UNITED STATES GOVERNMENT
MEMORANDUM

June 29, 2018

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

Subject: Public Information copy of plan

Control #	-	N-10016
Type	-	Initial Exploration Plan
Lease(s)	-	OCS-G35625 Block - 920 Ewing Bank Area
Operator	-	EnVen Energy Ventures, LLC
Description	-	Well A, Well B, Well C, Well D
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.

Robert Arpino
Plan Coordinator

Site Type/Name	Botm Lse/Area/Blk	Surface Location	Surf Lse/Area/Blk
WELL/A	G35625/EW/920	2875 FSL, 5657 FEL	G35625/EW/920
WELL/B	G35625/EW/920	2875 FSL, 5657 FEL	G35625/EW/920
WELL/C	G35625/EW/920	2875 FSL, 5657 FEL	G35625/EW/920
WELL/D	G35625/EW/920	1573 FSL, 2782 FEL	G35625/EW/920

INITIAL EXPLORATION PLAN

EWING BANK BLOCK 920

LEASE NO. OCS-G 35625

OFFSHORE, LOUISIANA

Public Data

Prepared By:

Cheryl Powell
EnVen Energy Ventures, LLC
333 Clay St., Suite 4200
Houston, Texas 77002
713-335-7041
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Date of Submittal: May 3, 2018
Estimated Start-up Date: January 1, 2019

Ewing Bank Block 920
Initial Exploration Plan
Control No. N-10016
Record of Change Log

Submission Type	Date Sent to BOEM	Summary of Submission	Page Numbers
Amendment	5/16/18	Storage Tank Charts	A-2
Amendment	6/4/18	WCD updates	B-2, H-2, Form 137 (Pages 1 – 5)

Initial Exploration Plan
Lease OCS-G 35625, Ewing Bank Block 920

TABLE OF CONTENTS

SECTION A
CONTENTS OF PLAN
(30 CFR 550.211 AND 550.241)

A. PLAN INFORMATION FORM

EnVen Energy Ventures, LLC submits this Initial Exploration Plan to allow for the drilling and completion of Well Location(s) A thru D. Tentative schedules from start to completion of the drilling and completion activities and information regarding the proposed locations are included on the OCS Plan Information Forms BOEM-0137, **Attachments A-1 thru A-8.**

B. LOCATION

A location/bathymetry plat, prepared in accordance with Notice to Lessees (NTL) 2008-G04, depicting the surface locations and water depths of each proposed well is included as **Attachment A-9.** Location plats depicting the surface and bottom-hole locations of each well are included as **Attachments A-10 thru A-13**.

The max anchor radius anticipated should a semi-submersible drilling rig be utilized is anticipated at 5000'. A map showing the proposed radius in conjunction with the proposed surface locations in included in Section E.

C. SAFETY AND POLLUTION PREVENTION FEATURES

During the proposed exploration activities, EnVen will utilize either a semi-submersible, DP semi-submersible or drillship drilling rig which will be equipped with a subsea BOP. Rig specifications will be made part of each Application for Permit to Drill.

Safety features on the drilling unit will include well control, pollution prevention, and blowout prevention equipment as described in Title 30 CFR Part 250, Subparts C, D, E, O, Q and S; and as further clarified by BSEE Notice to Lessees, and current policy making invoked by the BSEE, Environmental Protection Agency (EPA) and the USCG.

Appropriate life rafts, life jackets, ring buoys, etc., will be maintained on the facility at all times and the rig will be equipped with safety and fire-fighting equipment as mandated by the U.S. Coast Guard regulations contained in Title 33 CFR.

Supervisory and certain designated personnel on-board the facility will be familiar with the effluent limitations and guidelines for overboard discharges into the receiving waters, as outlined in the NPDES General Permit GMG 290000. Pollution prevention measures include installation of curbs, gutters, drip pans, and drains on drilling deck areas to collect all contaminants and debris and compliance will be maintained under the EPA NPDES permit.

D. STORAGE TANKS AND/OR PRODUCTION VESSELS

Information regarding the storage tanks that will store oil and fuels, as defined at 30 CFR 254.6, is provided in the table below. Only those tanks with a capacity of 25 barrels or more are included.

Type of Storage Tank	Type of Facility	Tank Capacity (bbls)	Number of Tanks	Total Capacity (bbls)	Fluid Gravity (API)
Fuel Oil	Semi/DP Semi	4541	2	9082	No. 2 Diesel
Fuel Oil	Semi/DP Semi	3396	2	6792	No. 2 Diesel
Lube Oil	Semi/DP Semi	116	1	116	26°
Waste Oil	Semi/DP Semi	38	2	66	26°
Oily Water	Semi/DP Semi	186	2	372	N/A
Oily Water	Semi/DP Semi	178	2	356	N/A
Fuel Oil	DPDS	4136	2	8272	33°
Fuel Oil	DPDS	9340	2	18680	33°
Fuel Oil	DPDS	9049	1	9049	33°
Fuel Oil	DPDS	9044	1	9044	33°
Fuel Oil	DPDS	446	2	892	33°
Fuel Oil	DPDS	320	2	640	33°
Fuel Oil	DPDS	360	1	360	33°
Fuel Oil	DPDS	435	1	435	33°
Fuel Oil	DPDS	60	1	60	33°
Base Oil	DPDS	3690	2	7380	31°
Lube Oil	DPDS	430	1	430	22.3°
Waste Oil	DPDS	132	1	132	20°
Waste Oil	DPDS	44	1	44	20°
Waste Oil	DPDS	143	1	143	20°
Waste Oil	DPDS	1366	1	1366	6 .5°

E. POLLUTION PREVENTION MEASURES (FLORIDA ONLY)

According to NTL 2008-G04, pollution prevention measures are not required for these proposed operations.

F. ADDITIONAL MEASURES

EnVen does not propose additional safety, pollution prevention, or early spill detection measures beyond those required by 30 CFR 250.

OCS PLAN INFORMATION FORM

General Information

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

Company Name: EnVen Energy Ventures, LLC	BOEM Operator Number: 03026
Address:	Contact Person: Cheryl Powell
333 Clay St., Suite 4200, Houston, TX 77002	Phone Number: 713-335-7041
	E-Mail Address: cpowell@enven.com

If a service fee is required under 30 CFR 550.125(a), provide the	Amount paid	$7346	Receipt No.	269D09DI

Project and Worst Case Discharge (WCD) Information

Lease(s): G 35625			Area: EW		Block: 920		Project Name (If Applicable):		
Objective(s)	x	Oil	x	Gas		Sulphur		Salt	Onshore Support Base(s): Fourchon, LA
Platform/Well Name: Wells A thru D			Total Volume of WCD: 92,541				API Gravity: 21°		
Distance to Closest Land (Miles): 70			Volume from uncontrolled blowout:						

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
Exploration drilling –	See table below		
Development drilling			
Well completion –	See table below		
Well test flaring (for more than 48 hours)			
Installation or modification of structure			
Installation of production facilities			
Installation of subsea wellheads and/or manifolds	See table below		
Installation of lease term pipelines			
Commence production			
Other (Specify and attach description)			

Description of Drilling Rig

	Jackup	x	Drillship
	Gorilla Jackup		Platform rig
x	Semisubmersible		Submersible
x	DP Semisubmersible		Other (Attach Description)
Drilling Rig Name (If Known):			

Description of Structure

	Caisson		Tension leg platform
	Fixed platform		Compliant tower
	Spar		Guyed tower
	Floating production system		Other (Attach Description)

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): A					Previously reviewed under an approved EP or DOCD?		Yes	x	No	
Is this an existing well or structure?		Yes	x	No	If this is an existing well or structure, list the Complex ID or API No.					
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?						x	Yes		No	

WCD info	For wells, volume of uncontrolled blowout (Bbls/day): 92,541	For structures, volume of all storage and pipelines (Bbls):	API Gravity of fluid 21°

	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	OCS-G 35625	OCS-G 35625	OCS OCS
Area Name	Ewing Bank	Ewing Bank	
Block No.	920	920	
Blockline Departures (in feet)	N/S Departure: 2875' FSL	N/S Departure:	N/S Departure: F___L N/S Departure: F___L N/S Departure: F___L
	E/W Departure: 5657' FEL	E/W Departure:	E/W Departure: F___L E/W Departure: F___L E/W Departure: F___L
Lambert X-Y coordinates	X: 2,592,099.190'	X:	X: X: X:
	Y: 10,187,996.40'	Y:	Y: Y: Y:
Latitude/ Longitude	Latitude 28°02'34.806"	Latitude	Latitude Latitude Latitude
	Longitude -90°02'57.817"	Longitude	Longitude Longitude Longitude
Water Depth (Feet): 1500'		MD (Feet): / TVD (Feet):	MD (Feet): / TVD (Feet): MD (Feet): / TVD (Feet): MD (Feet): / TVD (Feet):
Anchor Radius (if applicable) in feet: 5000'			

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 =	

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Proposed Well/Structure Location

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

WCD info	For wells, volume of uncontrolled blowout (Bbls/day): 92,541	For structures, volume of all storage and pipelines (Bbls):	API Gravity of fluid 21°

	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	OCS-G 35625	OCS-G 35625	OCS OCS
Area Name	Ewing Bank	Ewing Bank	
Block No.	920	920	
Blockline Departures (in feet)	N/S Departure: 2875' FSL	N/S Departure:	N/S Departure: F___L N/S Departure: F___L N/S Departure: F___L
	E/W Departure: 5657' FEL	E/W Departure:	E/W Departure: F___L E/W Departure: F___L E/W Departure: F___L
Lambert X-Y coordinates	X: 2,592,099.190'	X:	X: X: X:
	Y: 10,187,996.40'	Y:	Y: Y: Y:
Latitude/ Longitude	Latitude 28°02'34.806"	Latitude	Latitude Latitude Latitude
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Water Depth (Feet): 1500'	MD (Feet):	TVD (Feet):	MD (Feet): MD (Feet): MD (Feet):	TVD (Feet): TVD (Feet): TVD (Feet):
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			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	
			X =	Y =	

Include one copy of this page for each proposed well/structure

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

WCD info	For wells, volume of uncontrolled blowout (Bbls/day): 92,541	For structures, volume of all storage and pipelines (Bbls):	API Gravity of fluid 21°

	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	OCS-G 35625	OCS-G 35625	OCS OCS
Area Name	Ewing Bank	Ewing Bank	
Block No.	920	920	
Blockline Departures (in feet)	N/S Departure: 2875' FSL	N/S Departure:	N/S Departure: F___L N/S Departure: F___L N/S Departure: F___L
	E/W Departure: 5657' FEL	E/W Departure:	E/W Departure: F___L E/W Departure: F___L E/W Departure: F___L
Lambert X-Y coordinates	X: 2,592,099.190'	X:	X: X: X:
	Y: 10,187,996.40'	Y:	Y: Y: Y:
Latitude/ Longitude	Latitude 28°02'34.806"	Latitude	Latitude Latitude Latitude
	Longitude -90°02'57.817"	Longitude	Longitude Longitude Longitude

Water Depth (Feet): 1500'	MD (Feet):	TVD (Feet):	MD (Feet): MD (Feet): MD (Feet):	TVD (Feet): TVD (Feet): TVD (Feet):
Anchor Radius (if applicable) in feet: 5000'				

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 =	

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Is this an existing well or structure?		Yes	x	No	If this is an existing well or structure, list the Complex ID or API No.				
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?						x	Yes		No

WCD info	For wells, volume of uncontrolled blowout (Bbls/day): 92,541	For structures, volume of all storage and pipelines (Bbls):	API Gravity of fluid	21°

	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	OCS-G 35625	OCS-G 35625	OCS OCS
Area Name	Ewing Bank	Ewing Bank	
Block No.	920	920	
Blockline Departures (in feet)	N/S Departure: 1573' FSL	N/S Departure:	N/S Departure: F___L N/S Departure: F___L N/S Departure: F___L
	E/W Departure: 2782' FEL	E/W Departure:	E/W Departure: F___L E/W Departure: F___L E/W Departure: F___L
Lambert X-Y coordinates	X: 2,594,976.100'	X:	X: X: X:
	Y: 10,186,693.980'	Y:	Y: Y: Y:
Latitude/ Longitude	Latitude 28°02'21'231"	Latitude	Latitude Latitude Latitude
	Longitude -90°02'26.094"	Longitude	Longitude Longitude Longitude

Water Depth (Feet): 1550'	MD (Feet):	TVD (Feet):	MD (Feet): MD (Feet): MD (Feet):	TVD (Feet): TVD (Feet): TVD (Feet):
Anchor Radius (if applicable) in feet: 5000'				

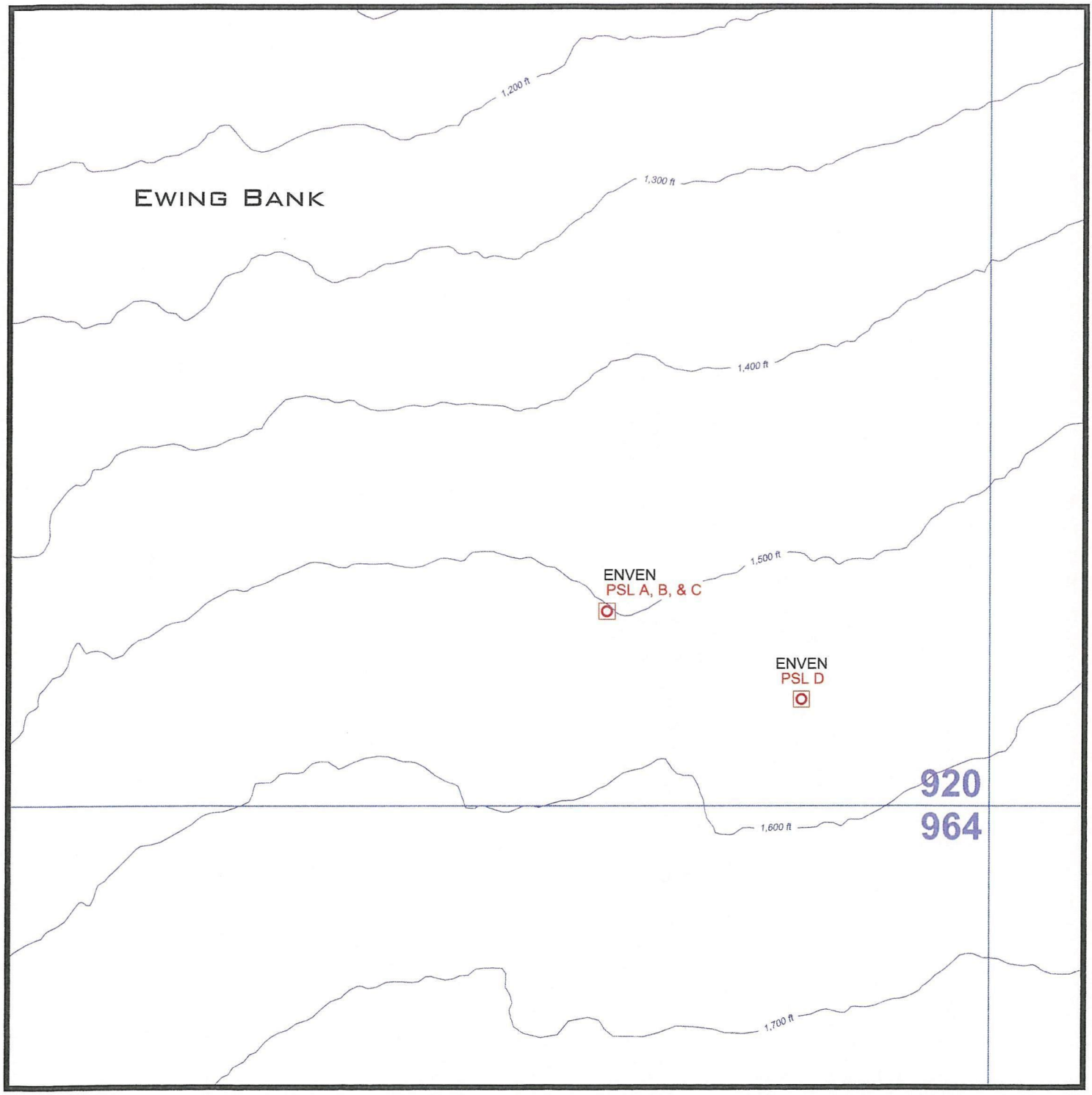
Anchor Locations for Drilling Rig or Construction Barge (If anchor radius supplied above, not necessary)

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 =	

Schedule to drill, complete & install subsea tree:

Well	Start Date	Duration	End Date
A	01/01/19	115	04/26/19
B	01/01/20	115	04/25/20
C	01/01/21	115	04/26/21
D	01/01/22	115	04/26/22

Attachment A-8



PSL A, B, & C	PSL D
LAT: 28° 02' 34.806" N	LAT: 28° 02' 21.231" N
LONG: -90° 02' 57.817" W	LONG: -90° 02' 26.094" W
X = 2,592,099.190	X = 2,594,976.100
Y = 10,187,996.400	Y = 10,186,693.980
5657.14' FEL of EW 920	2782.09' FEL of EW 920
2874.53' FSL of EW 920	1572.96' FSL of EW 920

0 1000' 2000' 3000' 4000'

Offshore Lousiana
Ewing Bank 920
Surface Location / Bathymetry Map
Proprietary Location A, B, C & D

enven
ENERGY VENTURES

Attachment A-9

SECTION B
GENERAL INFORMATION
(30 CFR 550.213 and 550.243)

A. APPLICATIONS AND PERMITS

List all individual or site-specific application approvals you must obtain to conduct your proposed activities. Do not list general NPDES or COE Permits.

Application/Permit	Issuing Agency	Status
Application for Permit to Drill	BSEE	To Be Submitted
Application for Permit to Modify	BSEE	To Be Submitted

B. DRILLING FLUIDS

See **Attachment F-1** for drilling fluids to be used during the proposed operations.

C. NEW OR UNUSUAL TECHNOLOGY

EnVen does not propose to use new techniques or unusual technology to carry out these proposed exploration activities; however, the best available and safest technologies (BAST) as referenced in Title 30 CFR 250 will be incorporated as standard operational procedures.

D. BONDING STATEMENT

The bond requirements for the activities and facilities proposed in this DOCD are satisfied by a $3,000,000.00 area-wide bond, furnished and maintained according to 30 CFR 556.900 (a) and 30 CFR 556.901(a) and (b) and BOEM's NTL No. 2016-N01 "Requiring Additional Security".

E. OIL SPILL FINANCIAL RESPONSIBILITY (OSFR)

EnVen (BOEM company number 03026) will demonstrate oil spill financial responsibility for the facilities proposed in this EP according to 30 CFR Part 553; and NTL No. 2008-N05, "Guidelines for Oil Spill Financial Responsibility for Covered Facilities".

F. DEEPWATER WELL CONTROL STATEMENT

EnVen (BOEM company number 03026) has the financial capability to drill a relief well and conduct other emergency well control operations.

G. BLOWOUT SCENARIO

The primary scenario considered is the well has been drilled to the Worst Case Discharge open hole interval, the rig has sunk, and the rig and riser has been displaced with no debris on or near the wellbore. The well is flowing uncontrolled near the mud line.

Worst Case Discharge (Max Oil Flow Rate) / Max Duration / Total Volume

The Worst Case Discharge (WCD) is based on reservoir modeling and nodal analysis. The wellbore configuration and all properties and calculations are submitted in the EP. The results of the WCD as well as the duration and maximum total volumes estimated to be discharged in those scenarios is presented in the table below. Note that the WCD rate represents "worst case" and that duration and total volume are based on pre-event estimations with WCD throughout those durations.

Scenario	Max Rate (BOPD)	Durations (Days)	Max Total Volume (BBL)
Bridging	92,541	3	277,623
Surface Intervention	92,541	15	1,388,115
Relief Well	92,541	65	6,015,165

Potential of Wellbore to Bridge Over Due to Blowout (Resolve w/o Intervention)

Based on empirical results as well as our company's own experiences in the US Gulf of Mexico there are numerous examples of bridging events in drilling/completion/production scenarios. The BSEE historical incident database also confirms a high percentage of actual loss of well control incidents while drilling in the US GOM resolving with no containment intervention as a result of bridging. The majority of the hydrocarbon bearing intervals in the basin and the objective formations in this field are unconsolidated geologically young age sandstone intervals. These intervals offer both prolific production as well as high risk of sand/solids production, which in an open hole environment result in a "bridge" or solids plug forming.

As a company Enven strives to limit the estimated total drawdown on a producing interval to reduce the risk of wellbore collapse and sand/fines migration into a well. This can vary depending on reservoir properties and completion techniques but it is our experience that in the best case scenario a drawdown of 4,000 psi or greater will collapse most wellbores or introduce formation sand production. The referenced drawdown occurs is in a controlled production environment through a engineered completion isolating a particular zone(s). The blowout scenario being discussed is in an uncontrolled open hole scenario with numerous zones contributing different fluid types at mixed rates and thus likely requires even less drawdown to create a wellbore collapse which would form a bridge/plug. The WCD calculations submitted show the actual drawdown that would occur in this blowout scenario and is more than sufficient to induce a bridging event.

Surface Intervention in the Event of a Blowout

Any blowout event will immediately trigger Enven's incident management process which will notify and establish its IMT (incident management team). This process also notifies and readies containment and oil spill response equipment and personnel through Enven's membership agreements with Helix Well Containment Group (HWCG) and Clean Gulf Associates. Enven has contractual service agreements with blowout consulting experts at Boots & Coots, Cudd Pressure Control, and Wild Well Control which the established IMT will consult with or utilize as IMT team members.

This team and this process will guide the early assessment of the scenario and the intervention options based on the actual conditions. The process initiates simultaneously all containment options; utilization of the rig's subsea BOPs through ROV intervention, Helix Well Containment Group's capping and containment equipment, and relief well planning and execution. This ensures the quickest possible response during the assessment phase of the process. Once assessed this process will guide one of the above containment options to control the source and secure the well.

Details of the containment equipment and processes can be found in the submitted Well Containment Plan. Details on the well and rig technical specifications and limitations can be found in the WCST and WCST+ documents submitted with the APD.

Surface Intervention Time Estimates

As noted previously, all containment options initiate simultaneously and are performed in parallel. The fastest surface invention response time would be utilizing the rig's subsea BOPs through ROV intervention, this operation is estimated to take **3 days** or less to shut-in and secure the well However, for the purposes of "worst case" we have assumed that this option is not viable and the HWCG's capping stack must be deployed. The table below describes the estimated time required to shut in and secure the well using the capping stack. The entire operation is estimated to take **15 days** from start of site assessment until the capping stack has been deployed and the well shut in.

Duration of a well capping operation

Operation	Estimated Duration (days)	Cumulative Time Since Event Start (days)
Assessment for surface intervention options. Notify regulatory agencies and contractors.	2	2
Site Preparation, mobilizing and deployment of the IWOCS system and Dispersant system.	5	7
Debris removal, mobilization of ROV boat and support vessels	7	14
Well capping and/or cap and flow operations mobilization, deployment, and installation of the well containment system.	15	**29**

Relief Well Planning

Surface Location: The location of nearest production platforms is such that it would not allow or expedite drilling a relief well. Multiple subsea surface relief well locations have been identified and a shallow hazards survey has been conducted at these locations.

Well Design and Equipment: The preferred surface location and directional well plan is submitted with the APD. All tangible equipment required by the well design is either in hand or has been identified as available through contracted service providers. In general the design/strategy will be to intersect the original wellbore just above the shoe of intermediate casing or liner (13-5/8/14in csg or 11-7/8in liner) or 9-7/8in production liner. This will allow ranging to find the original casing and is deep enough to provide pressure control/well design to handle the dynamic kill. Final actual surface location and well design is conducted and confirmed through the WCP process based on actual scenario and conditions.

Rig Selection/Rig Package Constraints: No constraints have been identified for selecting a rig capable of accessing the subsea surface location or executing the relief well design due to equipment, station keeping, or BOP pressure rating limitations.

Rig Availability:

Enven's membership in HWCG includes a "Mutual Aide" agreement that obligates all members to assist through making personnel and equipment available to respond to a blowout incident. This agreement takes precedent over any individual members own operations. This agreement makes any MODU's under contract to members of HWCG (currently 17) available to Enven in the

event of a blowout incident. In addition, Enven has the relationships and financial means to contract MODU's with all major rig contractors with rigs in the Gulf of Mexico. At present, there are at least 25 rigs located in the GOM identified as capable of drilling this relief well.

Estimated Time to Drill a Relief Well and Dynamic Kill:

Below is the pre-event best estimate of general schedule and duration of drilling a relief well:

Description	Days	Cumulative Days
Access and select MODU/ Final Well Design	2	2
Contract /Permit / Mobilize Rig and Equipment	14	16
Spud/Drill/Case Top Hole Sections	5	21
Certify BOPs / Run BOPs and Riser/ Test	15	36
Drill and intercept original well	15	51
Dynamically kill well	4	**55**

Blowout Risk Prevention/Reduction

The following measures are employed to prevent the likelihood of a well control event.

Management and Direction Supervision:

- Current Well Control Certification from an accredited IWCF or WellCap organization for all Rig Site Supervisors (Drilling/Completion/Workover)

Well and Rig Equipment:

- All rigs utilized are to be compliant with 30 CRF 250 and 550 as well as all Notice to Lessees
- BOPE to be certified and maintained per regulations and operated within temperature and pressure limitations and per OEM's operating manuals
- When deployed and to the extent possible, MWD/LWD/PWD measurement tools will be utilized to assist in real time pore pressure prediction, kick detection and for additional well control data support

Operations/Practices:

- Fluid volume measurements will be made and accounted for at all times both in the wellbore and for surface transfers

- Taking Slow Pump Rate (SCRs..slow circulating rate) measurements during all open hole operations and critical cased hole operations
- Updating Kill Sheets during each tour and posting the same on the rig floor
- Maintain a current BOP to RKB spaceout Chart,
- Monitoring wellbore fill-ups and displacements during trips, by the Well Site Supervisor
- Maintain the necessary circulating swages, TIW Valves and IBOP on the rig floor at all times during operations and function test these valves during each tour

Measures for Early and Effective Well Control intervention

Enven employs the following measures or has the following agreements/process to ensure early and effective intervention in the event of a blowout scenario:

- Enven's incident management process is immediately triggered establishing the Incident Management Team (IMT) and activates the Well Containment and Oil Spill Response plans
- The IMT immediately initiates all containment options while simultaneously working through the assessment phase to determine viable and best options for containment
- The HWCG Mutual Aide agreement notifies all members to ensure personnel and equipment is made ready for the containment response
- Through the IMT and its process a blowout specialty company (Boots&Coots, Cudd Pressure Control, or Wild Well Control) will be contacted and their expert consultants will be deployed as members of the IMT.

Additional Prevention & Mitigation Techniques

Pursuant to wellbore cementing and zonal isolation techniques, all cementing operations will be modeled and designed under the guidelines set forth in API Recommended Practice 65 Part 1 & 2. Operations will be dictated by the rules and requirements set forth in Federal Regulations, under the wellbore cementing requirements.

API Standard 53 Blowout Prevention Equipment Systems for Drilling Wells and Recommended Practice 16Q for Marine Drilling Risers will be used as the guidelines for installation, testing and maintenance of the surface and subsea Marine Risers and BOP systems.

SECTION C
GEOLOGICAL AND GEOPHYSICAL INFORMATION
(30 CFR 550.214 AND 550.244)

A. GEOLOGICAL DESCRIPTION

Proprietary Data

B. STRUCTURE CONTOUR MAP(S)
Proprietary Data

C. INTERPRETED SEISMIC LINE(S)
Proprietary Data

D. GEOLOGICAL STRUCTURE CROSS-SECTIONS
Proprietary Data

E. SHALLOW HAZARDS REPORT
An AUV archaeological survey was conducted over Ewing Bank Block 920 in addition to an extensive 3-D data set provided to prepare the shallow hazards analysis and report.

One hard copy and one CD of both the AUV Archaeological Survey and Shallow Hazards Analysis Report is being submitted under separate cover.

F. SHALLOW HAZARDS ASSESSMENT

A shallow hazards assessment has been prepared for the proposed surface locations, evaluating seafloor and subsurface geological and manmade features and conditions that may adversely affect drilling operations, and are included as **Attachment(s) C-5 and C-6.**

G. HIGH-RESOLUTION SEISMIC LINES
Proprietary Data

H. STRATIGRAPHIC COLUMN
Proprietary Data

I. TIME VS DEPTH TABLES
Sufficient well control data for the target areas proposed in this EP exists; therefore, seismic time versus depth tables for the proposed well locations are not required.

GULF OCEAN SERVICES
OFFSHORE GEOPHYSICAL SURVEYS
226 WALL STREET LAFAYETTE, LA 70506
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April 6, 2018

Bureau of Ocean Energy Management
Gulf of Mexico OCS Region (MS 5230)
1201 Elmwood Park Blvd.
New Orleans, LA 70123-2394

RE: EnVen Energy Ventures, LLC
Block 920, Ewing Bank Area
Proposed OCS-G 35625 Wells A-B-C
Common Surface Location
Shallow Hazard Analysis
Archaeological Assessment
Area of Potential Effect (APE)

EnVen Energy Ventures, LLC proposes to drill 3 wells (A-B-C) in OCS-G 35625 from the following common surface location:

- 2,876.40' FSL and 5,660.81' FEL of Block 920, Ewing Bank Area
- X = 2,592,099.19' and Y = 10,187,996.40' (NAD 27)
- Latitude: 28°02' 34.806" N and Longitude: 90° 02' 57.817" W (NAD 27)

EnVen Energy Ventures, LLC provided Gulf Ocean Services with an AUV Archaeological Survey from 2016 covering a 16,000ft square survey grid in EW920 to supplement a high quality 3-D seismic data set completely encompassing the proposed surface drilling location, bottom hole locations, and all surrounding areas where semi-submersible rig anchors and mooring lines will impact the seafloor. Gulf Ocean Services, Inc partnered with Reservoir Definition Inc. to extract the 3-D data for EW920 and all surrounding contiguous blocks from the full time migrated volume and angle offset stack volume. Data sets were spectrally balanced by Reservoir Definition Inc. with bandwidth extension between 9Hz and 100Hz.

The combined data sets provide excellent detail for this Shallow Hazards Analysis of the proposed wells and anchor/mooring arrays in accordance with ***NTL No. 2008-G05, Section II.A & Section III.D.6*** using 3-D seismic reflection data. Dr. Sam LeRoy prepared the geologic interpretation of the processed 3-D seismic data with respect to potential shallow hazards to drilling. The AUV Archaeological Survey Report by Tesla Offshore in 2016, attached under separate cover, complies with ***Archaeological Resource Surveys NTL No. 2005-G07*** and ***NTL No. 2011-JOINT-G01***. The AUV archaeological survey data included high-resolution records from multibeam echosounder, side scan sonar, and subbottom profiler systems which provide complete coverage of the defined ***Area of Potential Effect (APE)*** for the proposed well site and anchor mooring array as required by BOEM & BSEE under ***NTL No. 2008-G05, Section VI, Mitigation of Potential Hazards.***

The potential ***APE*** surrounding the proposed well site will include a seafloor drilling template for a semisubmersible rig, and probable remote anchor locations or suction pilings, and mooring chain/cable spreads on bottom. If a dynamically-positioned semisubmersible rig is used, only the seafloor drilling template will impact the seafloor. The seafloor features highlighted from the AUV survey and 3-D seafloor rendering will be carefully marked for avoidance when designing any future anchor arrays if required for the semisubmersible rig.

Attachment C-5

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As required for this shallow hazards assessment at the newly proposed surface location under ***NTL No. 2008-G04 Information Requirements for Exploration Plans and Developmental Operations Coordination Documents*** (extended under ***NTL No. 2014-G05***), *Geological and Geophysical Information (30 CFR 250.214 and 250.244)*, paragraphs (f) and (g), copies of the high-resolution subbottom profiler and 3-D data are enclosed from the survey line closest to the proposed well location.

- ***Water depth*** is -1,502 feet at the specific drilling location based on high-resolution AUV swath bathymetry data. The smooth seafloor dips gently to the south at 1.7° slope (3% grade). No seafloor irregularities exist near the drill site. The closest pockmark or expulsion crater was detected on the AUV multibeam swath and sonar survey approximately 8,200 feet NW of the planned drill site. This 300-foot diameter crater was also detected on the seafloor rendering from the 3-D data set and correlates to the BOEM published dormant expulsion feature mapped on the ***Gulf of Mexico Seafloor Anomaly Classifications Map*** derived from regional 3-D data mapping of seafloor seismic amplitude anomalies (BOEM 2017).

- ***Seafloor soils*** are silty clay mud based on BOEM maps and sonar reflectivity.

- ***Identified man-made features closest to the APE include:***

  In Block 921, Ewing Bank Area, Platform 'A' Morpeth East operated by ENI Petroleum US, LLC is located 9,000 feet southeast of the proposed well site in EW920. Two (2) pipelines run northwestward from Platform 'A' Morphlet East and trend along a smooth curved path across Block 920. The two parallel pipelines include the ENI Petroleum US, LLC 12-inch Oil pipeline (Segment 1458 Active) and Williams Energy, LLC 8-inch Gas pipeline (Segment 11457 Active) and extend essentially parallel to each other from EW921 Platform 'A' before crossing into Block 920 at a point 6,000 feet ENE at the closest point from the proposed EnVen drilling location. The two pipelines merge together and cross-over each other at that point then run to NNE out of EW920. The pipelines will not be impacted if mooring anchor arrays are required; extreme caution will be exercised when planning anchor arrays.

- ***Side scan sonar*** data from the AUV Archaeological Survey detected 43 seafloor contacts of man-made debris, and 11 of those objects were identified as partially buried cable or wire rope. None of the sonar targets were considered to be archaeologically significant in the Tesla Offshore report, and this review of the data concurs with that assessment. The sonar data did not highlight any obstructions or shipwrecks near the proposed well site or within any possible anchor pattern and mooring array. The ***APE*** is clear of historical shipwrecks sites and prehistoric archaeological sites do not exist in this deepwater environment.

- ***Subbottom profiler*** data at the proposed well site reflected 45 feet of finely laminated silty clay beds overlying 35 feet of chaotically reflecting turbidity deposits, probably containing basal sands and coarse granular material. The next 75 feet of strata are strongly reflecting, tightly laminated beds. A fault complex highlighted on the AUV subbottom profiler data exists 11,500 feet NW of the proposed site and will not be impacted by the proposed drilling or any possible anchor pattern. Another fault complex was clearly resolved on the 3-D seismic data and the AUV subbottom profiles

approximately 10,000 feet NNW of the proposed well site. The hydrocarbon seep anomaly flows associated with this area are reported on the BOEM database map. Neither the proposed drilling nor any anchor array will disturb the seafloor in that area of the fault scarp and hydrocarbon seep.

- ***3-D Seismic Data*** were utilized to prepare the accompanying full block report with ***Seafloor Features Map 1***, ***Shaded Relief Map 2***, ***Seafloor Amplitude Map 3***, ***Structure Map 4***, and ***Amplitude Extraction Map 5*** along with the attached proposed wellbore exhibits and required ***Tophole Prognosis Chart***. After a complete analysis of the 3-D seismic data set identified potential subbottom drilling hazards beneath the proposed drill site at the specific center of the 16,000-foot square grid covered by the 2016 AUV Archaeological Survey, the proposed A, B, and C common surface location was moved 1,300 feet SW and directional well paths adjusted to avoid the identified potentially over-pressured intervals. The ***Tophole Prognosis Chart*** required to a depth of 2,500 feet below the seafloor under ***NTL No. 2008-G05*** is attached, and the analysis goes beyond the requirements to a depth of 3,800 feet below the seafloor. Normal drilling precautions will be implemented in anticipation of pressure differentials when intersecting the highlighted horizons. The well paths have been designed to avoid likely over-pressured intervals that would constitute hazards to drilling.

Neither shipwrecks nor prehistoric archaeological sites are present within the ***Area of Potential Effect (APE)*** for this proposed drilling project.

EnVen Energy Ventures, LLC has identified the potential hazards to drilling and potential semisubmersible anchor mooring arrays in EW920. No seafloor obstructions or shipwrecks will be disturbed within the ***APE*** for the proposed drilling. The existing pipelines are 6,000 feet ENE of the proposed surface well location and will be marked with real-time DGPS graphics on the rig to comply with ***NTL No. 2008-G05 Section VI Mitigation of Potential Shallow Hazards parts 'B' & 'C'.*** A map at a scale of 1:12,000 (1'= 1,000') will be provided to key personnel on the drilling rig. The field map will depict the aforementioned infrastructure in the general vicinity of the ***APE*** for the drilling rig.

S. Dean ElDarragi
Marine Geophysicist

Robert J. Floyd Ph.D.
Marine Archaeologist

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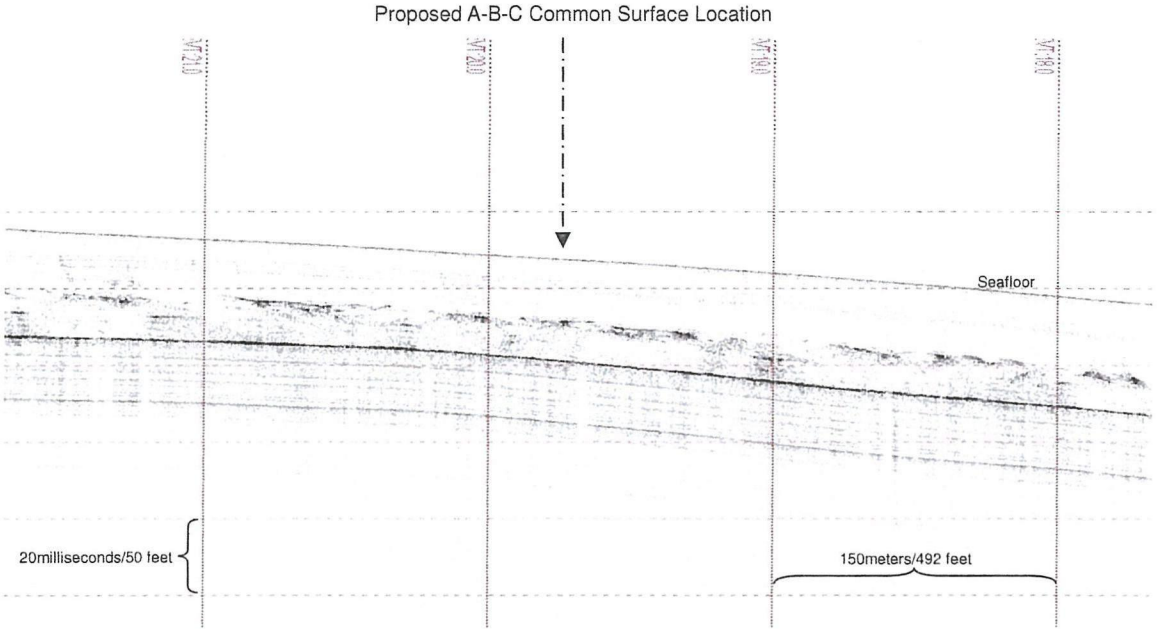

Subbottom Profiler Line 8 EW920 AUV Archaeological Survey 2016

Required Notification of the Discovery of Shipwrecks on the Seafloor (30 CFR 250.194(c) and 30 CFR 250.1010(c))

If you discover man-made debris that appears to indicate the presence of a shipwreck (e.g., a sonar image or visual confirmation of an iron, steel, or wooden hull, wooden timbers, anchors, concentrations of man-made objects such as bottles or ceramics, piles of ballast rock) within or adjacent to your lease area or pipeline right-of-way during your shallow hazard survey, diver inspection, or remotely operated vehicle (ROV) inspection, you must immediately halt operations, take steps to ensure that the site is not disturbed in any way, and contact the Regional Supervisor, Leasing and Environment, within 48 hours of its discovery. You must cease all operations within 1,000 feet (305 meters) of the site until the Regional Director instructs you on what steps you must take to assess the site's potential historic significance and what steps you must take to protect it.

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April 6, 2018

Bureau of Ocean Energy Management
Gulf of Mexico OCS Region (MS 5230)
1201 Elmwood Park Blvd.
New Orleans, LA 70123-2394

RE: EnVen Energy Ventures, LLC
Block 920, Ewing Bank Area
Proposed OCS-G 35625 Well D
Relief Well Surface Location
Shallow Hazard Analysis
Archaeological Assessment
Area of Potential Effect (APE)

EnVen Energy Ventures, LLC proposes to drill a relief well (D) if necessary in OCS-G 35625 from the following common surface location:

- 1,573.98' FSL and 2,783.90' FEL of Block 920, Ewing Bank Area
- X = 2,594,976.10' and Y = 10,186,693.98' (NAD 27)
- Latitude: 28° 02' 21.231" N and Longitude: 90° 02' 26.094" W (NAD 27)

EnVen Energy Ventures, LLC provided Gulf Ocean Services with an AUV Archaeological Survey from 2016 covering a 16,000ft square survey grid in EW920 to supplement a high quality 3-D seismic data set completely encompassing the proposed surface drilling location, bottom hole locations, and all surrounding areas where semi-submersible rig anchors and mooring lines will impact the seafloor. Gulf Ocean Services, Inc partnered with Reservoir Definition Inc. to extract the 3-D data for EW920 and all surrounding contiguous blocks from the full time migrated volume and angle offset stack volume. Data sets were spectrally balanced by Reservoir Definition Inc. with bandwidth extension between 9Hz and 100Hz.

The combined data sets provide excellent detail for this Shallow Hazards Analysis of the proposed wells and anchor/mooring arrays in accordance with ***NTL No. 2008-G05, Section II.A & Section III.D.6*** using 3-D seismic reflection data. Dr. Sam LeRoy prepared the geologic interpretation of the processed 3-D seismic data with respect to potential shallow hazards to drilling. The AUV Archaeological Survey Report by Tesla Offshore in 2016, attached under separate cover, complies with ***Archaeological Resource Surveys NTL No. 2005-G07*** and ***NTL No. 2011-JOINT-G01***. The AUV archaeological survey data included high-resolution records from multibeam echosounder, side scan sonar, and subbottom profiler systems which provide complete coverage of the defined ***Area of Potential Effect (APE)*** for the proposed well site and anchor mooring array as required by BOEM & BSEE under ***NTL No. 2008-G05, Section VI, Mitigation of Potential Hazards.***

The potential ***APE*** surrounding the proposed well site will include a seafloor drilling template for a semisubmersible rig, and probable remote anchor locations or suction pilings, and mooring chain/cable spreads on bottom. If a dynamically-positioned semisubmersible rig is used, only the seafloor drilling template will impact the seafloor. The seafloor features

Attachment C-1e

highlighted from the AUV survey and 3-D seafloor rendering will be carefully marked for avoidance when designing any future anchor arrays if required for the semisubmersible rig. As required for this shallow hazards assessment at the newly proposed surface location under ***NTL No. 2008-G04 Information Requirements for Exploration Plans and Developmental Operations Coordination Documents*** (extended under ***NTL No. 2014-G05***), *Geological and Geophysical Information (30 CFR 250.214 and 250.244)*, paragraphs (f) and (g), copies of the high-resolution subbottom profiler and 3-D data are enclosed from the survey line closest to the proposed well location.

- ***Water depth*** is -1,560 feet at the specific drilling location based on high-resolution AUV swath bathymetry data. The smooth seafloor dips gently to the south at 1.7° slope (3% grade). No seafloor irregularities exist near the drill site. The closest pockmark or expulsion crater was detected on the AUV multibeam swath and sonar survey approximately 11,200 feet NW of the planned drill site. This 300-foot diameter crater was also detected on the seafloor rendering from the 3-D data set and correlates to the BOEM published dormant expulsion feature mapped on the ***Gulf of Mexico Seafloor Anomaly Classifications Map*** derived from regional 3-D data mapping of seafloor seismic amplitude anomalies (BOEM 2017).

- ***Seafloor soils*** are silty clay mud based on BOEM maps and sonar reflectivity.

- ***Identified man-made features closest to the APE include:***

  In Block 921, Ewing Bank Area, Platform 'A' Morpeth East operated by ENI Petroleum US, LLC is located 5,800 feet southeast of the proposed well site in EW920. Two (2) pipelines run northwestward from Platform 'A' Morphlet East and trend along a smooth curved path across Block 920. The two parallel pipelines include the ENI Petroleum US, LLC 12-inch Oil pipeline (Segment 1458 Active) and Williams Energy, LLC 8-inch Gas pipeline (Segment 11457 Active) and extend essentially parallel to each other from EW921 Platform 'A' before crossing into Block 920 at a point approximately 3,500 feet ENE at the closest point from the proposed EnVen drilling location. The two pipelines merge together and cross-over each other at that point then run to NNE out of EW920. The pipelines will not be impacted if mooring anchor arrays are required; extreme caution will be exercised when planning anchor arrays.

- ***Side scan sonar*** data from the AUV Archaeological Survey detected 43 seafloor contacts of man-made debris, and 11 of those objects were identified as partially buried cable or wire rope. None of the sonar targets were considered to be archaeologically significant in the Tesla Offshore report, and this review of the data concurs with that assessment. The sonar data did not highlight any obstructions or shipwrecks near the proposed well site or within any possible anchor pattern and mooring array. The ***APE*** is clear of historical shipwrecks sites and prehistoric archaeological sites do not exist in this deepwater environment.

- ***Subbottom profiler*** data at the proposed well site reflected 35 feet of finely laminated silty clay beds overlying 30 feet of chaotically reflecting turbidity deposits, probably containing basal sands and coarse granular material. The next 75 feet of strata are strongly reflecting, tightly laminated beds. A fault complex highlighted on the AUV subbottom profiler data exists 14,500 feet NW of the proposed site and will not be

impacted by the proposed drilling or any possible anchor pattern. Another fault complex was clearly resolved on the 3-D seismic data and the AUV subbottom profiles approximately 13,000 feet NNW of the proposed well site. The hydrocarbon seep anomaly flows associated with this area are reported on the BOEM database map. Neither the proposed drilling nor any anchor array will disturb the seafloor in that area of the fault scarp and hydrocarbon seep.

- ***3-D Seismic Data*** were utilized to prepare the accompanying full block report with ***Seafloor Features Map 1***, ***Shaded Relief Map 2***, ***Seafloor Amplitude Map 3***, ***Structure Map 4***, and ***Amplitude Extraction Map 5*** along with the attached proposed wellbore exhibits and required ***Tophole Prognosis Chart***. After a complete analysis of the 3-D seismic data set identified potential subbottom drilling hazards beneath the proposed drill site at the specific center of the 16,000-foot square grid covered by the 2016 AUV Archaeological Survey, the proposed D relief well surface location was moved 3,300 feet SE and the well path adjusted to avoid the identified potentially over-pressured intervals. The ***Tophole Prognosis Chart*** required to a depth of 2,500 feet below the seafloor under ***NTL No. 2008-G05*** is attached, and the analysis goes beyond the requirements to a depth of almost 3,900 feet below the seafloor. Normal drilling precautions will be implemented in anticipation of pressure differentials when intersecting the highlighted horizons. The well paths have been designed to avoid likely over-pressured intervals that would constitute hazards to drilling.

Neither shipwrecks nor prehistoric archaeological sites are present within the ***Area of Potential Effect (APE)*** for this proposed drilling project.

EnVen Energy Ventures, LLC has identified the potential hazards to drilling and potential semisubmersible anchor mooring arrays in EW920. No seafloor obstructions or shipwrecks will be disturbed within the ***APE*** for the proposed drilling. The existing pipelines are 3,500 feet ENE of the proposed surface well location and will be marked with real-time DGPS graphics on the rig to comply with ***NTL No. 2008-G05 Section VI Mitigation of Potential Shallow Hazards parts 'B' & 'C'.*** A map at a scale of 1:12,000 (1'= 1,000') will be provided to key personnel on the drilling rig. The field map will depict the aforementioned infrastructure in the general vicinity of the ***APE*** for the drilling rig.

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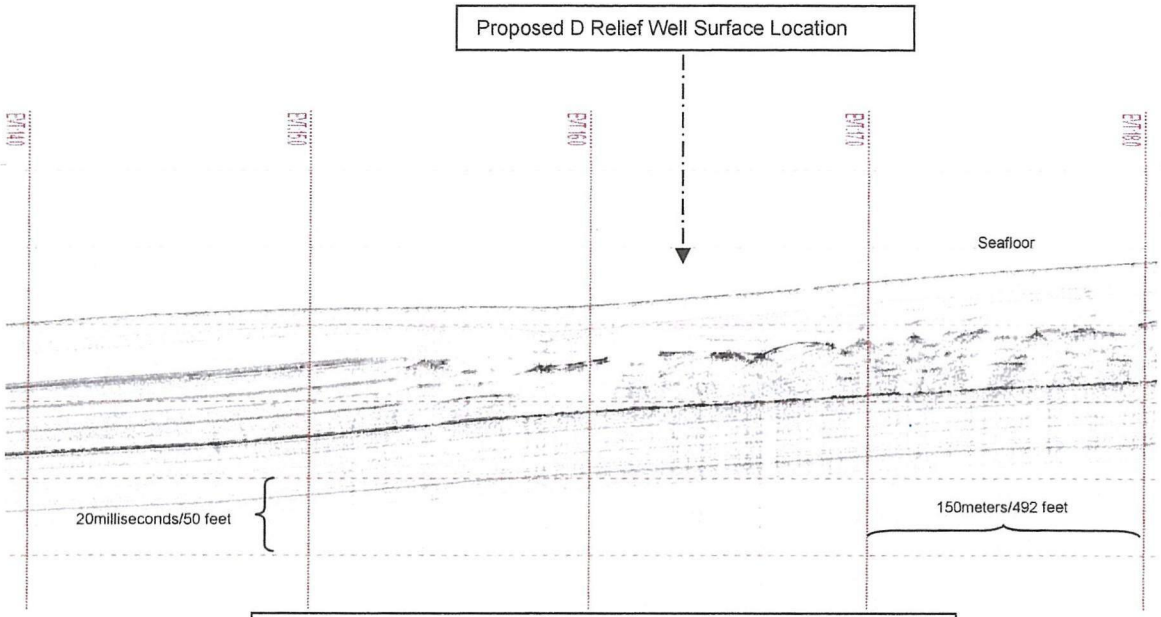

Subbottom Profiler Line 11 EW920 AUV Archaeological Survey 2016

Required Notification of the Discovery of Shipwrecks on the Seafloor (30 CFR 250.194(c) and 30 CFR 250.1010(c))

If you discover man-made debris that appears to indicate the presence of a shipwreck (e.g., a sonar image or visual confirmation of an iron, steel, or wooden hull, wooden timbers, anchors, concentrations of man-made objects such as bottles or ceramics, piles of ballast rock) within or adjacent to your lease area or pipeline right-of-way during your shallow hazard survey, diver inspection, or remotely operated vehicle (ROV) inspection, you must immediately halt operations, take steps to ensure that the site is not disturbed in any way, and contact the Regional Supervisor, Leasing and Environment, within 48 hours of its discovery. You must cease all operations within 1,000 feet (305 meters) of the site until the Regional Director instructs you on what steps you must take to assess the site's potential historic significance and what steps you must take to protect it.

SECTION D
HYDROGEN SULFIDE INFORMATION
(30 CFR 550.215 AND 550.245)

A. CONCENTRATION
EnVen does not anticipate encountering any H_2S during the proposed operations.

B. CLASSIFICATION
In accordance with Title 30 CFR 250.490(c), EnVen requests that Ewing Bank Block 920 be classified as H_2S absent.

C. H2S CONTINGENCY PLAN
EnVen is not required to provide an H2S contingency plan before conducting the proposed exploration activities.

D. MODELING REPORT
EnVen does not anticipate encountering H2S concentrations greater than 500 ppm, so therefore, a modeling report is not required.

SECTION E
BIOLOGICAL, PHYSICAL & SOCIOECONOMIC INFORMATION
(30 CFR 550.216 AND 550.247)

A. CHEMOSYNTHETIC COMMUNITIES REPORT

Activities proposed in this plan disturb seafloor areas in deepwater, therefore, a Deepwater Benthic Community Analysis has been prepared in accordance with NTL No. 2009-G40 "Deepwater Benthic Communities" and are included as **Attachments E-1 and E-2**.

MAPS

Included as **Attachment E-3** is a map depicting bathymetry, seafloor and shallow geological features, the surface location of proposed well(s), a radius circle of 2000 feet around each such location, and an anchor radius of 5000' with an additional 1000' buffer.

ANALYSIS

Using high-resolution seismic information, or 3-D seismic information, all seafloor features and areas that could be disturbed by the activities proposed in this plan have been identified. The likelihood of these proposed activities disturbing these seafloor and shallow geologic features is discussed in the following summary statement:

Associated Anchors – No Anchor Disturbances Within 500 Feet of Chemosynthetic Communities

- Features or areas that could support high-density chemosynthetic communities are **not** located within 2000 feet of each proposed muds and cuttings discharge location.

- Features or areas that could support high-density chemosynthetic communities are **not** located within 500 feet of any seafloor disturbances resulting from our use of anchors (including those caused by anchors, anchor chains, and wire ropes).

1. Sensitive Underwater Features

The activities proposed in this plan will not take place within 500 feet of any identified topographic feature; therefore topographic features information is not required.

2. Marine Sanctuaries
Ewing Bank Block 920 is not located within 200 feet of any pinnacle trend feature with vertical relief equal to or greater than 8 feet; therefore, live bottom information is not required.

B. TOPOGRAPHIC FEATURES MAP

Activities proposed in this EP do not fall within 305 meters (1000 feet) of the "no activity zone", therefore no map is required.

C. TOPOGRAPHIC FEATURES STATEMENT (SHUNTING)

All activities proposed under this EP will be conducted outside all Topographic Feature Protective Zones, therefore shunting of drill cuttings and drilling fluids is not required.

D. LIVE BOTTOMS (PINNACLE TREND) MAP

Ewing Bank Block 920 is not located within 200 feet of any pinnacle trend feature with vertical relief equal to or greater than 8 feet; therefore, live bottom information is not required.

E. LIVE BOTTOMS (LOW RELIEF) MAP

Ewing Bank Block 920 is not located within 200 feet of any pinnacle trend feature with vertical relief equal to or greater than 8 feet; therefore, live bottom (low relief) maps are not required.

F. POTENTIALLY SENSITIVE BIOLOGICAL FEATURES

Ewing Bank Block 920 is not located within 200 feet of potentially sensitive biological features; therefore, biologically sensitive area maps are not required.

H. THREATENED AND ENDANGERED SPECIES, CRITICAL HABITAT, AND MARINE MAMMAL INFORMATION

Under Section 7 of the Endangered Species Act (ESA) all federal agencies must ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species, or destroy or adversely modify its designated critical habitat.

In accordance with the 30 CFR 250, Subpart B, effective May 14, 2007, and further outlined in Notice to Lessees (NTL) 2008-G04, lessees/operators are required to address site-specific information on the presence of federally listed threatened or endangered species and critical habitat designated under the ESA and marine mammals protected under the Marine Mammal Protection Act. The federally listed endangered and threatened species potentially occurring in the lease area and/or along the gulf coast are provided in the table below:

Gulf of Mexico's Threatened and Endangered Species

Marine Mammal Species	Scientific Name	Status
fin whale	*Balaenoptera physalus*	Endangered
sei whale	*Balaenoptera borealis*	Endangered
sperm whale	*Physeter macrocephalus*	Endangered
Sea Turtle Species		
green sea turtle	*Chelonia mydas*	Threatened[1]
hawksbill sea turtle	*Eretmochelys imbricata*	Endangered
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered
leatherback sea turtle	*Dermochelys coriacea*	Endangered
loggerhead sea turtle	*Caretta caretta*	Threatened[2]
Fish Species		
Gulf sturgeon	*Acipenser oxyrinchus desotoi*	Threatened
Nassau grouper	*Epinephelus striatus*	Threatened
smalltooth sawfish	*Pristis pectinata*	Endangered[3]
Invertebrate Species		
rough cactus coral	*Mycetophyllia ferox*	Threatened[4]
pillar coral	*Dendrogyra cylindrus*	Threatened[4]
lobed star coral	*Orbicella annularis*	Threatened
mountainous star coral	*Orbicella faveolata*	Threatened
boulder star coral	*Orbicella franksi*	Threatened
staghorn coral	*Acropora cervicornis*	Threatened[4]
elkhorn coral	*Acropora palmata*	Threatened[5]

[1] North Atlantic and South Atlantic Distinct Population Segments.
[2] Northwest Atlantic Distinct Population Segment.
[3] U.S. Distinct Population Segment
[4] Colonies located at Dry Tortugas National Park.
[5] Colonies located at Flower Garden Banks National Marine Sanctuary and Dry Tortugas National Park.

Critical Habitat Designations

Loggerhead Sea Turtle: There are 38 designated marine areas that occur throughout the Southeast Region.

Gulf sturgeon: There are 14 marine and estuarine units located in Northwest Florida, Alabama, Mississippi, and eastern Louisiana.

Smalltooth sawfish: There are two habitat units located in Charlotte Harbor and in the Ten Thousand Islands/Everglades, Florida.

I. ARCHAEOLOGICAL REPORT

Ewing Bank Block 920 has been determined to have a high potential for containing archaeological properties,

Therefore, an Archaeological Survey Report has been prepared in accordance with NTL 2005-G07 "Archaeological Surveys and Reports" and NTL 2011-Joint-G01 "Revisions to the List of OCS Lease Blocks Requiring Archaeological Resource Surveys and Reports" and is being submitted under separate cover.

J. AIR AND WATER QUALITY INFORMATION

Per NTL NO. 2008-G04 this information is not required.

K. SOCIOECONOMIC INFORMATION

Per NTL NO. 2008-G04 this information is not required.

GULF OCEAN SERVICES
OFFSHORE GEOPHYSICAL SURVEYS

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PHONE (337) 267-1133 FAX (337) 267-1155

April 9, 2018

Bureau of Ocean Energy Management
Gulf of Mexico OCS Region (MS 5230)
1201 Elmwood Park Blvd.
New Orleans, LA 70123-2394

RE: EnVen Energy Ventures, LLC
NTL No. 2009-G40
Deepwater Benthic Communities Analysis
Block 920, Ewing Bank Area
Proposed OCS-G 35625 Well A-B-C Site

EnVen Energy Ventures, LLC proposes to drill 3 wells (A-B-C) in OCS-G 35625 from the following common surface location:

- 2,876.40' FSL and 5,660.81' FEL of Block 920, Ewing Bank Area
- X = 2,592,099.19' and Y = 10,187,996.40' (NAD 27)
- Latitude: 28°02' 34.806" N and Longitude: 90° 02' 57.817" W (NAD 27)

EnVen Energy Ventures, LLC contracted Gulf Ocean Services to prepare this Deepwater Benthic Community Analysis in accordance with ***NTL No. 2009-G40*** requiring site-specific information about high-density deepwater benthic communities, including chemosynthetic features, to accompany each Exploration Plan (EP), DOCD, or DPP. ***NTL No. 2009-G40*** changed the definition of deepwater from 400 meters (1,312 feet) to 300 meters (984 feet), increased the required separation distance between drilling muds/cuttings and sensitive features to 2,000 feet, and provided for an additional 1000-foot separation buffer zone beyond each anchor with respect to any potential deepwater benthic communities.

EnVen Energy Ventures, LLC provided a high-resolution AUV Archaeological Survey conducted in 2016 over a 16,000ft square survey grid in EW920 to supplement high quality 3-D seismic data completely encompassing the proposed surface drilling location, bottom hole locations, and all surrounding areas where semi-submersible rig anchors and mooring lines may impact the seafloor. The AUV survey included high-resolution multibeam echosounder data, side scan sonar for complete seafloor mosaic, and subbottom profiler records covering the 16,000ft square grid. Gulf Ocean Services, Inc partnered with Reservoir Definition Inc. to extract the 3-D data for EW920 and all surrounding contiguous blocks from the full time migrated volume and angle offset stack volume. Data sets were spectrally balanced by with bandwidth extension between 9Hz and 100Hz.

The combined data sets provide excellent detail for this Deepwater Benthic Community Analysis, which encompasses proposed well sites and anchor/mooring arrays in accordance with ***NTL No. 2009-G40***. Potentially sensitive benthic zones are outlined on the ***Seafloor Features Map 1 of 5*** included in the Shallow Hazard Report and Archaeological Assessment. The AUV survey data and 3-D seismic mapped features correlated closely to the ***Gulf of Mexico Seafloor Anomaly Classifications Map*** derived from regional 3-D data seafloor seismic amplitude anomalies plotted by BOEM with specific correlation to waterbottom anomalies indicative of potential benthic communities (*BOEM Map Gallery 2017*) https://www.boem.gov/Seismic-Water-Bottom-Anomalies-Map-Gallery/

Attachment E-1

GULF OCEAN SERVICES
OFFSHORE GEOPHYSICAL SURVEYS
226 WALL STREET LAFAYETTE, LA 70506
PHONE (337) 267-1133 FAX (337) 267-1155

The common surface location for OCS-G 35625 proposed wells A, B, and C is in -1,502 feet of water where seafloor impact will include a seafloor drilling template for a semisubmersible rig. The planned well drill site is 5,600 feet southwest of the nearest seep anomaly flow zone plotted in dotted blue. BOEM defines these zones of high-positive anomalies to be flows of sediment out of high flux vent sites on steep slopes. These zones either contained hydrocarbons which were partially lithified, possibly attracting chemosynthetic clams which consumed what carbon was available and subsequently died because they were not located at an active seep, or are made up of acoustically faster sediment, i.e. sand. The flows visited by submersibles have often a combination of the aforementioned components. The separation of any possible drilling muds/cuttings between the proposed wellbore and the nearest flow margin is 5,600 feet, which more than doubles the required 2,000 feet of separation required under ***NTL No. 2009-G40.***

The closest seep anomaly positive zones plotted in red on ***Seafloor Features Map 1 of 5*** is 10,750 feet NW of the proposed A-B-C common well site. These zones have not yet been confirmed as seep-site hardgrounds – BOEM states that they are purely seismic interpretations. Some of these high-positive anomalies visited by ROV's or submersibles have not had exposed authigenic carbonates due to the soft sediment cover. Due to vertical resolution of 3-D, there may be 28 feet of authigenic carbonates buried by 2 feet of soft hemipelagic mud and the feature could exhibit a strong high-positive amplitude anomaly on the 3-D data. The required separation zone between the wellbore and the seep will be 5 times the required 2,000 feet.

If a semisubmersible rig needing a mooring array is contracted to drill the proposed A-B-C wells, then the anchors or suction pilings will be placed farther than 1000 feet from the aforementioned seafloor anomaly features detected during this survey and correlated directly to published BOEM water bottom anomalies. If a dynamically-positioned semisubmersible rig is used, only the seafloor drilling template will impact the seafloor, and there will be 5,600 feet between the closest seep anomaly flow zone and the seafloor drilling template.

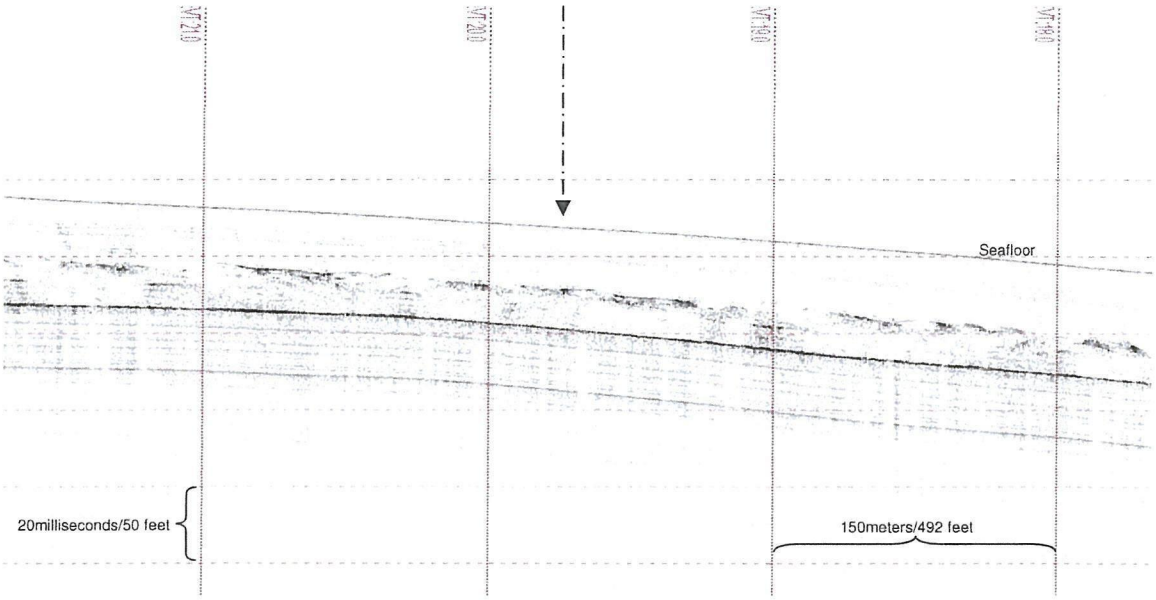
EnVen Energy Ventures, LLC has identified the potential deepwater benthic community zones surrounding the proposed well site and possible anchor/mooring spread. No seafloor features indicative of any type of deepwater benthic community will be disturbed.

S. Dean ElDarragi
Marine Geophysicist

Robert J. Floyd Ph.D.
Marine Archaeologist

GULF OCEAN SERVICES
OFFSHORE GEOPHYSICAL SURVEYS
226 WALL STREET LAFAYETTE, LA 70506
PHONE (337) 267-1133 FAX (337) 267-1155

Proposed A-B-C Common Surface Location



Subbottom Profiler Line 8 EW920 AUV Archaeological Survey 2016

GULF OCEAN SERVICES
OFFSHORE GEOPHYSICAL SURVEYS

226 WALL STREET LAFAYETTE, LA 70506
PHONE (337) 267-1133 FAX (337) 267-1155

April 9, 2018

Bureau of Ocean Energy Management
Gulf of Mexico OCS Region (MS 5230)
1201 Elmwood Park Blvd.
New Orleans, LA 70123-2394

RE: EnVen Energy Ventures, LLC
NTL No. 2009-G40
Deepwater Benthic Communities Analysis
Block 920, Ewing Bank Area
Proposed OCS-G 35625 Relief Well D Site

EnVen Energy Ventures, LLC proposes to drill a relief well D if necessary in OCS-G 35625 from the following common surface location:

- 1,573.98' FSL and 2,783.90' FEL of Block 920, Ewing Bank Area
- X = 2,594,976.10' and Y = 10,186,693.98' (NAD 27)
- Latitude: 28°02' 21.231" N and Longitude: 90° 02' 26.094" W (NAD 27)

EnVen Energy Ventures, LLC contracted Gulf Ocean Services to prepare this Deepwater Benthic Community Analysis in accordance with ***NTL No. 2009-G40*** requiring site-specific information about high-density deepwater benthic communities, including chemosynthetic features, to accompany each Exploration Plan (EP), DOCD, or DPP. ***NTL No. 2009-G40*** changed the definition of deepwater from 400 meters (1,312 feet) to 300 meters (984 feet), increased the required separation distance between drilling muds/cuttings and sensitive features to 2,000 feet, and provided for an additional 1000-foot separation buffer zone beyond each anchor with respect to any potential deepwater benthic communities.

EnVen Energy Ventures, LLC provided a high-resolution AUV Archaeological Survey conducted in 2016 over a 16,000ft square survey grid in EW920 to supplement high quality 3-D seismic data completely encompassing the proposed surface drilling location, bottom hole locations, and all surrounding areas where semi-submersible rig anchors and mooring lines may impact the seafloor. The AUV survey included high-resolution multibeam echosounder data, side scan sonar for complete seafloor mosaic, and subbottom profiler records covering the 16,000ft square grid. Gulf Ocean Services, Inc partnered with Reservoir Definition Inc. to extract the 3-D data for EW920 and all surrounding contiguous blocks from the full time migrated volume and angle offset stack volume. Data sets were spectrally balanced by with bandwidth extension between 9Hz and 100Hz.

The combined data sets provide excellent detail for this Deepwater Benthic Community Analysis, which encompasses proposed well sites and anchor/mooring arrays in accordance with ***NTL No. 2009-G40***. Potentially sensitive benthic zones are outlined on the ***Seafloor Features Map 1 of 5*** included in the Shallow Hazard Report and Archaeological Assessment. The AUV survey data and 3-D seismic mapped features correlated closely to the ***Gulf of Mexico Seafloor Anomaly Classifications Map*** derived from regional 3-D data seafloor seismic amplitude anomalies plotted by BOEM with specific correlation to waterbottom anomalies indicative of potential benthic communities (*BOEM Map Gallery 2017*) https://www.boem.gov/Seismic-Water-Bottom-Anomalies-Map-Gallery/

Attachment E-2

GULF OCEAN SERVICES
OFFSHORE GEOPHYSICAL SURVEYS
226 WALL STREET LAFAYETTE, LA 70506
PHONE (337) 267-1133 FAX (337) 267-1155

The proposed surface location for OCS-G 35625 relief well D is in -1,560 feet of water where seafloor impact will include a seafloor drilling template for a semisubmersible rig. The planned well drill site is 5,800 feet south of the nearest seep anomaly flow zone plotted in dotted blue. BOEM defines these zones of high-positive anomalies to be flows of sediment out of high flux vent sites on steep slopes. These zones either contained hydrocarbons which were partially lithified, possibly attracting chemosynthetic clams which consumed what carbon was available and subsequently died because they were not located at an active seep, or are made up of acoustically faster sediment, i.e. sand. The flows visited by submersibles have often a combination of the aforementioned components. The separation of any possible drilling muds/cuttings between the proposed wellbore and the nearest flow margin is 5,800 feet, which almost triples the required 2,000 feet of separation required under ***NTL No. 2009-G40.***

The closest seep anomaly positive zones plotted in red on ***Seafloor Features Map 1 of 5*** is 13,800 feet NW of the proposed D well site. These zones have not yet been confirmed as seep-site hardgrounds – BOEM states that they are purely seismic interpretations. Some of these high-positive anomalies visited by ROV's or submersibles have not had exposed authigenic carbonates due to the soft sediment cover. Due to vertical resolution of 3-D, there may be 28 feet of authigenic carbonates buried by 2 feet of soft hemipelagic mud and the feature could exhibit a strong high-positive amplitude anomaly on the 3-D data. The required separation zone between the wellbore and the seep will be approximately 7 times farther than the required 2,000 feet.

If a semisubmersible rig needing a mooring array is contracted to drill the proposed D well, then the anchors or suction pilings will be placed farther than 1000 feet from the aforementioned seafloor anomaly features detected during this survey and correlated directly to the published BOEM water bottom anomalies. If a dynamically-positioned semisubmersible rig is used, only the seafloor drilling template will impact the seafloor, and there will be 5,800 feet between the closest seep anomaly flow zone and the seafloor drilling template.

EnVen Energy Ventures, LLC has identified the potential deepwater benthic community zones surrounding the proposed well site and possible anchor/mooring spread. No seafloor features indicative of any type of deepwater benthic community will be disturbed.

S. Dean ElDarragi
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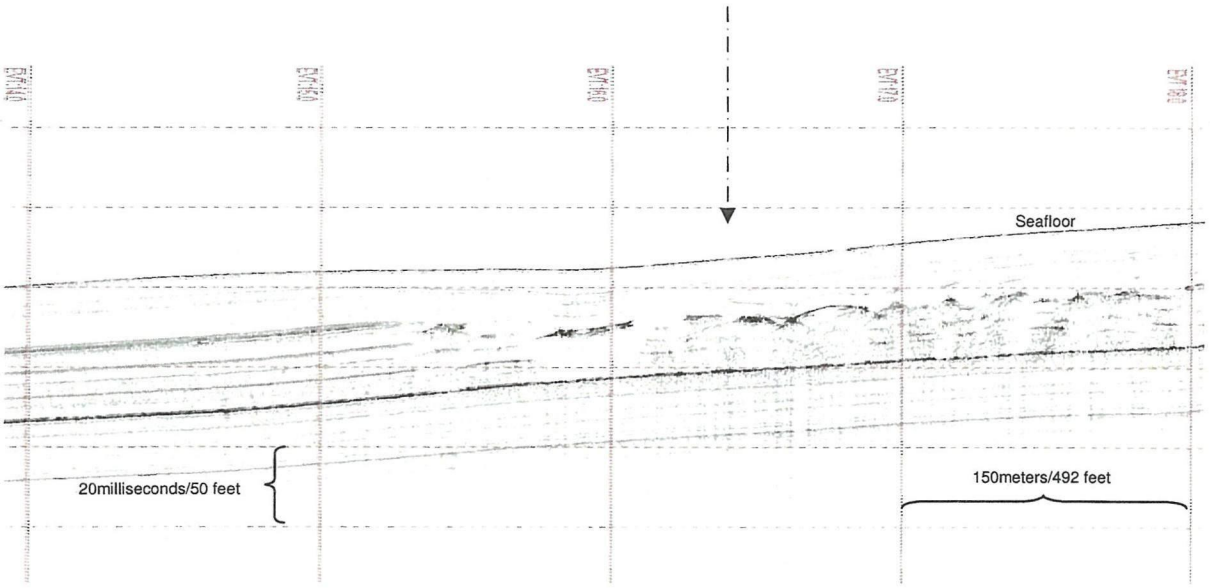
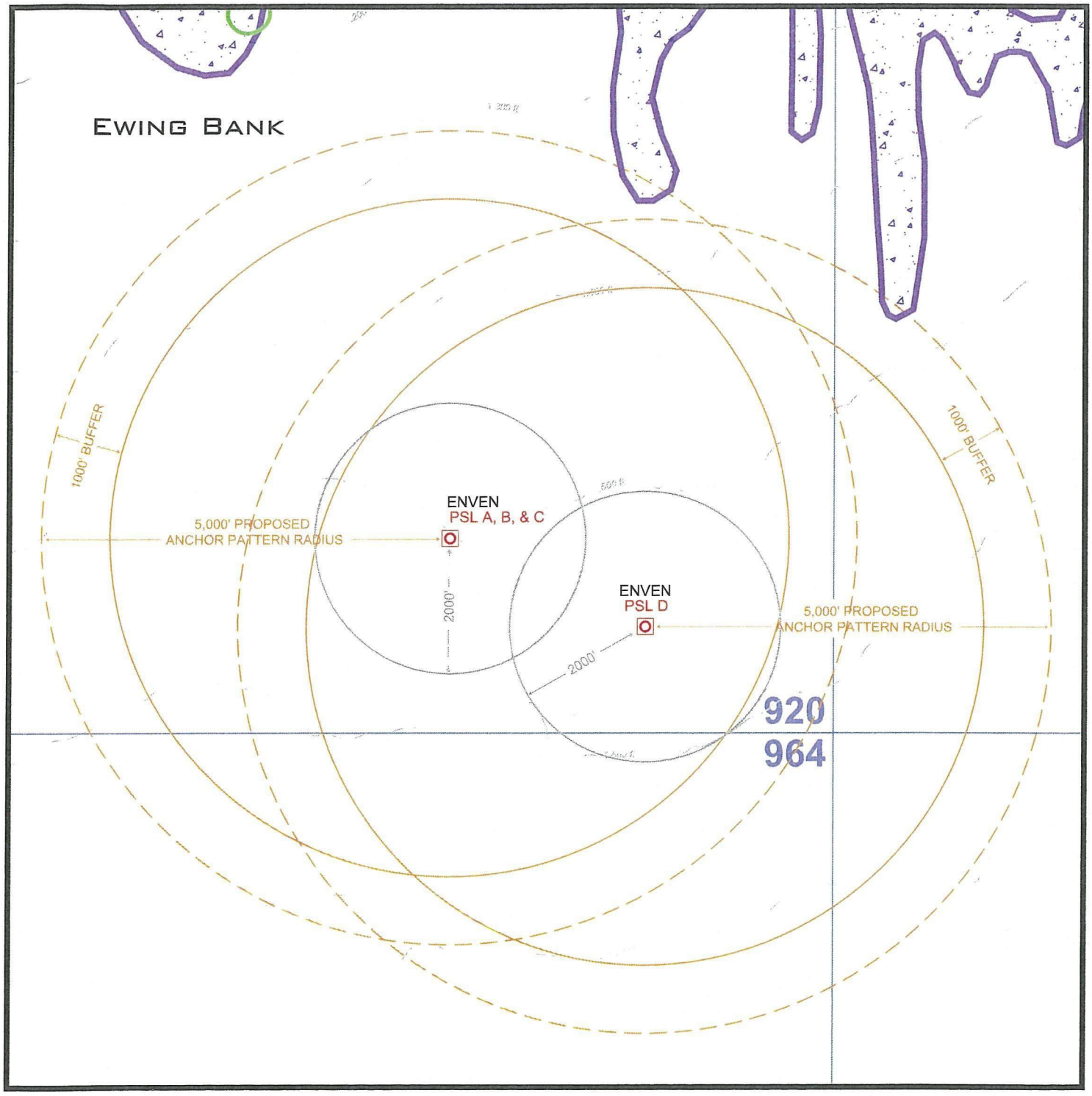
PHONE (337) 267-1133 FAX (337) 267-1155

Proposed D Relief Well Surface Location



Subbottom Profiler Line 11 EW920 AUV Archaeological Survey 2016



BOEM ANOMALIES 2017 (Per Shallow Harzard Survey)

- DORMANT EXPLUSION CRATER
- AREAS OF SEEP ANOMALY FLOWS

0 1000' 2000' 3000' 4000'

Offshore Lousiana
Ewing Bank 920
Proposed Anchor Pattern Map
Proprietary Location A, B, C & D

enven
ENERGY VENTURES

Attachment E3

SECTION F
WASTES AND DISCHARGES INFORMATION
(30 CFR 550.217 AND 550.248)

A. PROJECTED GENERATED WASTES & OCEAN DISCHARGES

Projected solid and liquid wastes likely to be generated by the proposed activities and/or to be discharged overboard are included as **Attachment F-1**.

Waste you will generate, treat and downhole dispose or discharge to the GOM

Projected Generated Waste			Projected Ocean Discharges	
Type of Waste	**Composition**	**Projected Amount**	**Discharge Rate**	**Discharge Method**
Will drilling occur? If yes, you should list muds and cuttings				
EXAMPLE: Cuttings wetted with synthetic based fluid	*Cuttings generated while using synthetic based drilling fluid*	*X bbl/well*	*X bbl/day /well*	*Discharge overboard*
Water-based Drilling Fluids	Water based drilling fluid	32,000	5,000	Discharged overboard
Cuttings wetted with water-based fluid	Cuttings coated with water based drilling mud	1,512	400	Discharged overboard
Synthetic-based Drilling Fluids	Synthetic based drilling fluid - retained on cuttings	1,857	93	Discharged thru shunt pipe below water's surface
Cuttings wetted with synthetic-based fluid	Cuttings coated with synthetic based drilling fluid	530	27	Treated using solids control equipment and discharged thru shunt pipe 25' below water's surface.
Will humans be there? If yes, expect conventional waste				
EXAMPLE: Sanitary waste water	*Sanitary waste from living quarters*	*X bbl/well*	*X bbl/hr /well*	*Chlorinate & discharge overboard*
Domestic waste	Gray water (laundry, galley, lavatory)	30,000	200	Discharged overboard. Any associated food waste will be processed using an approved grinder
Sanitary waste	Treated human body waste from toilets	25,000	150	USCG approved MSD
Is there a deck? If yes, there will be Deck Drainage				
Deck Drainage	Wash and rainwater	3000 bbls/well	20 bbl/day	Treat for oil and drain overboard
Will you conduct well treatment, completion or workover? If yes, only fill in those associated with your activity				
Well treatment fluids	KCL/HCL/NaCL/NaBr	2,000	N/A	N/A
Well completion fluids	CaBr2 / ZnBr2	6,000	N/A	N/A
Workover fluids	CaBr2 / ZnBr2	6,000	N/A	N/A
Miscellaneous discharges? If yes, only fill in those associated with your activity				
Desalinization unit discharge	Rejected water from water maker unit	125,000	60	Cuttings chute
Blowout prevent fluid	Stackmagic 200/0/5% glycol based on 2% mixture with potable water	200	12 per week with function test	Discharged from BOP near mudline
Ballast water	Uncontaminated seawater used to maintain proper draft	50,000	9	Discharged overboard
Bilge Water	Bilge water	600	0.1	Discharged overboard
Excess cement at seafloor	Cement slurry	1000	19	Discharged at the mudline during cementing conductor casing
Firewater	Seawater with no addition of chemicals	N/A	N/A	Discharged overboard
Cooling water	Seawater with no addition of chemicals	3,600,000	1,667	Discharged overboard
Will you produce hydrocarbons? If yes, fill in for produced water				
Produced water	N/A	N/A	N/A	N/A
Will you be covered by an individual or general NPDES permit:				
General - NPDES ID GMG290376				
NOTE: IF YOU WILL NOT HAVE A TYPE OF WASTE, ENTER *"NA"* IN THE ROW.				

Attachment F-1

TABLE 2. WASTE AND SURPLUS ESTIMATED TO BE TRANSPORTED AND/OR DISPOSED OF ONSHORE/EW 920/OCSG 35625

	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.						
	EXAMPLE: Synthetic-based drilling fluid or mud	*internal olefin, ester*	*Below deck storage tanks on offshore support vessels*	*Newport Environmental Services Inc., Ingleside, TX*	*X bbl/well*	*Recycled*
	Oil-based drilling fluid or mud	**NA**	NA	NA		NA
	Synthetic-based drilling fluid or mud	**IO 16/18 & product**	USCG approved 25 bbl boxes on transport vessel	EcoServe or R360, Fourchon, LA	750 bbls/well	*Injected downhole or recycled*
	Cuttings wetted with Water-based fluid	Water Based/Shale/Sand	Overboard	NA		*Overboard*
	Cuttings wetted with Synthetic-based fluid	IO 16/18 & product	USCG approved 25 bbl boxes on transport vessel	EcoServe or R360, Fourchon, LA	500 bbls/well	*Injected downhole or recycled*
	Cuttings wetted with oil-based fluids	NA	NA	NA		NA
Will you produce hydrocarbons? If yes fill in for produced sand.						
	Produced sand	NA				
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	Domestic Trash	Storge bins on transport vessel	Approved disposal site, Fourchon, LA	250 bbls/well	Recycled or disposed
	Used oil	Used Oil filter/Rags	Transport in DOT containers on supply	Martin fuel dock, Fourchon, LA	10 bbls/well	Recycled
	Wash water	NA				
	Chemical product wastes	NA				
	NOTE: If you will not have a type of waste, enter NA in the row.					

SECTION G
AIR EMISSIONS INFORMATION
(30 CFR 550.218 AND 550.249)

EMISSIONS WORKSHEETS AND SCREENING QUESTIONS

Screen Procedures for EP's	Yes	No
Is any calculated Complex Total (CT) Emission amount (tons) associated with your proposed exploration activities more than 90% of the amounts calculated using the following formulas: CT = $3400D^{2/3}$ for CO, and CT = 33.3D for the other air pollutants (where D = distance to shore in miles)?		X
Do your emission calculations include any emission reduction measures or modified emission factors?		X
Are your proposed exploration activities located east of 87.5° W longitude?		X
Do you expect to encounter H_2S at concentrations greater than 20 parts per million (ppm)?		X
Do you propose to flare or vent natural gas for more than 48 continuous hours from any proposed well?		X
Do you propose to burn produced hydrocarbon liquids?		X

Plan Emission amounts were calculated using the methodology, emission factors and worksheets in Form BOEM-0138 for Exploration Plans.

There are no existing facilities or activities co-located with the currently proposed activities, therefore the Complex Total Emissions are the same as the Plan Emissions and are provided in **Attachment G-1.**

OMB Control No. 1010-0151
OMB Approval Expires: 12/31/14

EXPLORATION PLAN (EP)
AIR QUALITY SCREENING CHECKLIST

COMPANY	EnVen Energy Ventures, LLC
AREA	Ewing Bank
BLOCK	920
LEASE	OCS-G 35625
PLATFORM	
WELL	Wells A thru D
COMPANY CONTACT	Cheryl Powell
TELEPHONE NO.	713-335-7041
REMARKS	Drill and complete 4 wells utilizing either a semi-submersible, DP semi or drillship.

Attachment G-1

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	1.468	14	1.12	3.03	AP42 3.3-1	10/96
Diesel Recip. > 600 hp.	gms/hp-hr	0.32	1.468	11	0.33	2.4	AP42 3.4-1	10/96
Diesel Boiler	lbs/bbl	0.084	2.42	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	0.4	% 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
EnVen Energy Ventures,	Ewing Bank	920	OCS-G 35625		Wells A thru D		Cheryl Powell	713-335-7041	

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	DAYS	PM	SOx	NOx	VOC	CO	PM	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	61800	2984.94	71638.56	24	115	43.56	199.83	1497.36	44.92	326.70	60.11	275.76	2066.35	61.99	450.84
	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)	2265	109.3995	2625.59	6	49	1.60	7.32	54.88	1.65	11.97	0.24	1.08	8.11	0.24	1.77
	VESSELS>600hp diesel(supply)	2265	109.3995	2625.59	10	21	1.60	7.32	54.88	1.65	11.97	0.17	0.77	5.76	0.17	1.26
	VESSELS>600hp diesel(anchor handling)	4400	212.52	5100.48	24	3	3.10	14.23	106.61	3.20	23.26	0.11	0.51	3.84	0.12	0.84
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							49.85	228.70	1713.72	51.41	373.90	60.63	278.13	2084.07	62.52	454.71
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											2331.00	2331.00	2331.00	2331.00	57748.97
	70.0															

EMISSIONS CALCULATIONS 2ND YEAR

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL		CONTACT	PHONE	REMARKS
EnVen Energy Ventures,	Ewing Bank	920	OCS-G 35625		Wells A thru D		Cheryl Powell	713-335-7041	

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	DAYS	PM	SOx	NOx	VOC	CO	PM	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	61800	2984.94	71638.56	24	115	43.56	199.83	1497.36	44.92	326.70	60.11	275.76	2066.35	61.99	450.84
	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)	2265	109.3995	2625.59	6	49	1.60	7.32	54.88	1.65	11.97	0.24	1.08	8.11	0.24	1.77
	VESSELS>600hp diesel(supply)	2265	109.3995	2625.59	10	21	1.60	7.32	54.88	1.65	11.97	0.17	0.77	5.76	0.17	1.26
	VESSELS>600hp diesel(anchor handling)	4400	212.52	5100.48	24	3	3.10	14.23	106.61	3.20	23.26	0.11	0.51	3.84	0.12	0.84
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	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.	BPD	SCF/HR	COUNT												
	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						49.85	228.70	1713.72	51.41	373.90	60.63	278.13	2084.07	62.52	454.71
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											2331.00	2331.00	2331.00	2331.00	57748.97
	70.0															

EMISSIONS CALCULATIONS 3RD YEAR

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL		CONTACT	PHONE	REMARKS
EnVen Energy Ventures	Ewing Bank	920	OCS-G 35625		Wells A thru D		Cheryl Powell	713-335-7041	

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	DAYS	PM	SOx	NOx	VOC	CO	PM	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	61800	2984.94	71638.56	24	115	43.56	199.83	1497.36	44.92	326.70	60.11	275.76	2066.35	61.99	450.84
	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)	2265	109.3995	2625.59	6	49	1.60	7.32	54.88	1.65	11.97	0.24	1.08	8.11	0.24	1.77
	VESSELS>600hp diesel(supply)	2265	109.3995	2625.59	10	21	1.60	7.32	54.88	1.65	11.97	0.17	0.77	5.76	0.17	1.26
	VESSELS>600hp diesel(anchor handling)	4400	212.52	5100.48	24	3	3.10	14.23	106.61	3.20	23.26	0.11	0.51	3.84	0.12	0.84
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 WELL TEST	OIL BURN	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GAS FLARE		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
2021 YEAR TOTAL							49.85	228.70	1713.72	51.41	373.90	60.63	278.13	2084.07	62.52	454.71
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											2331.00	2331.00	2331.00	2331.00	57748.97
	70.0															

EMISSIONS CALCULATIONS 4TH YEAR

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL		CONTACT	PHONE	REMARKS
EnVen Energy Ventures	Ewing Bank	920	OCS-G 35625		Wells A thru D		Cheryl Powell	713-335-7041	

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	DAYS	PM	SOx	NOx	VOC	CO	PM	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	61800	2984.94	71638.56	24	115	43.56	199.83	1497.36	44.92	326.70	60.11	275.76	2066.35	61.99	450.84
	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)	2265	109.3995	2625.59	6	49	1.60	7.32	54.88	1.65	11.97	0.24	1.08	8.11	0.24	1.77
	VESSELS>600hp diesel(supply)	2265	109.3995	2625.59	10	21	1.60	7.32	54.88	1.65	11.97	0.17	0.77	5.76	0.17	1.26
	VESSELS>600hp diesel(anchor handling)	4400	212.52	5100.48	24	3	3.10	14.23	106.61	3.20	23.26	0.11	0.51	3.84	0.12	0.84
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 WELL TEST	OIL BURN	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GAS FLARE		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
2022 YEAR TOTAL							49.85	228.70	1713.72	51.41	373.90	60.63	278.13	2084.07	62.52	454.71
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											2331.00	2331.00	2331.00	2331.00	57748.97
	70.0															

SUMMARY

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL
EnVen Energy V	Ewing Bank	920	OCS-G 35625		Wells A thru D

Year	Emitted Substance				
	PM	SOx	NOx	VOC	CO
2019	60.63	278.13	2084.07	62.52	454.71
2020	60.63	278.13	2084.07	62.52	454.71
2021	60.63	278.13	2084.07	62.52	454.71
2022	60.63	278.13	2084.07	62.52	454.71
Allowable	2331.00	2331.00	2331.00	2331.00	57748.97

SECTION H
OIL SPILLS INFORMATION
(30 CFR 550.219 AND 550.250)

A. OIL SPILL RESPONSE PLANNING

The proposed activities are in the Central Planning Area of the GOM. Therefore, a site-specific Oil Spill Response Plan (OSRP) is not required for this plan.

B. REGIONAL OSRP INFORMATION

All the proposed activities and facilities in this Exploration Plan will be covered by the Oil Spill Response Plan filed by EnVen Energy Ventures, LLC (BOEM Operator Number 03026) in accordance with 30 CFR 254 and approved on May 8, 2014, biennial update found to be in compliance on May 2, 2016, and most recently revised and found to be in compliance on January 11, 2018.

1. SPILL RESPONSE SITES

Primary Response Equipment Location	Preplanned Staging Location
Houma, LA	Houma, LA
Fourchon, LA	Port Fourchon, LA
Leeville, LA	

C. OSRO INFORMATION

EnVen utilizes the Clean Gulf Associates (CGA) and the Marine Spill Response Corporation's (MSRC) STARS network as the primary providers for oil spill removal equipment. The MSRC STARS network provides for the closest available personnel, as well as an MSRC supervisor to operate the equipment.

D. WORST-CASE SCENARIO COMPARISON

A comparison from EnVen's approved regional OSRP with the worst-case scenario from the proposed activities in this Exploration Plan is provided in the table below.

The proposed activities are greater than ten miles seaward of the coastline, therefore, the "far-shore" worst case scenario is provided as the "exploration" worst case scenario.

Category	Regional OSRP WCD	Exploration WCD
Type of Activity	Drilling	Drilling
Facility Location (Area/Block)	SM 152	EW 920
Facility Designation	Well Location B	Well Location A
Distance to Nearest Shoreline (miles)	85	70
Volume Storage tanks (total) Uncontrolled blowout Total Volume	0 0 120,000 120,000	0 0 92,541 92,541
Type of Oil(s) (crude, condensate, diesel)	Oil	Oil
API Gravity	35°	21°

Since EnVen has the capability to respond to the worst-case spill scenario included in our Regional OSRP approved on May 8, 2014, and since the worst-case scenario determined for our EP does not replace the worst-case scenario in our Regional OSRP, I hereby certify that EnVen 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 our EP.

Detailed reservoir simulation used to determine the WCD at Ewing Bank Block 920 is being submitted under separate cover. A wellbore schematic and directional survey are included as **Attachments H-1 and H-2**.

E. OIL SPILL RESPONSE DISCUSSION (NEPA ANALYSIS)

SPILL RESPONSE DISCUSSION

For the purpose of NEPA and Coastal Zone Management Act analysis, the largest spill volume originating from the proposed activity would be a well blowout during drilling operations, estimated to be 35,879 barrels of crude oil with an API gravity of 17.9°.

Land Segment and Resource Identification

Trajectories of a spill and the probability of it impacting a land segment have been projected utilizing information in the BOEM Oil Spill Risk Analysis Model (OSRAM) for the Central and Western Gulf of Mexico available on the BOEM website. The results are shown in **Figure 1.** The BOEM OSRAM identifies a 7% probability of impact to the shorelines of Cameron Parish, Louisiana within 30 days. Cameron Parish includes the east side of Sabine Lake, Sabine National Wildlife Refuge, Calcasieu Lake, Lacassine National Wildlife Refuge (inland) and Grand Lake. Cameron Parish also includes the area along the coastline from Sabine Pass to Big Constance Lake in Rockefeller Wildlife Refuge. This region is composed of open public beaches, marshlands and swamps. It serves as a habitat for numerous birds, finfish and other animals, including several rare, threatened and endangered species.

Response

EnVen Energy Ventures, LLC will make every effort to respond to the Worst Case Discharge as effectively as practicable. A description of the response equipment under contract to contain and recover the Worst Case Discharge is shown in **Figure 2.**

Using the estimated chemical and physical characteristics of crude oil, an ADIOS weathering model was run on a similar product from the ADIOS oil database. The results indicate 14% or approximately 5,023 barrels of crude oil would be evaporated/dispersed within 24 hours, with approximately 30,856 barrels remaining.

Natural Weathering Data: EW 920, Well Location A	**Barrels of Oil**
WCD Volume	35,879
Less 14% natural evaporation/dispersion	5,023
Remaining volume	30,856

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

EnVen Energy Ventures, LLC's Oil Spill Response Plan includes alternative response technologies such as dispersants and in-situ burn. Strategies will be decided by Unified Command based on an operations safety analysis, the size of the spill, weather and potential

impacts. If aerial dispersants are utilized, 8 sorties (9,600 gallons) from two of the DC-3 aircrafts and 4 sorties (8,000 gallons) from the Basler aircraft would provide a daily dispersant capability of 7,540 barrels. If the conditions are favorable for in-situ burning, the proper approvals have been obtained and the proper planning is in place, in-situ burning of oil may be attempted. Slick containment boom would be immediately called out and on-scene as soon as possible. Offshore response strategies may include attempting to skim utilizing CGA spill response equipment, with a total derated skimming capacity of 157,693 barrels. Temporary storage associated with skimming equipment equals 5,347 barrels. If additional storage is needed, various storage barges with a total capacity 154,000 bbls may be mobilized and centrally located to provide temporary storage and minimize off-loading time. **Safety is first priority. Air monitoring will be accomplished and operations deemed safe prior to any containment/skimming attempts.**

If the spill went unabated, shoreline impact in Cameron Parish, Louisiana would depend upon existing environmental conditions. Shoreline protection would include the use of CGA's near shore and shallow water skimmers with a totaled derated skimming capacity of 34,874 barrels. Temporary storage associated with skimming equipment equals 903 barrels. If additional storage is needed, one storage barge with a total capacity 47,000 bbls may be mobilized and centrally located to provide temporary storage and minimize off-loading time. Onshore response may include the deployment of shoreline boom on beach areas, or protection and sorbent boom on vegetated areas. A Master Service Agreement with AMPOL will ensure access to 94,250 feet of 18" shoreline protection boom. **Figure 2** outlines individual times needed for procurement, load out, travel time to the site and deployment. Strategies would be based upon surveillance and real time trajectories that depict areas of potential impact given actual sea and weather conditions. Applicable Area Contingency Plans (ACPs), Geographic Response Plans (GRPs), and Unified Command (UC) will be consulted to ensure that environmental and special economic resources are correctly identified and prioritized to ensure optimal protection. Shoreline protection strategies depict the protection response modes applicable for oil spill clean-up operations. As a secondary resource, the State of Louisiana Initial Oil Spill Response Plan will be consulted as appropriate to provide detailed shoreline protection strategies and describe necessary action to keep the oil spill from entering Louisiana's coastal wetlands. The UC should take into consideration all appropriate items detailed in Tactics discussion of this Appendix. The UC and their personnel have the option to modify the deployment and operation of equipment to allow for a more effective response to site-specific circumstances. EnVen Energy Ventures, LLC's contract Spill Management Team has access to the applicable ACP(s) and GRP(s).

Based on the anticipated worst case discharge scenario, EnVen Energy Ventures, LLC can be onsite with contracted oil spill recovery equipment with adequate response capacity to contain and recover surface hydrocarbons, and prevent land impact, to the maximum extent practicable, within an estimated 60 hours (based on the equipment's Effective Daily Recovery Capacity (EDRC)).

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

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

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

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

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

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

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

Offshore Response Actions

Equipment Deployment

Surveillance

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

Dispersant application assets

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

Containment boom

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

Oceangoing Boom Barge

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

In-situ Burn assets

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

Dedicated off-shore skimming systems
General

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

CGA HOSS Barge

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

CGA 95' Fast Response Vessels (FRVs)

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

CGA FRUs

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

T&T Koseq Skimming Systems

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

Storage Vessels

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

Vessels of Opportunity (VOO)

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

Adverse Weather Operations:

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

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

Maximization of skimmer-oil encounter rate

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

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

Maximize skimmer system efficiency

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

Recovered Oil Storage

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

Command, Control, and Communications (C^3)

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

On Water Recovery Group

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

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

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

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

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

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

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

Initial set-up and potential actions:

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

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

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

TF 1

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

TF 2

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

TF 3

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

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

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

TF 4

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

TF 5

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

TF 6

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

TF 7

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

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

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

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

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

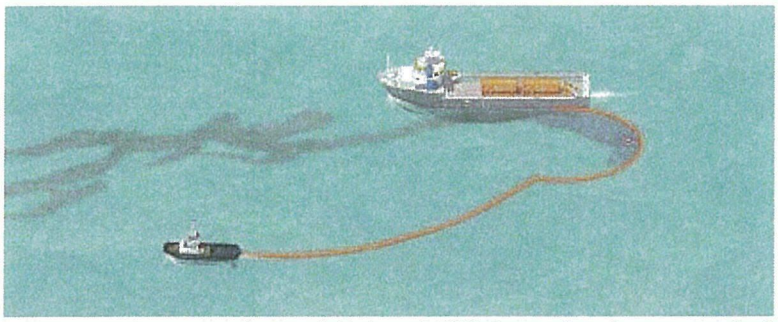
The Fast Response Unit (FRU): A self-contained, skid based, skimming system that is deployed from the right side of a vessel of opportunity (VOO). An outrigger holds a 75' long section of air inflatable boom in place that directs oil to an apex for recovery via a Foilex 250 weir skimmer. The outrigger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

Tactical Overview

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

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

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



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

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

Tactical Overview

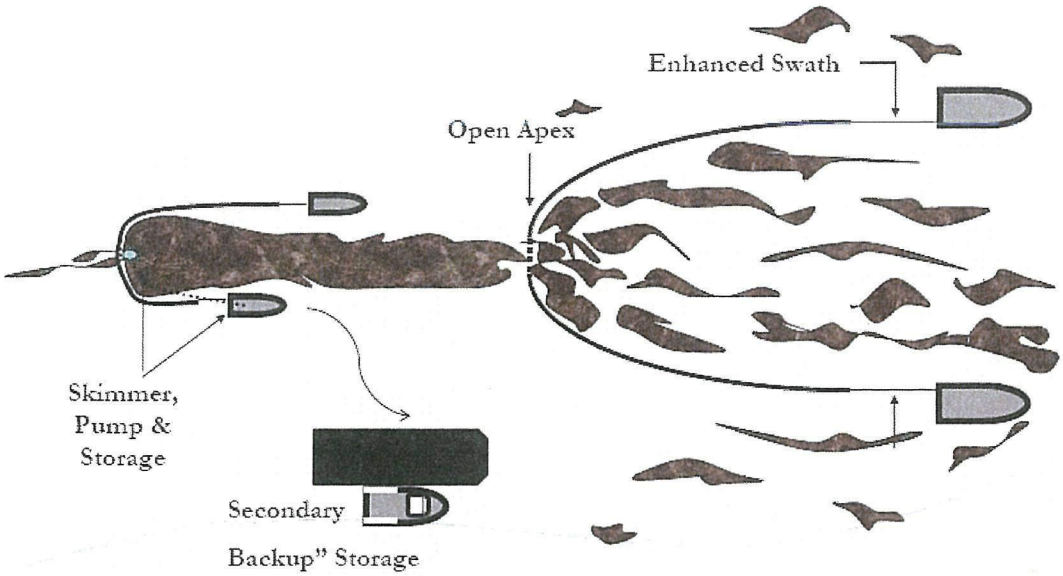
Mechanical Recovery – Deployed on large vessels of opportunity (VOO) the Koseq Rigid Sweeping Arms are high volume surge capacity deployed to increase recovery capacity at the source of a large oil spill in the offshore and outer nearshore environment of the Gulf of Mexico. They are highly mobile and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

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

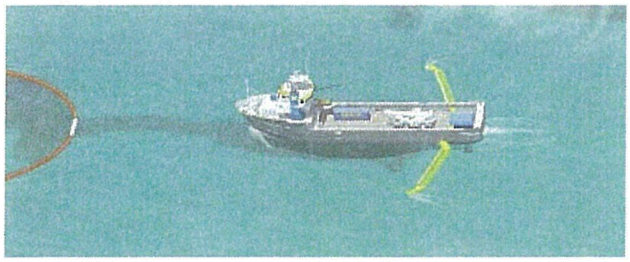
Command and Control – The large OSVs in many cases have state of the art communication and electronic systems, as well as the accommodations to support the function of directing all skimming operations offshore and reporting back to the command post.

Possible Task Force Configuration (Multiple Koseq VOOs can be deployed in a task force)

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



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



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

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

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

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

Near Shore Response Actions

Timing

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

Considerations

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

Surveillance

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

Dispersant Use

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

Dedicated Near Shore skimming systems

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

VOO

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

Shoreline Protection Operations

Response Planning Considerations

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

Placement of boom

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

Beach Preparation - Considerations and Actions

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

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

Inland and Coastal Marsh Protection and Response Considerations and Actions

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

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

Decanting Strategy

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

CGA Equipment Limitations

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

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

Environmental Conditions in the GOM

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

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

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

FIGURE 1
TRAJECTORY BY LAND SEGMENT

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

Area/Block	OCS-G	Launch Area	Land Segment and/or Resource	Conditional Probability (%)
Drilling Operations **EW 920,** **Well Location A** *70 miles from shore*	G35625	C42	Matagorda, TX Galveston, TX Jefferson, TX **Cameron, LA** Vermilion, LA Iberia, LA Terrebonne, LA Lafourche, LA Jefferson, LA Plaquemines, LA	1 2 2 **7** 3 1 3 2 1 5

WCD Scenario– <u>BASED ON WELL BLOWOUT DURING DRILLING OPERATIONS</u> (70 miles from shore)
30,856 bbls of crude oil (Volume considering natural weathering)
API Gravity 17.9°

FIGURE 2 – Equipment Response Time to EW 920, Well Location A

Dispersants/Surveillance

Dispersant/Surveillance	Dispersant Capacity (gal)	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Travel to site	Total Hrs
ASI							
Basler 67T	2000	2	Houma	2	2	0.6	4.6
DC 3	1200	2	Houma	2	2	0.8	4.8
DC 3	1200	2	Houma	2	2	0.8	4.8
Aero Commander	NA	2	Houma	2	2	0.6	4.6

Offshore Response

Offshore Equipment Pre-Determined Staging	EDRC	Storage Capacity	VOO	Persons Required	From	Hrs to Procure	Hrs to Loadout	Hrs to GOM	Travel to Spill Site	Hrs to Deploy	Total Hrs
CGA											
HOSS Barge	76285	4000	3 Tugs	12	Harvey	6	0	12	10	2	30
95' FRV	22885	249	NA	6	Leeville	2	0	2	4	1	9
95' FRV	22885	249	NA	6	Venice	2	0	3	4	1	10
95' FRV	22885	249	NA	6	Vermilion	2	0	3	10	1	16
Boom Barge (CGA-300) 42" Auto Boom (25000')	NA	NA	1 Tug 50 Crew	4 (Barge) 2 (Per Crew)	Leeville	8	0	4	11.5	2	25.5

Recovered Oil Storage Pre-Determined Staging	EDRC	Storage Capacity	VOO	Persons Required	From	Hrs to Procure	Hrs to Loadout	Hrs to GOM	Travel to Spill Site	Hrs to Deploy	Total Hrs
Enterprise Marine Services LLC (Available through contract with CGA)											
CTCo 2603	NA	25000	1 Tug	6	Amelia	26	12	6	15	1	60
CTCo 2604	NA	20000	1 Tug	6	Amelia	26	12	6	15	1	60
CTCo 2605	NA	20000	1 Tug	6	Amelia	26	12	6	15	1	60
CTCo 2606	NA	20000	1 Tug	6	Amelia	26	12	6	15	1	60
CTCo 2607	NA	23000	1 Tug	6	Amelia	26	12	6	15	1	60
CTCo 2608	NA	23000	1 Tug	6	Amelia	26	12	6	15	1	60
CTCo 2609	NA	23000	1 Tug	6	Amelia	26	12	6	15	1	60

Staging Area: Fourchon

Offshore Equipment With Staging	EDRC	Storage Capacity	VOO	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Travel to Staging	Travel to Site	Hrs to Deploy	Total Hrs
CGA											
FRU (1) + 100 bbl Tank (2)	4251	200	1 Utility	6	Morgan City	2	6	3	7	1	19
FRU (2) + 100 bbl Tank (4)	8502	400	2 Utility	12	Venice	2	6	5	7	1	21
Hydro-Fire Boom	NA	NA	8 Utility	40	Harvey	0	24	3	7	6	40

Nearshore Response

Nearshore Equipment Pre-determined Staging	EDRC	Storage Capacity	VOO	Persons Required	From	Hrs to Procure	Hrs to Loadout	Hrs to GOM	Travel to Spill Site	Hrs to Deploy	Total Hrs
CGA											
46' FRV	15257	65	NA	4	Lake Charles	2	0	2	2.5	1	7.5
Enterprise Marine Services LLC (Available through contract with CGA)											
CTCo 5001	NA	47000	1 Tug	6	Amelia	26	12	6	15	1	60

Staging Area: Cameron

Nearshore Equipment With Staging	EDRC	Storage Capacity	VOO	Persons Req.	From	Hrs to Procure	Hrs to Load Out	Travel to Staging	Travel to Deployment	Hrs to Deploy	Total Hrs
CGA											
SWS Egmopol	1810	100	NA	3	Galveston	2	2	5	2	1	12
SWS Egmopol	1810	100	NA	3	Morgan City	2	2	4.5	2	1	11.5
SWS Marco	3588	20	NA	3	Lake Charles	2	2	2	2	1	9
SWS Marco	3588	34	NA	3	Leeville	2	2	7	2	1	14
SWS Marco	3588	34	NA	3	Venice	2	2	9.5	2	1	16.5
Foilex Skim Package (TDS 150)	1131	50	NA	3	Lake Charles	4	12	2	2	2	22
Foilex Skim Package (TDS 150)	1131	50	NA	3	Galveston	4	12	5	2	2	25
Foilex Skim Package (TDS 150)	1131	50	NA	3	Harvey	4	12	7	2	2	27
4 Drum Skimmer (Magnum 100)	680	100	1 Crew	3	Lake Charles	2	2	2	2	1	9
4 Drum Skimmer (Magnum 100)	680	100	1 Crew	3	Harvey	2	2	7	2	1	14
2 Drum Skimmer (TDS 118)	240	100	1 Crew	3	Lake Charles	2	2	2	2	1	9
2 Drum Skimmer (TDS 118)	240	100	1 Crew	3	Harvey	2	2	7	2	1	14

Staging Area: Cameron

Shoreline Protection Boom	VOO	Persons Req.	Storage/Warehouse Location	Hrs to Procure	Hrs to Loadout	Travel to Staging	Travel to Deployment	Hrs to Deploy	Total Hrs
AMPOL (available through MSA)									
34,050' 18" Boom	13 Crew	26	New Iberia, LA	2	2	3.5	2	12	21.5
12,850' 18" Boom	7 Crew	14	Chalmette, LA	2	2	7.5	2	6	19.5
900' 18" Boom	1 Crew	2	Morgan City, LA	2	2	5	2	2	13
30,000' 18" Boom	13 Crew	26	Harvey, LA	2	2	7.5	2	12	25.5
1,700' 18" Boom	2 Crew	4	Venice, LA	2	2	9	2	2	17
14,750' 18" Boom	7 Crew	14	Port Arthur, TX	2	2	1.5	2	6	13.5

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

Response Asset	Total
Offshore EDRC	157,693
Offshore Recovered Oil Capacity	159,347
Nearshore / Shallow Water EDRC	34,874
Nearshore / Shallow Water Recovered Oil Capacity	47,903

SECTION I
ENVIRONMENTAL MONITORING INFORMATION
(30 CFR 550.221 AND 550.252)

A. MONITORING SYSTEMS

EnVen subscribes to Wilkens Weather Service which provides access to real time weather conditions and provides periodic updates on impending weather conditions such as tropical depressions, storms and/or hurricanes entering the Gulf of Mexico.

In addition, EnVen will comply with NTL 2009-G04 "Ocean Current Monitoring" as required.

B. INCIDENTAL TAKES

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

EnVen will adhere to the requirements set forth in the following documents, as applicable, to avoid or minimize impacts to protected species:

- NTL No. 2015-G03 "Marine Trash and Debris Awareness and Elimination"
- NTL No. 2016-G01 "Vessel Strike Avoidance and Injured/Dead Protected Species Reporting"
- NTL No. 2016-G02 "Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program"

C. FLOWER GARDEN BANKS NATIONAL MARINE SANCTUARY

Ewing Bank Block 920 is not located in the Flower Garden Banks National Marine Sanctuary; therefore, the requested information is not required in this EP.

SECTION J
LEASE STIPULATIONS INFORMATION
(30 CFR 550.222 and 550.253)

Oil and gas exploration activities on the OCS are subject to stipulations developed before the lease sale and would be attached to the lease instrument, as necessary, in the form of mitigating measures. The BOEM is responsible for ensuring full compliance with stipulations.

Exploration activities are subject to the following stipulation attached to Lease OCS-G 35625, Ewing Bank Block 920:

Marine Protected Species

Lease Stipulation No. 8 is meant to reduce the potential taking of marine protected species. EnVen will operate in accordance with NTL 2016-G02, to minimize the risk of vessel strikes to protected species and report observations of injured or dead protected species, and the prevention of intentional and/or accidental introduction of debris into the marine environment.

SECTION K
ENVIRONMENTAL MITIGATION MEASURES INFORMATION
(30 CFR 550.224 and 550.257)

A. MEASURES TAKEN TO AVOID, MINIMIZE, AND MITIGATE IMPACTS
Activities in this Exploration Plan do not impact the State of Florida.

B. INCIDENTAL TAKES
There is no reason to believe that the protected species may be incidentally taken by the proposed activities.

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

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

SECTION L
SUPPORT VESSELS AND AIRCRAFT INFORMATION
(30 CFR 550.224 and 550.257)

A. GENERAL
EnVen will travel the most practical, direct route from the shorebase to Ewing Bank Block 920 as permitted by weather and traffic conditions.

Type	Maximum Fuel Tank Capacity	Maximum Number in Area at Any Time	Trip Frequency or Duration
Anchor Handling Boat	1500 bbls	2	3 days
Crew Boat	500 bbls	1	3/week
Supply Boat	2880 bbls	1	3/week
Helicopter	760 gallons	1	As Needed

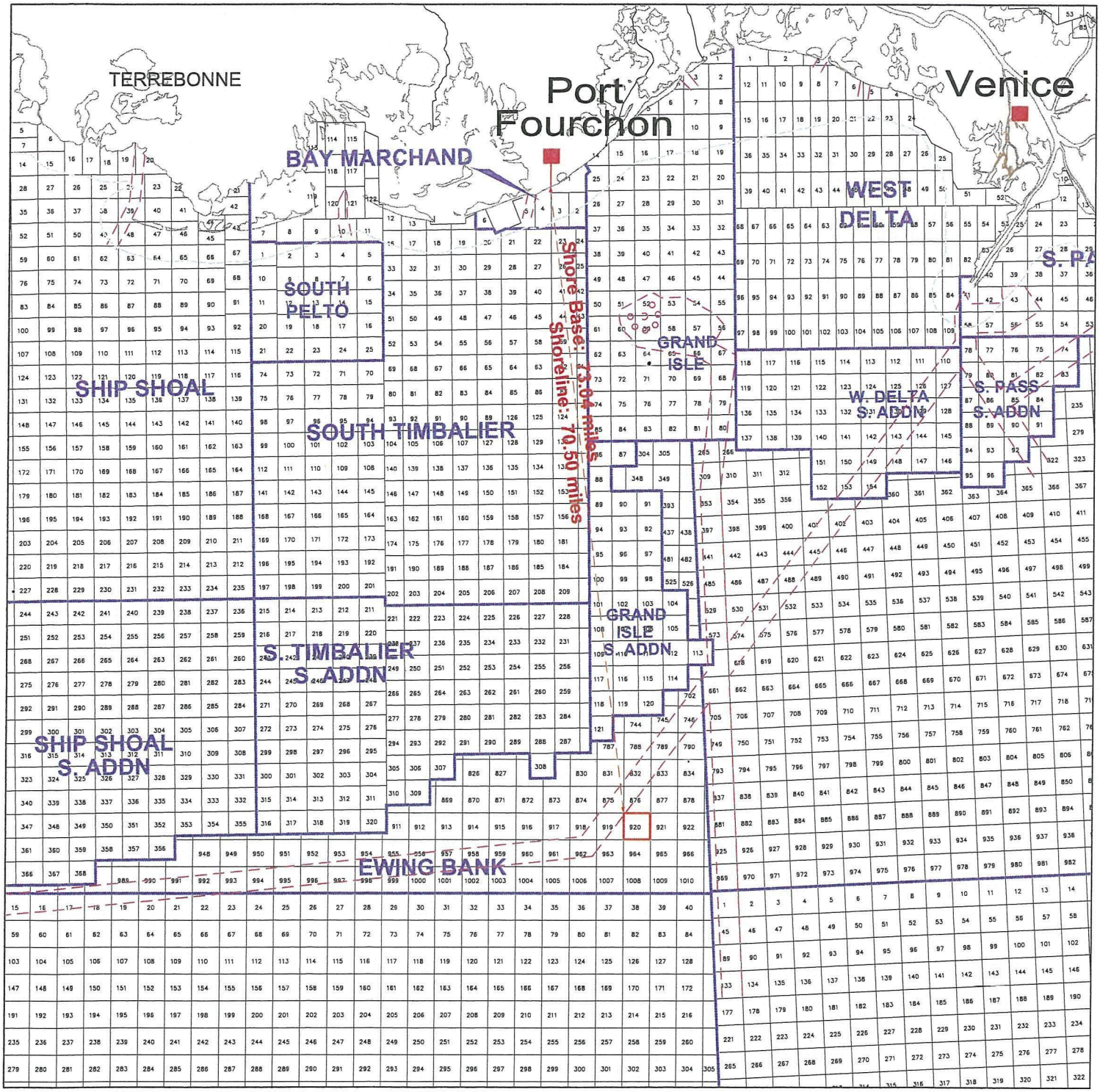
B. DIESEL OIL SUPPLY VESSELS

Size of Fuel Supply Vessel	Capacity of Fuel Supply Vessel	Frequency of Fuel Transfers	Route Fuel Supply Vessel Will Take
240'	2500 bbls	Weekly	From the shorebase in Fourchon to Ewing Bank Block 920, then back to shorebase

C. DRILLING FLUID TRANSPORTATION
Drilling fluid transportation information is not required.

D. SOLID AND LIQUID WASTE TRANSPORTATION
Please refer to **Attachment F-1.**

E. VICINITY MAP
A vicinity map showing the location of the proposed activities relative to the shoreline, the distance of the proposed activities from the shoreline and the support base, and the primary route of the support vessels and aircraft that will be used when traveling between the onshore support facilities is included as **Attachment L-1**.



enven
ENERGY VENTURES

Ewing Bank 920
OFFSHORE LOUISIANA
EP
Proposed Well Location's
A, B, C & D

Vicinity Location Map

CONTOUR INTERVAL:	DATE: 03-29-18
INTERPRETATION BY:	DRAFTED BY: LH
SCALE: 1"=40,000'	APPROVED BY: N/A
AREA: Main Pass	FILE:

Attachment L-1

SECTION M
ONSHORE SUPPORT FACILITIES INFORMATION
(30 CFR 550.225 and 550.258)

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

Name	Location	Existing/New/Modified
Fourchon	Port Fourchon, LA	Existing

B. SUPPORT BASE CONSTRUCTION OR EXPANSION
EnVen does not propose any land acquisitions for the construction of an onshore support base, nor will we expand the existing shorebase as a result of the operations proposed in this Exploration Plan.

C. SUPPORT BASE CONSTRUCTION OR EXPANSION TIMETABLE
Not applicable for the proposed operations.

D. WASTE DISPOSAL

Please refer to **Attachment F-1**.

SECTION N
COASTAL ZONE MANAGEMENT (CZMA) INFORMATION
(30 CFR 550.226 and 550.260)

Under the direction of the Coastal Zone Management Act (CZMA), the states of Alabama, Florida, Louisiana, Mississippi and Texas developed Coastal Zone Management Programs (CZMP) to allow for the supervision of significant land and water use activities that take place within or that could significantly impact their respective coastal zones.

Relevant enforceable policies were considered in certifying consistency for Louisiana.

A certificate of Coastal Zone Management Consistency for the state of Louisiana is enclosed as **Attachment N-1**.

COASTAL ZONE MANAGEMENT CONSISTENCY CERTIFICATION

INITIAL EXPLORATION PLAN

EWING BANK BLOCK 920

LEASE OCS-G 35625

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

EnVen Energy Ventures, LLC
Lessee or Operator

Cheryl Powell
Certifying Official

5/2/18
Date

Attachment N-1

SECTION O
ENVIRONMENTAL IMPACT ANALYSIS (EIA)
(30 CFR 550.227 and 550.261)

The Environmental Impact Analysis for the proposed operations as outlined in this Exploration Plan has been prepared for EnVen by J. Connor Consulting, Inc.

EnVen Energy Ventures, LLC (EnVen)

Initial Exploration Plan
Ewing Bank Block 920
OCS-G 35625

(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		X	
Fisheries		X	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			X(7)			
Vicinity of Offshore Location						
Essential fish habitat		X	X		X(6)	
Marine and pelagic birds	X				X	X
Public health and safety					(5)	
Coastal and Onshore						
Beaches					X(6)	X
Wetlands					X(6)	
Shore birds and coastal nesting birds					X(6)	X
Coastal wildlife refuges					X	
Wilderness areas					X	

Footnotes for Environmental Impact Analysis Matrix

1) Activities that may affect a marine sanctuary or topographic feature. Specifically, if the well or platform site or any anchors will be on the seafloor within the:
   - 4-mile zone of the Flower Garden Banks, or the 3-mile zone of Stetson Bank;
   - 1000-m, 1-mile or 3-mile zone of any topographic feature (submarine bank) protected by the Topographic Features Stipulation attached to an 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 Ewing Bank Block 920

Proposed operations consist of the drilling and completion of 4 subsea locations.

Operations will be conducted with either a semi-submersible rig, a dynamically-positioned semi-submersible rig, or a dynamically-positioned drillship.

1. Designated Topographic Features

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

Physical disturbances to the seafloor: Ewing Bank Block 920 is 38 miles from the closest designated Topographic Features Stipulation Block (Diaphus Bank); therefore, no adverse impacts are expected.

Effluents: Ewing Bank Block 920 is 38 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 EnVen's Regional OSRP (refer to information submitted in **Appendix H**).

There are no other IPFs (including emissions 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 physical disturbances to the seafloor, effluents, and accidents.

Physical disturbances to the seafloor: Ewing Bank Block 920 is 125 miles from the closest live bottom (pinnacle trend) area; therefore, no adverse impacts are expected.

Effluents: Ewing Bank Block 920 is 125 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 EnVen's Regional OSRP (refer to information submitted in **Appendix H**).

There are no other IPFs (including emissions 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 physical disturbances to the seafloor, effluents, and accidents.

Physical disturbances to the seafloor: Ewing Bank Block 920 is not located in an area characterized by the existence of live bottoms, and this lease does not contain a Live-Bottom Stipulation requiring a photo documentation survey and survey report.

Effluents: Ewing Bank Block 920 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 EnVen's Regional OSRP (refer to information submitted in **Appendix H**).

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

4. Benthic Communities

Ewing Bank Block 920 is located in water depths 984 feet (300 meters) or greater. IPFs that could result in impacts to benthic communities from the proposed activities include physical disturbances to the seafloor.

Physical disturbances to the seafloor: Ewing Bank Block 920 is approximately 6 miles from a known benthic community site (BenthicEwing Bank Block 1010), listed in NTL 2009-G40. This Initial Exploration Plan submittal includes the required maps, analyses, and statement(s). The proposed activities will be conducted in accordance with NTL 2009-G40, which will ensure that features or areas that could support high-density benthic communities will not be impacted.

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

5. Water Quality

IPFs that could result in water quality degradation from the proposed operations in Ewing Bank Block 920 include disturbances to the seafloor, effluents and accidents.

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

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 EnVen's Regional Oil Spill Response Plan (refer to information submitted in **Appendix H**).

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 Ewing Bank Block 920 include physical disturbances to the seafloor, effluents and accidents.

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

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 EnVen's Regional OSRP (refer to information submitted in **Appendix H**).

There are no IPFs from emissions, 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 Ewing Bank Block 920 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).

EnVen 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), *"Keep the Seas Free of Debris"* (previously *"Think About It"*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from EnVen management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE. EnVen will submit an annual training report to BSEE by January 31st. This report will describe the training process and be signed by a company official.

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 EnVen'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 EnVen's OSRP (refer to information submitted in accordance with **Appendix H**).

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). EnVen 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), *"Keep the Seas Free of Debris"* (previously *"Think About It"*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from EnVen management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE. EnVen will submit an annual training report to BSEE by January 31st. This report will describe the training process and be signed by a company official.

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 EnVen's Regional Oil Spill Response Plan (refer to information submitted in accordance with **Appendix H**).

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

9. Air Quality

Ewing Bank Block 920 is located 108 miles from the Breton Wilderness Area and 70 miles from shore. Applicable emissions data is included in **Appendix G** of the Plan.

There would be a limited degree of air quality degradation in the immediate vicinity of the proposed activities. Plan Emissions for the proposed activities do not exceed the annual exemption levels as set forth by BOEM. Accidents and blowouts can release hydrocarbons or chemicals, which could cause the emission of air pollutants. However, these releases would not impact onshore air quality because of the prevailing atmospheric conditions, emission height, emission rates, and the distance of Ewing Bank Block 920 from the coastline. There are no other IPFs (including effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal) from the proposed activities which would impact air quality.

10. Shipwreck Sites (known or potential)

IPFs that could impact known or unknown shipwreck sites as a result of the proposed operations in Ewing Bank Block 920 include disturbances to the seafloor and accidents (oil spill). Ewing Bank Block 920 is not located in or adjacent to an OCS block designated by BOEM as having a high probability for occurrence of shipwrecks. EnVen will report to BOEM the discovery of any evidence of a shipwreck and make every reasonable effort to preserve and protect that cultural resource. 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 shipwreck sites.

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

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

11. Prehistoric Archaeological Sites

IPFs that could cause impacts to prehistoric archaeological sites as a result of the proposed operations in Ewing Bank Block 920 are physical disturbances to the seafloor and accidents (oil spills).

Physical Disturbances to the seafloor: Ewing Bank Block 920 is located inside the Archaeological Prehistoric high probability lines. EnVen will report to BOEM the discovery of any object of prehistoric archaeological significance and make every reasonable effort to preserve and protect that cultural resource.

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

There are no other IPFs (including emissions, effluents, wastes sent to shore for treatment or disposal) from the proposed activities that could cause impacts to prehistoric archaeological 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 Ewing Bank Block 920 include physical disturbances to the seafloor, effluents and accidents. EFH includes all estuarine and marine waters and substrates in the Gulf of Mexico.

Physical disturbances to the seafloor: 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 bottom disturbing activities (e.g., anchoring, structure emplacement and removal).

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 EnVen's Regional OSRP (refer to information submitted in **Appendix H**).

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

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 EnVen's Regional OSRP (refer to information submitted in **Appendix H**).

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). EnVen 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), *"Keep the Seas Free of Debris"* (previously *"Think About It"*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from EnVen management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE. EnVen will submit an annual training report to

BSEE by January 31st. This report will describe the training process and be signed by a company official. 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 H2S releases) 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 **Appendix D** 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 (70 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 EnVen's Regional OSRP (refer to information submitted in **Appendix H**).

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). EnVen 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), *"Keep the Seas Free of Debris"* (previously *"Think About It"*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from EnVen management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE. EnVen will submit an annual training report to BSEE by January 31st. This report will describe the training process and be signed by a company official.

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 (70 miles) and the response capabilities that would be implemented, no impacts are expected. The activities proposed in this plan will be covered by EnVen's Regional OSRP (refer to information submitted in **Appendix H**).

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). EnVen 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), *"Keep the Seas Free of Debris"* (previously *"Think About It"*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from EnVen management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL

No. 2015-G03-BSEE. EnVen will submit an annual training report to BSEE by January 31st. This report will describe the training process and be signed by a company official.

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 (70 miles) and the response capabilities that would be implemented, no impacts are expected. The activities proposed in this plan will be covered by EnVen's Regional OSRP (refer to information submitted in **Appendix H**).

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). EnVen 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), *"Keep the Seas Free of Debris"* (previously *"Think About It"*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from EnVen management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE. EnVen will submit an annual training report to BSEE by January 31st. This report will describe the training process and be signed by a company official.

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 (70 miles) and the response capabilities that would be implemented, no impacts are expected. The activities proposed in this plan will be covered by EnVen's Regional OSRP (refer to information submitted in **Appendix H**).

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). EnVen 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), *"Keep the Seas Free of Debris"* (previously *"Think About It"*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from EnVen management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE. EnVen will submit an annual training report to BSEE by January 31st. This report will describe the training process and be signed by a company official.

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 (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 EnVen's Regional OSRP (refer to information submitted in **Appendix H).**

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). EnVen 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), *"Keep the Seas Free of Debris"* (previously *"Think About It"*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from EnVen management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE. EnVen will submit an annual training report to BSEE by January 31st. This report will describe the training process and be signed by a company official.

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, Ewing Bank Block 920 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)

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(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. MMS 2000-001
  - GOM Central and Western Planning Areas Sales 166 and 168 Final Environmental Impact Statement. MMS 96-0058.

SECTION P
ADMINISTRATIVE INFORMATION
(30 CFR Parts 550.228 and 550.262)

A. EXEMPTED INFORMATION DESCRIPTION

Included in the proprietary copy and removed from the public copy of this Exploration Plan are the proposed bottom-hole locations of the planned well(s), discussions of the target objectives, geologic and/or geophysical data, and any interpreted geology.

B. BIBLIOGRAPHY

EnVen's Regional OSRP

Shallow Hazard Analysis, EW 920, Lease OCS-G 35625, Job No. 16-1004 Gulf Ocean Services (provided with this EP)

AUV Archaeological Survey, EW 920, Lease OCS-G 35625, Job No. 16-088-42 Tesla Offshore, LLC (provided with this EP)