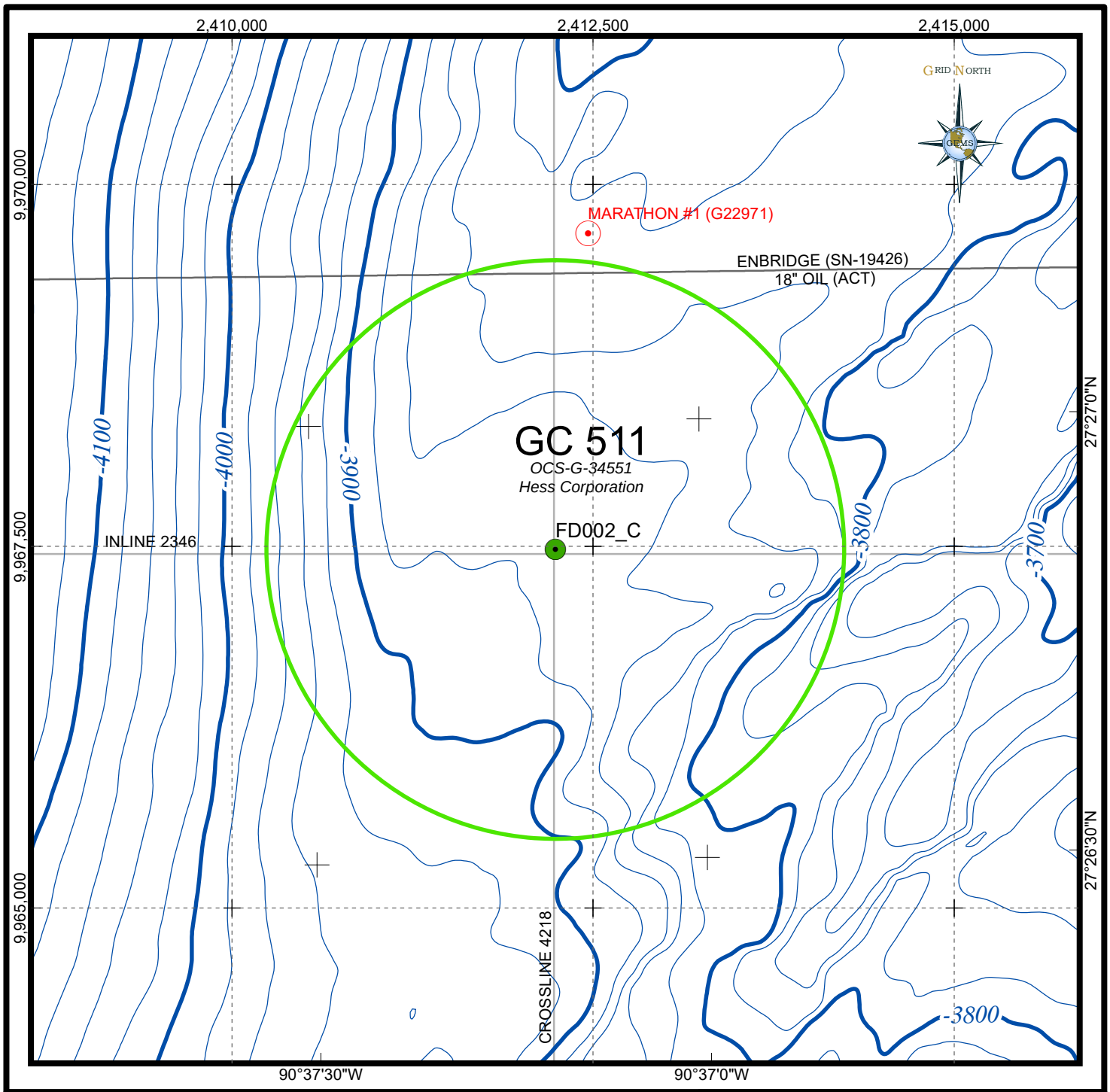
Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE), 2011, "Pre-Seabed disturbance survey mitigation", released by BOEMRE in March 2011.

Coffeen, J. A., 1978, Seismic Exploration Fundamentals: Tulsa, the Petroleum Publishing Co., p. 125.

Minerals Management Service (MMS), 2008a, Notice to lessees and operators of federal oil, gas, and sulphur leases and pipeline right-of-way holders in the outer continental shelf, Gulf of Mexico OCS region, information requirements for exploration plans and development operations coordination documents: U. S. Department of the Interior, Minerals Management Service, Gulf of Mexico, NTL 2008-G04.

Minerals Management Service (MMS), 2008b, Notice to lessees and operators of federal oil, gas, and sulphur leases and pipeline right-of-way holders in the outer continental shelf, Gulf of Mexico OCS region, shallow hazards requirements: U. S. Department of the Interior, Minerals Management Service, Gulf of Mexico, NTL 2008-G05.

Minerals Management Service (MMS), 2010, Notice to lessees and operators of federal oil and gas leases in the outer continental shelf, Gulf of Mexico OCS region, deepwater benthic communities: U. S. Department of the Interior, Minerals Management Service, Gulf of Mexico, NTL 2009-G40. Effective Date January 27, 2010.



PROPOSED WELL.

CIRCLE REPRESENTS 2000 FT RADIUS AROUND PROPOSED WELLSITE.

EXISTING WELL LOCATION, AS REPORTED BY BOEM.

EXISTING PIPELINE LOCATION, AS PROVIDED BY CLIENT.

3-D SURVEY LINE.

WATER DEPTH CONTOUR IN FEET.

HESS

BATHYMETRY MAP

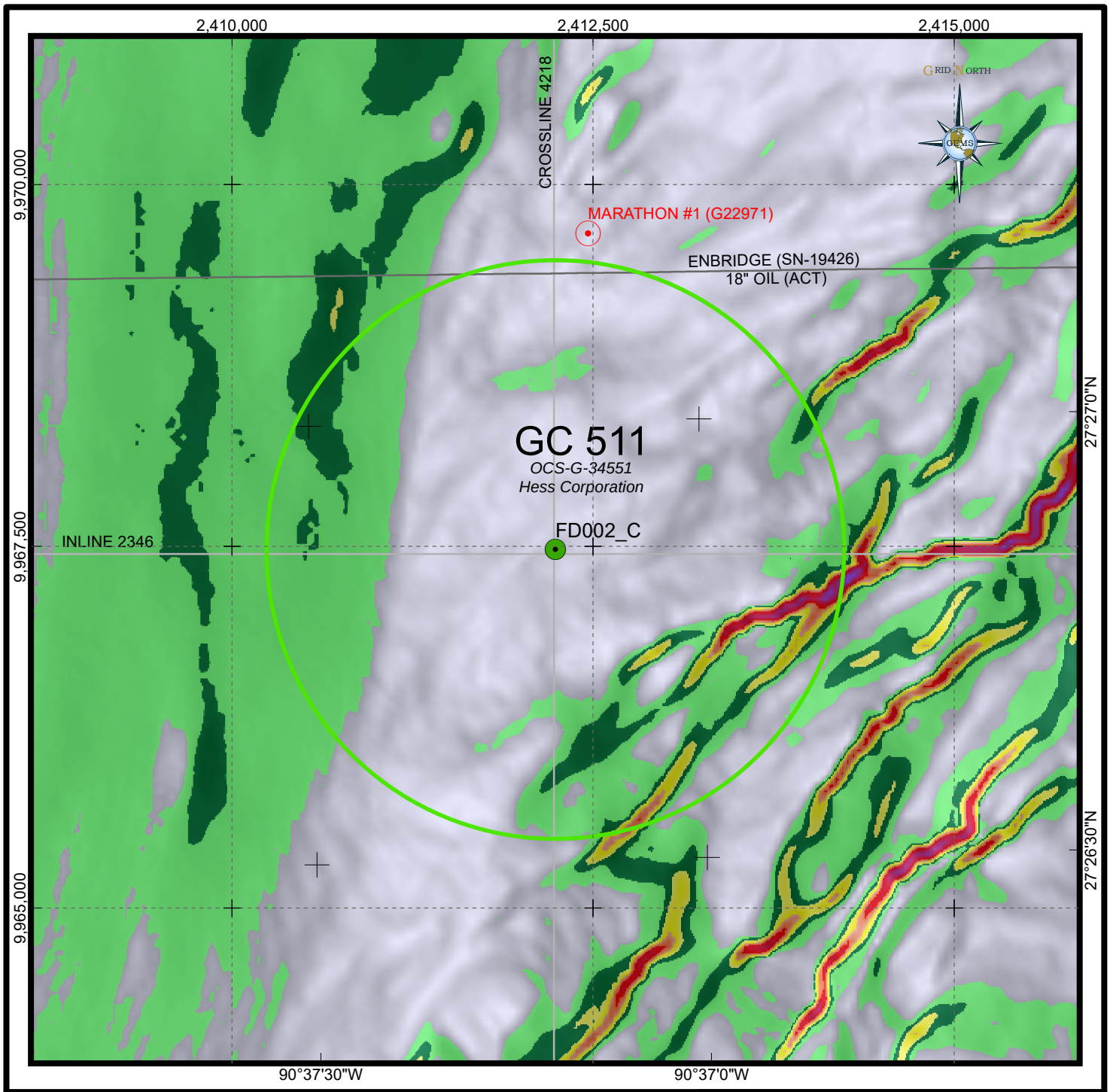
BLOCK 511
GREEN CANYON AREA
GULF OF MEXICO

1,000 500 0 1,000 Feet

GEOSCIENCE EARTH & MARINE SERVICES, INC.

DATE: 04 MARCH 2019
FILE NAME: 2822_WELL_FD002-C1.mxd
PROJECT NO.:0119-2822

MAP NO. FD002_C-1



PROPOSED WELL.

CIRCLE REPRESENTS 2000 FT RADIUS AROUND PROPOSED WELLSITE.

EXISTING WELL LOCATION, AS REPORTED BY BOEM.

EXISTING PIPELINE LOCATION, AS PROVIDED BY CLIENT.

3-D SURVEY LINE.

ALTITUDE = 45°
AZIMUTH = 75°
V.E. = 3X

0 4 7 10 15 20 30 40 50 54

SLOPE IN DEGREES

HESS

SEAFLOOR GRADIENT MAP

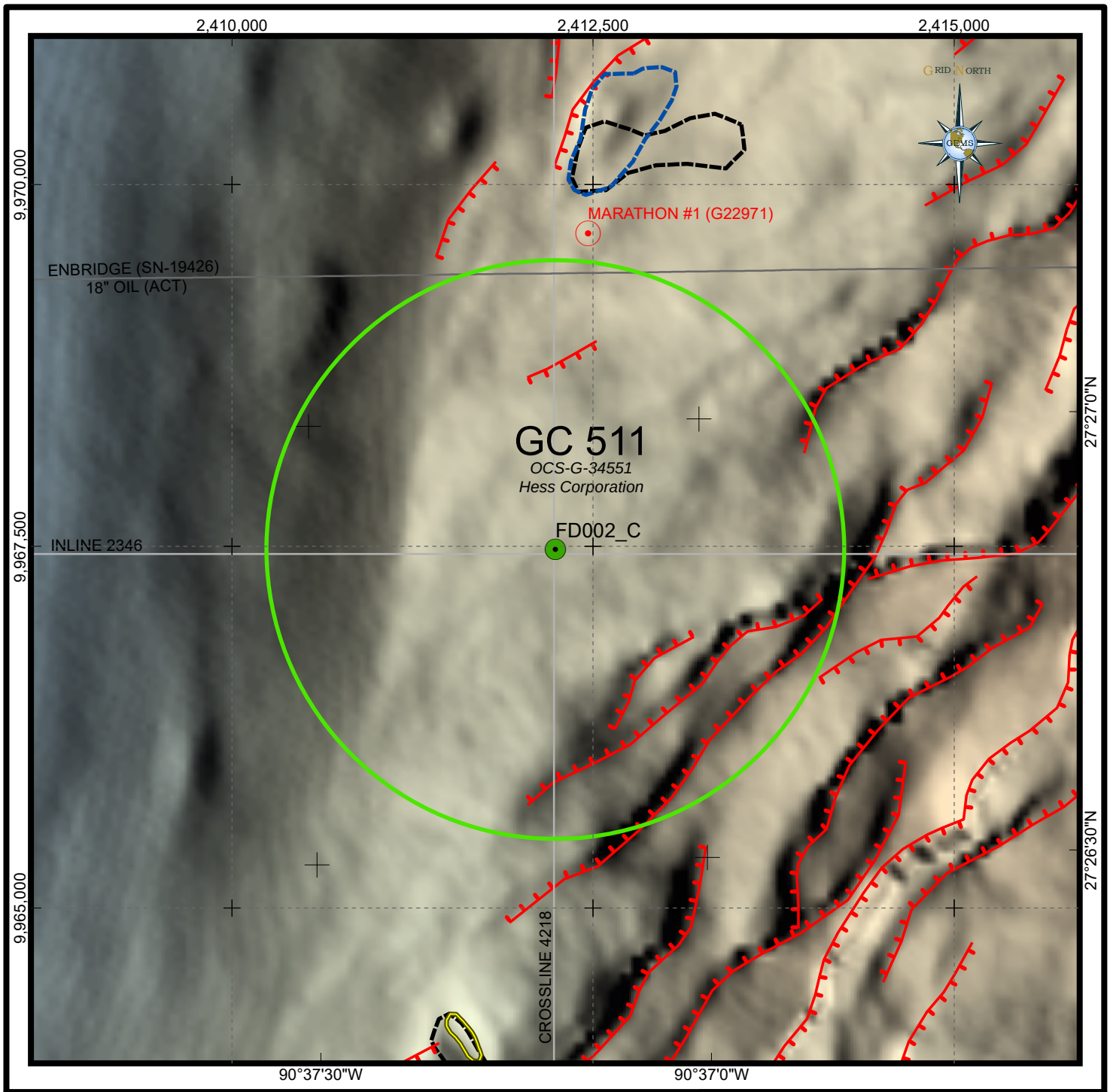
BLOCK 511
GREEN CANYON AREA
GULF OF MEXICO

1,000 500 0 1,000 Feet

GEOSCIENCE EARTH & MARINE SERVICES, INC.

DATE: 04 MARCH 2019
FILE NAME: 2822_WELL_FD002-C2.mxd
PROJECT NO.:0119-2822

MAP NO. FD002_C-2



PROPOSED WELL.

CIRCLE REPRESENTS 2000 FT RADIUS AROUND PROPOSED WELLSITE.

EXISTING WELL LOCATION, AS REPORTED BY BOEM.

EXISTING PIPELINE LOCATION, AS PROVIDED BY CLIENT.

3-D SURVEY LINE.

EXPULSION FEATURES.

SEAFLOOR FAULTS, TICKS INDICATE DOWNTHROWN SIDE OF FAULT.

AMPLITUDE ANOMALIES AT THE SEAFLOOR.

AREAS OF POSITIVE ANOMALIES AS REPORTED BY BOEM (2019B).

ALTITUDE = 45°
AZIMUTH = 75°
V.E. = 3X

-3,093 -3,250 -3,500 -3,750 -4,000 -4,250 -4,500

WATER DEPTH IN FEET

HESS

SEAFLOOR FEATURES MAP

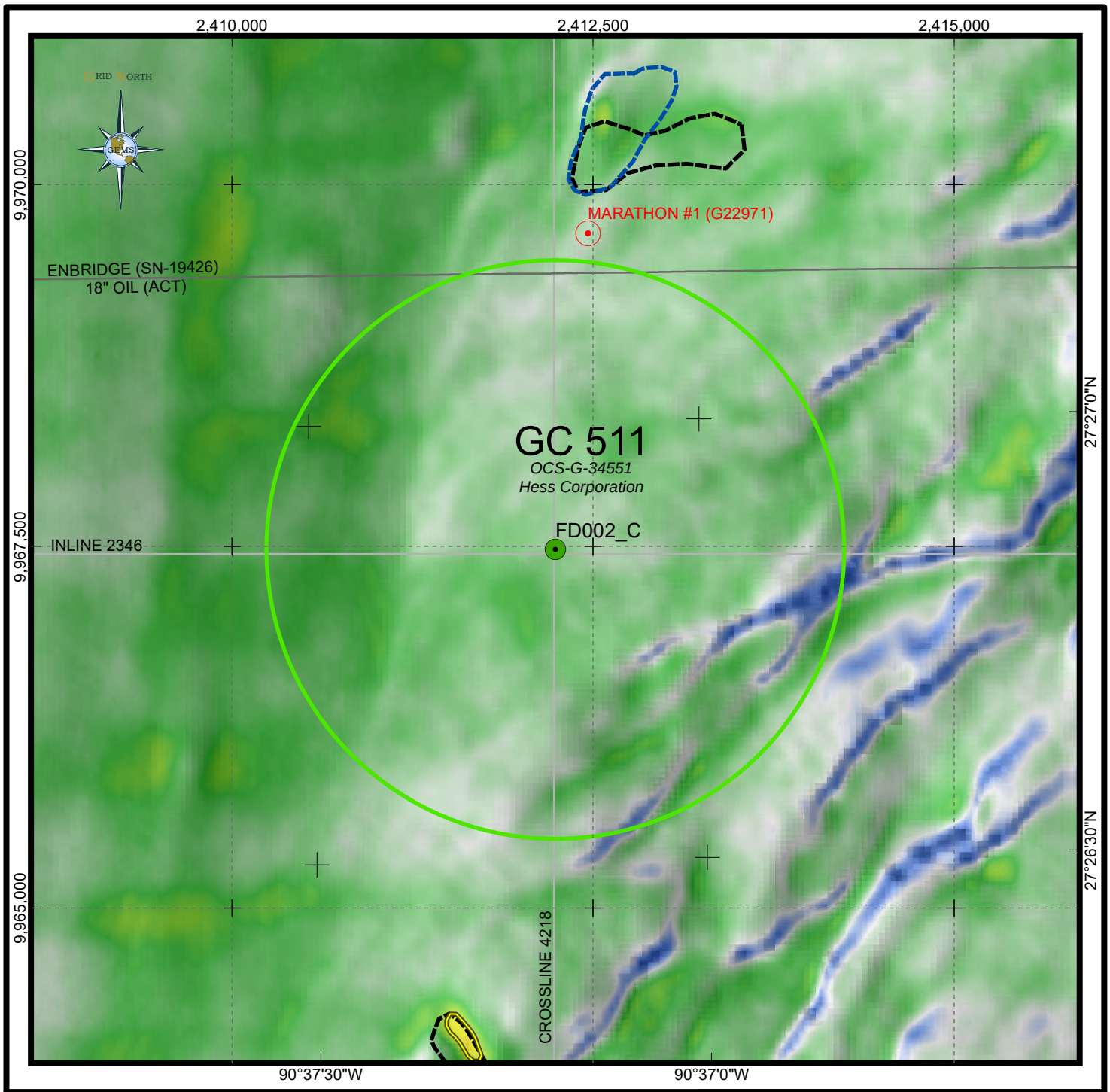
BLOCK 511
GREEN CANYON AREA
GULF OF MEXICO

1,000 500 0 1,000
Feet

GEOSCIENCE EARTH & MARINE SERVICES, INC.

DATE: 04 MARCH 2019
FILE NAME: 2822_WELL_FD002-C3.mxd
PROJECT NO.:0119-2822

MAP NO. FD002_C-3



PROPOSED WELL.

CIRCLE REPRESENTS 2000 FT RADIUS AROUND PROPOSED WELLSITE.

EXISTING WELL LOCATION, AS REPORTED BY BOEM.

EXISTING PIPELINE LOCATION, AS PROVIDED BY CLIENT.

3-D SURVEY LINE.

EXPULSION FEATURES.

AMPLITUDE ANOMALIES AT THE SEAFLOOR.

AREAS OF POSITIVE ANOMALIES AS REPORTED BY BOEM (2019B).

680 — 37,513

RELATIVE AMPLITUDE

HESS

SEAFLOOR AMPLITUDE RENDERING MAP

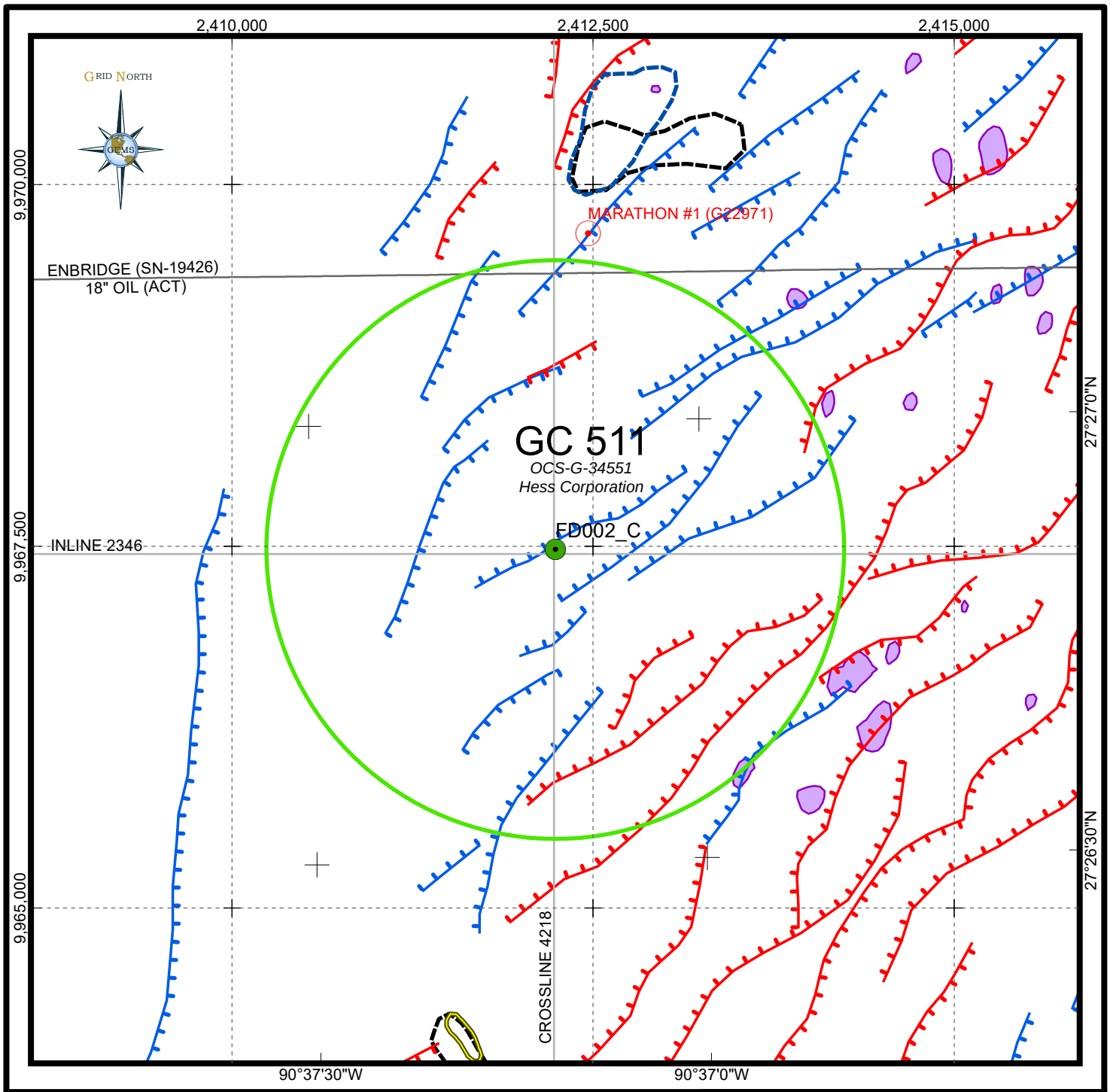
BLOCK 511
GREEN CANYON AREA
GULF OF MEXICO

1,000 500 0 1,000 Feet

GEOSCIENCE EARTH & MARINE SERVICES, INC.

DATE: 04 MARCH 2019
FILE NAME: 2822_WELL_FD002-C4.mxd
PROJECT NO.:0119-2822

MAP NO. FD002_C-4



PROPOSED WELL.

CIRCLE REPRESENTS 2000 FT RADIUS AROUND PROPOSED WELLSITE.

EXISTING WELL LOCATION, AS REPORTED BY BOEM.

EXISTING PIPELINE LOCATION, AS PROVIDED BY CLIENT.

3-D SURVEY LINE.

EXPULSION FEATURES.

SEAFLOOR FAULTS, TICKS INDICATE DOWNTHROWN SIDE OF FAULT.

BURIED FAULTS, TICKS INDICATE DOWNTHROWN SIDE OF FAULT.

AMPLITUDE ANOMALIES AT THE SEAFLOOR.

AREAS OF POSITIVE ANOMALIES AS REPORTED BY BOEM (2019B).

SUBSURFACE AMPLITUDE ANOMALIES

AMPLITUDE ANOMALIES BETWEEN HORIZON 12 AND LIMIT OF INVESTIGATION.

HESS

GEOLOGIC FEATURES MAP

BLOCK 511
GREEN CANYON AREA
GULF OF MEXICO

1,000 500 0 1,000 Feet

GEOSCIENCE EARTH & MARINE SERVICES, INC. GEMS

DATE: 04 MARCH 2019
FILE NAME: 2822_WELL_FD002-C5.mxd
PROJECT NO.:0119-2822

MAP NO. FD002_C-5

15810 Park Ten Place, Suite 100
Houston, Texas 77084
832.603.4352
www.gemsinc.com

March 8, 2019

Project No.: 0119-2822

Hess Corporation
1501 McKinney Street
Houston, TX 77010

Attention: Dr. Aurélie Justwan

**Site Clearance Letter,
Proposed Wellsite FD002_D,
Block 511 (OCS-G-34551),
Green Canyon Area,
Gulf of Mexico**

Hess Corporation (Hess) contracted Geoscience Earth & Marine Services (GEMS) to provide an assessment of the seafloor and shallow geologic conditions to determine the favorability of drilling operations for the proposed location FD002_D in Block 511 (OCS-G-34551), Green Canyon Area, Gulf of Mexico. This letter addresses specific seafloor and subsurface conditions around the proposed location to the Top of Salt, a depth of about 1,433 ft below the mudline (bml).

Seafloor conditions appear favorable within the vicinity of the proposed surface location. There are no potential sites for deepwater benthic communities within 2,000 ft of the proposed wellsite. There is negligible to low potential for encountering overpressured sands or significant shallow gas between the seafloor and the Top of Salt based on seismic attributes and amplitude analysis.

This letter provides details specific to the well location, including available data, Notice to Lessees (NTL) requirements, man-made features, and wellsite conditions.

Proposed Well Location

The surface location for the Proposed Exploration Wellsite FD002_D lies in the southwestern portion of GC 511. Hess provided the following coordinates:

Table II-D-1. Proposed Location Coordinates

Proposed Wellsite FD002_D			
Spheroid & Datum: Clarke 1866 NAD27Projection: UTM Zone 15 North		Line Reference	Block Calls (GC 511)
X: 2,412,018 ft	Latitude: 27° 26′ 42.0927″ N	Inline 2332	4,338 ft FWL
Y: 9,966,548 ft	Longitude: 90° 37′ 13.9864″ W	Crossline 4213	3,188 ft FSL

Hess will drill this well using a dynamically positioned drilling vessel. Our assessment addresses the seafloor conditions within a 2,000-ft radius around the proposed wellsite location.

Available Data

The following discussion is based on the findings provided within Volume I of this report. The text, maps, and figures included in the report provide detail on the regional geology of the Study Area. Hess provided an exploration 3-D seismic time volume for the geohazard analysis, covering an approximate 194 square-mile area within the Green Canyon (GC) protraction area. The data volume includes 20 Federal Lease Blocks (GC 422-426, 466-470, 510-514, and 554-558). Seafloor mapping was limited to the "Seafloor Mapping Area", which encompassed Blocks GC 466-468, 510-512, and 554-556. Subsurface mapping was limited to a one-block "Study Area" covering GC 511 (Figure II-D-1).

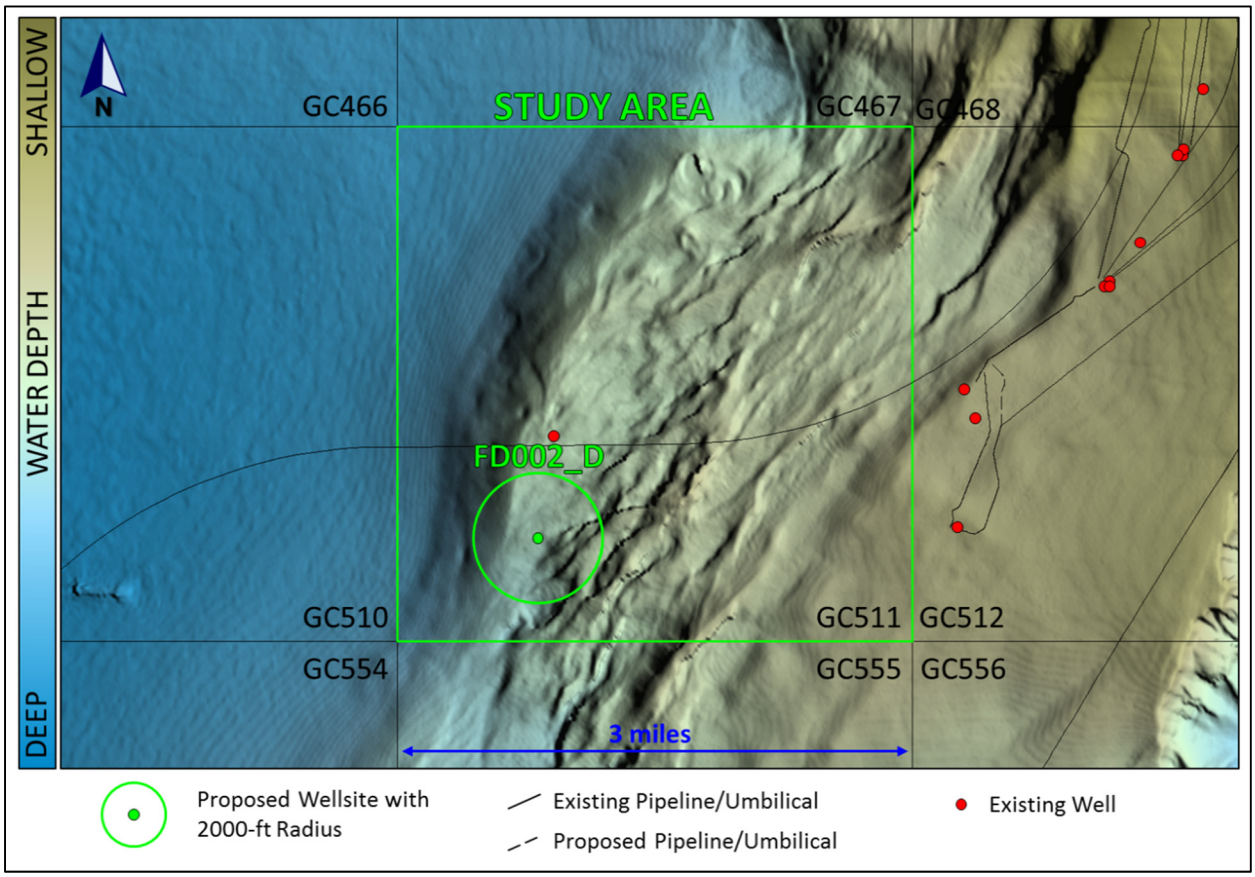


Figure II-D-1. Seafloor Rendering of the Green Canyon Study Area

Attachments

Wellsite maps are centered on the Proposed FD002_D location and are displayed at a 1 inch = 1,000 ft scale (1:12,000). The maps included in this letter are as follows:

Map No. FD002_D-1: Bathymetry Map

Map No. FD002_D-2: Seafloor Gradient Map

Map No. FD002_D-3: Seafloor Features Map

Map No. FD002_D-4: Seafloor Amplitude Rendering Map

Map No. FD002_D-5: Geologic Features Map

The accompanying illustrations were extracted from the available datasets and are listed below:

Illustration FD002_D-1: Portions of Inline 2332 and Crossline 4213 Showing Conditions Beneath Proposed Wellsite FD002_D

Illustration FD002_D-2: Tophole Prognosis Chart, Proposed Wellsite FD002_D, Green Canyon, Block 511

Illustration FD002_D-3: Seismic Correlation Between Existing Well No. 1 in GC 511, Nos. WI004, WI003, and SB003 in GC 512, and Proposed Wellsite FD002_D

NTL Requirements

The following report complies with the Bureau of Ocean Energy Management (BOEM) Notice to Lessees (NTLs) 2009-G40, 2008-G04, and 2008-G05 (MMS, 2010 and 2008a, b). BOEM's NTL 2015-N02 (BOEM, 2015) eliminates the expiration of all NTLs pending further review.

The Federal lease Block GC 511 is not considered archaeologically significant (NTL 2011-JOINT-G01, BOEM, 2011); however, mitigation guidelines released by BOEM, entitled "Pre-Seabed Disturbance Survey Mitigation", require an archaeological assessment of all surveyed blocks prior to any bottom disturbing activities (BOEMRE, 2011).

GC 511 is located within military warning area (MWA) W-92; therefore, drilling activities must be coordinated with the appropriate military command for this warning area. Military warning areas represent regions where the U.S. Department of Defense conducts various testing and training operations. Lessees within MWA's are required to enter into an agreement with the appropriate command headquarters concerning the control of electromagnetic emissions and the use of boats and aircraft within the warning area (NTL 2014-G04; BOEM, 2014).

As specified in NTL 2008-G04 (MMS, 2008a), GEMS extracted the power spectrum diagram from the 3-D seismic data cube provided by Hess at the proposed wellsite (Figure II-D-2). The extraction was generated within a 2,000-ft radius of the intersection of the inline and crossline at the proposed wellsite. The extraction time interval consisted of the seafloor to the Top of Salt. We converted the amplitude vs. frequency spectrum, generated by the IHS Kingdom software, to power vs. frequency by squaring the amplitude values as described by J. A. Coffeen, 1978. The frequency bandwidth at 50% power ranges between 8 and 72 Hz.

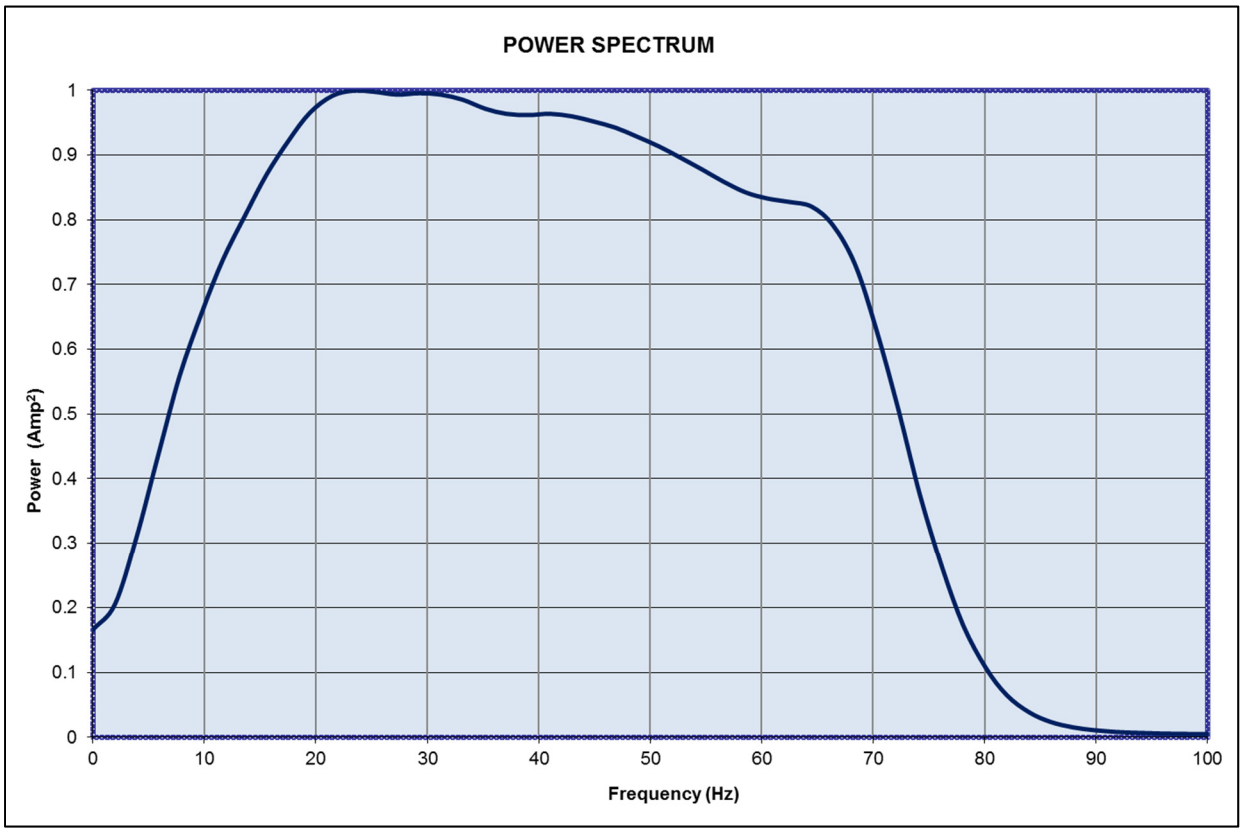


Figure II-D-2. Power Spectrum Curve, Proposed Wellsite FD002_D

Man-Made Features

No existing infrastructure is located within 2,000 ft of the proposed wellsite (Maps FD002_D-1 through FD002_D-5; Figure II-D-1). The nearest pipeline is Enbridge Offshore Facilities' 18" Oil pipeline, which trends west to east approximately 2,845 ft north of the proposed wellsite. The nearest well, Marathon Oil Company's Well No. 1, is approximately 3,150 ft north of proposed wellsite FD002_D (BOEM, 2019a); Figure II-D-1. This well was spudded in 2010 and is permanently abandoned.

Wellsite Conditions

The proposed wellsite is located along the heavily faulted western margin of an uplifted, salt-cored plateau. The surface location is clear of any constraining seafloor conditions as defined by the 3-D seismic dataset. The shallow stratigraphy at the proposed well location consists of interbedded hemipelagic clays and silty-clays, turbidites, mass-transport deposits, and some possible sands. Sand-prone, slope-fan sediments of the "Red Unit" may be present. The following discussions on stratigraphy and lithology are based on seismic character and well logs from nearby Well No. 1.

Water Depth and Seafloor Conditions. The water depth at the proposed surface location is -3,884 ft (Map FD002_D-1). The seafloor slopes to the southwest at approximately 1.9° (Map FD002_D-2). The seafloor in the vicinity of the proposed wellsite is variable due to the seafloor expressions of buried faults. The seafloor gradient steepens, approximately 1,075 ft west of the proposed wellsite, to between 4° and 8° as the plateau margin slopes into Steward Basin (Map FD002_D-2; Figure II-D-1).

The nearest seafloor faults are located approximately 700 ft southeast and 750 ft east of the proposed wellsite (Map FD002_D-3). Two additional seafloor faults are located within a 2,000 ft radius of the proposed wellsite. The faults all trend southwest to northeast and are downthrown to the northwest, towards the wellsite. Seafloor offsets along the faults are up to 40 ft and gradients reach up to 30° (Maps FD002_D-1 and FD002_D-2). Any failures along the steep fault planes will likely be localized and should not affect the proposed wellsite.

Deepwater Benthic Communities. No features or areas were interpreted within 2,000 ft of the proposed location that are capable of supporting high-density chemosynthetic or other deepwater benthic communities. The seafloor amplitude rendering shows no elevated amplitudes in the vicinity of the wellsite indicating normal Gulf of Mexico sediments of clays and/or silty-clays (Map FD002_D-4). Additionally, there are no BOEM seabed anomalies within a 2,000 ft radius of the proposed wellsite (BOEM, 2019b).

Stratigraphy. Stratigraphic conditions are shown on Illustrations FD002_D-1 through FD002_D-3. Four horizons (Horizons 2, 5, 10, and 12) and the Top of Salt were mapped to define the stratigraphic facies in the Study Area. Horizon 2 is not present at the proposed wellsite location.

The stratigraphy in Unit 1b, between the seafloor and Horizon 5 (185 ft bml), consists of low-amplitude, continuous to discontinuous reflectors. These sediments likely consist of a very soft, hemipelagic silty-clay drape overlying hemipelagic clays and silty-clays. Thin clay-prone mass-transport deposits may be interbedded with the stratified sediments (Illustrations FD002_D-1 and FD002_D-2).

The sediments within Unit 2, from Horizon 5 to Horizon 10 (185 ft to 442 ft bml), are generally low to moderate-amplitude continuous to semi-continuous reflectors representing silty-clays. Some thin, fine-grained mass-transport deposits may be interbedded with the stratified sediments.

Unit 3, between Horizon 10 and Horizon 12 (442 ft to 773 ft bml), consists of generally low-amplitude, chaotic sediments, likely indicating generally fine-grained mass-transport deposits. Well logs from Well No. 1 in GC 511 indicate that some sands may be present (Illustration FD002_D-3). This unit may correspond to the slope-fan sediments of the shallow water flow prone "Red Unit".

The sediments in Unit 4, from Horizon 12 to the Top of Salt (773 ft to 1,433 ft bml) are chaotic, low to moderate-amplitude reflectors. These sediments are likely alternating fine-grained mass-transport deposits and turbidites that have been heavily disturbed and faulted due to the emplacement of the shallow salt body. Some thin sands may be present. The Top of Salt at the proposed wellsite slopes to the west at 26° (Figure II-D-3).

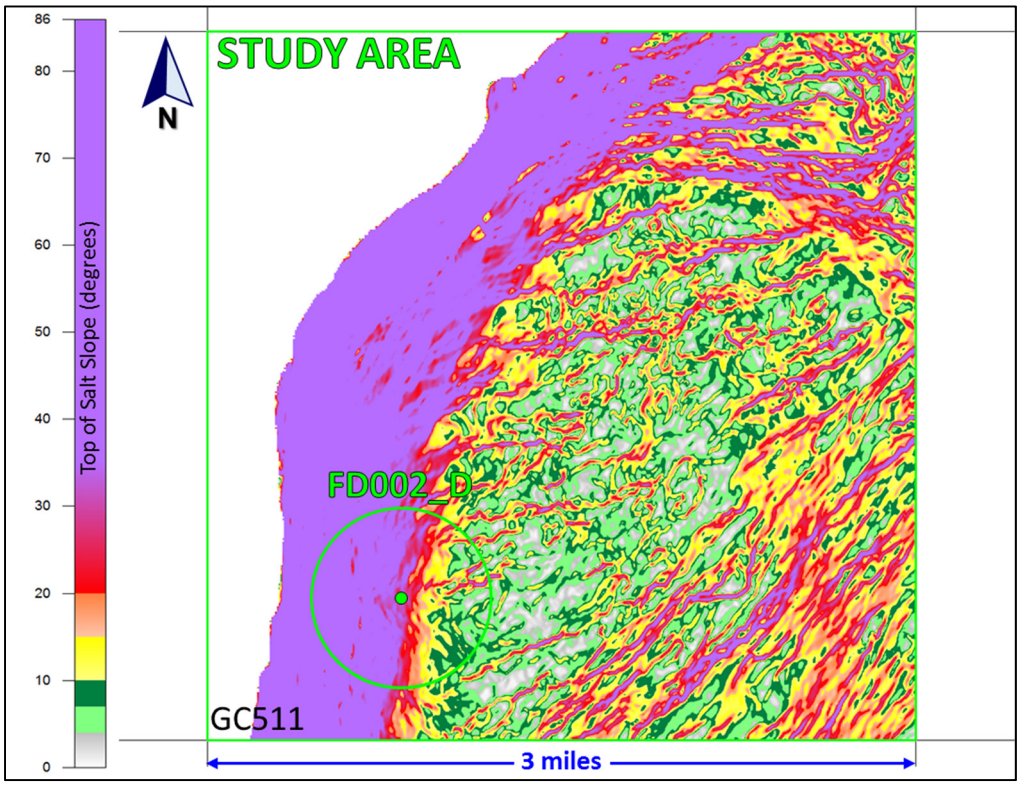


Figure II-D-3. Gradient Map showing the Slope of the Top of Salt at the Proposed Wellsite

Faults. No seafloor or buried faults will be penetrated by the proposed wellsite (Illustrations FD002_D-1 and FD002_D-2). The nearest faults are located approximately 700 ft to the southeast and 750 ft to the east, trend southwest to northeast, and are downthrown to the northwest (Maps FD002_D-3 and FD002_D-5). The top of one buried fault is approximately 30 ft southeast of the wellsite, and dips away from the proposed location (Illustrations FD002_D-1 and FD002_D-2). The sediments above the shallow salt body are highly faulted. Buried faults may be encountered that are below the resolution of the 3-D seismic data, particularly beneath Horizon 10.

Shallow Gas and Shallow Water Flow. Significant shallow gas is not likely to be encountered within the shallow sediments from the seafloor to the Top of Salt (1,433 ft bml), Illustration FD002_D-2. The potential for shallow water flow is considered negligible to low.

Shallow Gas. There are no apparent high-amplitude anomalies or other direct hydrocarbon indicators directly below the proposed wellsite. The nearest high-amplitude anomaly is located approximately 1,580 ft southeast of the proposed wellsite (Map FD002_D-5). This anomaly is located near the Horizon 12 interface and likely indicates gas migration along a fault plane. This anomaly poses no threat to the proposed wellsite. A low potential for encountering shallow gas exists from Horizon 10 (442 ft bml) to the Top of Salt (1,433 ft bml); Illustration FD002_D-2. Minor amounts of gas may be encountered within thin sand layers. There is a negligible potential for encountering shallow gas within the upper 442 ft of sediment (seafloor to Horizon 10); Illustration FD002_D-2.

Shallow Water Flow. The potential for shallow water flow at this well location is considered negligible to low (Illustration FD002_D-2). Faulting in the vicinity of the proposed wellsite likely relieved any significant overpressures. In addition, nearby Well No. 1, approximately 3,150 ft north of the proposed wellsite, did not report any shallow water flow conditions (Illustration FD002_D-3). Drilling reports provided by Hess indicate that shallow water flow was observed at Well SB003 in Block GC 512 at a depth of 6,717 ft bml (Illustration FD002_D-3). This shallow water flow occurred near the Top of Salt; however, the stratigraphy is deeper and cannot be correlated to the proposed wellsite location.

There is a low potential for shallow water flow between Horizon 10 and the Top of Salt (442 ft to 1,433 ft bml). Thin sands may be encountered; however, any fluids present are not likely to be significantly overpressured. A negligible potential for overpressured sands exists in the shallow fine-grained sediments from the seafloor to Horizon 10 (442 ft bml).

Relief Well Conditions

The seafloor and subsurface conditions are clear for relief wells within a 150 ft radius surrounding proposed wellsite FD002_D. No seafloor faults, amplitude anomalies, or other constraining features would be encountered. Seafloor faults are located 700 ft southeast and 750 ft east of the proposed wellsite. If a relief well is placed in this vicinity, BOEM requires a 75 m (~245 ft) stand-off distance from the seafloor faults. A relief well within 150 ft of the proposed wellsite would be at least 2,000 ft from any features or areas that may be capable of supporting deepwater benthic communities. The relief well location would encounter similar stratigraphy to proposed wellsite FD002_D.

Results

No areas with the potential for deepwater benthic communities are identified within 2,000 ft of the proposed location.

It is possible that thin sand layers will be encountered in the shallow section from Horizon 10 (442 ft bml) to the Top of Salt (1,433 ft bml). There is a negligible to low potential for encountering overpressured sands or shallow gas.

The well will not penetrate any mapped seafloor or buried faults; however, buried faults may be encountered that are below the resolution of the 3-D seismic data.

The Top of Salt is steep, sloping 26° to the west.

GC 511 is in Military Warning Area W-92. The appropriate military command will need to be notified prior to the commencement of drilling operations.

Closing

We appreciate the opportunity to be of service to Hess Corporation and look forward to working with Hess on future projects.

Sincerely,

GEOSCIENCE EARTH & MARINE SERVICES

Chelcy Berkey
Marine Geologist

Daniel Lanier
President

Erin Janes
Project Manager/Sr. Geoscientist

Attachments (5 Maps and 3 Figures)

Distribution:
Dr. Aurélie Justwan, Hess Corporation (3 copies)

REFERENCES

Bureau of Ocean Energy Management (BOEM), 2011, Notice to lessees and operators (NTL) of federal oil and gas leases and pipeline right-of-way (ROW) holders on the outer continental shelf (OCS), Revisions to the list of OCS lease blocks requiring archaeological resource surveys and reports: U. S. Department of the Interior, Bureau of Ocean Energy Management, Bureau of Safety and Environmental Enforcement Gulf of Mexico Region (GOMR), NTL 2011-JOINT-G01. Effective Date December 29, 2011.

Bureau of Ocean Energy Management (BOEM), 2014, Notice to lessees and operators of federal oil, gas, and sulphur leases in the outer continental shelf (OCS), Gulf of Mexico OCS region, Military warning and water test areas: U. S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico Region (GOMR), NTL 2014-G04. Effective Date June 1, 2014.

Bureau of Ocean Energy Management (BOEM), 2015, Notice to Lessees (NTL) and Operators of Federal Oil and Gas Leases in the Outer Continental Shelf (OCS) Elimination of expiration dates on certain notices to lessees and operators pending review and reissuance: U.S, Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, NTL 2015-N02. Effective Date February 6, 2015.

Bureau of Ocean Energy Management (BOEM), 2019a, ASCII data files, published on the BOEM Gulf of Mexico Region Homepage, http://www.data.boem.gov/homepg/data_center/index.asp, accessed February 2019.

Bureau of Ocean Energy Management (BOEM), 2019b, Seismic water bottom anomalies map gallery, published on the BOEM Gulf of Mexico Region web page, http://www.boem.gov/Oil-and-Gas-Energy-Program/Mapping-and-Data/Map-Gallery/Seismic-Water-Bottom-Anomalies-Map-Gallery.aspx, accessed February 2019.

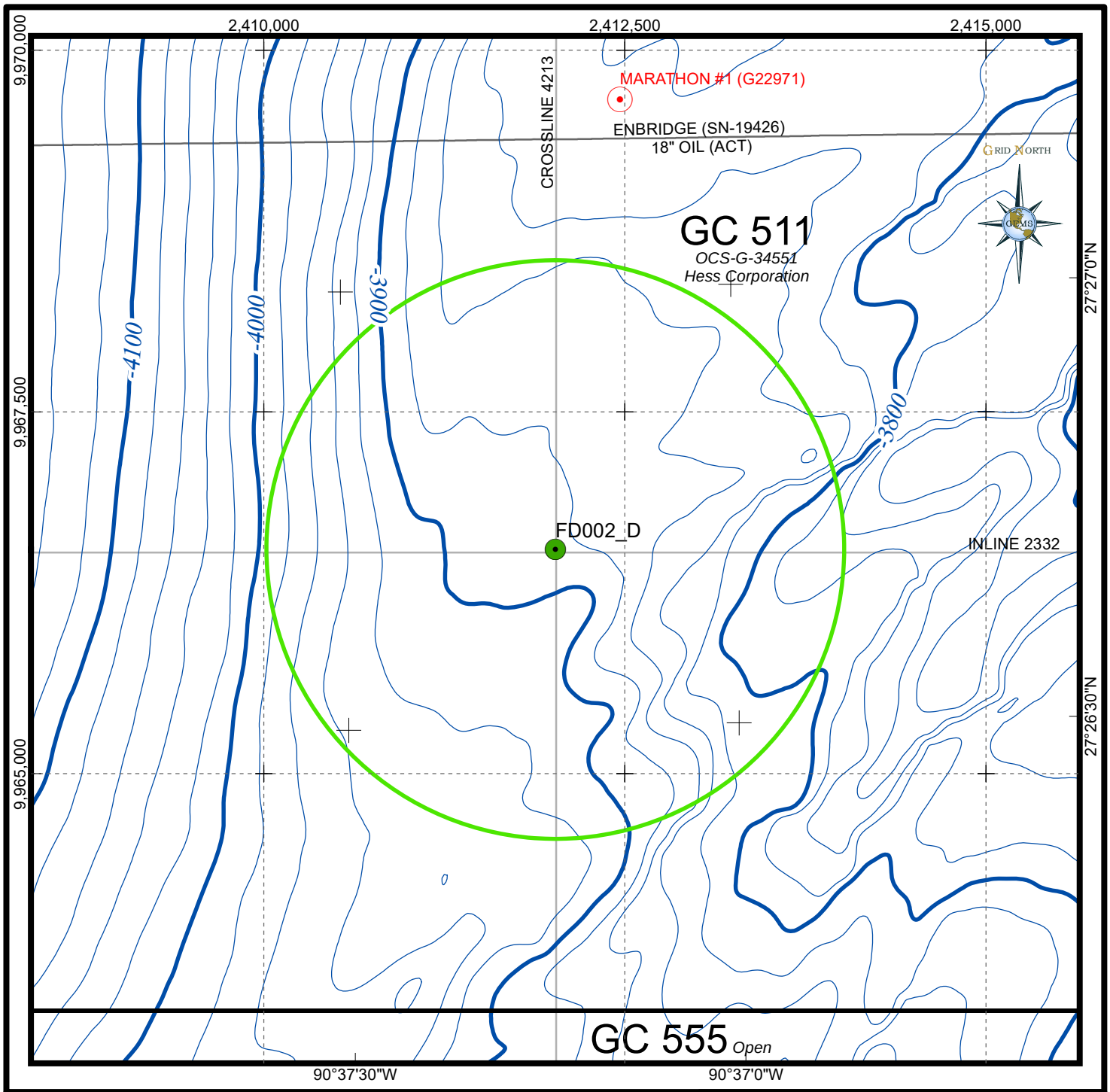
Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE), 2011, "Pre-Seabed disturbance survey mitigation", released by BOEMRE in March 2011.

Coffeen, J. A., 1978, Seismic Exploration Fundamentals: Tulsa, the Petroleum Publishing Co., p. 125.

Minerals Management Service (MMS), 2008a, Notice to lessees and operators of federal oil, gas, and sulphur leases and pipeline right-of-way holders in the outer continental shelf, Gulf of Mexico OCS region, information requirements for exploration plans and development operations coordination documents: U. S. Department of the Interior, Minerals Management Service, Gulf of Mexico, NTL 2008-G04.

Minerals Management Service (MMS), 2008b, Notice to lessees and operators of federal oil, gas, and sulphur leases and pipeline right-of-way holders in the outer continental shelf, Gulf of Mexico OCS region, shallow hazards requirements: U. S. Department of the Interior, Minerals Management Service, Gulf of Mexico, NTL 2008-G05.

Minerals Management Service (MMS), 2010, Notice to lessees and operators of federal oil and gas leases in the outer continental shelf, Gulf of Mexico OCS region, deepwater benthic communities: U. S. Department of the Interior, Minerals Management Service, Gulf of Mexico, NTL 2009-G40. Effective Date January 27, 2010.



PROPOSED WELL.

CIRCLE REPRESENTS 2000 FT RADIUS AROUND PROPOSED WELLSITE.

EXISTING WELL LOCATION, AS REPORTED BY BOEM.

EXISTING PIPELINE LOCATION, AS PROVIDED BY CLIENT.

3-D SURVEY LINE.

WATER DEPTH CONTOUR IN FEET.

HESS

BATHYMETRY MAP

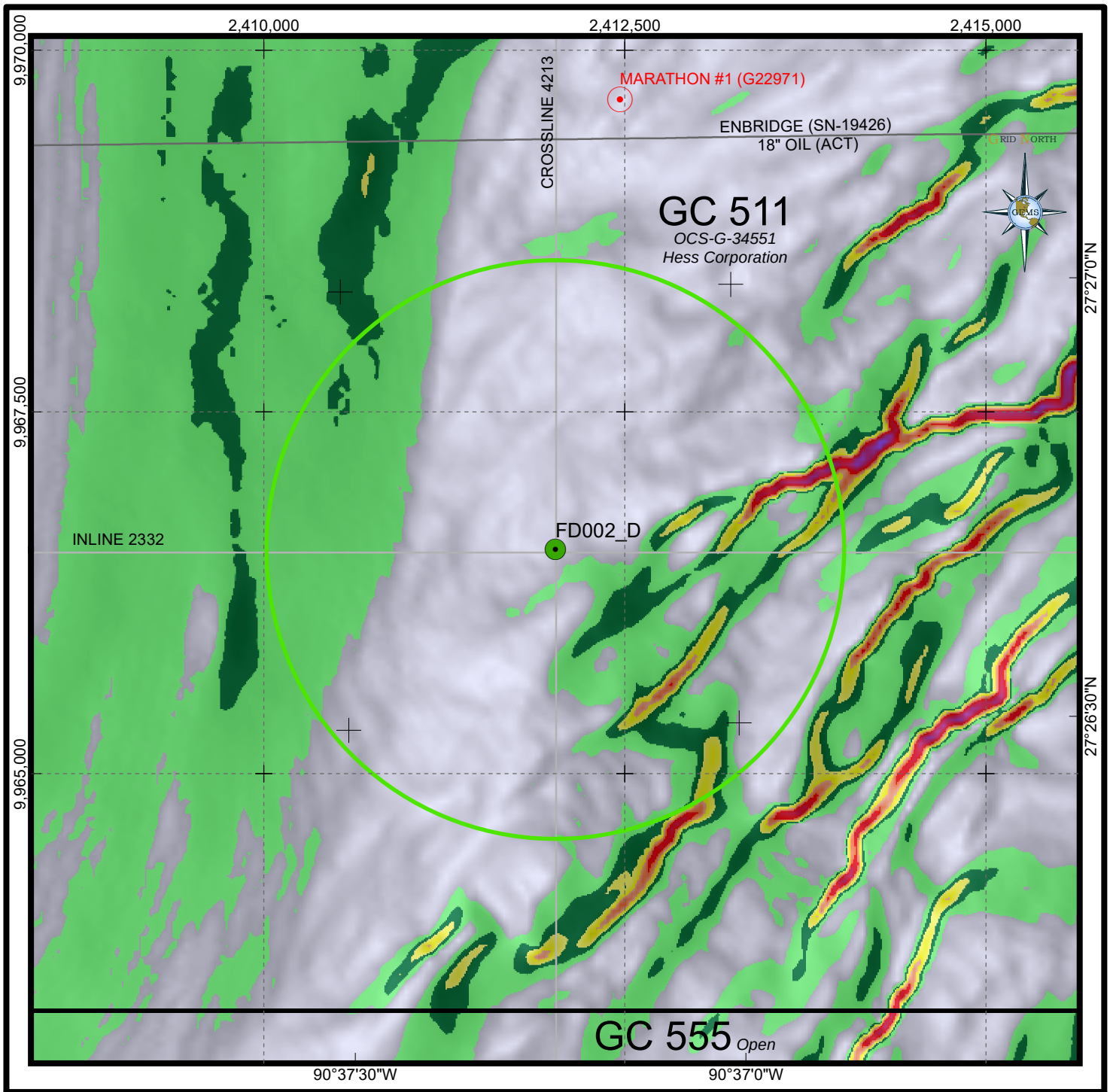
BLOCK 511
GREEN CANYON AREA
GULF OF MEXICO

1,000 500 0 1,000 Feet

GEOSCIENCE EARTH & MARINE SERVICES, INC.

DATE: 04 MARCH 2019
FILE NAME: 2822_WELL_FD002-D1.mxd
PROJECT NO.:0119-2822

MAP NO. FD002_D-1



PROPOSED WELL.

CIRCLE REPRESENTS 2000 FT RADIUS AROUND PROPOSED WELLSITE.

EXISTING WELL LOCATION, AS REPORTED BY BOEM.

EXISTING PIPELINE LOCATION, AS PROVIDED BY CLIENT.

3-D SURVEY LINE.

ALTITUDE = 45°
AZIMUTH = 75°
V.E. = 3X

0 4 7 10 15 20 30 40 50 54

SLOPE IN DEGREES

HESS

SEAFLOOR GRADIENT MAP

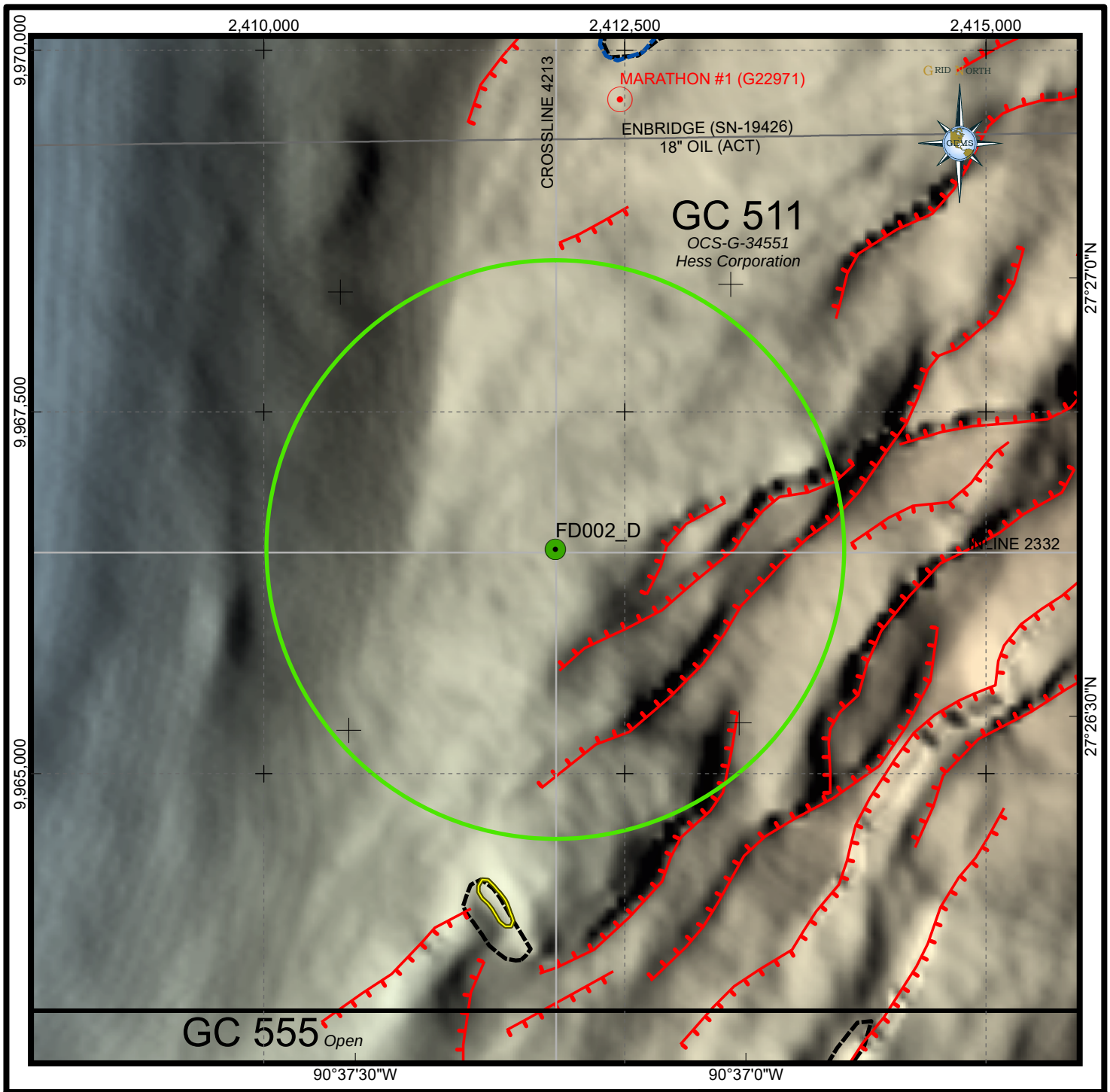
BLOCK 511
GREEN CANYON AREA
GULF OF MEXICO

1,000 500 0 1,000 Feet

GEOSCIENCE EARTH & MARINE SERVICES, INC.

DATE: 04 MARCH 2019
FILE NAME: 2822_WELL_FD002-D2.mxd
PROJECT NO.:0119-2822

MAP NO. FD002_D-2



PROPOSED WELL.

CIRCLE REPRESENTS 2000 FT RADIUS AROUND PROPOSED WELLSITE.

EXISTING WELL LOCATION, AS REPORTED BY BOEM.

EXISTING PIPELINE LOCATION, AS PROVIDED BY CLIENT.

3-D SURVEY LINE.

EXPULSION FEATURES.

SEAFLOOR FAULTS, TICKS INDICATE DOWNTHROWN SIDE OF FAULT.

AMPLITUDE ANOMALIES AT THE SEAFLOOR.

AREAS OF POSITIVE ANOMALIES AS REPORTED BY BOEM (2019B).

ALTITUDE = 45°
AZIMUTH = 75°
V.E. = 3X

-3,093 -3,250 -3,500 -3,750 -4,000 -4,250 -4,500

WATER DEPTH IN FEET

HESS

SEAFLOOR FEATURES MAP

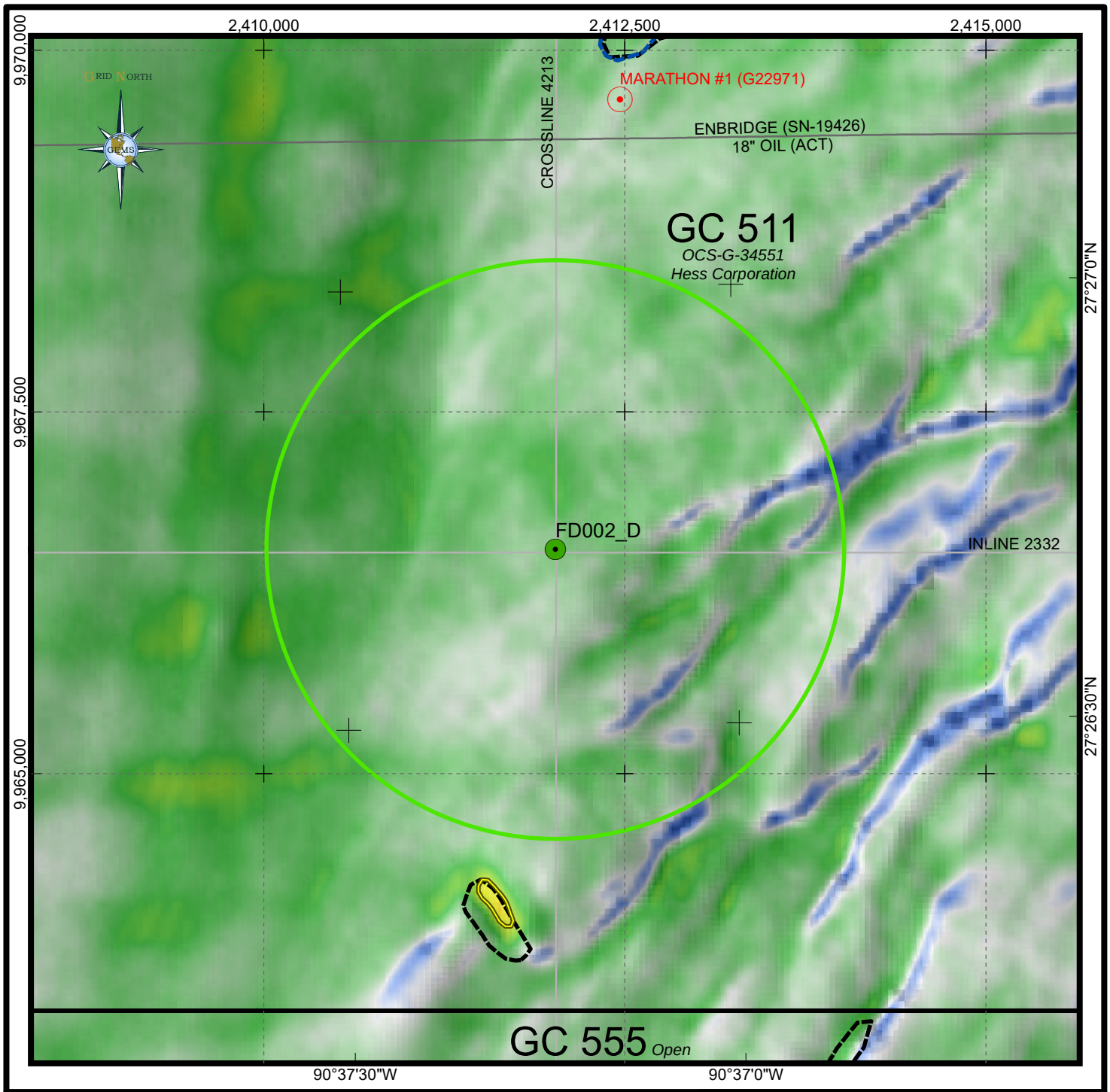
BLOCK 511
GREEN CANYON AREA
GULF OF MEXICO

1,000 500 0 1,000 Feet

GEOSCIENCE EARTH & MARINE SERVICES, INC.

DATE: 04 MARCH 2019
FILE NAME: 2822_WELL_FD002-D3.mxd
PROJECT NO.:0119-2822

MAP NO. FD002_D-3



PROPOSED WELL.

CIRCLE REPRESENTS 2000 FT RADIUS AROUND PROPOSED WELLSITE.

EXISTING WELL LOCATION, AS REPORTED BY BOEM.

EXISTING PIPELINE LOCATION, AS PROVIDED BY CLIENT.

3-D SURVEY LINE.

EXPULSION FEATURES.

AMPLITUDE ANOMALIES AT THE SEAFLOOR.

AREAS OF POSITIVE ANOMALIES AS REPORTED BY BOEM (2019B).

680 37,513

RELATIVE AMPLITUDE

HESS

SEAFLOOR AMPLITUDE RENDERING MAP

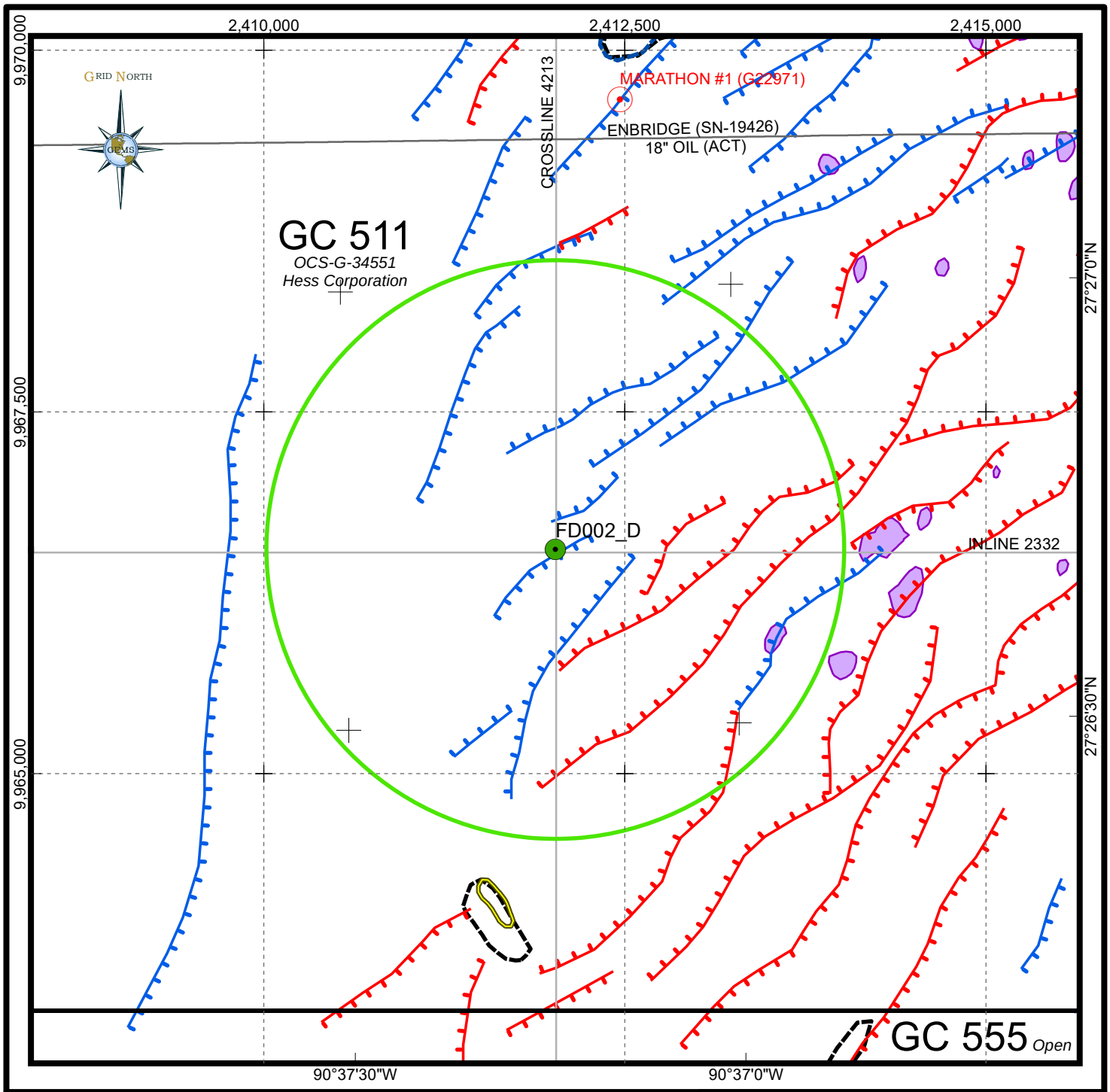
BLOCK 511
GREEN CANYON AREA
GULF OF MEXICO

1,000 500 0 1,000 Feet

GEOSCIENCE EARTH & MARINE SERVICES, INC.

DATE: 04 MARCH 2019
FILE NAME: 2822_WELL_FD002-D4.mxd
PROJECT NO.:0119-2822

MAP NO. FD002_D-4



PROPOSED WELL.

CIRCLE REPRESENTS 2000 FT RADIUS AROUND PROPOSED WELLSITE.

EXISTING WELL LOCATION, AS REPORTED BY BOEM.

EXISTING PIPELINE LOCATION, AS PROVIDED BY CLIENT.

3-D SURVEY LINE.

EXPULSION FEATURES.

SEAFLOOR FAULTS, TICKS INDICATE DOWNTHROWN SIDE OF FAULT.

BURIED FAULTS, TICKS INDICATE DOWNTHROWN SIDE OF FAULT.

AMPLITUDE ANOMALIES AT THE SEAFLOOR.

AREAS OF POSITIVE ANOMALIES AS REPORTED BY BOEM (2019B).

SUBSURFACE AMPLITUDE ANOMALIES

AMPLITUDE ANOMALIES BETWEEN HORIZON 12 AND LIMIT OF INVESTIGATION.

HESS

GEOLOGIC FEATURES MAP

BLOCK 511
GREEN CANYON AREA
GULF OF MEXICO

1,000 500 0 1,000 Feet

GEOSCIENCE EARTH & MARINE SERVICES, INC.

DATE: 04 MARCH 2019
FILE NAME: 2822_WELL_FD002-D5.mxd
PROJECT NO.:0119-2822

MAP NO. FD002_D-5

Appendix D
Hydrogen Sulfide (H_2S) Information

(a) Concentration

Hess does not anticipate encountering H_2S while conducting the operations proposed under this plan.

(b) Classification

In accordance with 30 CFR §550.215, Hess requests that Green Canyon Block 511 be classified by the Bureau of Ocean Energy Management as an area where the absence of hydrogen sulfide has been confirmed based on the following correlative well drilled to the stratigraphic equivalent of the wells proposed under this Plan PROPRIETARY DATA.

(c) H_2S Contingency Plan

In accordance with the Title 30 CFR §250.490(f), should BOEM determine the location proposed under this plan to be either H_2S known or unknown, Hess Corporation will submit an H_2S Contingency Plan for review and approval prior to the initiation of operations.

(d) Modeling Report

Hess Corporation does not anticipate to encounter or to handle H_2S at concentrations of greater than 500 ppm, therefore this section of the plan is not applicable.

Appendix E
Mineral Resource Conservation Information

No production is proposed under this Supplemental Exploration Plan; therefore, this section is not required.

Appendix F
Biological, Physical and Socioeconomic Information

(a) High-Density Deepwater Benthic Communities Information

BOEM/BSEE require site-specific surveys of bottom disturbing actions in water depths greater than 300 meters in order to evaluate the potential for the region to support high-density deepwater benthic communities. These areas are subsequently protected from physical disturbances associated with muds/cuttings discharge locations, anchors, pipelines, chains and templates.

Water depth in the field ranges between ~3,000 and ~4,500 feet. Seafloor disturbing activities proposed while drilling under this N-EP are discussed within Appendix C: *Geological and Geophysical Information* and are addressed within the Wellsite Clearance Letters prepared by Geoscience Earth & Marine Services, Inc., included under Appendix C Attachments. Within this report, specific seafloor and subsurface geologic conditions around the proposed surface location are discussed in detail and ensure that there will be no disturbances to high-density deepwater benthic communities within that area.

● Features or areas that could support high-density deepwater benthic communities are not located within 2,000 feet of any proposed muds and cuttings discharge location.

● No evidence of hydrocarbon seepage, authigenic carbonates or hard bottom conditions that could support high-density, deepwater chemosynthetic or coral communities exist within 7,000 feet of the proposed surface location, therefore, there is no evidence of conditions that could support deepwater benthic communities within 250 feet of the proposed seafloor disturbance area resulting from the use of anchors (including those caused by anchors, anchor chains and wire ropes) should a moored rig be used.

(b) Topographic Features Map

There are no topographic lease stipulations associated with Green Canyon 511; therefore, the activities proposed under this plan should not have an effect on topographic features and the map described in Attachment 2, Section A, Item No. 1 of NTL No. 2009-G39, "Biologically-Sensitive Underwater Features and Areas" is not required to be included as part of this plan.

(c) Topographic Features Statement (Shunting)

The bottom-disturbing activities proposed under this plan are not located within 500-feet of the designated "No Activity Zone" of a topographic feature, nor are the surface locations of the proposed wells located within 3-miles of any identified topographic feature; therefore, Hess is not required to shunt drill cuttings and/or drilling fluids. The information described in Attachment 2, Section A, Item No. 2 of NTL No. 2009-G39, "Biologically-Sensitive Underwater Features and Areas" is not required to be included as part of this plan.

(d) Live Bottoms (Pinnacle Trend) Map

The field is not located within 61 meters (200 feet) of any block associated with the Live Bottoms (Pinnacle Trend) lease stipulations as identified in NTL 2009-G39. There are no bottom-disturbing activities proposed within 100 feet of any hard bottoms/pinnacles having a vertical relief of 8-feet or more, therefore the Live Bottom (Pinnacle Trend) Map described in Attachment 4, Section A of NTL No. 2009-G39, "Biologically-Sensitive Underwater Features and Areas" is not required to be included as part of this plan.

(e) Live Bottoms (Low Relief) Map

The field is not located within 30 meters (100 feet) of the nearest block associated with the Live Bottoms (Low Relief) Lease Stipulation, therefore the activities proposed under this plan are believed to have no effect on live bottom (low relief features) and the Live Bottom (Low Relief) Map is described in Attachment 6, Section A of NTL No. 2009-G39, "Biologically-Sensitive Underwater Features and Areas" is not required to be included as part of this plan.

(f) Potentially Sensitive Biologic Features

The field is not located within 30 meters (100 feet) of any block associated with any of the live bottom (pinnacle trend) stipulated blocks in Attachment 3 of NTL No. 2009-G39, therefore the activities proposed under this plan should have no effect on potentially sensitive biological features and the map described in Attachment 8, Section A of NTL No. 2009-G39, "Biologically-Sensitive Underwater Features and Areas" is not required to be included as part of this plan.

(g) Remotely Operated Vehicle (ROV) Monitoring Survey Plan

BOEM has determined there is enough data gathered in Grid Area 13; therefore, Hess will not be conducting any ROV surveys either pre-spud or post-drill operations per NTL No. 2008-G06, "Remotely Operated Vehicle Surveys in Deepwater," (extended by NTL No. 2014-N01, "Elimination of Expiration Dates on Certain Notices to Lessees and Operators Pending Review and Reissuance").

(h) Threatened or Endangered Species, Critical Habitat and Marine Mammal Information

Federally-listed endangered or threatened species designated under the Endangered Species Act that may occur in the Gulf of Mexico are listed below. Of the 28-different species of marine mammals known to occur in the Gulf of Mexico, all are protected under the Marine Mammal Protection Act and 6 species are considered endangered.

The area is not designated as a critical habitat for any of these species. Hess Corporation does not anticipate that any threatened or endangered species will be adversely affected as a result of proposed activities under this Supplemental Exploration Plan.

Listed Species	Scientific Name	Status	Date Listed
Marine Mammals			
blue whale	*Balaenoptera musculus*	Endangered	12/02/70
finback whale	*Balaenoptera physalus*	Endangered	12/02/70
humpback whale	*Megaptera novaengliae*	Endangered	12/02/70
sei whale	*Balaenoptera borealis*	Endangered	12/02/70
sperm whale	*Physeter macrocephalus*	Endangered	12/02/70
Turtles			
green sea turtle	*Chelonia mydas*	Threatened[1]	07/28/78
hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	06/02/70
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered	12/02/70
leatherback sea turtle	*Dermochelys coriacea*	Endangered	06/02/70
loggerhead sea turtle	*Caretta caretta*	Threatened	07/28/78
Fish			
Gulf sturgeon	*Acipenser oxyrinchus desotoi*	Threatened	09/30/91
smalltooth sawfish	*Pristis pectinata*	Endangered	04/01/03
Invertebrates			
elkhorn coral	*Acropora palmata*	Threatened	5/9/06
staghorn coral	*Acropora cervicornis*	Threatened	5/9/06

(i) Archaeological Report

Mitigation guidelines released under the BOEMRE entitled, "Pre-Seabed Disturbance Survey Mitigation" provide that BOEM (now BSEE) may require as a condition of approval, an archaeological assessment to be performed over the area of potential effect (APE) prior to commencing any bottom-disturbing activities.

If required, prior to performing any bottom-disturbing activities, Hess will submit to BSEE, a certification from a professional marine archaeologist noting the absence of any potential archaeological resources in the Area of Potential Effect (APE) and certification from an operator representative confirming the survey results and certifying that all seabed disturbing activities will be confined to the surveyed area.

(j) Air and Water Quality Information

Pursuant to NTL 2008-G04, this section of the plan is not required.

(k) Socioeconomic Information

The activities proposed under this plan are not expected to result in any of the following situations; therefore, this section is not required:

- No support personnel are expected to be employed by the State of Florida as a result of the activities proposed under this plan.
- No families or employees are expected to move to Florida as a result of the activities proposed under this plan.
- No major supplies, services, energy or water are expected to be purchased within the State of Florida as a result of the activities proposed under this plan.
- No contractors or vendors within the State of Florida are expected to be utilized as a result of the activities proposed under this plan.

Appendix G
Waste and Discharge Information

(a) Projected Generated Wastes

This information is included under Appendix G Attachments.

(b) Projected Ocean Discharges

This information is included under Appendix G Attachments.

(c) Modeling Report

No trajectory modeling was performed; therefore no report is included.

WASTES YOU WILL GENERATE, TREAT AND DOWNHOLE DISPOSE OR DISCHARGE TO THE GOM

Projected Generated Waste			Projected Ocean Discharges		Projected Downhole Disposal
Type of Waste	Composition	Projected Amount (bbls or lbs/well)	Discharge Rate (bbls or lbs/well/day)	Discharge Method	Answer yes or no
Will drilling occur? If yes, you should list muds and cuttings					
Water Based Drilling Fluid	Water, NaCl (salt), PHPA polymer and Barium Sulfate (Barite)	71,168 bbl/well	23723 bbl/day/well	Discharge at the mudline prior to the riser installation. Nominal amount of unused fluid may be discharged at the surface. Based on 3 days of drilling with WBM.	No
Cuttings wetted with water-based fluid	Cuttings coated while drilling with WBM	1,750 bbl/well	583 bbl/day/well	Discharged to mudline prior to riser installation. Based on 3 days of drilling with WBM.	No
Synthetic Based Drilling Fluid	Water, Olefin Synthentic Base Fluid, Polymer, Calcium Chloride Salt, Fatty Acid Ester, Barite	5,000 bbls / well	28 bbls/day/well	Mud Consumption as Drilling, Downhole Losses, and Mud Volume left behind casing after cementing are estimated volumes based on key offset wells.	Yes
Cuttings wetted with synthetic-based fluid	Cuttings coated with Synthetic drilling fluids, including drill out cement.	7,867 bbls/well	71 bbls/day/well	Discharged to surface. Treated cuttings will be discharged overboard during drilling of the SBM intervals. Cuttings will be processed through a cuttings dryer, substantially reducing the ROC percentage.	No
Will humans be there? If yes, expect conventional waste					
Domestic waste	Gray water from living quarters	38,571 bbls/well	142 bbls/day/well	Chlorinate and discharge overboard thru US Coast Guard (USCG) approved Marine Sanitary Device.	No
Sanitary	Sanitary waste from living quarters, control rooms and change rooms.	25,714 bbls/well	95 bbls/day/well	USCG approved Marine Sanitary Device with chlorination.	No
Is there a deck? If yes, there will be Deck Drainage					
Deck Drainage	Deck drainage from drilling floor rig washing and rain water.	25,400 bbls/well	94 bbls/day/well	All deck drainage is settle seperated and static sheen tested before being discharged into the GOM.	No
Well completion fluids.					
Well treatment fluids	Crosslinked guar gel mixed in 7% potassium chloride	3500 bbls/well	300 bbls/well	Fluid is pre-qualified to have passed oil & grease limit, LC-50, and static sheen. Static sheen confirmed before discharing overboard from pit system.	No
Well treatment fluids	10% hydrochoric + 10% Acetic acid	350 bbls/well	0 bbls/well	Fluid will be spent and disposed of downhole across formations as part of completion stimulation for the well.	Yes
Well treatment fluids	7% potassium chloride	200 bbls/well	0 bbls/well	Fluid will be spent and disposed of downhole across formations as part of completion stimulation for the well.	Yes
Well treatment fluids	15% hydrochloric acid	95 bbls/well	48 bbls/well/day (2 days)	Acid neutralized with soda ash or equivalent buffer, checked for static sheen, then discharged overboard.	No
Well completion fluids	11 ppg calcium chloride	1000 bbs/well	25 bbls/well/day (during completion only)	Fluid is checked for static sheen, and if passes limit test, will be discharged overboard from the pit system.	No
Workover fluids	N/A			N/A	

Miscellaneous discharges. If yes, only fill in those associated with your activity.					
Desalinization unit discharge	Rejected water from the watermaker.	4,561,920 bbls/well	25344 bbls/well/day	Hull discharge overboard	No
Blowout prevent fluid	Potable Water with 3% Erifon	100 bbl/well	1.00 bbl/day/well	Discharge at the seafloor or with deck drainage when tested at surface	No
Ballast water	Uncontaminated seawater used to maintain proper draft	945,000 bbl/well	3500 bbls/day/well	Hull discharge overboard as per MARPOL regulations.	No
Bilge water	N/A	N/A	N/A	N/A	
Excess cement at seafloor	Cement Slurry	1000 - 1500 bbl/well		Discharge at seafloor during riserless operations	No
Fire water	Sea Water with no additional chemicals	35,262,000 bbl/well	130,600 bbls/day/well	Hull discharge overboard	No
Cooling water	Sea Water with no additional chemicals	35,262,000 bbl/well	130,600 bbls/day/well	Hull discharge overboard	No
Will you produce hydrocarbons? If yes fill in for produced water.					
N/A	N/A	N/A	N/A	N/A	No
Please enter individual or general to indicate which type of NPDES permit you will be covered by:					
		General NPDES Permit #: GMG290003			

WASTE YOU WILL TRANSPORT AND/OR DISPOSE OF ONSHORE

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

	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 Ester Base Mud Cuttings - Polymer - Barite *SBM adhering to drill cuttings*		SBM and cuttings will pass through cuttings dryer to reduce ROC percentage to maintain in compliance with EPA specs and will then be shunt through downpipe below water line. Contingency disposal option during closed loop operations.	Bariod Facility, Fourchon, LA	No plans to send SBM to shore.	Recycle
Cuttings wetted with Water-based fluid	N/A		N/A	N/A	N/A	N/A
Cuttings wetted with Synthetic-based fluid	Internal Olefin Ester Base Mud Cuttings - Polymer - Barite		SBM and cuttings will pass through cuttings dryer to reduce ROC percentage to maintain in compliance with EPA specs and will then be shunt through downpipe below water line. Contingency disposal option during closed loop operations.	Bariod Facility, Fourchon, LA	No plans to send cuttings with SBM to shore. In the event of cuttings dryer system failure 500 bbl/well are prejected to be sent to shore.	Recycled
Cuttings wetted with oil-based fluids	N/A		N/A	N/A	N/A	N/A
Will you produce hydrocarbons? If yes fill in for produced sand.						
Produced sand	Produced sand is included on a separate table for the TLP waste					
Will you have additional wastes that are not permitted for discharge? If yes, fill in the appropriate rows.						
EXAMPLE: trash and debris (recylables)	*Plastic, paper, aluminum*		*barged in a storage bin*	*ARC, New Iberia, LA*	*X lb/well*	*Recycled*
Trash and debris	Generated during operations: paper, carboard, plastic, glass and aluminum		Stored in segragated bins on the rig and transported to Port Fouchon, :A via supply boat and then onto proper disposal site	PU for Disposal as per Classification from Port "C" Terminal - Fourchon, LA by Waste Management	378,000 lbs/well	Recycled
Used Oil, Oil Filters, Oily Rags and Absorbent Pads	Used engine oil and products		Proper DOT containers on supply boat	Univar - Carencro, LA	180 bbl/well	Recycled or incinerated
Wash water	N/A		N/A	N/A	N/A	N/A
Chemical product wastes	N/A		N/A	N/A	N/A	N/A
All liquids are expressed in barrels and solids expressed in pounds. All volumes were calculated on a total per well basis, unless otherwise noted.						

Appendix H
Air Emissions Information

OMB Control No. 1010-0151
OMB Approval Expires: 06/30/2021

EXPLORATION PLAN (EP)
AIR QUALITY SCREENING CHECKLIST

COMPANY	Hess Corporation
AREA	Green Canyon
BLOCK	511
LEASE	OCS-G 34551
PLATFORM	
WELL	FD002C and FD002D
COMPANY CONTACT	Kelley Pisciola
TELEPHONE NO.	281-698-8519
REMARKS	***Drill and complete 2 wells locations; horsepower based on 2018 fuel usage (BlackLion) plus 20% contingency factor. BlackLion 2018 fuel usage = 5,772,732 gallons/365 days = 15,815 gallons/day * 20% contingency (3163 gallons) = 18,978 gallons/day.**

"Yes"	"No"	**Screening Questions for EP's**
	No	Is any calculated Complex Total (CT) Emission amount (in tons) associated with your proposed exploration activities more than 90% of the amounts calculated using the following formulas: CT = 3400D2/3 for CO, and CT = 33.3D for the other air pollutants (where D = distance to shore in miles)?
Yes		Do your emission calculations include any emission reduction measures or modified emission factors?
	No	Are your proposed exploration activities located east of 87.5° W longitude?
	No	Do you expect to encounter H_2S at concentrations greater than 20 parts per million (ppm)?
	No	Do you propose to flare or vent natural gas for more than 48 continuous hours from any proposed well?
	No	Do you propose to burn produced hydrocarbon liquids?

EMISSIONS FACTORS

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

Equipment/Emission Factors	units	PM	SOx	NOx	VOC	CO	REF.	DATE
NG Turbines	gms/hp-hr		0.00247	1.3	0.01	0.83	AP42 3.2-1& 3.1-1	10/96
NG 2-cycle lean	gms/hp-hr		0.00185	10.9	0.43	1.5	AP42 3.2-1	10/96
NG 4-cycle lean	gms/hp-hr		0.00185	11.8	0.72	1.6	AP42 3.2-1	10/96
NG 4-cycle rich	gms/hp-hr		0.00185	10	0.14	8.6	AP42 3.2-1	10/96
Diesel Recip. < 600 hp.	gms/hp-hr	1	0.1835	14	1.12	3.03	AP42 3.3-1	10/96
Diesel Recip. > 600 hp.	gms/hp-hr	0.32	0.1835	11	0.33	2.4	AP42 3.4-1	10/96
Diesel Boiler	lbs/bbl	0.084	0.3025	0.84	0.008	0.21	AP42 1.3-12,14	9/98
NG Heaters/Boilers/Burners	lbs/mmscf	7.6	0.593	100	5.5	84	P42 1.4-1, 14-2, & 14	7/98
NG Flares	lbs/mmscf		0.593	71.4	60.3	388.5	AP42 11.5-1	9/91
Liquid Flaring	lbs/bbl	0.42	6.83	2	0.01	0.21	AP42 1.3-1 & 1.3-3	9/98
Tank Vapors	lbs/bbl				0.03		E&P Forum	1/93
Fugitives	lbs/hr/comp.				0.0005		API Study	12/93
Glycol Dehydrator Vent	lbs/mmscf				6.6		La. DEQ	1991
Gas Venting	lbs/scf				0.0034			

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

EMISSIONS CALCULATIONS 1ST YEAR

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL		CONTACT	PHONE	REMARKS
Hess Corporation	Green Canyon	511	OCS-G 34551	0	FD002C and FD002D		Kelley Pisciola	281-698-8519	

OPERATIONS	EQUIPMENT	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR					ESTIMATED TONS				
	Diesel Engines	HP	GAL/HR	GAL/D												
	Nat. Gas Engines	HP	SCF/HR	SCF/D												
	Burners	MMBTU/HR	SCF/HR	SCF/D	HR/D	D/YR	PM	SOx	NOx	VOC	CO	PM	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	61800	2984.94	18978.00	24	120	43.56	24.98	1497.36	44.92	326.70	16.62	9.53	571.20	17.14	124.63
	PRIME MOVER>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	BURNER diesel	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	AUXILIARY EQUIP<600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel(crew)	5200	251.16	6027.84	6	35	3.67	2.10	125.99	3.78	27.49	0.38	0.22	13.23	0.40	2.89
	VESSELS>600hp diesel(supply)	7200	347.76	8346.24	8	52	5.07	2.91	174.45	5.23	38.06	1.06	0.61	36.29	1.09	7.92
	VESSELS>600hp diesel(tugs)	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	DERRICK BARGE diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MATERIAL TUG diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel(crew)	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel(supply)	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.	BPD	SCF/HR	COUNT												
	TANK-	0			0	0				0.00					0.00	
DRILLING	OIL BURN	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WELL TEST	GAS FLARE		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
2019	YEAR TOTAL						52.30	29.99	1797.80	53.93	392.25	18.06	10.35	620.72	18.62	135.43
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											3596.40	3596.40	3596.40	3596.40	77107.17
	108.0															

***Drillship - based on 2018 fuel usage plus 20% contingency. Hess will utilize either the BlackRhino or Black Lion Drillship. Diamond Ocean BlackLion fuel usage for 2018 calendar year = 5,772,732 gallons / 365 days = 15,815 gallons/day * 20% contingency (3163 gallons) = 18,978 gallons/day.**

EMISSIONS CALCULATIONS 2ND YEAR

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL		CONTACT	PHONE	REMARKS
Hess Corporation	Green Canyon	511	OCS-G 34551	0	FD002C and FD002D		Kelley Pisciola	281-698-8519	

OPERATIONS	EQUIPMENT	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR					ESTIMATED TONS				
	Diesel Engines	HP	GAL/HR	GAL/D												
	Nat. Gas Engines	HP	SCF/HR	SCF/D												
	Burners	MMBTU/HR	SCF/HR	SCF/D	HR/D	D/YR	PM	SOx	NOx	VOC	CO	PM	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	61800	2984.94	18978.00	24	280	43.56	24.98	1497.36	44.92	326.70	38.77	22.23	1332.81	39.98	290.79
	PRIME MOVER>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	BURNER diesel	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	AUXILIARY EQUIP<600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel(crew)	5200	251.16	6027.84	6	80	3.67	2.10	125.99	3.78	27.49	0.88	0.50	30.24	0.91	6.60
	VESSELS>600hp diesel(supply)	7200	347.76	8346.24	8	120	5.07	2.91	174.45	5.23	38.06	2.44	1.40	83.74	2.51	18.27
	VESSELS>600hp diesel(tugs)	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY	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
INSTALLATION	MATERIAL TUG diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel(crew)	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel(supply)	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.	**BPD**	**SCF/HR**	**COUNT**												
	TANK-	0			0	0				0.00					0.00	
DRILLING	OIL BURN	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WELL TEST	GAS FLARE		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
2020	**YEAR TOTAL**						**52.30**	**29.99**	**1797.80**	**53.93**	**392.25**	**42.09**	**24.13**	**1446.78**	**43.40**	**315.66**
EXEMPTION CALCULATION	**DISTANCE FROM LAND IN MILES** 108.0											**3596.40**	**3596.40**	**3596.40**	**3596.40**	**77107.17**

***Drillship - based on 2018 fuel usage plus 20% contingency. Hess will utilize either the BlackRhino or BlackLion Drillship. Diamond Ocean BlackLion fuel usage for 2018 calendar year = 5,772,732 gallons / 365 = 15,815 gallons/day * 20% contingency (3163 gallons) = 18,978 gallons/day.**

SUMMARY

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL
Hess Corporatio	Green Canyon	511	OCS-G 34551	0	FD002C and FD002D

Year	Emitted Substance				
	PM	SOx	NOx	VOC	CO
2019	18.06	10.35	620.72	18.62	135.43
2020	42.09	24.13	1446.78	43.40	315.66
Allowable	3596.40	3596.40	3596.40	3596.40	77107.17

Appendix I
Oil Spills Information

(a) Oil Spill Response Planning

In accordance with 30 CFR §254, all the proposed activities and facilities in this EP will be covered by the Oil Spill Response Plan filed by Hess Corporation (Company Number 00059) and most recently approved on December 22, 2017. **Hess Corporation hereby certifies that it has the capability to respond, to the maximum extent practicable, to a worst-case discharge or a substantial threat of such a discharge as a result of the activities proposed under this plan.**

(b) Spill Response Sites

Primary Response Equipment Location	Preplanned Staging Location
Harvey, LA	Fourchon, LA
Leeville, LA	

(c) OSRO Information

Hess is a member of Clean Gulf Associates (CGA) cooperative. Membership provides for the use of CGA equipment which is stored, maintained and operated through an alliance agreement by Marine Spill Response Corporation (MSRC). The MSRC STARS network provided for the closest available personnel as well as an MSRC supervisor to operate the equipment. Additionally, Hess Corporation is a member of the Marine Well Containment Company (MWCC).

(d) Worst Case Scenario Determination

Category	Regional OSRP	Exploration Plan
Type of Activity[1]	Exploratory Drilling (MODU)	Exploratory Drilling (MODU)
Facility Location (area/block)	Garden Banks 216	Green Canyon Block 511
Facility Designation[2]	Well 6	Well FD002D
Distance to Nearest Shoreline (miles)	103.7 miles	109 miles
Volume[3] **Storage tanks (total)** **Flowline (on facility)** **Lease term pipelines** **Uncontrolled blowout (Initial 24 hours volume)** **Total Volume**	 0 bbls 0 bbls 0 bbls **385,721 bbls** 385,721 BOPD	 0 bbls 0 bbls 0 bbls **364,925 bbls** 364,925 BOPD
Type of Oil(s) - (crude oil, condensate, diesel)	Condensate	Oil
API Gravity(s)[4]	39.1°	32.5°

Footnotes:

1. Types of activities include pipeline, platform, caisson, subsea completion or manifold, and mobile drilling rig.
2. E.g., Well No. 2, Platform JA, Pipeline Segment No. 6373.
3. Take your regional OSRP worst-case scenario volume from the appropriate section of your regional OSRP. For EP's, the worst-case scenario volume is the daily volume possible from an uncontrolled blowout. Determine this volume using the provisions of 30 CFR 30 CFR 254.47(b). For DOCD's, determine the volume of your worst-case scenario using the provisions of 30 CFR 30 CFR 254.47(a) or (b), as appropriate.
4. Provide API gravity of all oils given under "Type of Oil(s)" above. Estimate for EP's.

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

Since Hess has the capability to respond to the worst-case spill scenario included in our Regional OSRP most recently approved December 22, 2017, and since the worst-case scenario determined for our EP does not replace the worst-case scenario in our Regional OSRP, Hess hereby certifies that Hess has the capability to respond, to the maximum extent practicable, to a worst-case discharge, or a substantial threat of such a discharge, resulting from the activities proposed in this EP.

(e) Calculations and Assumptions Used to Calculate WCD

Calculations and assumptions used to calculate worst-case discharge are included under Appendix I-1 Attachments.

(f) Oil Spill Response Discussion

An Oil Spill Response Discussion was prepared for Hess by The Response Group and is included under Appendix I-2 Attachments.

Appendix I-2
Oil Spill Response Discussion

Worst Case Discharge scenario for GC 511

1) Worst Case Summary

Hess has estimated its worst case scenario for discharge from a drilling operation that may occur from GC 511 FD002D. Given the anticipated reservoir thickness and historical productivity index the initial worst case discharge is estimated to be 364,925 barrels of crude oil per day. Calculations are based on formulas defined by BSEE regulations.

2) Facility Information

- Type of Operation: Drilling and complete 1 well
- Facility Name: Well FD002D
- Area and Block: Green Canyon Block 511
- Latitude: 27° 26' 50.79102"N
- Longitude: W 90° 37' 11.35811"
- Distance to Shore: 109 miles
- Water Depth:3,934'
- API Gravity: 32.5°

3) Worst Case Discharge Volume

Criteria	Barrels
TOTAL WORST CASE DISCHARGE	**364,925**
Surface Natural Evaporation and Dispersion - 47% (ADIOS2)	171,515
TOTAL SPILL VOLUME REMAINING AFTER NATURAL SURFACE EVAPORATION & DISPERSON	**193,410**

4) Land Segment Identification

In compliance with NTL 2006-G21, Hess has determined the land areas that could be potentially impacted by a potential GC 511 FD002D oil spill using the BOEM Oil Spill Risk Analysis Model (OSRAM) trajectory results. The OSRAM estimates the probability that oil spills from designated locations would contact shoreline and offshore natural resources. Whether and where a particular spill would reach shore is dependent on various factors, such as weather, currents and product characteristics and, as a result, actual oil movement in the event of a spill may vary from the OSRAM results. These probabilities are intended to indicate, in terms of percentage, the computed likelihood that an oil spill occurring in a particular launch area will contact a certain county or parish within 3, 10, and 30 days.

OCS Launch Block #44 was utilized as GC 511 P7 point of origin. Land segments identified by the model are listed below (referenced from "Oil-Spill Risk Analysis: Contingency Planning Statistics for Gulf of Mexico OCS Activities" – OCS Report MMS 2004-026):

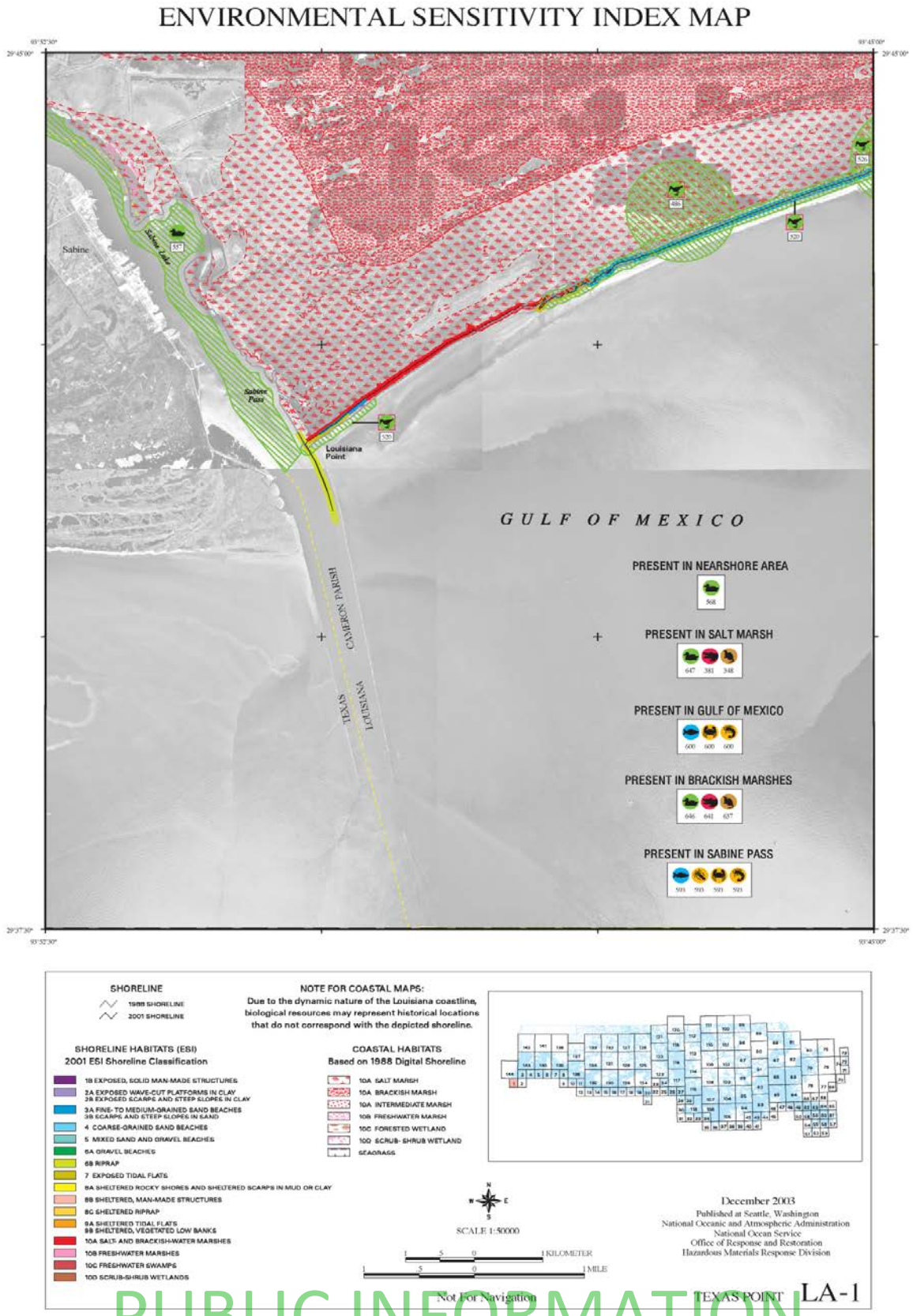
4) Land Segment Identification (Cont'd)

Area and Spill Site	Land Segment Contact	Percent Impact Chance (Days)		
	Land Segment No. & County/ Parish & State	***3***	***10***	***30***
Green Canyon 511 Launch Block #44	Matagorda, TX	--	--	1
	Galveston, TX	--	--	2
	Jefferson, TX	--	--	1
	Cameron, LA	**--**	**--**	**5**
	Vermilion, LA	--	--	2
	Terrebonne, LA	--	1	2
	Lafourche, LA	--	--	1
	Jefferson, LA	--	--	1
	Plaquemines, LA	--	1	4

5) Resource Identification

The land segment that has the highest computed probability of being impacted by a release from GC 511 FD002D within 30 days is **Cameron, Louisiana at 5 percent**. Sources which may be used to identify the sensitive resources located in Cameron, LA and the other land segments identified in the table above can be identified in the OSRP, **Section 12.** Resources that may be impacted in Cameron, Louisiana, being it has the highest impact rate include, but may not be limited to are shown in Figure 5-1.

Figure 5-1 – Sample Environmental Sensitivities & Socioeconomic Resources



6) Response

Hess has contracted with OSROs as identified in **Section 7** of the OSRP. Upon notification of a spill, Hess could request a partial or full mobilization of the resources referenced in **Appendix E** of the OSRP. The Qualified Individual, Incident Commander or his/her designee may contact other service companies if appropriate.

Release Modeling

When oil is released, modeling may serve as an important tool in planning a response. It is important to understand how the oil may behave based on oil characterisitics, so that the proper response measures can be taken. One tool that can be used for modeling is NOAA's Automated Data Inquiry for Oil Spills 2 (ADIOS2), which is an oil spill response software tool for emergency spill responders and contingency planners. ADIOS2 is designed to model the natural evaporation and dispersion of various types of oil on the surface of the water. Integrated within the tool is an oil library with a short-term oil fate and cleanup model to help responders/planners estimate the amount of time that spilled oil will remain in the marine environment and develop cleanup strategies. The results of the ADIOS2 model may be used to estimate the volume of oil remaining on the surface after natural evaporation and dispersion have taken place as well as determine the appropriate response technologies that need to be used for the remaining oil. However, the actual behavior of the released product during an incident could be affected by many factors and may, as a result, vary from the ADIOS2 model results.

Response Technologies Discussion

This section discusses various response technologies (in no prioritized order) that might be used during a response to a release of oil from GC 511 FD002D. The particular response technologies applied during a spill event will be coordinated based on the most accurate and up-to-date knowledge of the situation, the locations at which particular technologies are applied and the implementation of simultaneous operations (SIMOPS). Currently there are no new or unusual technology proposed for spill prevention, control, or cleanup.

The status boards below set forth a representative list of equipment and are not meant to be exhaustive. The status boards outline on-water containment; on-water recovery; temporary storage; aerial, vessel and subsea dispersant application; in-situ burning and shoreline protection equipment identified as most relevant in addressing the volume of oil that does not either evaporate or naturally disperse into the water column. These status boards estimate times needed for procurement, load out, travel time to the site and deployment.

6) Response (Cont'd)

The status boards show that upon notification of an incident, dispersant operations can commence within an estimated 3.75 hours, pending regulatory approval, followed by on-water recovery which can be on site and operational within an estimated 14 hours. According to the status boards, Hess can be on site with adequate response capacity to contain and recover surface hydrocarbons, and prevent land impact, to the maximum extent practicable, within an estimated 4 days. Consistent with the maximum extent practicable standard, and given the uncertainties and situation-specific variations associated with a marine oil release, this plan cannot guarantee that Hess's response to oil discharged offshore will in all cases prevent oil from reaching shorelines or impacting resources.

Surveillance

Upon notification of a release and mobilization of the response, either a fixed-wing aircraft or a field-support helicopter would be dispatched as promptly as possible (considering available daylight hours, weather conditions and other safety factors) in order to conduct visual surveillance at the source of the spill. If necessary, visual surveillance could be supplemented through use of field vessels. The effectiveness of many response technologies (such as in-situ burning, dispersant application and mechanical recovery) may be enhanced through collaboration with air-based spotters, who can guide these systems to oil concentrations and coordinate SIMOPS. Air-based spotters may be equipped with air to marine/ground communication equipment to facilitate immediate communications with marine- and land-based response assets. Vessel locations may also be monitored in real-time using vessel-tracking technologies (such as AIS data, GPS-based tracking, cell phone data, etc.), which can facilitate vessels being deployed for optimal recovery. Further information regarding methods of identifying and tracking a spill on water are discussed in **Section 11** in the OSRP. Specifically, Figure 11-2 sets forth various oil spill detection systems, remote thickness detection systems, and other remote sensing technologies that could be utilized in a response.

6) Response (Cont'd)

Source Containment/Source Control

Source containment and source control operations would be implemented simultaneously with the above response technologies to either reduce or stop the flow of the well into the environment. Source containment is designed to temporarily stop or redirect the flow from the well. Source control addresses the original source through either well-kill operations or the drilling of a relief well to permanently stop the flow of oil from the well.

The steps applied to achieve flow containment will be dependent on the specific characteristics and nature of the spill at hand. This could include multidisciplinary initiatives to recover flow to the surface for contained processing and disposal, efforts to shut-in flow at the source using pressure rated, tight seal fit for purpose assemblies, and techniques to kill (cease pressure source) the well. See **Appendix I** of the OSRP for further information needed regarding this topic.

Slick (Fresh Oil) Containment Systems

Slick (fresh oil) containment systems may be deployed (provided it is safe to do so) in thick, fresh oil to minimize further spreading of oil on the water's surface. These systems would typically consist of two offshore vessels (capable of trolling speeds of 0.5 knots) towing between 1,000 to 1,500 feet of offshore boom in a "U" or "V" configuration. The containment systems may allow fresh oil to be contained, concentrated and diverted to both skimming systems and in-situ burn task forces, as appropriate, increasing their encounter rate and containment efficiency in order to support enhanced skimming and burning operations.

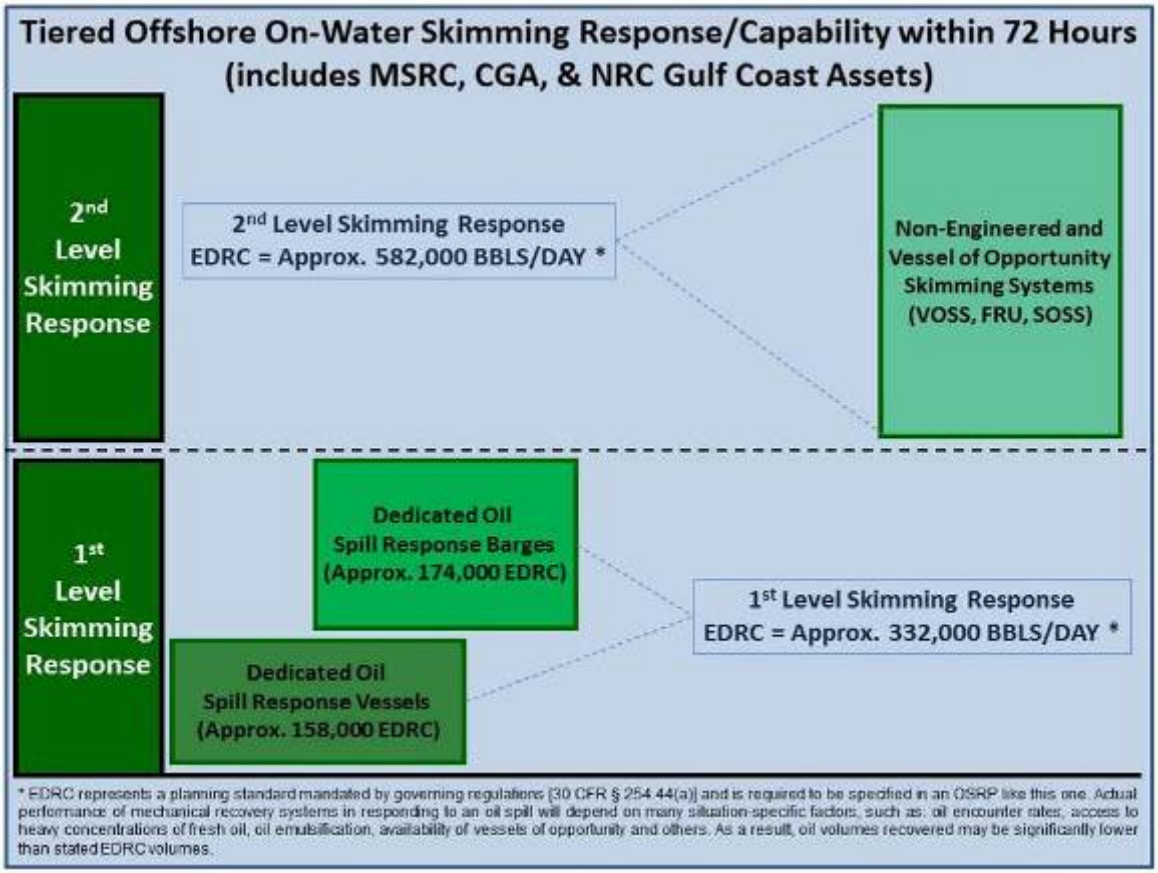
Mechanical Recovery

Mechanical recovery equipment, include Oil Spill Response Vessels (OSRVs), Oil Spill Recovery Barge (OSRBs) and Vessels of Opportunity Skimming System (VOSS) may be mobilized from contracted OSROs. As necessary, response equipment could be cascaded from locations along the Gulf of Mexico and other regions of the United States, as well as from international locations. This equipment could be deployed either at the source of the release or in concentrations of recoverable oil. Offshore mechanical recovery assets could be organized according to span of control concepts within Incident Command System (ICS). Vessels should be organized into task forces or groups with consideration for effective communication and control. As operations increase in scale or complexity, dedicated command/control vessel(s) may be considered for each major operating area or mission. These vessels could provide response activity coordination of all marine assets under their control, as well as provide communication between marine and air assets. Additionally, other technologies such as GPS-based vessel tracking systems may be used to facilitate coordination of marine assets. Positioning this equipment can be facilitated by collaboration with air-based spotters, who can guide these systems to oil concentrations. During night-time operations, skimming activities could be facilitated through the use of alternative spill surveillance technologies (such as infrared [IR] and X-band radio systems) to guide skimming vessels to sufficient concentrations of oil. The specific technologies used will be chosen based on availability suitability, OSRO recommendations, and other situation-specific considerations.

6) Response (Cont'd)

Mechanical Recovery (Cont'd)

The combined Effective Daily Recovery Capacity (EDRC) for the offshore on-water skimming vessel systems is 558,602 barrels; total storage volume for these dedicated systems is 725,960 barrels. (EDRC represents a planning standard mandated by governing regulations [30 CFR § 254.44(a)] and is required to be specified in an OSRP. Actual performance of mechanical recovery systems in responding to an oil spill will depend on many situation-specific factors, such as: oil encounter rates, access to heavy concentrations of fresh oil, oil emulsification, availability of support vessels and others. As a result, oil volumes recovered may be significantly lower than stated EDRC volumes.) Additional response equipment is available from Hess's OSROs; the resources identified in the status boards below represent a "first line of defense" of dedicated oil spill response vessels and barges and select VOSS, identified based on recent response experience. However, a secondary line of defense (primarily VOSS) is available to augment the response if necessary and appropriate under the circumstances, as depicted in the illustration below.



6) Response (Cont'd)

Dispersant Planning Case

We plan whenever possible to use aerial, vessel based, and/or sub-sea application methodologies. Hess's ability to utilize dispersants in a future response will be dependent upon numerous factors, including government actions needed to authorize and support such dispersant use. Most importantly, regulatory approval, pursuant to applicable regulations, must be obtained. As prefaced in **Section 18** of the OSRP, inventories of dispersants available via contract to HESS are detailed in Figure 18-2. HESS has contracts to acquire dispersants and to implement measures to deploy them with the parties listed in **Appendix D** of the OSRP. In addition to OSRO dispersant stockpiles available to HESS, Nalco, the current Corexit 9500 manufacturer, has represented that it anticipates being able to ramp up within 10 to 14 days to begin replenishing stocks piles in support of the anticipated daily dispersant operations, depending on raw material availability.

During the use of dispersants, the Operations and Logistics sections will be tracking daily usage and replenishment rates in order to support dispersant activity for the length of time required to drill a relief well. The use of dispersants can, under the right circumstances, reduce responders' potential exposure to volatile organic compounds (VOCs) at the surface, thereby allowing increased levels of vertical access for source control responders.

6) Response (Cont'd)

Aerial Dispersant Application

Aerial dispersants may be a response option depending on the circumstances of the release. Aerial dispersants are applied under the direction and approval of a designated Federal On Scene Coordinator (FOSC), and in a manner consistent with the National Contingency Plan and the applicable Regional Response plan(s) and/or Area Contingency Plan(s) (ACPs). Spotter aircraft could be activated along with aerial dispersant aircraft to coordinate more precise dispersant application on concentrations of free floating oil and to ensure that dispersant operations do not impact other ongoing response technologies. The table below identifies aerial dispersant application aircraft to which HESS has contractual access, as well as their response capacities. A table listing the dispersant stockpile available to HESS may be found in **Section 18** of the OSRP.

Aircraft	Owner/Contractor	Dispersant Capacity	Possible Sorties per Day
Regional Assets			
DC-3	ASI (through CGA)	1,200 gallons	1-4
BT-67 (DC-3 Turboprop)	ASI (through CGA)	2,000 gallons	1-4
C-130	MSRC	4,125 gallons	1-4
C-130	MSRC	4,125 gallons	1-4

For planning purposes, HESS assumes a 1:20 application rate and approximately a 50 to 75% effectiveness rate. Based on the estimates regarding aircraft dispersant capacities identified in the table above, 11,450 to 45,800 gallons of dispersant could be applied per day, which translates to approximately 2,726 to 16,357 barrels per day based on the stated application rate and range of estimated effectiveness. It is important to note that studies, laboratory tests, and field tests show a relatively wide range for the optimal application rate and actual effectiveness rate of dispersants applied to spilled oil. These rates may vary depending upon an assortment of situation-specific variables such as water temperature, weather, and timely access to the released oil. Further information regarding dispersant application methods and monitoring may be found in **Section 18** of the OSRP.

Vessel-Based Dispersant Application

Vessel-based dispersant application may be another effective response option. In previous responses, boat-spray systems were used for both dispersing oil and suppressing vapors on the water surface near the spill source. Vessel-based dispersants are also applied under the direction and approval of a designated FOSC, and in a manner consistent with the National Contingency Plan and the applicable Regional Response Plan(s) and/or ACPs. If appropriate, vessel spray systems can be installed on offshore vessels of opportunity to apply dispersants at the source or at other areas where there are significant concentrations of oil. Using inductor nozzles installed on fire-water monitors, skid mounted systems, or purpose-built boom-arm spray systems, vessels can initially apply dispersant beginning in the first 12 to 24 hours of the response, and thereafter as needed. In previous responses, boat-spray systems were used for both dispersing oil and suppressing vapors on the water surface near the spill source.

6) Response (Cont'd)

Subsea Dispersant Application

Depending on the circumstances, the use of a subsea dispersant application system may provide another response option in the event of a subsurface well blowout or other ongoing subsurface release. A modular Subsea Dispersant Application Unit (SDAU)—including an integrated chemical storage, distribution and deployment system—may be installed at the spill site, in close proximity to the release.

The subsea application of dispersants is a new variation on proven dispersant technology. Therefore, certain assumptions, including application rates and effectiveness, have been made based on past experience. However, additional data collection, laboratory tests, and field tests will likely be conducted by industry, government, and/or academia, and will help evaluate further the optimal application rates and anticipated effectiveness rates for subsea application of dispersants. For planning purposes, and subject to obtaining regulatory approval, Hess assumes a 1:75 application rate, at 50 to 75% effectiveness, and a system flow rate of 8 to 11 gallons per minute (approximately 11,500 to 16,000 gallons of dispersant per day). During a past response, the EPA limited sub-surface dispersant usage to 15,000 gallons per day. Under those assumptions, the system might be capable of dispersing approximately 10,268 to 21,429 barrels of oil per day. A table listing the dispersant stockpile available to HESS may be found in **Section 18** of the OSRP.

In-Situ Burning Planning Case and Strategy

Open-water in-situ burning (ISB) also may be used as a response strategy depending on the circumstances of the release. ISB services may be provided by the primary OSRO contractors. HESS plans, support the use of ISB as a response methodology when conditions allow it. In a past responses, ISB has been successfully used to remove oil from the response area. Under some circumstances, open water ISB of oil can be a safe and effective oil removal technique. The effective use of ISB depends on specific operational and environmental conditions, and on the composition and condition of the oil to be burned. In addition, the performance of ISB is subject to government regulation, approval and supervision throughout the burning process.

Additional ISB systems may be purchased, as production allows, from specialized fire boom manufacturers. For example, Elastec/American Marine, a widely-known supplier of boom in both the US and internationally, is capable of producing boom at a rate of up to one new system every 3 days, after a 6-8 week initial lead time (to allow procurement of source materials and to dedicate fabrication capabilities). Non-consumable components of the fire boom system may be reused with replacement boom, which could allow faster replenishment of available fire boom systems. During the use of ISB, the Operations and Logistics sections will be tracking daily usage and replenishment rates in order to support ISB activities for the length of time required to drill a relief well.

6) Response (Cont'd)

In-Situ Burning Planning Case and Strategy (Cont'd)

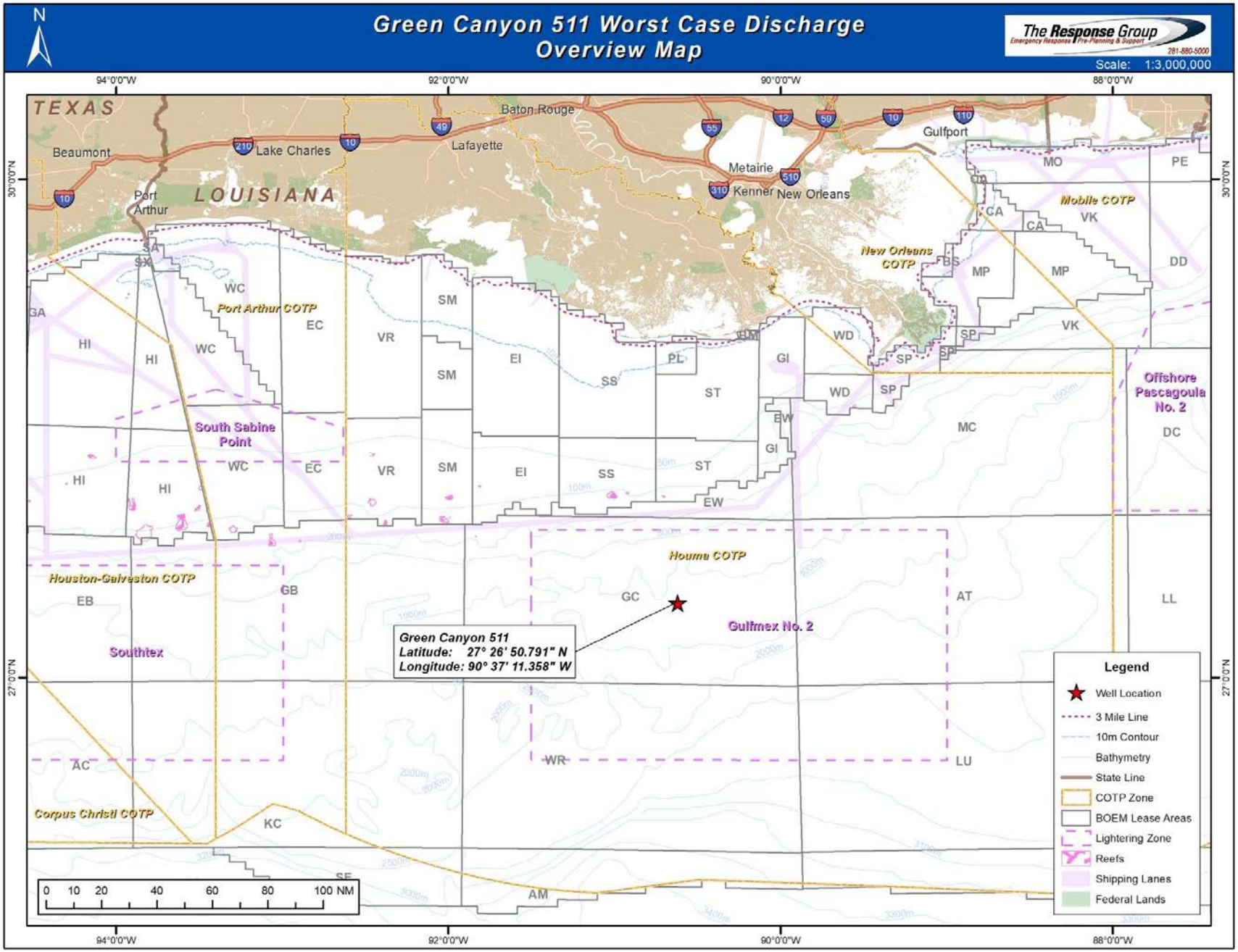
If appropriate conditions exist and approvals are granted, one to multiple ISB task forces could be deployed offshore. Task forces typically consist of two to four fire teams, each with two vessels capable of towing fire boom, guide boom or tow line and equipped with either handheld or aerially-deployed oil ignition systems. At least one support/safety boat would be present during active burning operations to provide logistics, safety and monitoring support. Depending upon a number of factors, including weather conditions and the nature and distribution of oil, up to 4 burns per 12-hour day may be completed per ISB fire team. Depending on weather and fire intensity, most fire boom systems can be used for approximately 8 to 12 burns before being replaced. Although the number of barrels eliminated per bun is dependent on many factors, past experience suggests that a typical burn might eliminate approximately 600 to 750 barrels. Based on these assumptions, a single task force of two fire teams assuming appropriate conditions, including weather and safety each completing four burns per day might be capable of removing up to approximately 4,800 to 6,000 barrels of oil per day. (See e.g., August 2010 reports: "Deepwater Horizon MC252 Gulf Incident Oil Budget" and "BP Deepwater Horizon Oil Budget: What Happened to the Oil?") Additional information on ISB is presented in **Section 19** of the OSRP.

Shoreline Response

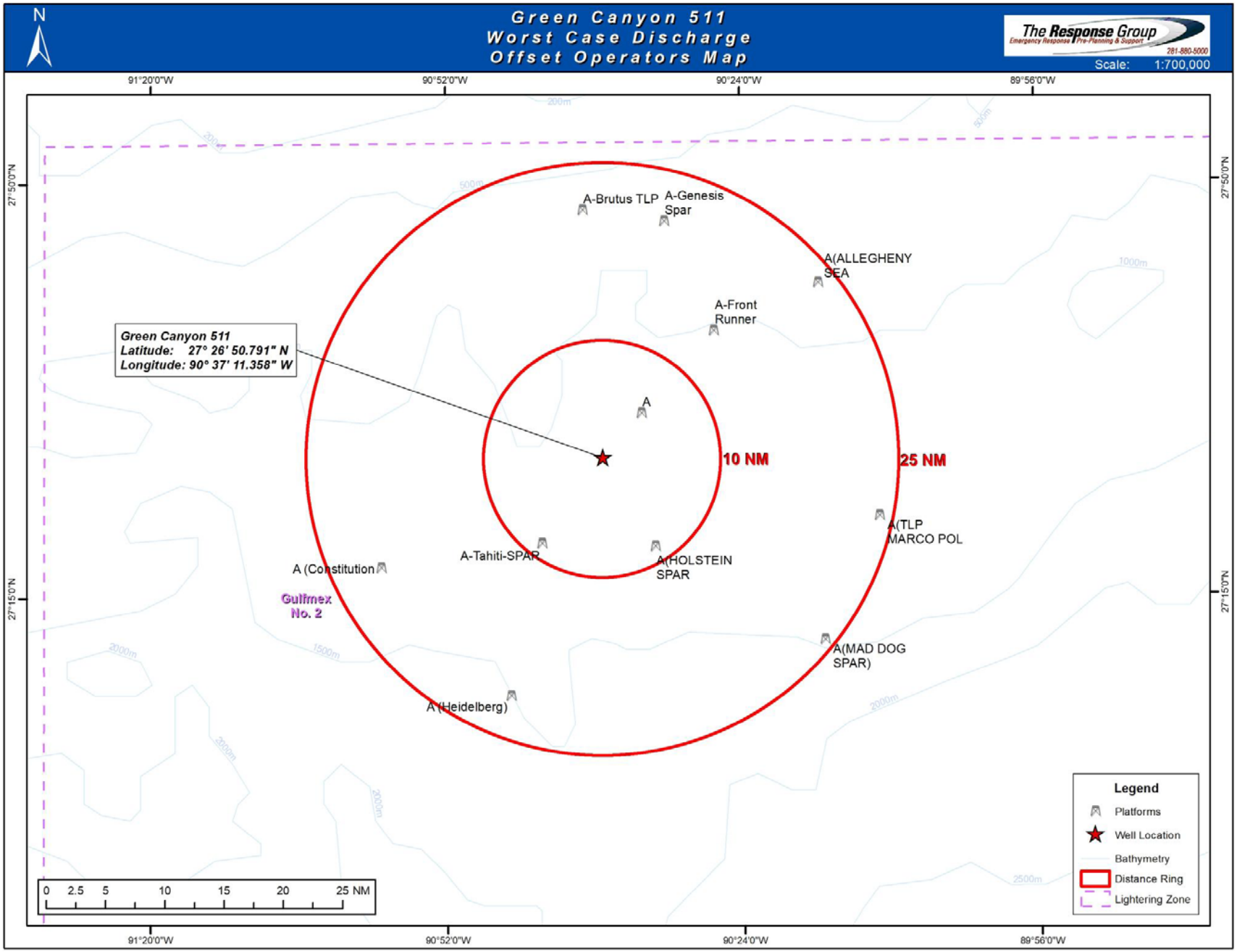
While historical trajectory modeling is important for planning response tactics, the potential direction and impact of a spill depends heavily upon existing environmental conditions during an actual response. Strategies developed during tactical planning would be based upon surveillance and real time trajectories that depict areas of potential impact given actual sea and weather conditions. Near shore response may include the deployment of shoreline boom to protect beach areas, or protection and sorbent boom for vegetated areas. The ACP and relevant agencies including, as appropriate, "branch offices" similar to those stood up in previous responses can be consulted to ensure that environmental, special economic and cultural resources are correctly identified and prioritized to ensure optimal protection. If impact does occur, onshore cleanup response may include specialized beach and marsh cleanup techniques.

The status boards listed in the latter part of this section show equipment could be deployed for the protection of these shorelines. From the table labeled, "Sample Shoreline Protection and Wildlife Support List", it is shown that upon receipt of notification, equipment can be onsite and operational within 6 hours.

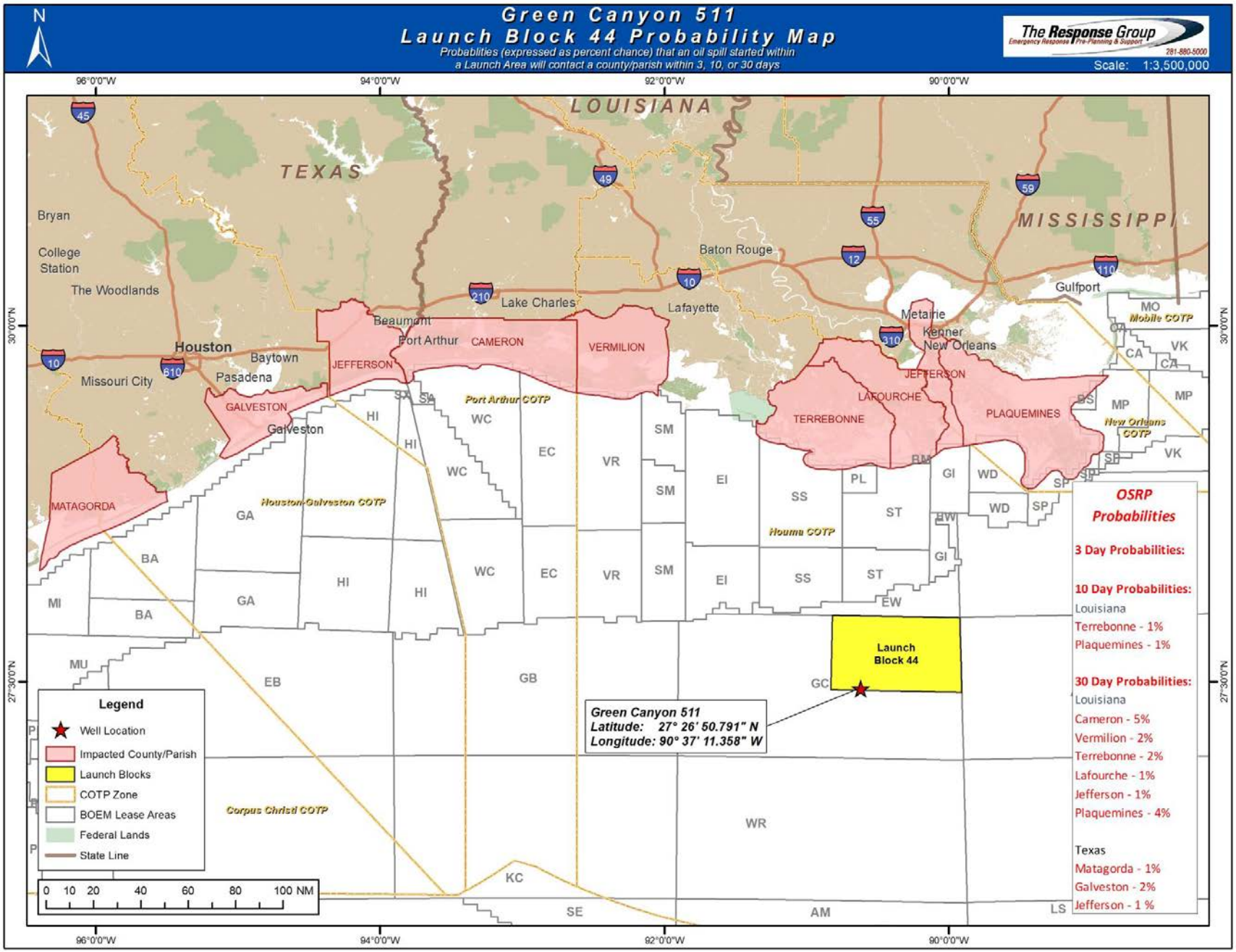
The Response Group's Shoreline Response Guides identify response strategies including equipment and personnel needs, possible tactics, and detailed job descriptions (ICS 204 Field Assignments) applicable for oil spill protection and clean-up operations. The guides are a tool for operational planning and logistics to initiate the procurement and deployment of resources while branch operations are established. Early tactical planning and deployment of advance (forward) teams should be considered to establish locations for branch offices as needed. (For more information on resource identification, see **Section 12** of the OSRP; for more information on resource protection methods, see **Section 13** of the OSRP; for more information on mobilization see **Section 14** of the OSRP.


Green Canyon 511 Worst Case Discharge
Overview Map
The Response Group
Emergency Response | Pre-Planning & Support
281-880-5000
Scale: 1:3,000,000
N
94°0'0"W
92°0'0"W
90°0'0"W
88°0'0"W
30°0'0"N
27°0'0"N
TEXAS
LOUISIANA
Beaumont
Port Arthur
Lake Charles
Lafayette
Baton Rouge
Metairie
Kenner
New Orleans
Gulfport
Port Arthur COTP
New Orleans COTP
Mobile COTP
Houma COTP
Houston-Galveston COTP
Corpus Christi COTP
South Sabine Point
Southtex
Offshore Pascagoula No. 2
Gulfmex No. 2
Green Canyon 511
Latitude: 27° 26' 50.791" N
Longitude: 90° 37' 11.358" W
0 10 20 40 60 80 100 NM
Legend
Well Location
3 Mile Line
10m Contour
Bathymetry
State Line
COTP Zone
BOEM Lease Areas
Lightering Zone
Reefs
Shipping Lanes
Federal Lands

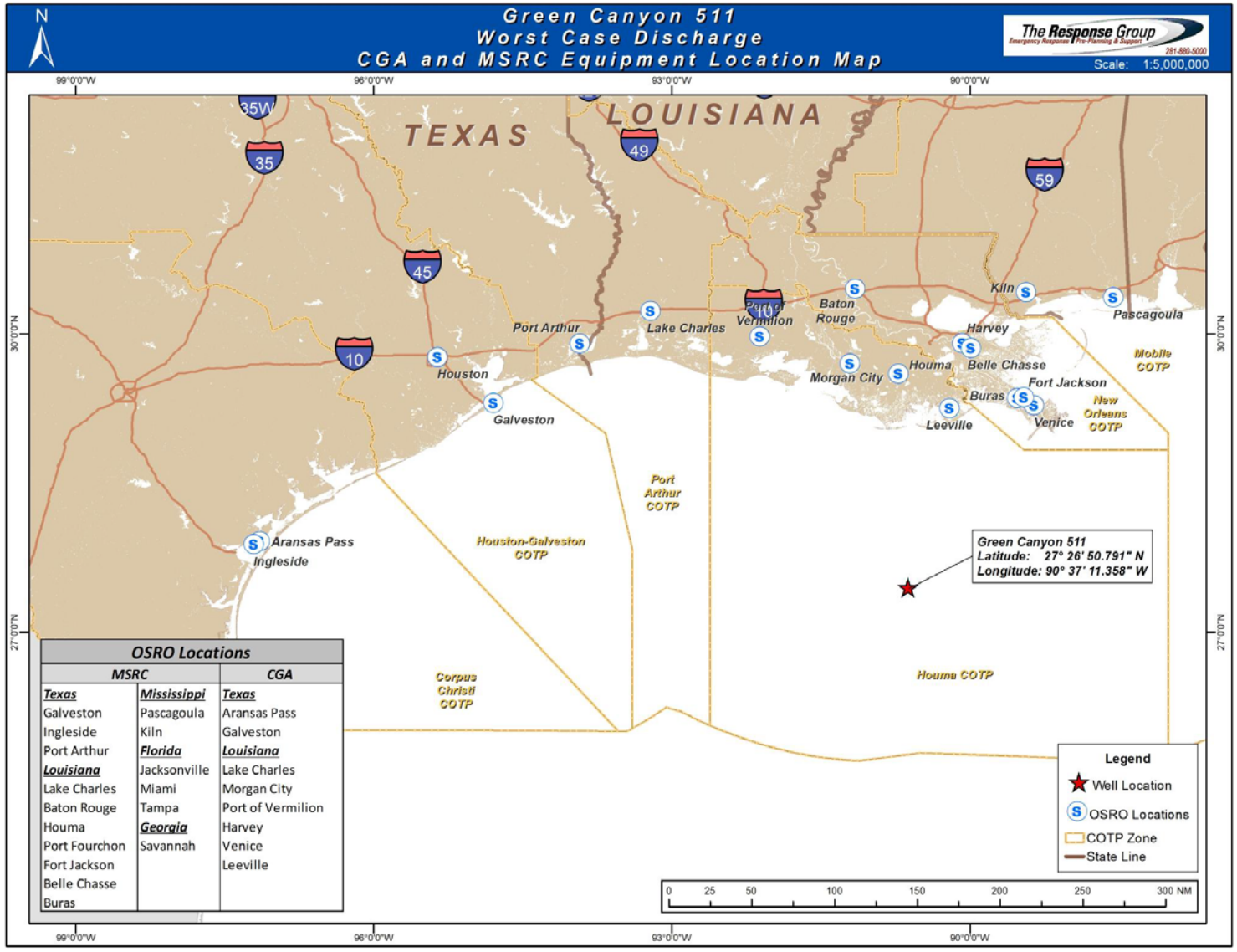
GC 511 FD002D



03/29/2019


Green Canyon 511
Launch Block 44 Probability Map
Probablities (expressed as percent chance) that an oil spill started within a Launch Area will contact a county/parish within 3, 10, or 30 days
The Response Group
Emergency Response | Pre-Planning & Support
281-880-5000
Scale: 1:3,500,000
N
LOUISIANA
TEXAS
MISSISSIPPI
Bryan
College Station
The Woodlands
Houston
Baytown
Pasadena
Missouri City
Galveston
Beaumont
Port Arthur
Lake Charles
Lafayette
Baton Rouge
Metairie
Kenner
New Orleans
Gulfport
JEFFERSON
CAMERON
VERMILION
TERREBONNE
LAFOURCHE
PLAQUEMINES
MATAGORDA
GALVESTON
Houston-Galveston COTP
Port Arthur COTP
Houma COTP
New Orleans COTP
Mobile COTP
Corpus Christi COTP
Launch Block 44
Green Canyon 511
Latitude: 27° 26' 50.791" N
Longitude: 90° 37' 11.358" W
Legend
Well Location
Impacted County/Parish
Launch Blocks
COTP Zone
BOEM Lease Areas
Federal Lands
State Line
0 10 20 40 60 80 100 NM
OSRP Probabilities
3 Day Probabilities:
10 Day Probabilities:
Louisiana
Terrebonne - 1%
Plaquemines - 1%
30 Day Probabilities:
Louisiana
Cameron - 5%
Vermilion - 2%
Terrebonne - 2%
Lafourche - 1%
Jefferson - 1%
Plaquemines - 4%
Texas
Matagorda - 1%
Galveston - 2%
Jefferson - 1 %
96°0'0"W
94°0'0"W
92°0'0"W
90°0'0"W
30°0'0"N
27°30'0"N

03/29/2019


Green Canyon 511
Worst Case Discharge
CGA and MSRC Equipment Location Map
The Response Group
Scale: 1:5,000,000
TEXAS
LOUISIANA
Port Arthur
Lake Charles
Port of Vermilion
Baton Rouge
Kiln
Pascagoula
Harvey
Houma
Belle Chasse
Morgan City
Fort Jackson
Buras
Leeville
Venice
Houston
Galveston
Aransas Pass
Ingleside
Mobile COTP
New Orleans COTP
Port Arthur COTP
Houston-Galveston COTP
Corpus Christi COTP
Houma COTP
Green Canyon 511
Latitude: 27° 26' 50.791" N
Longitude: 90° 37' 11.358" W
OSRO Locations
MSRC
Texas
Galveston
Ingleside
Port Arthur
Louisiana
Lake Charles
Baton Rouge
Houma
Port Fourchon
Fort Jackson
Belle Chasse
Buras
Mississippi
Pascagoula
Kiln
Florida
Jacksonville
Miami
Tampa
Georgia
Savannah
CGA
Texas
Aransas Pass
Galveston
Louisiana
Lake Charles
Morgan City
Port of Vermilion
Harvey
Venice
Leeville
Legend
Well Location
OSRO Locations
COTP Zone
State Line
0 25 50 100 150 200 250 300 NM

Green Canyon 511 Exploration
Sample Aerial Surveillance Activation List

Aerial Surveillance System	Supplier & Phone	Airport/City, State	Aerial Surveillance Package	Quantity	Staging Location	Distance to Site from Staging (nautical miles)	Response Times (Hours)			
							Staging ETA	Loadout Time	ETA to Site	Total ETA
*- These components are additional operational requirements that must be procured in addition to the system identified.										
Twin Commander Air Speed - 260 Knots	Airborne Support (985) 851-6391	Houma, LA	Surveillance Aircraft	1	Houma, LA	146	1	0.25	0.49	1.75
			Spotter Personnel	2						
			Crew - Pilots	1						
Aztec Piper Air Speed - 150 Knots	Airborne Support (985) 851-6391	Houma, LA	Surveillance Aircraft	1	Houma, LA	146	1	0.25	0.85	2.15
			Spotter Personnel	2						
			Crew - Pilots	1						
Helicopter Air Speed - Estimated 130 knots	Bristow (985) 288-1250	Galliano, LA	Surveillance Aircraft	1	Galliano, LA	139	1	0.25	0.94	2.20
			Spotter Personnel	2						
			Crew - Pilots	1						
Helicopter Air Speed - Estimated 130 knots	Bristow (985) 288-1250	Galliano, LA	Surveillance Aircraft	1	Galliano, LA	139	1	0.25	0.94	2.20
			Spotter Personnel	2						
			Crew - Pilots	1						

Green Canyon 511 Exploration
Sample Offshore Slick Containment Activation List

Skimming System	Supplier & Phone	Warehouse	Containment Package	Quantity	Staging Area	Distance to Site from Staging (Miles)	Response Times (Hours)				
							Staging ETA	Loadout Time	ETA to Site	Deploymen t Time	Total ETA
Note: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability. * - These components are additional operational requirements that must be procured in addition to the system identified. ** - The boom on this barge will be combined with vessels to create multiple containment systems, depending on the needs of the response.											
Offshore Containment System	MSRC (800) OIL-SPIL	Belle Chasse, LA	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	4.25	1	15	1	**21.25**
Offshore Containment System	MSRC (800) OIL-SPIL	Lake Charles, LA	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	6.25	1	15	1	**23.25**
Offshore Containment System	MSRC (800) OIL-SPIL	Lake Charles, LA	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	6.25	1	15	1	**23.25**
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	**25.25**
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	**25.25**
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	**25.25**
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	**25.25**
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	**25.25**
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	**25.25**
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	**25.25**
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	**25.25**
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	**25.25**
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	**25.25**
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	**25.25**
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	**25.25**

Green Canyon 511 Exploration
Sample Offshore Slick Containment Activation List

Skimming System	Supplier & Phone	Warehouse	Containment Package	Quantity	Staging Area	Distance to Site from Staging (Miles)	Response Times (Hours): Staging ETA	Loadout Time	ETA to Site	Deploymen t Time	Total ETA
Note: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability. * - These components are additional operational requirements that must be procured in addition to the system identified. ** - The boom on this barge will be combined with vessels to create multiple containment systems, depending on the needs of the response.											
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	25.25
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	25.25
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	25.25
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	25.25
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	25.25
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 2	Port Fourchon, LA	118	8.25	1	15	1	25.25
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	25.25
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	25.25
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	25.25
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	25.25
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	25.25
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	25.25
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	*Appropriate Vessel *Personnel *Safety Monitor	2 4 1	Port Fourchon, LA	118	8.25	1	15	1	25.25
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	25.25

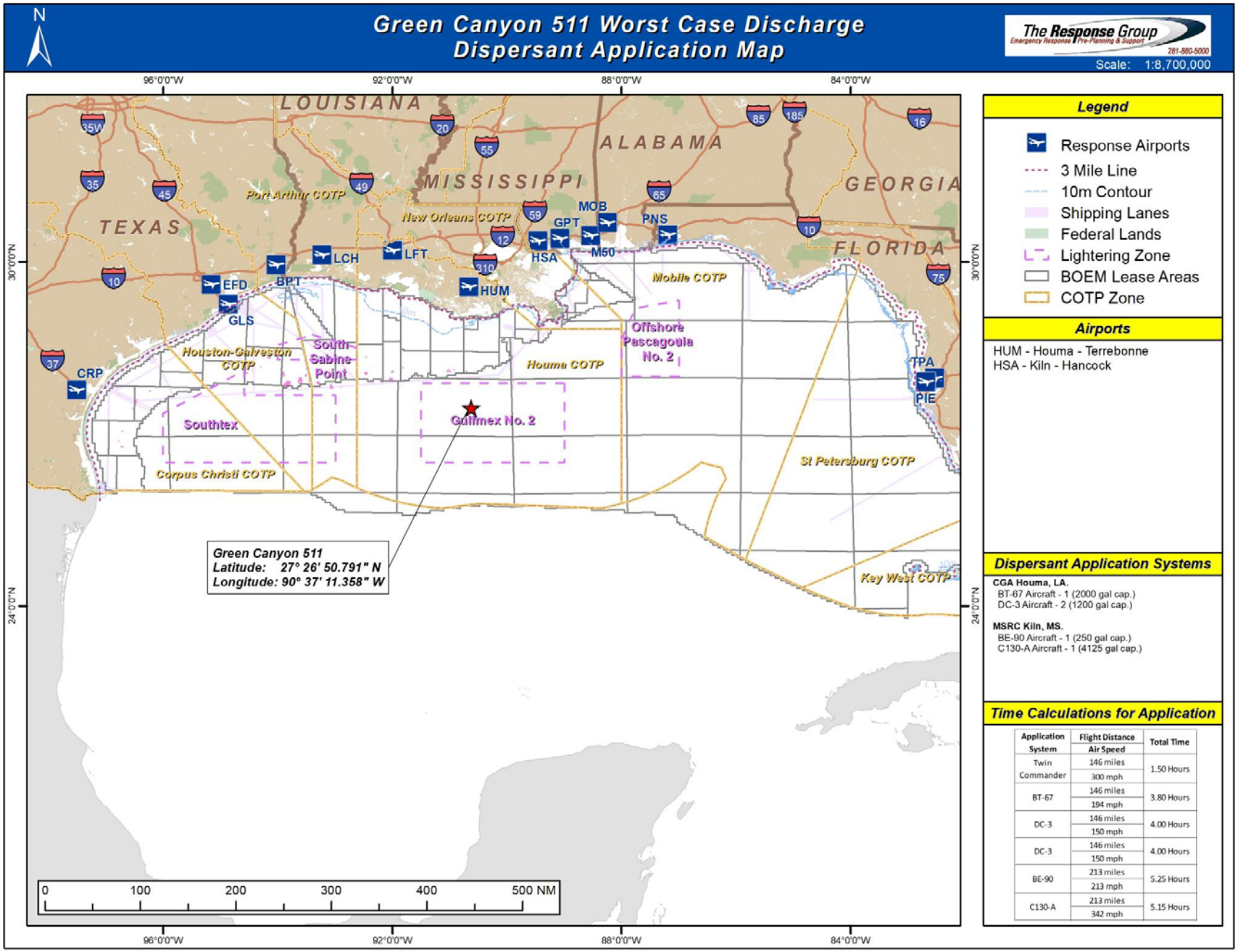
Green Canyon 511 Exploration
Sample Offshore Slick Containment Activation List

Skimming System	Supplier & Phone	Warehouse	Containment Package	Quantity	Staging Area	Distance to Site from Staging (Miles)	Response Times (Hours)				
							Staging ETA	Loadout Time	ETA to Site	Deployment Time	Total ETA
Note: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability. * - These components are additional operational requirements that must be procured in addition to the system identified. ** - The boom on this barge will be combined with vessels to create multiple containment systems, depending on the needs of the response.											
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom	1,320'	Port Fourchon, LA	118	8.25	1	15	1	25.25
			*Appropriate Vessel	2							
			*Personnel	4							
			*Safety Monitor	1							
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom	1,320'	Port Fourchon, LA	118	8.25	1	15	1	25.25
			*Appropriate Vessel	2							
			*Personnel	4							
			*Safety Monitor	1							
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom	1,320'	Port Fourchon, LA	118	8.25	1	15	1	25.25
			*Appropriate Vessel	2							
			*Personnel	4							
			*Safety Monitor	1							
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom	1,320'	Port Fourchon, LA	118	8.25	1	15	1	25.25
			*Appropriate Vessel	2							
			*Personnel	4							
			*Safety Monitor	1							
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom	1,320'	Port Fourchon, LA	118	8.25	1	15	1	25.25
			*Appropriate Vessel	2							
			*Personnel	4							
			*Safety Monitor	1							
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom	1,320'	Port Fourchon, LA	118	8.25	1	15	1	25.25
			*Appropriate Vessel	2							
			*Personnel	4							
			*Safety Monitor	1							
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom	1,320'	Port Fourchon, LA	118	8.25	1	15	1	25.25
			*Appropriate Vessel	2							
			*Personnel	4							
			*Safety Monitor	1							
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom	1,320'	Port Fourchon, LA	118	8.25	1	15	1	25.25
			*Appropriate Vessel	2							
			*Personnel	4							
			*Safety Monitor	1							
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom	1,320'	Port Fourchon, LA	118	8.25	1	15	1	25.25
			*Appropriate Vessel	2							
			*Personnel	4							
			*Safety Monitor	1							
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom	1,320'	Port Fourchon, LA	118	8.25	1	15	1	25.25
			*Appropriate Vessel	2							
			*Personnel	4							
			*Safety Monitor	1							
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom	1,320'	Port Fourchon, LA	118	8.25	1	15	1	25.25
			*Appropriate Vessel	2							
			*Personnel	4							
			*Safety Monitor	1							
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom	1,320'	Port Fourchon, LA	118	8.25	1	15	1	25.25
			*Appropriate Vessel	2							
			*Personnel	4							
			*Safety Monitor	1							
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom	1,320'	Port Fourchon, LA	118	8.25	1	15	1	25.25
			*Appropriate Vessel	2							
			*Personnel	4							
			*Safety Monitor	1							
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom	1,320'	Port Fourchon, LA	118	8.25	1	15	1	25.25
			*Appropriate Vessel	2							
			*Personnel	4							
			*Safety Monitor	1							

Green Canyon 511 Exploration
Sample Offshore Slick Containment Activation List

Skimming System	Supplier & Phone	Warehouse	Containment Package	Quantity	Staging Area	Distance to Site from Staging (Miles)	Response Times (Hours): Staging ETA	Loadout Time	ETA to Site	Deployment Time	Total ETA
Note: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability. * - These components are additional operational requirements that must be procured in addition to the system identified. ** - The boom on this barge will be combined with vessels to create multiple containment systems, depending on the needs of the response.											
Offshore Containment System	MSRC (800) OIL-SPIL	Houston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.25	1	15	1	25.25
Offshore Containment System	MSRC (800) OIL-SPIL	Galveston, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	8.75	1	15	1	25.75
Offshore Containment System	MSRC (800) OIL-SPIL	Ingleside, TX	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	11.5	1	15	1	28.5
CGA-300 Boom Barge **	CGA (888) 242-2007	Leeville, LA	43" Auto Boom (ft) Ocean Tug *70'+ Offshore Utility Boat Personnel Safety Monitor	25,000' 1 50 400 50	Leeville, LA	128	8	0	18.5	2	28.5
Offshore Containment System	MSRC (800) OIL-SPIL	Miami, FL	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	16.25	1	15	1	33.25
Offshore Containment System	MSRC (800) OIL-SPIL	Miami, FL	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	16.25	1	15	1	33.25
Offshore Containment System	MSRC (800) OIL-SPIL	Miami, FL	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	16.25	1	15	1	33.25
Offshore Containment System	MSRC (800) OIL-SPIL	Miami, FL	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	16.25	1	15	1	33.25
Offshore Containment System	MSRC (800) OIL-SPIL	Miami, FL	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	16.25	1	15	1	33.25
Offshore Containment System	MSRC (800) OIL-SPIL	Miami, FL	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	16.25	1	15	1	33.25
Offshore Containment System	MSRC (800) OIL-SPIL	Miami, FL	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	16.25	1	15	1	33.25
Offshore Containment System	MSRC (800) OIL-SPIL	Miami, FL	67" Pressure Inflatable Boom *Appropriate Vessel *Personnel *Safety Monitor	1,320' 2 4 1	Port Fourchon, LA	118	16.25	1	15	1	33.25
TOTAL SLICK CONTAINMENT BOOM SYSTEMS (FEET)										94,960'	

GC 511 FD002D



3/29/2019

Green Canyon 511 Exploration
Sample Offshore Aerial Dispersant Activation List

Aerial Dispersant System	Supplier & Phone	Airport/ City, State	Aerial Dispersant Package	Quantity	Staging Location	Distance to Site from Staging (Miles)	Response Times (Hours)				
							Staging ETA	Loadout Time	ETA to Site	Deployment Time	Total ETA
NOTE: Planholder has access to additional dispersant assets. For a comprehensive list of assets, see Section 18. *** - These components are additional operational requirements that must be procured in addition to the system(s) identified.** **** The second flight times listed are to demonstrate subsequent sortie and application timeframes.** ***** The dispersants listed is for gallon capacity only not amount stored at each location.**											
Twin Commander Air Speed - 300 MPH	CGA/Airborne Support (985) 851-6391	Houma, LA	Aero Commander	1	Houma, LA	146	1	0	0.49	0	1.50
			Spotter Personnel	2							
			Crew - Pilots	1							
BT-67 (DC-3 Turboprop) Aircraft Air Speed - 194 MPH	CGA/Airborne Support (985) 851-6391	Houma, LA	DC-3 Dispersant Aircraft	1	Houma, LA **1st Flight**	146	2	0.5	0.76	0.5	3.80
			Dispersant - Gallons	2000							
			Spotter Aircraft	1							
			Spotter Personnel	2	Houma, LA **2nd Flight**	146	0.76	0.5	0.76	0.3	2.35
			Crew - Pilots	2							
DC-3 Aircraft Air Speed - 150 MPH	CGA/Airborne Support (985) 851-6391	Houma, LA	DC-3 Dispersant Aircraft	1	Houma, LA **1st Flight**	146	2	0.5	0.98	0.5	4.00
			Dispersant - Gallons	1200							
			Spotter Aircraft	1							
			Spotter Personnel	2	Houma, LA **2nd Flight**	146	0.98	0.5	0.98	0.3	2.80
			Crew - Pilots	2							
DC-3 Aircraft Air Speed - 150 MPH	CGA/Airborne Support (985) 851-6391	Houma, LA	DC-3 Dispersant Aircraft	1	Houma, LA **1st Flight**	146	2	0.5	0.98	0.5	4.00
			Dispersant - Gallons	1200							
			Spotter Aircraft	1							
			Spotter Personnel	2	Houma, LA **2nd Flight**	146	0.98	0.5	0.98	0.3	2.80
			Crew - Pilots	2							
C130-A Aircraft Air Speed - 342 MPH	MSRC (800) OIL-SPIL	Kiln, MS	C130-A Disp Aircraft	1	Stennis INTL., MS **1st Flight**	213	4	0.0	0.62	0.5	5.15
			Dispersant - Gallons	4125							
			*Spotter Aircraft	1							
			*Spotter Personnel	2	Stennis INTL., MS	213	0.50	0.3	0.62	0.5	2.00
			Crew - Pilots	2							
BE-90 King Air Aircraft Air Speed - 213 MPH	MSRC (800) OIL-SPIL	Kiln, MS	BE-90 Dispersant Aircraft	1	Stennis INTL., MS **1st Flight**	213	4	0.00	1.00	0.20	5.25
			Dispersant - Gallons	250							
			* Spotter Aircraft	1							
			*Spotter Personnel	2	Stennis INTL., MS **2nd Flight**	213	1.00	0.3	1.00	0.20	2.55
			Crew - Pilots	2							
C130-A Aircraft Air Speed - 342 MPH	MSRC (800) OIL-SPIL	Mesa, AZ	C130-A Disp. Aircraft	1	Stennis INTL., MS **1st Flight**	213	9	0.3	0.62	0.5	10.50
			Dispersant - Gallons	4125							
			*Spotter Aircraft	1							
			*Spotter Personnel	2	Stennis INTL., MS **2nd Flight**	213	0.50	0.3	0.62	0.5	2.00
			Crew - Pilots	2							
BE-90 King Air Aircraft Air Speed - 213 MPH	MSRC (800) OIL-SPIL	Concord, CA	BE-90 Dispersant Aircraft	1	Stennis INTL., MS **1st Flight**	213	15	0.3	1.00	0.20	16.55
			Dispersant - Gallons	330							
			* Spotter Aircraft	1							
			*Spotter Personnel	2	Stennis INTL., MS **2nd Flight**	213	1.00	0.3	1.00	0.20	2.55
			Crew - Pilots	2							

Green Canyon 511 Exploration
Sample Offshore Boat Spray Dispersant Activation List

Boat Spray Dispersant System	Supplier & Phone	Warehouse	Boat Spray Dispersant Package	Quantity	Staging Area	Distance to Site from Staging (Miles)	Response Times (Hours)				
							Staging ETA	Loadout Time	ETA to Site	Deployment Time	Total ETA
NOTE: Planholder has access to additional dispersant assets. For a comprehensive list of assets, see Section 18. *- These components are additional operational requirements that must be procured by OSROs in addition to the system(s) identified.											
USCG SMART Team	USCG	Mobile, AL	Personnel	4	Port Fourchon, LA	118	6.25	1	8.5	0.5	16.25
			* Crew Boat	1							
Vessel Based Dispersant Spray System	CGA (888) 242-2007	Harvey, LA	Dispersant Spray System	1	Port Fourchon, LA	118	4	0.5	12	1	17.5
			Dispersant (Gallons)	330							
			Personnel	4							
			* Utility Boat	1							
Vessel Based Dispersant Spray System	CGA (888) 242-2007	Aransas Pass, TX	Dispersant Spray System	1	Port Fourchon, LA	118	11.5	0.5	12	1	25
			Dispersant (Gallons)	330							
			Personnel	4							
			* Utility Boat	1							

Green Canyon 511 Exploration
Sample In-Situ Burn Equipment Activation List

Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Staging Area	Distance to Site from Staging (Miles)	Response Times (Hours)				
							Staging ETA	Loadout Time	ETA to Site	Deployment Time	Total ETA
NOTE: Planholder has access to additional ISB assets. For a comprehensive list of those assets, see Section 19. Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability. * - These components are additional operational requirements that must be procured in addition to the system identified. ** - Teams will deploy in sections of 500' at any given time											
SMART In-Situ Burn Monitoring Team	USCG	Mobile, AL	* Air Monitoring Equipment	1	Port Fourchon, LA	118	4	1	8.5	1	14.5
			* Offshore Vessel	1							
			Personnel	4							
Fire Team (In-Situ Burn Fire System)	MSRC (800) OIL-SPIL	Lake Charles, LA	**Fire Boom (ft)	2,000	Port Fourchon, LA	118	6.25	1	15	1	23.25
			Tow Line (ft)	600							
			* Appropriate Vessel	2							
			Personnel	2							
			Ignition Device	25							
Fire Team (In-Situ Burn Fire System)	MSRC (800) OIL-SPIL	Houston, TX	**Fire Boom (ft)	16,000	Port Fourchon, LA	118	8.25	1	15	1	25.25
			Tow Line (ft)	600							
			* Appropriate Vessel	2							
			Personnel	2							
			Ignition Device	155							
Fire Team (In-Situ Burn Fire System)	MSRC (800) OIL-SPIL	Galveston, TX	**Fire Boom (ft)	1,000	Port Fourchon, LA	118	8.75	1	15	1	25.75
			Tow Line (ft)	600							
			* Appropriate Vessel	2							
			Personnel	2							
			Ignition Device	10							
Supply Team (Supply	MSRC (800) OIL-	Port Fourchon, LA	*Offshore Vessel 110' - 310'	1	Port Fourchon,	118	4	1	23.5	1	29.5
			Personnel	6							
Fire Team (In-Situ Burn Fire System)	MSRC (800) OIL-SPIL	Edison/Perth Amboy, NJ	**Fire Boom (ft)	1,000	Port Fourchon, LA	118	23	1	15	1	40
			Tow Line (ft)	600							
			* Appropriate Vessel	2							
			Personnel	2							
			Ignition Device	10							
Fire Team (In-Situ Burn Fire System)	CGA (888) 242-2007	Harvey, LA	Fire Boom (ft)	500	Port Fourchon, LA	118	0	24	12	6	42
			Guide Boom/Tow Line (ft)	400							
			* Offshore Vessel (0.5 kt capability)	3							
			Personnel	20							
			Ignition Device	10							
Fire Team (In-Situ Burn Fire System)	CGA (888) 242-2007	Harvey, LA	Fire Boom (ft)	500	Port Fourchon, LA	118	0	24	12	6	42
			Guide Boom/Tow Line (ft)	400							
			* Offshore Vessel (0.5 kt capability)	3							
			Personnel	20							
			Ignition Device	10							
						TOTAL FIRE BOOM AVAILABLE (FEET)					21,000

Green Canyon 511 Exploration
Sample Offshore On-Water Recovery & Storage Activation List

Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Effective Daily Recovery Capacity (EDRC in Bbls/Day)	Storage (Barrels)	Staging Area	Distance to Site from Staging (Miles)	Response Times (Hours)				
									Staging ETA	Loadout Time	ETA to Site	Deployment Time	Total ETA
Note: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability. * - These components are additional operational requirements that must be procured in addition to the system identified. ** - These components are additional operational requirements for the packages to be used in an enhanced skimming deployment. *** - Specific barge names may vary.													
FRV Breton Island	CGA (866) 242-2007	Venice, LA	Lamor Brush Skimmer	2	22,885	249	Venice, LA	154	2	0	9	1	12
			36" Boom	64									
			95' Vessel	1									
			X Band Radar	1									
			Personnel	6									
FRV JL O'Brien	CGA (888) 242-2007	Leeville, LA	Lamor Brush Skimmer	2	22,885	249	Leeville, LA	128	2	0	9.5	1	13
			36" Boom	64									
			95' Vessel	1									
			X Band Radar	1									
			Personnel	6									
S.T. Benz Responder LFF 100 Brush	MSRC (800) OIL-SPIL	Port Fourchon, LA	LFF 100 Brush Skimmer	1	18,086	4,000	Port Fourchon, LA	118	3	1	10	1	15
			Backup - Stress 1 Skimmer	1									
			67" Pressure Inflatable Boom	2640'									
			210' Vessel	1									
			Personnel	10									
			32' Support Boat	1									
			X Band Radar	1									
			Infrared Camera	1									
			FAES #4 "Buster"	1									
FRV H.I. Rich	CGA (888) 242-2007	Vermilion, LA	Lamor Brush Skimmer	2	22,885	249	Vermilion, LA	221	2	0	13	1	16
			36" Boom	64									
			95' Vessel	1									
			X Band Radar	1									
			Personnel	6									
Stress 1	MSRC (800) OIL-SPIL	Port Fourchon, LA	"S.T. Benz Responder"	1	15,840	0	Port Fourchon, LA	118	4	1	10	1	16
			Blue Responder"	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
FOILEX 200	MSRC (800) OIL-SPIL	Belle Chasse, LA	Offshore Skimmer	1	1,989	0	Port Fourchon, LA	118	4.25	1	10	1	17
			67" Pressure Inflatable Boom "Lousiana	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
GT-185 w/ adapter	MSRC (800) OIL-SPIL	Belle Chasse, LA	Offshore Skimmer	1	1,371	0	Port Fourchon, LA	118	4.25	1	10	1	17
			Responder"	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
FOILEX 250	MSRC (800) OIL-SPIL	Belle Chasse, LA	Offshore Skimmer	1	3,977	0	Port Fourchon, LA	118	4.25	1	10	1	17
			67" Pressure Inflatable Boom "Lousiana	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
Walosep W-4	MSRC (800) OIL-SPIL	Belle Chasse, LA	Offshore Skimmer	1	3,017	0	Port Fourchon, LA	118	4.25	1	10	1	17
			67" Pressure Inflatable Boom "MSRC 452 OSRB"	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
Stress 1	MSRC (800) OIL-SPIL	Fort Jackson, LA	Offshore Skimmer "Louisiana Responder"	1	15,840	0	Port Fourchon, LA	118	5.5	1	10	1	18
			67" Pressure Inflatable Boom "Louisiana Responder"	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
Stress 1	MSRC (800) OIL-SPIL	Pascagoula, MS	Offshore Skimmer "Mississippi Responder"	1	15,840	0	Port Fourchon, LA	118	5.75	1	10	1	18
			67" Pressure Inflatable Boom	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							

Green Canyon 511 Exploration
Sample Offshore On-Water Recovery & Storage Activation List

Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Effective Daily Recovery Capacity (EDRC in Bbls/Day)	Storage (Barrels)	Staging Area	Distance to Site from Staging (Miles)	Response Times (Hours)				
									Staging ETA	Loadout Time	ETA to Site	Deployment Time	Total ETA
Note: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability. * - These components are additional operational requirements that must be procured in addition to the system identified. ** - These components are additional operational requirements for the packages to be used in an enhanced skimming deployment. *** - Specific barge names may vary.													
Stress 2	MSRC (800) OIL-SPIL	Pascagoula, MS	Offshore Skimmer	1	3,017	0	Port Fourchon, LA	118	5.75	1	10	1	18
			67" Pressure Inflatable Boom	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
WP-1	MSRC (800) OIL-SPIL	Pascagoula, MS	Offshore Skimmer	1	3,017	0	Port Fourchon, LA	118	5.75	1	10	1	18
			67" Pressure Inflatable Boom	110'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
Louisiana Responder Transec 350	MSRC (800) OIL-SPIL	Fort Jackson, LA	Transrec Skimmer	1	10,567	4,000	Fort Jackson, LA	163	2	1	13.5	1	18
			Back - Stress 1 Skimmer	1									
			67" Pressure Inflatable Boom	2640'									
			210' Vessel	1									
			Personnel	10									
			32' Support Boat	1									
			X Band Radar	1									
			Infrared Camera	1									
			FAES #4 "Buster"	1									
Stress 1	MSRC (800) OIL-SPIL	Lake Charles, LA	Offshore Skimmer	1	15,840	0	Port Fourchon, LA	118	6.25	1	10	1	19
			67" Pressure Inflatable Boom	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
FOILEX 250	MSRC (800) OIL-SPIL	Lake Charles, LA	Offshore Skimmer	1	3,977	0	Port Fourchon, LA	118	6.25	1	10	1	19
			67" Pressure Inflatable Boom	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
DESMI OCEAN	MSRC (800) OIL-SPIL	Lake Charles, LA	Offshore Skimmer	1	3,017	0	Port Fourchon, LA	118	6.25	1	10	1	19
			"Gulf Coast Responder"	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
GT-185 w/ adapter	MSRC (800) OIL-SPIL	Port Arthur, TX	Offshore Skimmer	1	1,371	0	Port Fourchon, LA	118	7.25	1	10	1	20
			67" Pressure Inflatable Boom	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
Walosep W-4	MSRC (800) OIL-SPIL	Galveston, TX	Offshore Skimmer	1	3,017	0	Port Fourchon, LA	118	8.75	1	10	1	21
			67" Pressure Inflatable Boom *	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
FOILEX 250	MSRC (800) OIL-SPIL	Galveston, TX	Offshore Skimmer	1	3,977	0	Port Fourchon, LA	118	8.75	1	10	1	21
			67" Pressure Inflatable Boom	110'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
Stress 1	MSRC (800) OIL-SPIL	Galveston, TX	Offshore Skimmer	1	15,840	0	Port Fourchon, LA	118	8.75	1	10	1	21
			67" Pressure Inflatable Boom	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
GT-185 w/ adapter	MSRC (800) OIL-SPIL	Galveston, TX	Offshore Skimmer	1	1,371	0	Port Fourchon, LA	118	8.75	1	10	1	21
			67" Pressure Inflatable Boom	110'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							

Green Canyon 511 Exploration
Sample Offshore On-Water Recovery & Storage Activation List

Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Effective Daily Recovery Capacity (EDRC in Bbls/Day)	Storage (Barrels)	Staging Area	Distance to Site from Staging (Miles)	Response Times (Hours)				
									Staging ETA	Loadout Time	ETA to Site	Deployment Time	Total ETA
Note: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability. * - These components are additional operational requirements that must be procured in addition to the system identified. ** - These components are additional operational requirements for the packages to be used in an enhanced skimming deployment. *** - Specific barge names may vary.													
FRV Galveston Island	CGA (888) 242-2007	Galveston, TX	Lamor Brush Skimmer	2	22,885	249	Galveston, TX	288	2	0	19	1	22
			36" Boom	64									
			95' Vessel	1									
			X Band Radar	1									
			Personnel	6									
Fast Response Unit "FRU" 1.0	CGA (888) 242-2007	Morgan City, LA	Foilex 250 Skimmer	1	4,251	100	Port Fourchon, LA	118	4	6	12	1	23
			Personnel	4									
			Utility Boat	1									
			53" Skimming Boom	75'									
			** 67" Sea Sentry	440'									
			** Crew Boat	1									
			** Add'l Storage	1		100							
PT 150 Aquaguard Skimmer (2)	CGA (888) 242-2007	Harvey, LA	Brush skimmer	1	22,323	0	Port Fourchon, LA	118	4	6	12	1	23
			Personnel	4									
			* Offshore Utility Boat	1									
			* Add'l Storage	2		1,000							
Fast Response Unit "FRU" 1.0	CGA (888) 242-2007	Leeville, LA	Foilex 250 Skimmer	1	4,251	100	Port Fourchon, LA	118	4	6	12	1	23
			Personnel	4									
			Utility Boat	1									
			53" Skimming Boom	75'									
			** 67" Sea Sentry	440'									
			** Crew Boat	1									
			** Add'l Storage	1		100							
Fast Response Unit "FRU" 1.0	CGA (888) 242-2007	Leeville, LA	Foilex 250 Skimmer	1	4,251	100	Port Fourchon, LA	118	4	6	12	1	23
			Personnel	4									
			Utility Boat	1									
			53" Skimming Boom	75'									
			** 67" Sea Sentry	440'									
			** Crew Boat	1									
			** Add'l Storage	1		100							
Stress 1	MSRC (800) OIL-SPIL	Ingleside, TX	"Southern Responder"	1	15,840	0	Port Fourchon, LA	118	11.5	1	10	1	24
			67" Pressure Inflatable Boom	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
FOILEX 250	MSRC (800) OIL-SPIL	Ingleside, TX	Offshore Skimmer	1	3,977	0	Port Fourchon, LA	118	11.5	1	10	1	24
			67" Pressure Inflatable Boom	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
Walosep W-4	MSRC (800) OIL-SPIL	Ingleside, TX	Offshore Skimmer	1	3,017	0	Port Fourchon, LA	118	11.5	1	10	1	24
			67" Pressure Inflatable Boom	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
Fast Response Unit "FRU" 1.0	CGA (888) 242-2007	Venice, LA	Foilex 250 Skimmer	1	4,251	100	Port Fourchon, LA	118	5.75	6	12	1	25
			Personnel	4									
			Utility Boat	1									
			53" Skimming Boom	75'									
			** 67" Sea Sentry	440'									
			** Crew Boat	1									
			** Add'l Storage	1		100							
Fast Response Unit "FRU" 1.0	CGA (888) 242-2007	Venice, LA	Foilex 250 Skimmer	1	4,251	100	Port Fourchon, LA	118	5.75	6	12	1	25
			Personnel	4									
			Utility Boat	1									
			53" Skimming Boom	75'									
			** 67" Sea Sentry	440'									
			** Crew Boat	1									
			** Add'l Storage	1		100							

Green Canyon 511 Exploration
Sample Offshore On-Water Recovery & Storage Activation List

Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Effective Daily Recovery Capacity (EDRC in Bbls/Day)	Storage (Barrels)	Staging Area	Distance to Site from Staging (Miles)	Response Times (Hours)				
									Staging ETA	Loadout Time	ETA to Site	Deployment Time	Total ETA
Note: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability. * - These components are additional operational requirements that must be procured in addition to the system identified. ** - These components are additional operational requirements for the packages to be used in an enhanced skimming deployment. *** - Specific barge names may vary.													
Fast Response Unit "FRU" 1.0	CGA (888) 242-2007	Vermilion, LA	Foilex 250 Skimmer	1	4,251	100	Port Fourchon, LA	118	5.25	6	12	1	25
			Personnel	4									
			Utility Boat	1									
			53" Skimming Boom	75'									
			** 67" Sea Sentry	440'									
Gulf Coast Responder Transrec-350	MSRC (800) OIL-SPIL	Lake Charles, LA	Transrec Skimmer	1	10,567	4,000	Lake Charles, LA	255	2	1	21	1	25
			Backup - Stress 1 Skimmer	1									
			67" Pressure Inflatable Boom	2640'									
			210' Vessel	1									
			Personnel	10									
			32' Support Boat	1									
			X Band Radar	1									
			Infrared Camera	1									
			FAES #4 "Buster"	1									
Fast Response Unit "FRU" 1.0	CGA (888) 242-2007	Lake Charles, LA	Foilex 250 Skimmer	1	4,251	100	Port Fourchon, LA	118	6.25	6	12	1	26
			Personnel	4									
			Utility Boat	1									
			53" Skimming Boom	75'									
			** 67" Sea Sentry	440'									
			** Crew Boat	1									
			** Add'l Storage	1		100							
MSRC-452 Offshore Barge	MSRC (800) OIL-SPIL	Fort Jackson, LA	Offshore Barge	1	11,122	45,000	Fort Jackson, LA	163	4	1	20.5	1	27
			67" Pressure Inflatable Boom	2640'									
			Crucial Disc Skimmer 88/30	1									
			Backup - Desmi Ocean	1									
			*Appropriate Vessel	1									
			Personnel	9									
			* Offshore Tug	2									
			X Band Radar	1									
			Infrared Camera	1									
Texas Responder Transrec-350	MSRC (800) OIL-SPIL	Galveston, TX	Transrec Skimmer	1	10,567	4,000	Galveston, TX	288	2	1	24	1	28
			Backup - Stress 1 Skimmer	1									
			67" Pressure Inflatable Boom	2640'									
			210' Vessel	1									
			Personnel	10									
			32' Support Boat	1									
			X Band Radar	1									
			Infrared Camera	1									
			FAES #4 "Buster"	1									
PT 150 Aquaguard Skimmer (1)	CGA (888) 242-2007	Galveston, TX	Brush skimmer	1	22,323	0	Port Fourchon, LA	118	8.75	6	12	1	28
			Personnel	4									
			* Offshore Utility Boat	1									
			* Add'l Storage	2		1,000							
Stress 1	MSRC (800) OIL-SPIL	Miami, FL	Offshore Skimmer	1	15,840	0	Port Fourchon, LA	118	16.25	1	10	1	29
			67" Pressure Inflatable Boom	330'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
Fast Response Unit "FRU" 1.0	CGA (888) 242-2007	Galveston, TX	Foilex 250 Skimmer	1	4,251	100	Port Fourchon, LA	118	9.5	6	12	1	29
			Personnel	4									
			* 100-165' Utility Boat	1									
			53' Skimming Boom	75'									
			** 67" Sea Sentry	440'									
			** Crew Boat	1									
			** Add'l Storage	1		100							
FRU 3.0 - Foilex 150 TDS	CGA (888) 242-2007	Harvey, LA	Weir Skimmer	1	1,131	0	Port Fourchon, LA	118	4	12	12	2	30
			Personnel	4									
			* Utility Boat (<100')	1									
			50 bbl Portable tank	1		50							
Fast Response Unit "FRU" 1.0	CGA (888) 242-2007	Aransas Pass, TX	Foilex 250 Skimmer	1	4,251	100	Port Fourchon, LA	118	11.5	6	12	1	31
			Personnel	4									
			* 100-140' Utility Boat	1									
			53" Skimming Boom	75'									
			** 67" Sea Sentry	440'									
			** Crew Boat	1									
			** Add'l Storage	1		100							

Green Canyon 511 Exploration
Sample Offshore On-Water Recovery & Storage Activation List

Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Effective Daily Recovery Capacity (EDRC in Bbls/Day)	Storage (Barrels)	Staging Area	Distance to Site from Staging (Miles)	Response Times (Hours)				
									Staging ETA	Loadout Time	ETA to Site	Deployment Time	Total ETA
Note: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability. * - These components are additional operational requirements that must be procured in addition to the system identified. ** - These components are additional operational requirements for the packages to be used in an enhanced skimming deployment. *** - Specific barge names may vary.													
FRU 3.0 - Foilex 150 TDS	CGA (888) 242-2007	Lake Charles, LA	Weir Skimmer	1	1,131	0	Port Fourchon, LA	118	6.25	12	12	2	33
			Personnel	4									
			* Utility Boat (<100')	1									
			50 bbl Portable tank	1		50							
FRU 3.0 - Foilex 150 TDS	CGA (888) 242-2007	Galveston, TX	Weir Skimmer	1	1,131	0	Port Fourchon, LA	118	8.75	12	12	2	35
			Personnel	4									
			* Utility Boat (<100')	1									
			50 bbl Portable tank	1		50							
PSV-VOO Skimming System (Brush)	MSRC (800) OIL-SPIL	Lake Charles, LA	Lamor Brush Skimmer	1	18,086	0	Port Fourchon, LA	118	24	1	10	1	36
			67" Pressure Inflatable Boom	1320'									
			* PSV-VOO	1									
			Personnel	9									
			Thermal Infrared Camera	1									
			*Appropriate Vessel	1									
			* Marine Portable Tank	2		1,000							
PSV-VOO Skimming System (Brush)	MSRC (800) OIL-SPIL	Lake Charles, LA	Lamor Brush Skimmer	1	18,086	0	Port Fourchon, LA	118	24	1	10	1	36
			67" Pressure Inflatable Boom	1320'									
			* PSV-VOO	1									
			Personnel	9									
			Thermal Infrared Camera	1									
			*Appropriate Vessel	1									
			* Marine Portable Tank	2		1,000							
PSV-VOO Skimming System (Transrec)	MSRC (800) OIL-SPIL	Lake Charles, LA	Transrec 350 Skimmer	1	10,567	0	Port Fourchon, LA	118	24	1	10	1	36
			67" Pressure Inflatable Boom	1320'									
			* PSV-VOO	1									
			Personnel	9									
			Thermal Infrared Camera	1									
			*Appropriate Vessel	1									
			* Marine Portable Tank	2		1,000							
PSV-VOO Skimming System (Brush)	MSRC (800) OIL-SPIL	Port Fourchon, LA	Lamor Brush Skimmer	1	18,086	0	Port Fourchon, LA	118	24	1	10	1	36
			67" Pressure Inflatable Boom	1320'									
			* PSV-VOO	1									
			Personnel	9									
			Thermal Infrared Camera	1									
			*Appropriate Vessel	1									
			* Marine Portable Tank	2		1,000							
PSV-VOO Skimming System (Brush)	MSRC (800) OIL-SPIL	Port Fourchon, LA	Lamor Brush Skimmer	1	18,086	0	Port Fourchon, LA	118	24	1	10	1	36
			67" Pressure Inflatable Boom	1320'									
			* PSV-VOO	1									
			Personnel	9									
			Thermal Infrared Camera	1									
			*Appropriate Vessel	1									
			* Marine Portable Tank	2		1,000							
PSV-VOO Skimming System (Transrec)	MSRC (800) OIL-SPIL	Houma, LA	Transrec 350 Skimmer	1	10,567	0	Port Fourchon, LA	118	24	1	10	1	36
			67" Pressure Inflatable Boom	1320'									
			* PSV-VOO	1									
			Personnel	9									
			Thermal Infrared Camera	1									
			*Appropriate Vessel	1									
			* Marine Portable Tank	2		1,000							
PSV-VOO Skimming System (Crucial Disc)	MSRC (800) OIL-SPIL	Fort Jackson, LA	Crucial Disc Skimmer	1	11,122	0	Port Fourchon, LA	118	24	1	10	1	36
			67" Pressure Inflatable Boom	1320'									
			* PSV-VOO	1									
			Personnel	9									
			Thermal Infrared Camera	1									
			*Appropriate Vessel	1									
			* Marine Portable Tank	2		1,000							

Green Canyon 511 Exploration
Sample Offshore On-Water Recovery & Storage Activation List

Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Effective Daily Recovery Capacity (EDRC in Bbls/Day)	Storage (Barrels)	Staging Area	Distance to Site from Staging (Miles)	Response Times (Hours)				
									Staging ETA	Loadout Time	ETA to Site	Deployment Time	Total ETA
Note: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability. * - These components are additional operational requirements that must be procured in addition to the system identified. ** - These components are additional operational requirements for the packages to be used in an enhanced skimming deployment. *** - Specific barge names may vary.													
PSV-VOO Skimming System (Crucial Disc)	MSRC (800) OIL-SPIL	Fort Jackson, LA	Crucial Disc Skimmer	1	11,122	0	Port Fourchon, LA	118	24	1	10	1	36
			67" Pressure Inflatable Boom	1320'									
			* PSV-VOO	1									
			Personnel	9									
			Thermal Infrared Camera	1									
			*Appropriate Vessel	1									
			* Marine Portable Tank	2		1,000							
MSRC-402 Offshore Barge	MSRC (800) OIL-SPIL	Pascagoula, MS	Offshore Barge	1	11,122	40,300	Pascagoula, MS	253	4	1	31.5	1	38
			67" Pressure Inflatable Boom	2640'									
			Crucial Disc Skimmer 88/30	1									
			Backup - Crucial Disc Skimmer 88/30	1									
			*Appropriate Vessel	1									
			Personnel	9									
			* Offshore Tug	2									
			X Band Radar	1									
			Infrared Camera	1									
Southern Responder Transrec-350	MSRC (800) OIL-SPIL	Ingleside, TX	Transrec Skimmer	1	10,567	4,000	Ingleside, TX	409	2	1	34	1	38
			Backup - Stress 1 Skimmer	1									
			67" Pressure Inflatable Boom	2640'									
			210' Vessel	1									
			Personnel	10									
			32' Support Boat	1									
			X Band Radar	1									
			Infrared Camera	1									
			FAES #4 "Buster"	1									
CGA-200 HOSS Barge (OSRB)	CGA (888) 242-2007	Harvey, LA	Marco Skimmer	4	76,285	4,000	Harvey, LA	216	6	0	32	2	40
			67" Sea Sentry	2640'									
			Personnel	12									
			* Tug - 1,200 HP	2									
			X Band Radar	1									
			* Tug - 1,800 HP	1									
MSRC-570 Offshore Barge	MSRC (800) OIL-SPIL	Galveston, TX	Offshore Barge	1	11,122	56,900	Galveston, TX	288	4	1	36	1	42
			67" Pressure Inflatable Boom	2640'									
			Crucial Disc Skimmer 88/30	1									
			Backup - Crucial Disc Skimmer 88/30	1									
			*Appropriate Vessel	1									
			Personnel	9									
			* Offshore Tug	2									
			X Band Radar	1									
			Infrared Camera	1									
MSRC-403 Offshore Barge	MSRC (800) OIL-SPIL	Ingleside, TX	Offshore Barge	1	11,122	40,300	Ingleside, TX	409	4	1	51	1	57
			67" Pressure Inflatable Boom	2640'									
			Crucial Disc Skimmer 88/30	1									
			Backup - Crucial Disc Skimmer 56/30	1									
			*Appropriate Vessel	1									
			Personnel	9									
			* Offshore Tug	2									
			X Band Radar	1									
			Infrared Camera	1									
Koseq Skimming Arms (11) (Mariflex Weir)	CGA (888) 242-2007	Harvey, LA	15m rigid skimming arm	2	36,326	0	Port Fourchon, LA	118	24	24	12	2	62
			Personnel	5									
			* Offshore vessel (>200')	1									
			* 30T crane	1									
			* 500 bbl Portable tank	4		2,000							
Koseq Skimming Arms (9) (Lamor Brush)	CGA (888) 242-2007	Harvey, LA	15m rigid skimming arm	2	45,770	0	Port Fourchon, LA	118	24	24	12	2	62
			Personnel	5									
			* Offshore vessel (>200')	1									
			* 30T crane	1									
			* 500 bbl Portable tank	4		2,000							
Florida Responder Transrec-350	MSRC (800) OIL-SPIL	Miami, FL	Transrec Skimmer	1	10,567	4,000	Miami, FL	728	2	1	60.5	1	65
			Backup - Stress 1 Skimmer	1									
			67" Pressure Inflatable Boom	2640'									
			210' Vessel	1									
			Personnel	10									
			32' Support Boat	1									
			X Band Radar	1									
			Infrared Camera	1									
			FAES #4 "Buster"	1									

Green Canyon 511 Exploration
Sample Offshore On-Water Recovery & Storage Activation List

Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Effective Daily Recovery Capacity (EDRC in Bbls/Day)	Storage (Barrels)	Staging Area	Distance to Site from Staging (Miles)	Response Times (Hours)				
									Staging ETA	Loadout Time	ETA to Site	Deployment Time	Total ETA
Note: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability. * - These components are additional operational requirements that must be procured in addition to the system identified. ** - These components are additional operational requirements for the packages to be used in an enhanced skimming deployment. *** - Specific barge names may vary.													
MSRC-360 Offshore Barge	MSRC (800) OIL-SPIL	Tampa, FL	Offshore Barge 67* Pressure Inflatable Boom Crucial Disc Skimmer 88/30 Backup - Crucial Disc Skimmer 56/30 *Appropriate Vessel Personnel * Offshore Tug X Band Radar Infrared Camera	1 1320' 1 1 1 9 2 1 1	11,122	36,000	Tampa, FL	508	4	1	63.5	1	70
***Moran/ New Hampshire	CGA (888) 242-2007	Houma, LA	Offshore Barge Personnel Offshore Tug	1 4 1	N/A	118,836	Houma, LA	149	24-72	0	19	1	44 to 92
***Moran/ Long Island	CGA (888) 242-2007	Houma, LA	Offshore Barge Personnel Offshore Tug	1 4 1	N/A	62,982	Houma, LA	149	24-72	0	19	1	44 to 92
***Moran/ Massachusetts	CGA (888) 242-2007	Houma, LA	Offshore Barge Personnel Offshore Tug	1 4 1	N/A	137,123	Houma, LA	149	24-72	0	19	1	44 to 92
***K-Sea DBL 101 Offshore Barge	CGA (888) 242-2007	Belle Chasse, LA	Offshore Barge Personnel * Offshore Tug	1 10 1	N/A	107,285	Houma, LA	149	24-72	0	19	1	44 to 92
***K-Sea DBL 102 Offshore Barge	CGA (888) 242-2007	Belle Chasse, LA	Offshore Barge Personnel * Offshore Tug	1 10 1	N/A	107,285	Houma, LA	149	24-72	0	19	1	44 to 92
***CTCo-2606 Offshore Barge	CGA (888) 242-2007	Houma, LA	Offshore Barge Personnel Offshore Tug	1 4 1	N/A	20,000	Morgan City, LA	170	24-72	0	21.5	1	47 to 95
***CTCo-5001 Offshore Barge	CGA (888) 242-2007	Houma, LA	Offshore Barge Personnel Offshore Tug	1 4 1	N/A	47,000	Morgan City, LA	170	24-72	0	21.5	1	47 to 95
***CTCo-2609 Offshore Barge	CGA (888) 242-2007	Houma, LA	Offshore Barge Personnel Offshore Tug	1 4 1	N/A	23,000	Morgan City, LA	170	24-72	0	21.5	1	47 to 95
***CTCo-2604 Offshore Barge	CGA (888) 242-2007	Houma, LA	Offshore Barge Personnel Offshore Tug	1 4 1	N/A	20,000	Morgan City, LA	170	24-72	0	21.5	1	47 to 95
												DERATED RECOVERY RATE (BBLS/DAY)	729,464
												STORAGE CAPACITY INCLUDING SKIMMING VESSELS (BARRELS)	917,357

Green Canyon 511 Exploration Sample Nearshore On-Water Recovery Activation List													
									Response Times (Hours)				
Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Effective Daily Recovery Capacity (EDRC in Bbls/Day)	Storage (Barrels)	Staging Area	Distance to Nearshore Environment (Miles)	Staging ETA	Loadout Time	ETA to Nearshore Environment	Deployment Time	Total ETA
* - These components are additional operational requirements that must be procured in addition to the system identified. NOTE: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability.													
SW CGA-73 FRV	CGA (888) 242-2007	Lake Charles, LA	Marco Belt Skimmer	2	21,500	249	Lake Charles, LA	35	2	0	2	1	5
			36" Auto Boom	150'									
			Personnel	5									
			56' SWS Vessel	1									
			* 14'-16' Alum. Flatboat	2									
FRV M/V Bastian Bay	CGA (888) 242-2007	Lake Charles, LA	Lori Brush Skimmer	2	15,257	65	Lake Charles, LA	35	2	0	2	1	5
			36" Boom	46'									
			46' Vessel	1									
			Personnel	4									
MSRC "Quick Strike"	MSRC (800) OIL-SPIL	Lake Charles, LA	LORI Brush Skimmer	2	5,000	50	Lake Charles, LA	35	2	1	3	1	7
			Personnel	3									
			47' Fast Response Boat	1									
SBS w/ Queensboro	MSRC (800) OIL-SPIL	Lake Charles, LA	Skimmer	1	905	400	Cameron, LA	10	4	1	1	1	7
			18" Boom	50'									
			Personnel	4									
			Self-propelled barge	1									
SBS w/ Queensboro	MSRC (800) OIL-SPIL	Lake Charles, LA	Skimmer	1	905	400	Cameron, LA	10	4	1	1	1	7
			18" Boom	50'									
			Personnel	4									
			Self-propelled barge	1									
SBS w/ Queensboro	MSRC (800) OIL-SPIL	Lake Charles, LA	Skimmer	1	905	400	Cameron, LA	10	4	1	1	1	7
			18" Boom	50'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									
SBS w/ Queensboro	MSRC (800) OIL-SPIL	Lake Charles, LA	Skimmer	1	905	400	Cameron, LA	10	4	1	1	1	7
			18" Boom	50'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									
SBS w/ Queensboro	MSRC (800) OIL-SPIL	Lake Charles, LA	Skimmer	1	905	400	Cameron, LA	10	4	1	1	1	7
			18" Boom	50'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									
SWS CGA-51 MARCO Shallow Water Skimmer	CGA (888) 242-2007	Lake Charles, LA	Marco Belt Skimmer	1	3,588	20	Cameron, LA	10	4	2	0.5	1	8
			* 18" Boom (contractor)	100'									
			Personnel	3									
			34' Skimming Vessel	1									
			Shallow Water Barge	1		249							
SBS w/ GT-185 w/adapter	MSRC (800) OIL-SPIL	Baton Rouge, LA	Skimmer	1	1,371	400	Cameron, LA	10	4.75	1	1	1	8
			18" Boom	50'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									
SBS w/ GT-185 w/adapter	MSRC (800) OIL-SPIL	Galveston, TX	Skimmer	1	1,371	400	Cameron, LA	10	5.25	1	1	1	9
			18" Boom	50'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									

Green Canyon 511 Exploration
Sample Nearshore On-Water Recovery Activation List

Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Effective Daily Recovery Capacity (EDRC in Bbls/Day)	Storage (Barrels)	Staging Area	Distance to Nearshore Environment (Miles)	Response Times (Hours)				
									Staging ETA	Loadout Time	ETA to Nearshore Environment	Deployment Time	Total ETA
* - These components are additional operational requirements that must be procured in addition to the system identified. NOTE: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability.													
SW CGA-74 FRV	CGA (888) 242-2007	Vermilion, LA	Marco Belt Skimmer	2	21,500	249	Vermilion, LA	104	2	0	6	1	9
			36" Auto Boom	150'									
			Personnel	4									
			56' SW Vessel	1									
			* 14'-16' Alum. Flatboat	2									
SBS w/ Queensboro	MSRC (800) OIL-SPIL	Galveston, TX	Skimmer	1	905	400	Cameron, LA	10	5.25	1	1	1	9
			18" Boom	50'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									
MSRC "Kvichak"	MSRC (800) OIL-SPIL	Galveston, TX	Marco I Skimmer	1	3,588	24	Cameron, LA	10	5.25	1	1	1	9
			Personnel	2									
			30' Shallow Water Vessel	1									
SWS CGA-55 Egmopol Shallow Water Skimmer	CGA (888) 242-2007	Morgan City, LA	Marco Skimmer	1	1,810	100	Cameron, LA	10	5	2	1.5	1	10
			* 18" Boom (contractor)	100'									
			Personnel	3									
			38' Skimming Vessel	1									
			Shallow Water Barge	1		249							
CGA-54 Egmopol Shallow Water Skimmer	CGA (888) 242-2007	Galveston, TX	Marco Belt Skimmer	1	1,810	100	Cameron, LA	10	5	2	1.5	1	10
			* 18" Boom (contractor)	100'									
			Personnel	3									
			34' Skimming Vessel	1									
			Shallow Water Barge	1		249							
SBS w/ Queensboro	MSRC (800) OIL-SPIL	Belle Chasse, LA	Skimmer	1	905	400	Cameron, LA	10	6.5	1	1	1	10
			18" Boom	50'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									
MSRC "Kvichak"	MSRC (800) OIL-SPIL	Belle Chasse, LA	Marco I Skimmer	1	3,588	24	Cameron, LA	10	6.5	1	1	1	10
			Personnel	2									
			30' Shallow Water Vessel	1									
SWS CGA-75 FRV	CGA (888) 242-2007	Galveston, TX	Lori Brush Skimmer	2	22,885	249	Galveston, TX	99	2	0	8	1	11
			36" Boom	150									
			60' Vessel	1									
			X Band Radar	1									
			Personnel	4									
SWS CGA-53 MARCO Shallow Water Skimmer	CGA (888) 242-2007	Leeville, LA	Marco Belt Skimmer	1	3,588	34	Cameron, LA	10	6.75	2	0.5	1	11
			* 18" Boom (contractor)	100'									
			Personnel	3									
			38' Skimming Vessel	1									
MSRC "Kvichak"	MSRC (800) OIL-SPIL	Pascagoula, MS	Marco I Skimmer	1	3,588	24	Cameron, LA	10	7.25	1	1	1	11
			Personnel	2									
			30' Shallow Water Vessel	1									
SBS w/ Queensboro	MSRC (800) OIL-SPIL	Pascagoula, MS	Skimmer	1	905	400	Cameron, LA	10	7.25	1	1	1	11
			18" Boom	50'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									

Green Canyon 511 Exploration
Sample Nearshore On-Water Recovery Activation List

Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Effective Daily Recovery Capacity (EDRC in Bbls/Day)	Storage (Barrels)	Staging Area	Distance to Nearshore Environment (Miles)	Response Times (Hours)				
									Staging ETA	Loadout Time	ETA to Nearshore Environment	Deployment Time	Total ETA
* - These components are additional operational requirements that must be procured in addition to the system identified. NOTE: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability.													
AARDVAC	MSRC (800) OIL-SPIL	Pascagoula, MS	Skimmer	1	3,840		Cameron, LA	10	7	1	1	1	11
			18" Boom	50'									
			Personnel	5									
			* Appropriate Vessel	2									
			* Temporary Storage	1		500							
SBS w/ GT-185 w/adapter	MSRC (800) OIL-SPIL	Pascagoula, MS	Skimmer	1	1,371	400	Cameron, LA	10	7.25	1	1	1	11
			18" Boom	50'									
			Personnel	4									
			Self-propelled barge	1									
MSRC "Kvichak"	MSRC (800) OIL-SPIL	Ingleside, TX	Marco I Skimmer	1	3,588	24	Cameron, LA	10	8	1	1	1	11
			Personnel	2									
			30' Shallow Water Vessel	1									
SBS w/ GT-185 w/adapter	MSRC (800) OIL-SPIL	Ingleside, TX	Skimmer	1	1,371	400	Cameron, LA	10	8	1	1	1	11
			18" Boom	50'									
			Personnel	4									
			Self-propelled barge	1									
FRV M/V RW Armstrong	CGA (888) 242-2007	Morgan City, LA	Lori Brush Skimmer	2	15,257	65	Morgan City, LA	157	2	0	9	1	12
			36" Boom	46'									
			46' Vessel	1									
			Personnel	4									
SWS CGA-52 MARCO Shallow Water Skimmer	CGA (888) 242-2007	Venice, LA	Marco Belt Skimmer	1	3,588	34	Cameron, LA	10	8	2	0.5	1	12
			* 18" Boom (contractor)	100'									
			Personnel	3									
			36' Skimming Vessel	1									
			Shallow Water Barge	1		249							
SW CGA-72 FRV	CGA (888) 242-2007	Morgan City, LA	Marco Belt Skimmer	2	21,500	249	Morgan City, LA	157	2	0	9	1	12
			36" Auto Boom	150'									
			Personnel	4									
			56' SWS Vessel	1									
			* 14'-16' Alum. Flatboat	2									
SBS w/ Queensboro	MSRC (800) OIL-SPIL	Memphis, TN	Skimmer	1	905	400	Cameron, LA	10	10.25	1	1	1	14
			18" Boom	60'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									
SBS w/ GT-185 w/adapter	MSRC (800) OIL-SPIL	Jacksonville, FL	Skimmer	1	1,371	400	Cameron, LA	10	13	1	1	1	17
			18" Boom	60'									
			Personnel	5									
			Non-self-propelled barge	1									
			*Appropriate Vessel	1									
SBS w/ Queensboro	MSRC (800) OIL-SPIL	Whiting, IN	Skimmer	1	905	400	Cameron, LA	10	13.5	1	1	1	17
			18" Boom	60'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									
SBS w/ Queensboro	MSRC (800) OIL-SPIL	Roxana, IL	Skimmer	1	905	400	Cameron, LA	10	15	1	1	1	18
			18" Boom	50'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									

Green Canyon 511 Exploration
Sample Nearshore On-Water Recovery Activation List

Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Effective Daily Recovery Capacity (EDRC in Bbls/Day)	Storage (Barrels)	Staging Area	Distance to Nearshore Environment (Miles)	Response Times (Hours)				
									Staging ETA	Loadout Time	ETA to Nearshore Environment	Deployment Time	Total ETA
* - These components are additional operational requirements that must be procured in addition to the system identified. NOTE: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability.													
SBS w/ GT-185 w/adapter	MSRC (800) OIL-SPIL	Tampa, FL	Skimmer	1	1,371	400	Cameron, LA	10	15	1	1	1	18
			18" Boom	50'									
			Personnel	5									
			Non-self-propelled barge	1									
			Push Boat	1									
SBS w/ GT-185 w/adapter	MSRC (800) OIL-SPIL	Savannah, GA	Skimmer	1	1,371	400	Cameron, LA	10	15.25	1	1	1	19
			18" Boom	50'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									
SWS CGA-76 FRV	CGA (888) 242-2007	Leeville, LA	Lori Brush Skimmer	2	22,885	249	Leeville, LA	213	2	0	16	1	19
			36" Boom	150									
			60' Vessel	1									
			X Band Radar	1									
			Personnel	4									
FRV CGA 58 Timbalier Bay	CGA (888) 242-2007	Aransas Pass, TX	Lori Brush Skimmer	2	15,257	65	Aransas Pass, TX	276	2	0	16	1	19
			36" Boom	46'									
			46' Vessel	1									
			Personnel	4									
AARDVAC	MSRC (800) OIL-SPIL	Miami, FL	Skimmer	1	3,840		Cameron, LA	10	18	1	1	1	21
			18" Boom	50'									
			Personnel	5									
			* Appropriate Vessel	2									
			* Temporary Storage	1		500							
MSRC "Kvichak"	MSRC (800) OIL-SPIL	Miami, FL	Marco I Skimmer	1	3,588	24	Cameron, LA	10	18	1	1	1	21
			Personnel	2									
			30' Shallow Water Vessel	1									
WP-1	MSRC (800) OIL-SPIL	Miami, FL	Skimmer	1	3,017		Cameron, LA	10	18	1	1	1	21
			18" Boom	50'									
			Personnel	5									
			*Appropriate Vessel	2									
			*Temporary Storage	1		500							
AARDVAC	MSRC (800) OIL-SPIL	Miami, FL	Skimmer	1	3,840		Cameron, LA	10	18	1	1	1	21
			18" Boom	50'									
			Personnel	5									
			* Appropriate Vessel	2									
			* Temporary Storage	1		500							
SWS CGA-77 FRV	CGA (888) 242-2007	Venice, LA	Lori Brush Skimmer	2	22,885	249	Venice, LA	287	2	0	20	1	23
			36" Boom	150									
			60' Vessel	1									
			X Band Radar	1									
			Personnel	4									
SBS w/ Queensboro	MSRC (800) OIL-SPIL	Toledo, OH	Skimmer	1	905	400	Cameron, LA	10	20	1	1	1	23
			18" Boom	50'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									
MSRC "Kvichak"	MSRC (800) OIL-SPIL	Virginia Beach, VA	Marco I Skimmer	1	3,588	24	Cameron, LA	10	21.5	1	1	1	25
			Personnel	2									
			30' Shallow Water Vessel	1									

Green Canyon 511 Exploration
Sample Nearshore On-Water Recovery Activation List

Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Effective Daily Recovery Capacity (EDRC in Bbls/Day)	Storage (Barrels)	Staging Area	Distance to Nearshore Environment (Miles)	Response Times (Hours)				
									Staging ETA	Loadout Time	ETA to Nearshore Environment	Deployment Time	Total ETA
* - These components are additional operational requirements that must be procured in addition to the system identified. NOTE: Total ETA might be effected by weather, sea state, lock closure, 3rd party vessel availability.													
SBS w/ GT-185 w/adapter	MSRC (800) OIL-SPIL	Virginia Beach, VA	Skimmer	1	1,371	400	Cameron, LA	10	22	1	1	1	25
			18" Boom	50'									
			Personnel	4									
			Self-propelled barge	1									
SW CGA-71 FRV	CGA (888) 242-2007	Aransas Pass, TX	Marco Belt Skimmer	2	21,500	249	Aransas Pass, TX	276	2	0	19	1	22
			36" Auto Boom	150'									
			Personnel	5									
			56' SWS Vessel	1									
			* 14'-16' Alum. Flatboat	2									
FRV M/V Grand Bay	CGA (888) 242-2007	Venice, LA	Lori Brush Skimmer	2	15,257	65	Venice, LA	287	2	0	19	1	22
			36" Boom	46'									
			46' Vessel	1									
			Personnel	4									
SBS w/ GT-185 w/adapter	MSRC (800) OIL-SPIL	Chesapeake City, MD	Skimmer	1	1,371	400	Cameron, LA	10	23.25	1	1	1	27
			18" Boom	50'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									
SBS w/ GT-185 w/adapter	MSRC (800) OIL-SPIL	Bayonne, NJ	Skimmer	1	1,371	400	Cameron, LA	10	24.5	1	1	1	28
			18" Curtain Internal Foam	50'									
			Personnel	4									
			Non-self-propelled barge	1									
			*Appropriate Vessel	1									
SBS w/ GT-185 w/adapter	MSRC (800) OIL-SPIL	Edison/Perth Amboy, NJ	Skimmer	1	1,371	400	Cameron, LA	10	25	1	1	1	28
			18" Boom	50'									
			Personnel	4									
			Self-propelled barge	1									
MSRC "Kvichak"	MSRC (800) OIL-SPIL	Edison/Perth Amboy, NJ	Marco I Skimmer	1	3,588	24	Cameron, LA	10	24.75	1	1	1	28
			Personnel	2									
			30' Shallow Water Vessel	1									
SBS w/ GT-185 w/adapter	MSRC (800) OIL-SPIL	Providence, RI	Skimmer	1	1,371	400	Cameron, LA	10	27	1	1	1	30
			18" Curtain Internal Foam	60'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									
SBS w/ GT-185	MSRC (800) OIL-SPIL	Everett, MA	Skimmer	1	1,371	400	Cameron, LA	10	28	1	1	1	31
			18" Boom	60'									
			Personnel	4									
			Non-self-propelled barge	1									
			Push Boat	1									
MSRC "Kvichak"	MSRC (800) OIL-SPIL	Portland, ME	Marco I Skimmer	1	3,588	24	Cameron, LA	10	30	1	1	1	33
			Personnel	2									
			30' Shallow Water Vessel	1									
SBS w/ WP-1	MSRC (800) OIL-SPIL	Portland, ME	Skimmer	1	3,017	400	Cameron, LA	10	30	1	1	1	33
			18" Boom	50'									
			Personnel	4									
			Self-propelled barge	1									
MSRC "Lightning"	MSRC (800) OIL-SPIL	Tampa, FL	LORI Brush Skimmer	2	5,000	50	Tampa, FL	822	2	1	68.5	1	73
			Personnel	3									
			47' Fast Response Boat	1									
DERATED RECOVERY RATE (BBLS/DAY)													315,008
SKIMMING VESSEL STORAGE CAPACITY (BARRELS)													15,979

Green Canyon 511 Exploration
Sample Shoreline Protection & Wildlife Support List

Supplier & Phone	Warehouse	Equipment Listing	Quantity	Staging Area	Response Times (Hours)			
					Staging ETA	Loadout Time	Deployment Time	Total ETA
USES Environmental (888) 279-9930	Hahnville, LA	Containment Boom - 18"	500'	Port Fourchon, LA	4	1	1	6
USES Environmental (888) 279-9930	Amelia, LA	Containment Boom - 18"	500'	Port Fourchon, LA	4	1	1	6
ES&H Environmental (877) 437-2634	Lake Charles, LA	Containment Boom - 10"	500'	Cameron, LA	4	1	1	6
		Containment Boom - 18"	15,000'					
		Containment Boom - 24"	5,000'					
		Jon Boat - 12' to 16'	3					
		Response Boats - 18' to 21'	2					
		Response Boats - 26' to 29'	2					
		Portable Skimmers	13					
		Wildlife Hazing Cannon	40					
Miller Env. Services (800) 929-7227	Sulphur, LA	Containment Boom - 10"	600'	Cameron, LA	4	1	1	6
		Containment Boom - 18"	14,000'					
		Jon Boats - 14' to 16'	2					
		Jon Boats - 16' w/25hp HP Outboard Motor	2					
		Air Boat - 18'	1					
		Work Boat - 18'	2					
		Response Boats - 24' - 28'	4					
		Portable Skimmers	5					
		Shallow Water Skimmers	1					
		Response Personnel	49					
USES Environmental (888) 279-9930	Marrero, LA	Containment Boom - 18"	600'	Port Fourchon, LA	4	1	1	6
USES Environmental (888) 279-9930	Lake Charles, LA	Containment Boom - 10"	100'	Cameron, LA	4	1	1	6
		Containment Boom - 18"	7,700'					
		Response Boats - 16'	3					
		Response Boats - 27'	1					
		Response Boats - 37'	1					
Clean Harbors (800) 645-8265	Port Arthur, TX	Containment Boom - 18" to 24"	3,000'	Cameron, LA	4	1	1	6
		Response Boats - 21' to 36'	2					
		Portable Skimmers	2					
		Response Personnel	54					
AMPOL (800) 482-6765	Port Arthur, TX	Containment Boom - 18" to 24"	16,000'	Cameron, LA	4	1	1	6
		Response Boats - 14' to 20'	2					
		Response Boats - 21' to 36'	1					
		Portable Skimmers	3					

Green Canyon 511 Exploration
Sample Shoreline Protection & Wildlife Support List

Supplier & Phone	Warehouse	Equipment Listing	Quantity	Staging Area	Response Times (Hours)			
					Staging ETA	Loadout Time	Deployment Time	Total ETA
Garner Environmental (800) 424-1716	Port Arthur, TX	Containment Boom - 6"	22,000'	Cameron, LA	4	1	1	6
		Response Boats - 14' to 20'	8					
		Response Boats - 21' to 36'	1					
		Portable Skimmers	3					
OMI (800) 645-6671	Port Arthur, TX	Containment Boom - 18" to 24"	4000'	Cameron, LA	4	1	1	6
		Response Boats - 14' to 20'	6					
		Response Boats - 21' to 36'	2					
		Shallow Water Skimmers	1					
Miller Env. Services (800) 929-7227	Beaumont, TX	Containment Boom - 18"	14,000'	Cameron, LA	4	1	1	6
		Response Boats - 18'	2					
		Response Boats - 24'	2					
		Shallow Water Skimmers	1					
		Response Personnel	47					
USES Environmental (888) 534-2744	Geismar, LA	Containment Boom - 18"	1,000'	Cameron, LA	5	1	1	7
		Response Boats - 16'	2					
		Portable Skimmers	1					
Clean Harbors (800) 645-8265	New Iberia, LA	Containment Boom - 18" to 24"	33,800'	Cameron, LA	4.5	1	1	7
		Containment Boom - 6" to 10"	500'					
		Response Boats - 21' to 36'	4					
Clean Harbors (800) 645-8265	Baton Rouge, LA	Containment Boom - 18" to 24"	14,000'	Cameron, LA	4.75	1	1	7
		Response Boats - 14' to 20'	1					
		Portable Skimmers	3					
		Response Personnel	13					
AMPOL (800) 482-6765	New Iberia, LA	Containment Boom - 6" to 10"	4,150'	Cameron, LA	4.5	1	1	7
		Containment Boom - 18" to 24"	34,050'					
		Response Boats - 14' to 20'	3					
		Response Boats - 21' to 36'	3					
		Portable Skimmers	27					
ES&H Environmental (877) 437-2634	Morgan City, LA	Containment Boom - 10"	2,000'	Cameron, LA	5	1	1	7
		Containment Boom - 18"	500'					
		Jon Boat - 12' to 16'	3					
		Response Boats - 18' to 21'	2					
		Response Boats - 22' to 25'	1					
		Portable Skimmers	2					
		Wildlife Hazing Cannon	12					
ES&H Environmental (877) 437-2634	Lafayette, LA	Containment Boom - 10"	500'	Cameron, LA	4.25	1	1	7
		Containment Boom - 18"	13,000'					
		Jon Boat - 12' to 16'	3					
		Response Boats - 18' to 21'	1					
		Response Boats - 22' to 25'	1					
		Response Boats - 26' to 29'	1					
		Portable Skimmers	4					
		Wildlife Hazing Cannon	12					
Wildlife Ctr. of Texas (713) 861-9453	Baton Rouge, LA	Wildlife Specialist - Personnel	6 to 20	Cameron, LA	4.75	1	1	7

Green Canyon 511 Exploration Sample Shoreline Protection & Wildlife Support List								
					Response Times (Hours)			
Supplier & Phone	Warehouse	Equipment Listing	Quantity	Staging Area	Staging ETA	Loadout Time	Deployment Time	Total ETA
OMI (800) 645-6671	Port Allen, LA	Containment Boom - 18" to 24"	2500'	Cameron, LA	4.45	1	1	7
		Containment Boom - 6" to 10"	500'					
		Response Boats - 16'	2					
		Response Boats - 25 to 33'	1					
		Shallow Water Skimmers	1					
		Response Personnel	6					
OMI (800) 645-6671	Morgan City, LA	Containment Boom - 18" to 24"	2,500	Cameron, LA	5	1	1	7
		Containment Boom - 6" to 10"	400'					
		Response Boats - 16'	2					
		Response Boats - 25' to 28'	1					
		Portable Skimmers	3					
		Response Personnel	3					
OMI (800) 645-6671	New Iberia, LA	Containment Boom - 18" to 24"	12,000'	Cameron, LA	4.5	1	1	7
		Containment Boom - 6" to 10"	300'					
		Response Boats - 16'	3					
		Response Boats (Barge) - 25' to 33'	1					
		Response Boats - 25' to 28'	1					
		Portable Skimmers	8					
		Response Personnel	8					
Phoenix Pollution Control & Environmental Services (281) 838-3400	Baytown, TX	Containment Boom - 18"	13,000'	Cameron, LA	4.5	1	1	7
		Containment Boom - 10"	1,150'					
		Response Boats - 16'	6					
		Response Boats - 20'	3					
		Response Boats - 24'	1					
		Response Boats - 35'	2					
		Portable Skimmers	24					

Green Canyon 511 Exploration Sample Shoreline Protection & Wildlife Support List								
					Response Times (Hours)			
Supplier & Phone	Warehouse	Equipment Listing	Quantity	Staging Area	Staging ETA	Loadout Time	Deployment Time	Total ETA
Garner Environmental (800) 424-1716	Deer Park, TX	Containment Boom - 18"	16,000'	Cameron, LA	4.75	1	1	7
		Response Boats - 12'	2					
		Response Boats - 16' to 20'	5					
		Respons Boats - 30'	2					
		Portable Skimmers	13					
Garner Environmental (800) 424-1716	La Marque, TX	Containment Boom - 6"	9,500'	Cameron, LA	5	1	1	7
		Response Boats - 16'	5					
		Response Boats - 24'	1					
		Portable Skimmers	7					
ES&H Environmental (877) 437-2634	Houston, TX	Containment Boom - 10"	500'	Cameron, LA	4.75	1	1	7
		Containment Boom - 18"	13,000'					
		Containment Boom - 24"	5,000'					
		Jon Boat - 12' to 16'	2					
		Response Boats - 26' to 29'	2					
		Portable Skimmers	2					
		Wildlife Hazing Cannon	12					
OMI (800) 645-6671	Houston, TX	Containment Boom - 18" to 24"	4000'	Cameron, LA	4.75	1	1	7
		Response Boats - 16'	3					
		Response Boats - 25' to 28'	1					
		Portable Skimmers	1					
Miller Env. Services (800) 929-7227	Houston, TX	Containment Boom - 18"	12,000'	Cameron, LA	4.75	1	1	7
		Shallow Water Skimmers	1					
		Response Boats - 28'	1					
		Responder Personnel	38					
Clean Harbors (800) 645-8265	Houston, TX	Containment Boom - 18" to 24"	4,500'	Cameron, LA	4.75	1	1	7
		Response Boats - 14' to 20'	2					
		Response Boats - 21' to 36'	3					
		Portable Skimmers	1					
		Response Personnel	14					
USES Environmental (888) 279-9930	Houston, TX	Containment - 18"	10,000'	Cameron, LA	4.75	1	1	7
		Response Boats - 16'	4					
		Response Boats - 26'	1					
		Portable Skimmers	1					
Wildlife Ctr. of Texas (713) 861-9453	Houston, TX	Wildlife Specialist - Personnel	6 to 20	Cameron, LA	4.75	1	1	7
CGA (888) 242-2007	Harvey, LA	Wildlife Rehab Trailer	1	Cameron, LA	6	1	1	8
		Wildlife Husbandry Trailer	1					
		Support Trailer	3					
		Bird Scare Cannons	120					
		Contract Truck (Third Party)	3					
		Personnel (Responder/Mechanic)	4					
AMPOL (800) 482-6765	Harvey, LA	Containment Boom - 18" to 24"	8,000'	Cameron, LA	6	1	1	8
		Containment Boom - 6" to 10"	3,000'					
OMI (985) 798-1005	Houma, LA	Containment Boom - 18" to 24"	2,000'	Cameron, LA	5.75	1	1	8
		Containment Boom - 6" to 10"	500'					
		Response Boats - 16'	2					
		Response Boats - 25' to 28'	1					
		Response Boats - (Cabin Boat) 27' to 30'	1					
		Shallow Water Skimmers	3					

Green Canyon 511 Exploration
Sample Shoreline Protection & Wildlife Support List

Supplier & Phone	Warehouse	Equipment Listing	Quantity	Staging Area	Response Times (Hours)			
					Staging ETA	Loadout Time	Deployment Time	Total ETA
Lawson Environmental Service (985) 876-0420	Houma, LA	Containment Boom - 18"	30,000'	Cameron, LA	5.75	1	1	8
		Containment Boom - 12"	2,000'					
		Containment Boom - 10"	9,500'					
		Response Boats - 14'	10					
		Response Boats - 16'	6					
		Response Boats - 20'	5					
		Response Boats - 24'	8					
		Response Boats - 26'	4					
		Response Boats - 28'	7					
		Response Boats - 32'	4					
		Portable Skimmers	6					
ES&H Environmental (877) 437-2634	Houma, LA	Containment Boom - 10"	2,000'	Cameron, LA	5.75	1	1	8
		Containment Boom - 18"	20,000'					
		Containment Boom - 24"	5,000'					
		Jon Boat - 12' to 16'	30					
		Response Boats - 22' to 25'	2					
		Response Boats - 26' to 29'	4					
		Portable Skimmers	23					
		Shallow Water Skimmers	2					
		Wildlife Hazing Cannon	57					
ES&H Environmental (877) 437-2634	Golden Meadow, LA	Containment Boom - 10"	1,000'	Cameron, LA	6.25	1	1	9
		Containment Boom - 18"	13,000					
		Jon Boat - 12' to 16'	2					
		Response Boats - 18' to 21'	1					
		Response Boats - 22' to 25'	1					
		Response Boats - 26' to 29'	1					
		Portable Skimmers	5					
		Wildlife Hazing Cannon	12					
ES&H Environmental (877) 437-2634	Port Fourchon, LA	Containment Boom - 18"	1000'	Cameron, LA	7	1	1	9
		Response Boats - 22' to 25'	1					
		Portable Skimmers	1					
ES&H Environmental (877) 437-2634	Belle Chasse, LA	Containment Boom - 10"	1,500'	Cameron, LA	6.5	1	1	9
		Containment Boom - 18"	15,500'					
		Containment Boom - 24"	5,000'					
		Jon Boat - 12' to 16'	4					
		Response Boats - 18' to 21'	1					
		Response Boats - 22' to 25'	1					
		Response Boats - 26' to 29'	3					
		Portable Skimmers	10					
		Wildlife Hazing Cannon	50					

Green Canyon 511 Exploration
Sample Shoreline Protection & Wildlife Support List

Supplier & Phone	Warehouse	Equipment Listing	Quantity	Staging Area	Response Times (Hours)			
					Staging ETA	Loadout Time	Deployment Time	Total ETA
OMI (800) 645-6671	Belle Chasse, LA	Containment Boom - 18" to 24"	4,500'	Cameron, LA	6.5	1	1	9
		Containment Boom - 6" to 10"	500'					
		Response Boats - 20'	1					
		Response Boats - 25' to 28'	2					
		Portable Skimmers	12					
		Shallow Water Skimmers	1					
		Bird Scare Cannons	12					
		Response Personnel	24					
OMI (800) 645-6671	Galliano, LA	Containment Boom - 18" to 24"	2,000'	Cameron, LA	6.25	1	1	9
		Containment Boom - 6" to 10"	500'					
		Response Boats - 16'	1					
		Response Boats (Barge) - 25' to 33'	1					
		Response Boats - 25' to 28'	1					
		Portable Skimmers	3					
USES Environmental (888) 279-9930	Meraux, LA	Containment Boom - 18"	6,000'	Cameron, LA	6.25	1	1	9
		Containment Boom - 10"	1,000'					
		Response Boats - 16'	23					
		Response Boats - 18'	1					
		Response Boats - 24'	1					
		Response Boats - 26'	2					
		Response Boats - 28'	1					
		Portable Skimmers	2					
USES Environmental (888) 279-9930	Lafitte, LA	Containment Boom - 18"	1,000'	Cameron, LA	6.5	1	1	9
		Response Boats - 18'	2					
USES Environmental (888) 279-9930	Biloxi, MS	Containment Boom - 18"	2,000'	Cameron, LA	6.75	1	1	9
		Response Boats - 16'	1					
AMPOL (800) 482-6765	Venice, LA	Containment Boom - 18" to 24"	2,250'	Cameron, LA	7.75	1	1	10
		Response Boats - 14' to 20'	2					
		Response Boats - 21' to 36'	1					
		Portable Skimmers	2					
ES&H Environmental (877) 437-2634	Venice, LA	Containment Boom - 10"	2,000'	Cameron, LA	7.75	1	1	10
		Containment Boom - 18"	13,000'					
		Containment Boom - 24"	10,000					
		Jon Boat - 12' to 16'	4					
		Response Boats - 22' to 25'	1					
		Response Boats - 26' to 29'	2					
		Portable Skimmers	5					
		Wildlife Hazing Cannon	25					

Green Canyon 511 Exploration
Sample Shoreline Protection & Wildlife Support List

Supplier & Phone	Warehouse	Equipment Listing	Quantity	Staging Area	Response Times (Hours)			
					Staging ETA	Loadout Time	Deployment Time	Total ETA
OMI (800) 645-6671	Venice, LA	Containment Boom - 18" to 24"	1,500'	Cameron, LA	7.75	1	1	10
		Response Boats - 16'	4					
		Response Boats (Barge) - 25' to 33'	1					
		Response Boats - 25' to 28'	2					
		Response Boats - (Cabin Boat) 27' to 30'	1					
		Shallow Water Skimmers	3					
		Portable Skimmers	2					
USES Environmental (888) 279-9930	Venice, LA	Containment Boom - 18"	10,000'	Cameron, LA	7.75	1	1	10
		Response Boats - 16'	15					
		Response Boats - 26'	2					
		Response Boats - 30'	1					
		Portable Skimmers	2					
		Shallow Water Skimmers	1					
Miller Env. Services (800) 929-7227	Corpus Christi, TX	Containment Boom - 10"	2,000'	Cameron, LA	8	1	1	10
		Containment Boom - 18"	30,000'					
		Jon Boats - 14' to 16' w/25hp motor	4					
		Jon Boats - 16' to 18' w/Outboard motor	4					
		Air Boat - 14'	1					
		Response Boats - 24' to 26'	4					
		Portable Skimmers	6					
		Shallow Water Skimmers	2					
		Response Personnel	142					
USES Environmental (888) 279-9930	Mobile, AL	Containment Boom - 10"	800'	Cameron, LA	8	1	1	10
		Containment Boom - 18"	5,000'					
		Response Boats - 16'	1					
		Response Boats - 18'	1					
		Response Boats - 20'	1					
		Response Boats - 26'	1					
		Portable Skimmers	2					
USES Environmental (888) 279-9930	Memphis, TN	Containment Boom - 6"	850'	Cameron, LA	10.25	1	1	13
		Containment Boom - 12"	300'					
		Containment Boom - 18"	5,000'					
		Response Boats - 12'	3					
		Response Boats - 14'	5					
		Response Boats - 16'	2					
		Response Boats - 24'	1					
		Response Boats - 28'	1					
		Portable Skimmers	2					
Tri-State Bird Rescue & Research, Inc. (800) 261-0980	Newark, DE	Wildlife Specialist - Personnel	6 to 12	Cameron, LA	22.75	1	1	25

Appendix J
Environmental Monitoring Information

(a) Monitoring Systems

Hess subscribes to WeatherOps Commander which provides access to real time weather conditions, and provides periodic updates on impending inclement weather conditions such as tropical depressions, storms and/or hurricanes entering the Gulf of Mexico.

Hess also relies on the National Weather Service to support the subscribed service. During impending inclement weather conditions, Hess closely coordinates the activity with our contractors and field personnel to ensure the safety of people for evacuations to ensure protection of the environment and the facility/equipment.

(b) Incidental Takes

There is no reason to believe that any protected species listed under the ESA or MMPA may be incidentally taken by the activities proposed under this DOCD. Hess will comply with BOEM NTL 2016-G01 *Vessel Strike Avoidance and Injured Dead Protected Species Reporting* and NTL 2016-G02 *Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program*. Additionally, Hess will comply with BSEE NTL 2015-G03 *Marine Trash and Debris Awareness and Elimination.*

Appendix K
Lease Stipulations Information

Military Warning Area

Hess Corporation, when operating or causing to be operated on its behalf, any boat, ship, or aircraft traffic into the individual designated warning areas shall enter into an agreement with the commander of the headquarters for MWA-59A prior to commencing such traffic. Such an agreement will provide for positive control of boats, ships, and aircraft operating into the warning areas at all times.

MWA 59

Naval Air Station
JRB 159 Fighter Wing
400 Russell Avenue, Box 27
Building 285 (Operations)
New Orleans, Louisiana 70143-0027
Telephone: (504) 391-8695/8696

Marine Protected Species

MMS implemented this stipulation to reduce the potential taking of marine protected species (sea turtles, marine mammals, Gulf sturgeon, and other listed marine species). Hess will comply with BOEM NTL 2016-G01 *Vessel Strike Avoidance and Injured Dead Protected Species Reporting* and NTL 2016-G02 *Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program*. Additionally, Hess will comply with BSEE NTL 2015-G03 *Marine Trash and Debris Awareness and Elimination.*

Hess Corporation will abide by all terms of the mineral lease.

Appendix L
Environmental Mitigation Measures Information

(a) Description of measures taken to avoid, minimize and mitigate impacts to marine and coastal environments, habitats, biota and threatened and/or endangered species:

Hess Corporation will implement mitigation measures required by all applicable Federal & State requirements, including, but not limited to those concerning: Air emissions, ocean discharges, solid and liquid waste disposal and internal Hess standards and policies. Project activities will be conducted in accordance with the Regional Oil Spill Response Plan. The EIA included under this plan discusses site-specific impacts and mitigation measures as relative to activities proposed under this Supplemental EP.

(b) Incidental Takes

There is no reason to believe that a protected species may be incidentally taken by the proposed activities, however, Hess Corporation will adhere to the requirements set forth in the following documents, as applicable, to avoid or minimize impacts to any of the species listed in the ESA as a result of the operations proposed to be conducted herein.

Hess will comply with BOEM NTL 2016-G01 *Vessel Strike Avoidance and Injured Dead Protected Species Reporting* and NTL 2016-G02 *Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program*. Additionally, Hess will comply with BSEE NTL 2015-G03 *Marine Trash and Debris Awareness and Elimination.*

Appendix M
Decommissioning Information

This section is not required for Supplemental Exploration Plans in the Gulf of Mexico.

Appendix N
Related Facilities and Operations Information

No production is proposed under this Supplemental Exploration Plan; therefore this section is not required.

Appendix O
Support Vessels and Aircraft Information

(a) General

Type	Max Fuel Tank Storage Capacity	Max No. in Area at Any Time	Trip Frequency or Duration
Supply Boats	500 bbls	2	4 times weekly
Crew Boats	500 bbls	5	1 times weekly
Aircraft	560 gallons	2	5 times weekly

(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
180 feet	1,500 bbls	3 per week	From the shorebase in Fourchon, LA to the Flying Dutchman/ field

(c) Drilling Fluids Transportation

This Supplemental Exploration Plan does not propose activities that will affect the state of Florida therefore this section is not applicable in accordance with NTL 2008-G04.

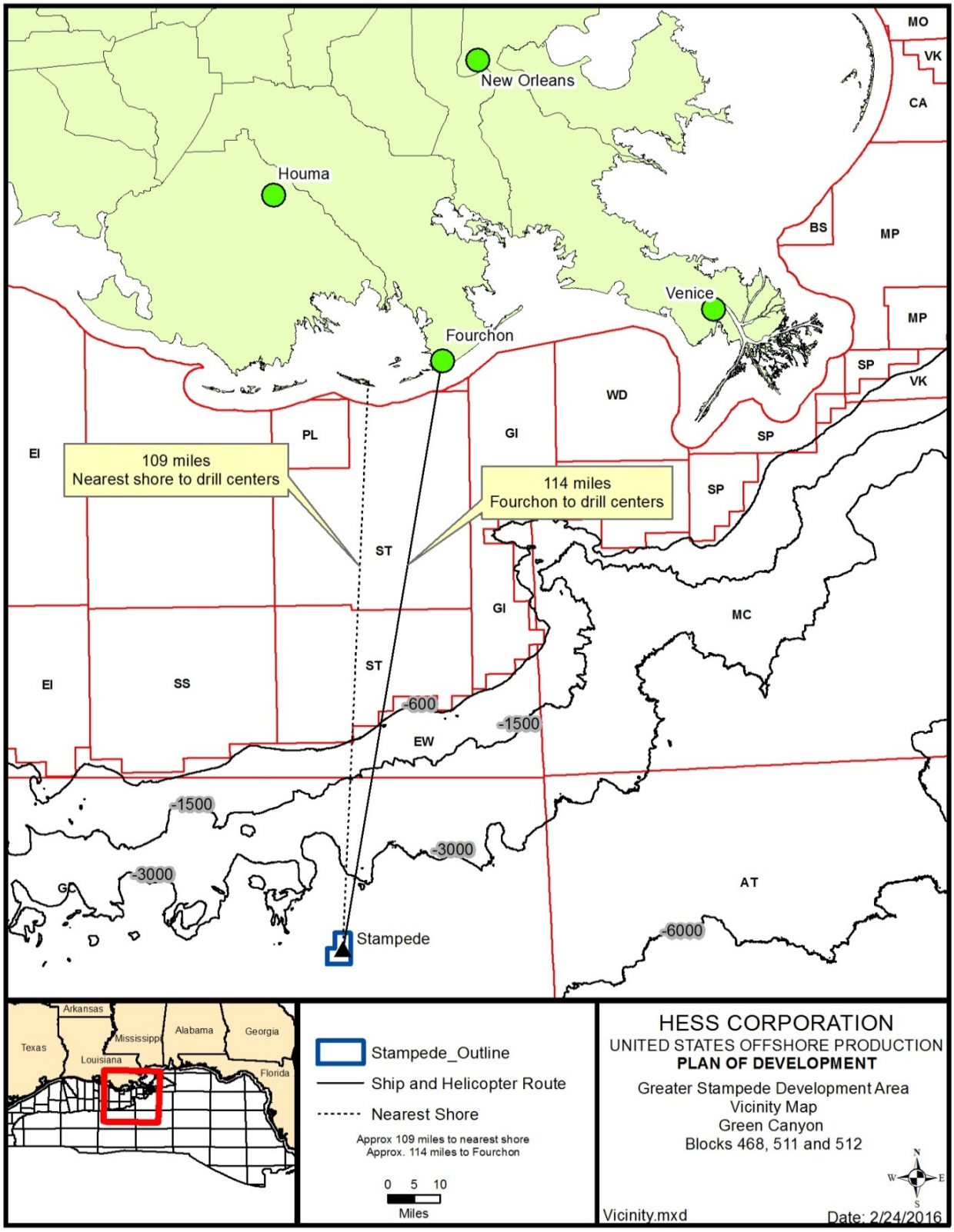
(d) Solid and Liquid Wastes Transportation

Information regarding solid and liquid wastes transportation is contained within the Water Quality Tables included under Appendix G attachments.

(e) Vicinity Map

Enclosed as under Appendix O Attachment, is a vicinity map showing the location of the activities proposed relative to the shoreline, and the primary route(s) of the support vessels and aircraft that will be taken when traveling between the onshore support facilities and the vessels in the field.

Appendix O Attachment
Vicinity Map



PUBLIC INFORMATION

Appendix P
Onshore Support Facilities Information

(a) General

Name	Location	Existing, New or Modified
Hess Shorebase	Fourchon, LA	Existing

(b) Support Base Construction or Expansion

Hess Corporation does not propose the construction or expansion of a support base to support the activities proposed under this plan, therefore this section is not required.

(c) Support Base Construction or Expansion Timetable

Hess Corporation does not propose the construction or expansion of a support base to support the activities proposed under this plan, therefore this section is not required.

(d) Waste Disposal

Information regarding solid and liquid wastes transportation and disposal is contained within the Water Quality Tables included under Appendix G attachments.

Appendix Q
Sulphur Operations Information

There is no production proposed under this Exploration Plan, therefore this section is not required.

Appendix R
Coastal Zone Management Act Information

The States of Texas, Louisiana, Mississippi, Alabama, and Florida have federally-approved coastal zone management programs (CZMP). Applicants for an OCS plan submitted to the BOEM must provide a certification with necessary data and information for the affected State to determine that the proposed activity(s) complies with the enforceable policies of each State's approved program, and that such activity will be conducted in a manner consistent with the program.

Hess Corporation will comply with all existing Federal and State laws, regulations and relevant enforceable program policies in each affected State's Coastal Zone Management Program.

Coastal Zone Management Certification for the State of Louisiana is not required for Supplemental EPs.

Hess Corporation (Hess)

Supplemental Exploration Plan
Green Canyon Block Number 511
OCS-G 34551

(A) IMPACT PRODUCING FACTORS

ENVIRONMENTAL IMPACT ANALYSIS WORKSHEET

Environment Resources	Impact Producing Factors (IPFs) Categories and Examples Refer to recent GOM 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			X(8)	X
Sea Turtles	X(8)	X			X(8)	X
Air quality	X(9)					
Shipwreck sites (known or potential)			(7)			
Prehistoric archaeological sites			(7)			
Vicinity of Offshore Location						
Essential fish habitat		X			X(6)	
Marine and pelagic birds					X	X
Public health and safety					(5)	
Coastal and Onshore						
Beaches					X(6)	X
Wetlands					X(6)	
Shore birds and coastal nesting birds					X6)	
Coastal wildlife refuges						
Wilderness areas						

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 OCS lease;
   - Essential Fish Habitat (EFH) criteria of 500 ft. from any no-activity zone; or
   - Proximity of any submarine bank (500 ft. buffer zone) with relief greater than 2 meters that is not protected by the Topographic Features Stipulation attached to an OCS lease.
2) Activities with any bottom disturbance within an OCS lease block protected through the Live Bottom (Pinnacle Trend) Stipulation attached to an OCS lease.
3) Activities within any Eastern Gulf OCS block where seafloor habitats are protected by the Live Bottom (Low-Relief) Stipulation attached to an OCS lease.
4) Activities on blocks designated by the BOEM as being in water depths 300 meters or greater.
5) Exploration or production activities where H2S concentrations greater than 500 ppm might be encountered.
6) All activities that could result in an accidental spill of produced liquid hydrocarbons or diesel fuel that you determine would impact these environmental resources. If the proposed action is located a sufficient distance from a resource that no impact would occur, the EIA can note that in a sentence or two.
7) All activities that involve seafloor disturbances, including anchor emplacements, in any OCS block designated by the BOEM as having high-probability for the occurrence of shipwrecks or prehistoric sites, including such blocks that will be affected that are adjacent to the lease block in which your planned activity will occur. If the proposed activities are located a sufficient distance from a shipwreck or 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.

(B) Analysis

Site-Specific at Green Canyon Block 511

Proposed operations consist of the drilling and completion of two locations, FD002C and FD002D.

The operations will be conducted with a Dynamically Positioned drillship.

1. Designated Topographic Features

Potential IPFs on topographic features include effluents and accidents.

Effluents: Green Canyon Block 511 is 41 miles from the closest designated Topographic Features Stipulation Block (Diaphus Bank); therefore, no adverse impacts are expected.

Accidents: It is unlikely that an accidental surface or subsurface spill would occur from the proposed activities (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 m 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 Mexico are found below 10 m, no oil from a surface spill could 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 Hess's Regional OSRP (refer to information submitted in **Section 8**).

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

2. Pinnacle Trend Area Live Bottoms

Potential IPFs on pinnacle trend area live bottoms include effluents and accidents.

Effluents: Green Canyon Block 511 is 172 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 activities (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 m 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 applicable due to the distance of these blocks from a live bottom (pinnacle trend) area. The activities proposed in this plan will be covered by Hess's Regional OSRP (refer to information submitted in **Section 8**).

There are no other IPFs (including emissions, physical disturbances to the seafloor and wastes sent to shore for disposal) from the proposed activities which could impact a live bottom (pinnacle trend) area.

3. Eastern Gulf Live Bottoms

Potential IPFs on Eastern Gulf live bottoms include effluents and accidents.

Effluents: Green Canyon Block 511 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 activities (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 m 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 applicable due to the distance of these blocks from a live bottom area. The activities proposed in this plan will be covered by Hess's Regional OSRP (refer to information submitted in **Section 8**).

There are no other IPFs (including emissions, physical disturbances to the seafloor and wastes sent to shore for disposal) from the proposed activities which could impact an Eastern Gulf live bottom area.

4. Benthic Communities

There are no IPFs (including emissions, physical disturbances to the seafloor, wastes sent to shore for disposal, or accidents) from the proposed activities that could cause impacts to benthic communities.

A Dynamically Positioned drillship is being used for the proposed activities; therefore, only an insignificant amount of seafloor will be disturbed. Because physical disturbances to the seafloor will be minimized by the use of a Dynamically Positioned drillship, Hess's proposed operations in Green Canyon Block 511 would not cause impacts to benthic communities.

5. Water Quality

IPFs that could result in water quality degradation from the proposed operations in Green Canyon Block 511 include effluents and accidents.

Effluents: Levels of contaminants in drilling muds and cuttings and produced water discharges, discharge-rate restrictions and monitoring and toxicity testing are regulated by the EPA NPDES permit, thereby eliminating many significant biological or ecological effects. Operational discharges are not expected to cause significant adverse impacts to water quality.

Accidents: Oil spills have the potential to alter offshore water quality; however, it is unlikely that an accidental surface or subsurface spill would occur from the proposed activities. Between 1980 and 2000, OCS operations produced 4.7 billion barrels of oil and spilled only 0.001 percent of this oil, or 1 bbl for every 81,000 bbl produced. The spill risk related to a diesel spill from drilling operations is even less. Between 1976 and 1985, (years for which data were collected), there were 80 reported diesel spills greater than one barrel associated with drilling activities. Considering that there were 11,944 wells drilled, this is a 0.7 percent probability of an occurrence. 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. The activities proposed in this plan will be covered by Hess's Regional Oil Spill Response Plan (refer to information submitted in **Section 8**).

There are no other IPFs (including emissions, physical disturbances to the seafloor, and wastes sent to shore for disposal) from the proposed activities which could cause impacts to water quality.

6. Fisheries

IPFs that could cause impacts to fisheries as a result of the proposed operations in Green Canyon Block 511 include effluents and accidents.

Effluents: Effluents such as drilling fluids and cuttings discharges contain components and properties which are detrimental to fishery resources. Moderate petroleum and metal contamination of sediments and the water column can occur out to several hundred meters down-current from the discharge point. Offshore discharges are expected to disperse and dilute to very near background levels in the water column or on the seafloor within 3,000 m of the discharge point, and are expected to have negligible effect on fisheries.

Accidents: An accidental oil spill has the potential to cause some detrimental effects on fisheries; however, it is unlikely that such an event would occur from the proposed activities (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 Hess's Regional OSRP (refer to information submitted in **Section 8**).

There are no IPFs from emissions, physical disturbances to the seafloor or wastes sent to shore for disposal from the proposed activities which could cause impacts to fisheries.

7. Marine Mammals

GulfCet II studies 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. IPFs that could cause impacts to marine mammals as a result of the proposed operations in Green Canyon Block 511 include emissions, effluents, discarded trash and debris, and accidents.

Emissions: Noises from drilling activities, support 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.

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

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

Hess will operate in accordance with the regulations 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.

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 Hess management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

Accidents: Collisions between support vessels and 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 when they are sighted. Vessel personnel should use a Gulf of Mexico reference guide to help identify the twenty-one species of whales and dolphins, and the single species of manatee that may be encountered in the Gulf of Mexico OCS. 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 1-877-433-8299 (http://www.nmfs.noaa.gov/pr/health/report.htm#southeast). 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 a contract vessel, the BOEM must be notified within 24 hours of the strike by email to 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.

Oil spills have the potential to cause sublethal oil-related injuries and spill-related deaths to marine mammals. However, it is unlikely that an accidental oil spill would occur from the proposed activities (refer to **Item 5**, Water Quality). Oil spill response activities may increase vessel traffic in the area, which could add to changes in cetacean behavior and/or distribution, thereby causing additional stress to the animals. The effect of oil dispersants on cetaceans is not known. The acute toxicity of oil dispersant chemicals included in Hess'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 Hess's OSRP (refer to information submitted in accordance with **Section 8**).

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

8. Sea Turtles

IPFs that could cause impacts to sea turtles as a result of the proposed operations include emissions, effluents, discarded trash and debris, and accidents. 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.

Emissions: Noise from drilling activities, support vessels, and helicopters may elicit a startle reaction from sea turtles, but this is a temporary disturbance.

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

Discarded trash and debris: Both entanglement in, and ingestion of, debris have caused the death or serious injury of sea turtles (Balazs, 1985). The limited amount of marine debris, if any, resulting from the proposed activities is not expected to substantially harm sea turtles. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V and the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA). Hess will operate in accordance with the regulations 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.

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 Hess management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

Accidents: Collisions between support vessels and 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 when they are sighted. Vessel crews should use a reference guide to help identify the five species of sea turtles that may be encountered in the Gulf of Mexico OCS. 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). 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 a contract vessel, the BOEM must be notified within 24 hours of the strike by email to

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.

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 activities (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 Hess's Regional Oil Spill Response Plan (refer to information submitted in accordance with **Section 8**).

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

9. Air Quality

The projected air emissions identified in **Section 7** are not expected to affect the OCS air quality primarily due to distance to the shore or to any Prevention of Significant Deterioration Class I air quality area such as the Breton Wilderness Area. Green Canyon Block 511 is beyond the 200 kilometer (124 mile) buffer for the Breton Wilderness Area and is 108 miles from the coastline. Therefore, no special mitigation, monitoring, or reporting requirements apply with respect to air emissions.

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 Green Canyon Block 511 from the coastline. There are no other IPFs (including effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal) from the proposed activities which could impact air quality.

10. Shipwreck Sites (known or potential)

Potential IPFs that could impact known or unknown shipwreck sites as a result of the proposed operations in Green Canyon Block 511 include disturbances to the seafloor.

Physical disturbances to the seafloor: A Dynamically Positioned drillship is being used for the proposed activities; therefore, only an insignificant amount of seafloor will be disturbed. Because physical disturbances to the seafloor will be minimized by the use of a Dynamically Positioned drillship, Hess's proposed operations in Green Canyon Block 511 would not cause impacts to shipwreck sites.

Additionally, Green Canyon Block 511 is not located in or adjacent to an OCS block designated by BOEM as having a high probability for occurrence of shipwrecks, therefore, no adverse impacts are expected.

There are no other IPFs (including emissions, effluents, wastes sent to shore for treatment or disposal, or accidents) from the proposed activities that could cause impacts to shipwreck sites.

11. Prehistoric Archaeological Sites

Potential IPFs that could cause impacts to prehistoric archaeological sites as a result of the proposed operations in Green Canyon Block 511 include disturbances to the seafloor.

Physical disturbances to the seafloor: A Dynamically Positioned drillship is being used for the proposed activities; therefore, only an insignificant amount of seafloor will be disturbed. Because physical disturbances to the seafloor will be minimized by the use of a Dynamically Positioned drillship, Hess's proposed operations in Green Canyon Block 511 would not cause impacts to prehistoric archaeological sites.

Additionally, Green Canyon Block 511 is located outside the Archaeological Prehistoric high probability line, therefore, no adverse impacts are expected.

There are no other IPFs (including emissions, effluents, wastes sent to shore for treatment or disposal, or accidents) from the proposed activities which could impact prehistoric archeological sites.

Vicinity of Offshore Location

1. Essential Fish Habitat (EFH)

IPFs that could cause impacts to EFH as a result of the proposed operations in Green Canyon Block 511 include effluents and accidents. EFH includes all estuarine and marine waters and substrates in the Gulf of Mexico.

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

Accidents: An accidental oil spill has the potential to cause some detrimental effects on EFH. Oil spills that contact coastal bays and estuaries, as well as OCS waters when pelagic eggs and larvae are present, have the greatest potential to affect fisheries. However, it is unlikely that an oil spill would occur from the proposed activities (refer to **Item 5**, Water Quality). The activities

proposed in this plan will be covered by Hess's Regional OSRP (refer to information submitted in **Section 8**).

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

2. Marine and Pelagic Birds

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

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

Accidents: An oil spill would cause localized, low-level petroleum hydrocarbon contamination. However, it is unlikely that an oil spill would occur from the proposed activities (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 Hess's Regional OSRP (refer to information submitted in **Section 8**).

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 and the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA). Hess will operate in accordance with the regulations 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. 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 Hess management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE. Debris, if any, from these proposed activities will seldom interact with marine and pelagic birds; therefore, the effects will be negligible.

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

3. Public Health and Safety Due to Accidents.

There are no IPFs (emissions, effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal or accidents, including an accidental H_2S release) from the proposed activities which could cause impacts to public health and safety. In accordance with NTL No.'s 2008-G04, 2009-G27, and 2009-G31, sufficient information is included in **Section 4** to justify our request that our proposed activities be classified by BSEE as H_2S absent.

Coastal and Onshore

1. Beaches

IPFs from the proposed activities that could cause impacts to beaches include accidents (oil spills) 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 (108 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 Hess's Regional OSRP (refer to information submitted in **Section 8**).

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

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 Hess management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

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

2. Wetlands

IPFs from the proposed activities that could cause impacts to wetlands include accidents (oil spills) and discarded trash and debris.

Accidents: It is unlikely that an oil spill would occur from the proposed activities (refer to **Item 5**, Water Quality). Due to the distance from shore (108 miles) and the response capabilities that would be implemented, no impacts are expected. The activities proposed in this plan will be covered by Hess's Regional OSRP (refer to information submitted in **Section 8**).

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

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 Hess management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

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

3. Shore Birds and Coastal Nesting Birds

Accidents: Oil spills could cause impacts to shore birds and coastal nesting birds. However, it is unlikely that an oil spill would occur from the proposed activities (refer to **Item 5**, Water Quality). Given the distance from shore (108 miles) and the response capabilities that would be implemented, no impacts are expected. The activities proposed in this plan will be covered by Hess's Regional OSRP (refer to information submitted in **Section 8**).

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

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 Hess management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

There are no other IPFs (emissions, effluents, physical disturbances to the seafloor, or wastes sent to shore for treatment or disposal) from the proposed activities that could cause impacts to shore birds and coastal nesting birds.

4. Coastal Wildlife Refuges

Accidents: An accidental oil spill from the proposed activities could cause impacts to coastal wildlife refuges. However, it is unlikely that an oil spill would occur from the proposed activities (refer to Item 5, Water Quality). Due to the distance from shore (108 miles) and the response capabilities that would be implemented, no impacts are expected. The activities proposed in this plan will be covered by Hess's Regional OSRP (refer to information submitted in **Section 8**).

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). Hess will operate in accordance with the

regulations 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.

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 Hess management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

There are no other IPFs (emissions, effluents, physical disturbances to the seafloor, or wastes sent to shore for treatment or disposal) from the proposed activities that could cause impacts to coastal wildlife refuges.

5. Wilderness Areas

Accidents: An accidental oil spill from the proposed activities could cause impacts to wilderness areas. However, it is unlikely that an oil spill would occur from the proposed activities (refer to **Item 5**, Water Quality). Due to the distance from the nearest designated Wilderness Area (157 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 Hess's Regional OSRP (refer to information submitted in **Section 8).**

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). Hess will operate in accordance with the regulations 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.

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 Hess management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

There are no other IPFs (emissions, effluents, physical disturbances to the seafloor, or wastes sent to shore for treatment or disposal) from the proposed activities that could cause impacts to wilderness areas.

6. Other Environmental Resources Identified

There are no other environmental resources identified for this impact assessment.

(C) IMPACTS ON PROPOSED ACTIVITIES

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

(D) ENVIRONMENTAL HAZARDS

During the hurricane season, June through November, the Gulf of Mexico 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, Green Canyon Block 511 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. Drilling & completion
    a. Secure well
    b. Secure rig / platform
    c. Evacuate personnel

Drilling activities will be conducted in accordance with NTL No.'s 2008-G09, 2009-G10, and 2010-N10.

2. Structure Installation
   Operator will not conduct structure installation operations during Tropical Storm or Hurricane threat.

(E) ALTERNATIVES

No alternatives to the proposed activities 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 activities. 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

(I) REFERENCES

Authors:

American Petroleum Institute (API). 1989. Effects of offshore petroleum operations on cold water marine mammals: a literature review. Washington, DC: American Petroleum Institute. 385 pp.

Balazs, G.H. 1985. Impact of ocean debris on marine turtles: entanglement and ingestion. In: Shomura, R.S. and H.O. Yoshida, eds. Proceedings, Workshop on the Fate and Impact of Marine Debris, 26-29 November 1984, Honolulu, HI. U.S. Dept. of Commerce. NOAA Tech. Memo. NOAA-TM-NMFS-SWFC-54. Pp 387-429.

Burke, C.J. and J.A. Veil. 1995. Potential benefits from regulatory consideration of synthetic drilling muds. Environmental Assessment Division, Argonne National Laboratory, ANL/EAD/TM-43.

Daly, J.M. 1997. Controlling the discharge of synthetic-based drilling fluid contaminated cuttings in waters of the United States. U.S. Environmental Protection Agency, Office of Water. Work Plan, June 24, 1997.

Hansen, D.J. 198l. The relative sensitivity of seabird populations in Alaska to oil pollution. U.S. Dept. of the Interior, Bureau of Land Management, Alaska OCS Region, Anchorage. BLM-YK-ES-81-006-1792.

Laist, D.W. 1997. Impacts of marine debris: entanglement of marine life in marine debris including a comprehensive list of species with entanglement and ingestion records. In: Coe, J.M. and D.B. Rogers, eds. Marine debris: sources, impacts, and solutions. New York, NY: Springer-Verlag. Pp. 99-139.

Majors, A.P. and A.C. Myrick, Jr. 1990. Effects of noise on animals: implications for dolphins exposed to seal bombs in the eastern tropical Pacific purse-seine fishery–an annotated bibliography. NOAA Administrative Report LJ-90-06.

Marine Mammal Commission. 1999. Annual report to Congress – 1998.

Piatt, J.F., C.J. Lensink, W. Butler, M. Kendziorek, and D.R. Nysewander. 1990. Immediate impact of the Exxon Valdez oil spill on marine birds. The Auk. 107 (2): 387-397

Vauk , G., E. Hartwig, B. Reineking, and E. Vauk-Hentzelt. 1989. Losses of seabirds by oil pollution at the German North Sea coast. Topics in Marine Biology. Ros, J.D, ed. Scient. Mar. 53 (2-3): 749-754.

Vermeer, K. and R. Vermeer, 1975 Oil threat to birds on the Canadian west coast. The Canadian Field-Naturalist. 89:278-298.

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

- Hazard Surveys
- BOEM EIS's:
  - GOM Deepwater Operations and Activities. Environmental Assessment. BOEM 2000-001
  - GOM Central and Western Planning Areas Sales 166 and 168 Final Environmental Impact Statement. BOEM 96-0058.

Appendix T
Administrative Information

(a) Exempted Information Description

In accordance with BOEM NTL No. 2008-G04, the geologic objectives, BHL, TVD, and MD information on form BOEM-0137; descriptions of any new or unusual technology; production rates and life of reservoirs; all items under Geological and Geophysical Information except for the non-proprietary versions of the shallow hazards assessments; correlative well information used to justify H_2S classification; and mineral resource conservation information have been removed from the public information copies.

(b) Bibliography

Geoscience Earth and Marine Services, Inc., 2005, Geologic and Stratigraphic Assessment Blocks 424, 425, 467-470, 512 and 513, Green Canyon Area, Gulf of Mexico: GEMS Report No. 0205-953.