

UNITED STATES GOVERNMENT  
MEMORANDUM

July 21, 2009

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

Subject: Public Information copy of plan  
Control # - S-07338  
Type - Supplemental Exploration Plan  
Lease(s) - OCS- 00060 Block - 72 Ship Shoal Area  
Operator - PetroQuest Energy, L.L.C.  
Description - Well Protector and Well No. 34  
Rig Type - SUBMERSIBLE

Attached is a copy of the subject plan.

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

Elmo Cooper  
Plan Coordinator

Site Type/Name	Botm Lse/Area/Blk	Surface Location	Surf Lse/Area/Blk
WP/34		1430 FNL, 1650 FEL	00060/SS/72
WELL/NO. 34	00060/SS/72	1430 FNL, 1650 FEL	00060/SS/72



July 14, 2009

**Via FedEx Standard Overnight Delivery**

Regional Supervisor, Field Operations  
Plans Section (MS 5230)  
Minerals Management Service  
Gulf of Mexico OCS Region  
1201 Elmwood Park Boulevard  
New Orleans, Louisiana 70123-2394

**PUBLIC  
INFORMATION**

**RE: SUPPLEMENTAL EXPLORATION PLAN  
Ship Shoal 72, OCS-00060, Unit Agreement No. 14-08-001-2945  
Proposed Well No. 34, Federal Waters, GOM, Offshore LA**

In accordance with the provisions of Title 30CFR 250.203, PetroQuest Energy, L.L.C. (PetroQuest) hereby submits for your review and approval six (6) copies of Supplemental Exploration Plan for surface location lease OCS-00060, Ship Shoal Block 72 where the proposed Well No. 34 will be drilled. Two (2) copies (one electronic, one hardcopy) are "Proprietary Information", one (1) copy (hardcopy) and three (3) copies (electronic) are "Public Information". Excluded from the Public Information copies is all proprietary information as described in NTL No. 2008-G04.

Ship Shoal 72 is located within the boundary of the "8G-Zone", which was established to allow for state/federal joint review with the designated state agency for comments on the proposed plan activities to determine if the activities impact a common reservoir overlying state and federal acreage. PetroQuest will submit the pertinent bottom-hole information included in this plan to the Louisiana State Governor's office two days following this plan being deemed submitted by your office.

PetroQuest anticipates activity commencement under this proposed Supplemental EP on or about September 30, 2009. The application fees for this EP were paid via pay.gov on July 10, 2009 with Agency Tracking ID Number 74075431660. A copy of the payment receipt is attached.

Also included with this submittal are three (3) copies of archaeological and shallow hazards reports provided by Fugro GeoServices from site-specific survey data obtained during the May 2009 shallow hazards survey performed by FGSI of the proposed surface location.

Should additional information be required please contact Brittany Kight at (337) 262-8135 or via email at [bkight@jchance.com](mailto:bkight@jchance.com).

Respectfully,

**PetroQuest Energy, L.L.C.**

Lindsay Longman  
Drilling Superintendent

Enclosures

Xc: PQUE OCS-00060 Lease File  
JCLS Regulatory Project File 09-0260

# **SUPPLEMENTAL EXPLORATION PLAN**

Ship Shoal 72 – OCS-00060

Offshore Louisiana

## **Public Information**



**PETROQUEST ENERGY, L.L.C.**  
400 East Kaliste Saloom Road, Suite 6000  
Lafayette, Louisiana 70508

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**Kight, Brittany**

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**From:** paygovadmin@mail.doc.twai.gov  
**Sent:** Friday, July 10, 2009 10:43 AM  
**to:** bkight@petroquest.com  
**Subject:** Pay.Gov Payment Confirmation

THIS IS AN AUTOMATED MESSAGE. PLEASE DO NOT REPLY.

Your transaction has been successfully completed.

**Payment Summary**

**Application Name:** MMS Exploration Plan - BF Pay.gov Tracking ID: 24VJQONB Agency Tracking ID: 74075431660

**Account Holder Name:** Russell Walters  
**Transaction Type:** Sale  
**Billing Address:** 200 Dulles Drive  
**City:** Lafayette  
**State/Province:** LA  
**Zip/Postal Code:** 70506  
**Country:** USA  
**Card Type:** Master Card  
**Card Number:** \*\*\*\*\*2371  
**Payment Amount:** \$3,442.00  
**Transaction Date:** Jul 10, 2009 11:42:43 AM

**Region:** Gulf of Mexico  
**Contact:** Brittany Kight 3372983631  
**Company Name/No:** PetroQuest Energy, L.L.C., 02222 Lease Number(s): 00060, , , ,  
**Area-Block:** Ship Shoal SS, 72: , : , : , : , Surface Locations: 1

# **PETROQUEST ENERGY, L.L.C.**

## **SUPPLEMENTAL EXPLORATION PLAN**

### **Ship Shoal 72 OCS-00060**

<b>APPENDIX 1</b>	<b>Plan Contents</b>
<b>APPENDIX 2</b>	<b>General Information</b>
<b>APPENDIX 3</b>	<b>Geological and Geophysical Information</b>
<b>APPENDIX 4</b>	<b>H<sub>2</sub>S Information</b>
<b>APPENDIX 5</b>	<b>Mineral Resource Conservation Information</b>
<b>APPENDIX 6</b>	<b>Biological, Physical and Socioeconomic Information</b>
<b>APPENDIX 7</b>	<b>Waste and Discharge Information</b>
<b>APPENDIX 8</b>	<b>Air Emissions Information</b>
<b>APPENDIX 9</b>	<b>Oil Spills Information</b>
<b>APPENDIX 10</b>	<b>Environmental Monitoring Information</b>
<b>APPENDIX 11</b>	<b>Lease Stipulations Information</b>
<b>APPENDIX 12</b>	<b>Support Vessels and Aircraft Information</b>
<b>APPENDIX 13</b>	<b>Environmental Mitigation Measures Information</b>
<b>APPENDIX 14</b>	<b>Onshore Support Facilities Information</b>
<b>APPENDIX 15</b>	<b>Coastal Zone Management Act (CZMA) Information</b>
<b>APPENDIX 16</b>	<b>Environmental Impact Analysis</b>
<b>APPENDIX 17</b>	<b>Administrative Information</b>

# APPENDIX 1

## Plan Contents

### A. PLAN INFORMATION FORM

See attached OCS Plan Information Form – Form MMS-137, included in Appendix 1 Attachments. Proposed Location “A” will be a directionally drilled well with surface location located within Ship Shoal Block 72, OCS-00060.

### B. LOCATION

Included in Appendix 1 Attachments is a location map depicting the proposed surface location. A bathymetry map depicting water depths is also included in Appendix 1 Attachments. There will not be any anchors associated with the proposed operations.

### C. SAFETY AND POLLUTION PREVENTION FEATURES

The Noble submersible ‘Lester Pettus’ or comparable drilling rig has been identified as the type of mobile offshore drilling unit (MODU) to be used to drill the proposed well. Typical Diverter and BOP equipment will be utilized. The rig utilized by PetroQuest Energy will be operated and maintained in accordance with Title 30 CFR Part 250.300, “Pollution Prevention.”

In addition to the drilling of the subject well, other activities which may be conducted under this plan are the setting of a well protector type structure, sea floor templates, velocity surveys in wellbore, well test operations and the collection of soil borings. If done, the drilling unit will be utilized to install the well support caisson.

Selection of a MODU will be contingent upon compliance with Title 30 CFR Subpart D. Specific safety and pollution-prevention features shall include, but will not be limited to well control and blow-out prevention equipment. Rig specifications will be included as part of the Applications for Permit to Drill. In addition, adequate life rafts and personal flotation devices as required by the U.S. Coast Guard will be available at all times.

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

The drilling rig and each of the marine vessels servicing the rig and its operations will be equipped with all U.S. Coast Guard required navigational safety aids to alert ships of its presence in all weather conditions. No parts of Ship Shoal 72 are located in a designated shipping fairway/anchorage area; therefore no permit from the Department of Army Corps of Engineers New Orleans District will be required.

**D. STORAGE TANKS AND/OR PRODUCTION VESSELS**

Type of Storage Tanks	Type of Facility	Tank Capacity (bbls)	Number of Tanks	Total Capacity (bbls)	Fluid Gravity (API)
Fuel Oil	Submersible	1,374 bbls	2	2,748 bbls	42°

**E. POLLUTION PREVENTION MEASURES**

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

**F. ADDITIONAL MEASURES**

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

# APPENDIX 1 ATTACHMENTS

Location Plat (PUBLIC INFORMATION)  
Bathymetry Map  
Lester Pettus Rig Specifications  
MMS Form 137 (PUBLIC INFORMATION)



SS63

OCS-G-12348  
PETROQUEST

34 SURF

SS72

OCS-G-12348  
PETROQUEST

OCS-00060  
PETROQUEST

PROPOSED LOCATION

LOCATION	CALLNS	CALLEW	X COORDINATE	Y COORDINATE	LATITUDE	LONGITUDE	WD	TVD	MD
34 SURF	1,430.45' FNL	1,650.00' FEL	2,123,150.00'	112,200.00'	28° 58' 28.659"N	90° 56' 53.660"W	28'		



SS87

**PUBLIC  
INFORMATION**



**PetroQuest**  
ENERGY, INC.

**SUPPLEMENTAL EXPLORATION PLAN**

**OCS-00060**

BLOCK 72  
SHIP SHOAL AREA  
GULF OF MEXICO

**FUGRO CHANCE INC.**

200 Dulles Dr. Lafayette, Louisiana 70508-3001 (337) 237-1500



GEODETIC DATUM: NAD 1927  
PROJECTION: LOUISIANA SOUTH  
GRID UNITS: US SURVEY FEET

SCALE 0 2,000'  
IN FEET

Job No.: 0901679 Date: 6/25/09 Drwn: SJL Chart: Of:

Dwgfile: O:\WellPermit\LA's\SS\Permit\72\_SEP\_34\_OCS0060

Printed: 6/25/09

**DIGITAL COPY**  
ORIGINAL PLAT 6/22/09

# SHIP SHOAL AREA

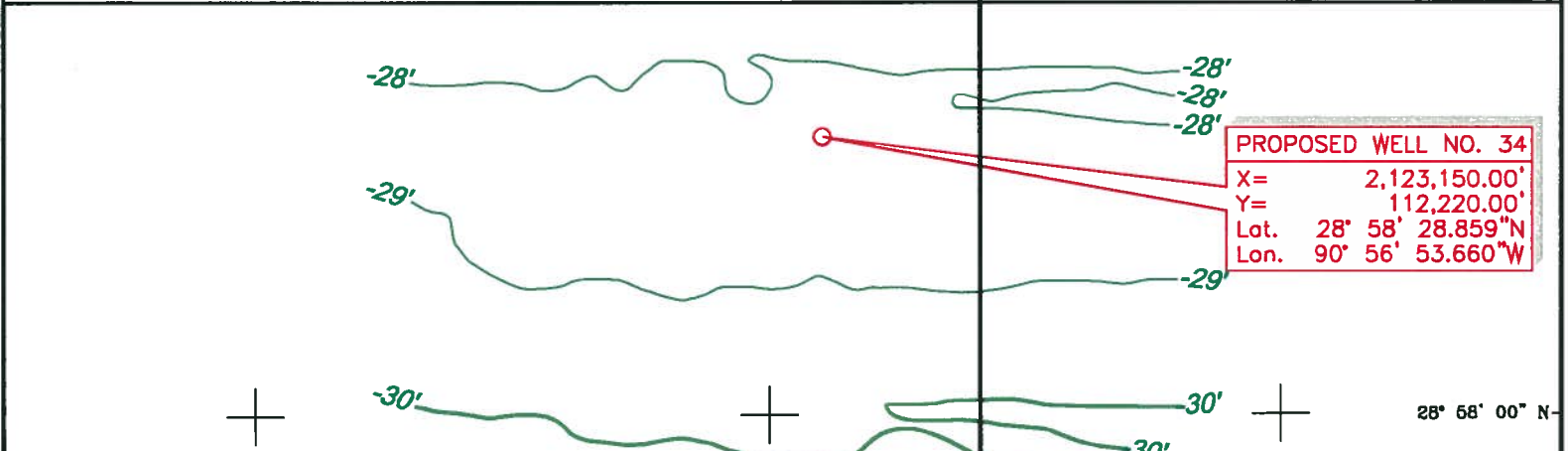
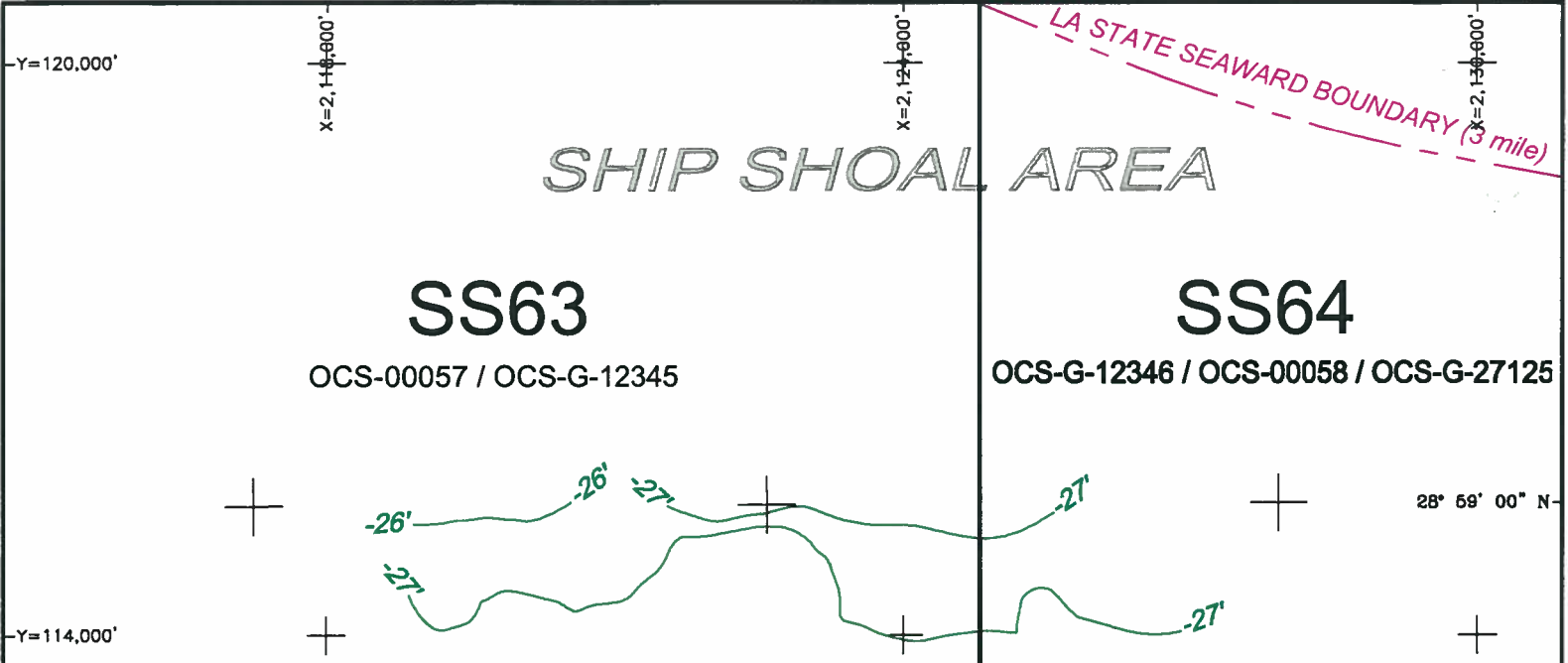
LA STATE SEAWARD BOUNDARY (3 mile)

## SS63

OCS-00057 / OCS-G-12345

## SS64

OCS-G-12346 / OCS-00058 / OCS-G-27125



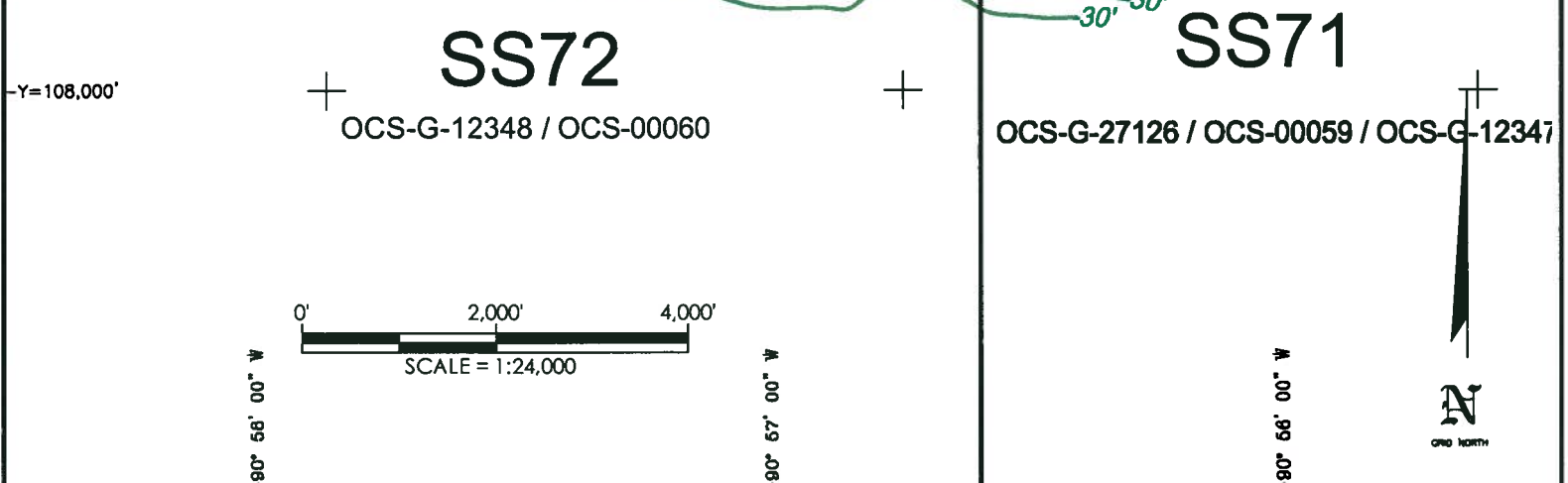
**PROPOSED WELL NO. 34**  
 X= 2,123,150.00'  
 Y= 112,220.00'  
 Lat. 28° 58' 28.859"N  
 Lon. 90° 56' 53.660"W

## SS72

OCS-G-12348 / OCS-00060

## SS71

OCS-G-27126 / OCS-00059 / OCS-G-12347



CONTOUR INTERVAL = 1 FOOT  
 ZERO DATUM = MEAN LOWER LOW WATER  
 APPLIED ACOUSTIC VELOCITY = HARMONIC MEAN  
 AVERAGE TIDE HEIGHT ADJUSTMENT  
 MEAN LOWER LOW WATER = 0.0  
 MEAN SEA LEVEL = +0.8 feet  
 MEAN HIGH TIDE = +1.6 feet



BATHYMETRY MAP  
 OCS-00060 WELL No. 34  
 BLOCK 72  
 SHIP SHOAL AREA  
**EXPLORATION PLAN**

**Fugro GeoServices, Inc.**  
 200 DULLES DRIVE - LAFAYETTE, LOUISIANA 70506 - (504) 237-2634



# Noble Lester Pettus — Rig Specifications



## General

Rig Type	Submersible
Rig Design	Pace Marine; Pace 85G
Built By	Vemar Shipyard, Houston, Texas
Year Constructed	1982;2005
Water Depth Rated	70
Drilling Depth	25,000 ft
Hull Dimensions	196' x 199'
Draft, Operating	
Draft, Transit	12'
Draft, Storm	70'
Heliport	Sikorsky S-61N (72' x 72')

## Capacities

Quarters	88
Variable Load	4,000 ST
Mud Cement Bulk	9,600 cu ft
LiquidMud	1,452 bbls
Active Mud	
Reserve Mud	
Fuel	2,748 bbls
DrillWater	5,496 bbls
PotableWater	1,138 bbls

## Equipment

Drawworks	National Oilwell 1320 UE; 2,000 hp
Pumps	(3) National Oilwell 12-P-160; 1600 hp
Total HP	6,600
Hook Load	1,300,000 lbs
Max Load	1,250 kips
Top Drive	NOV PAC 500
Derrick	149' x 30'
Moonpool	
Bop System	Cameron U 13-5/8" 10,000 psi double and single; Cameron 13-5/8" 5,000 psi annular; Shaffer 21-1/4" 2,000 psi annular
Cranes	(2) PMC 120, 50 tons @ 79', with 120' booms
Pipe Handling System	
Iron Roughneck	Varco ST-80
Mud Cleaner	(1) Brandt King Cobra
Shakers	(3) Brandt Alt cascade
Power Slips	
Compensator	
Riser Tensioner	
Mooring System	

**OCS PLAN INFORMATION FORM**

General Information											
Type of OCS Plan:	<input checked="" type="checkbox"/>	Exploration Plan (EP)	Development Operations Coordination Document (DOCD)								
Company Name: PETROQUEST ENERGY, L.L.C.			MMS Operator Number: 2222								
Address: 400 EAST KALISTE SALOOM ROAD			Contact Person: BRITTANY KIGHT								
SUITE 6000			Phone Number: 337-262-8135								
LAFAYETTE, LA 70508			E-Mail Address: BKIGHT@JCHANCE.COM								
Lease(s): OCS-00060		Area: SHIP SHOAL		Block(s): 72		Project Name (If Applicable): SYRAH					
Objective(s):	<input type="checkbox"/>	Oil	<input checked="" type="checkbox"/>	Gas	<input type="checkbox"/>	Sulphur	<input type="checkbox"/>	Salt	Onshore Base: FOURCHON, LA	Distance to Closest Land (Miles): 5.6	
Description of Proposed Activities (Mark all that apply)											
<input checked="" type="checkbox"/>	Exploration drilling				Development drilling						
<input checked="" type="checkbox"/>	Well completion				Installation of production platform						
<input type="checkbox"/>	Well test flaring (for more than 48 hours)				Installation of production facilities						
<input checked="" type="checkbox"/>	Installation of caisson or platform as well protection structure				Installation of satellite structure						
<input type="checkbox"/>	Installation of subsea wellheads and/or manifolds				Commence production						
<input type="checkbox"/>	Installation of lease term pipelines				Other (Specify and describe)						
Have you submitted or do you plan to submit a Conservation Information Document to accompany this plan?								Yes	<input checked="" type="checkbox"/>	No	
Do you propose to use new or unusual technology to conduct your activities?								Yes	<input checked="" type="checkbox"/>	No	
Do you propose any facility that will serve as a host facility for deepwater subsea development?								Yes	<input checked="" type="checkbox"/>	No	
Do you propose any activities that may disturb an MMS-designated high-probability archaeological area?								<input checked="" type="checkbox"/>	Yes	No	
Have all of the surface locations of your proposed activities been previously reviewed and approved by MMS?								Yes	<input checked="" type="checkbox"/>	No	
Tentative Schedule of Proposed Activities											
Proposed Activity				Start Date	End Date	No. of Days					
DRILL & COMPLETE WELL NO. 34 & INSTALL MINIMAL WELL PROTECTOR STRUCTURE				09/30/2009	02/06/2010	130					
Description of Drilling Rig				Description of Production Platform							
<input type="checkbox"/>	Jackup		<input type="checkbox"/>	Drillship		<input type="checkbox"/>	Caisson		Tension leg platform		
<input type="checkbox"/>	Gorilla Jackup		<input type="checkbox"/>	Platform rig		<input checked="" type="checkbox"/>	Well protector		Compliant tower		
<input type="checkbox"/>	Semisubmersible		<input checked="" type="checkbox"/>	Submersible		<input type="checkbox"/>	Fixed platform		Guyed tower		
<input type="checkbox"/>	DP Semisubmersible		<input type="checkbox"/>	Other (Attach Description)		<input type="checkbox"/>	Subsea manifold		Floating production system		
Drilling Rig Name (If Known):				<input type="checkbox"/>	Spar		<input type="checkbox"/>				Other (Attach Description)
Description of Lease Term Pipelines											
From (Facility/Area/Block)			To (Facility/Area/Block)			Diameter (Inches)		Length (Feet)			
NA											

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

Well or Structure Name/Number (If renaming well or structure, include old name): 34		<b>FOR PUBLIC RELEASE</b>	Subsea Completion NO	
Anchor Radius (if applicable) in feet:			Yes	No
	<b>Surface Location</b>	<b>Bottom-Hole Location (For Wells)</b>		
<b>Lease No.</b>	OCS 00060	OCS 00060		
<b>Area Name</b>	SHIP SHOAL	SHIP SHOAL		
<b>Block No.</b>	72	72		
<b>Blockline Departures (in feet)</b>	N/S Departure: F__ L 1,430.45' FNL	N/S Departure: F__ L		
	E/W Departure: 2,050.00' FEL F__ L	E/W Departure: F__ L		
<b>Lambert X-Y coordinates</b>	X: 2,122,750.00'	X:		
	Y: 112,200.00'	Y:		
<b>Latitude/ Longitude</b>	Latitude 28° 58' 28.672" N	Latitude		
	Longitude 90° 56' 58.163" W	Longitude		
	TVD (Feet):	MD (Feet):	Water Depth (Feet): 30'	

<b>Anchor Locations for Drilling Rig or Construction Barge (If anchor radius supplied above, not necessary)</b>				
Anchor Name or No.	Area	Block	X Coordinate	Y Coordinate
			X =	Y =
			X =	Y =
			X =	Y =
			X =	Y =
			X =	Y =
			X =	Y =
			X =	Y =
			X =	Y =

**Paperwork Reduction Act of 1995 Statement:** The Paperwork Reduction Act of 1995 (44 U.S.C. Chapter 35) requires us to inform you that MMS collects this information as part of an applicant's Exploration Plan or Development Operations Coordination Document submitted for MMS approval. We use the information to facilitate our review and data entry for OCS plans. We will protect proprietary data according to the Freedom of Information Act and 30 CFR 250.196. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget Control Number. The use of this form is voluntary. The public reporting burden for this form is included in the burden for preparing Exploration Plans and Development Operations Coordination Documents. We estimate that burden to average 600 hours per response, or 640 with an accompanying EP, or 690 with an accompanying DPP or DOCD, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the forms associated with subpart B. Direct comments regarding the burden estimate or any other aspect of this form to the Information Collection Clearance Officer, Mail Stop 4230, Minerals Management Service, 1849 C Street, NW., Washington, DC 20240.

## APPENDIX 2 General Information

### A. APPLICATIONS AND PERMITS

Application / Permit	Issuing Agency	Status
Application for Permit to Drill	MMS – Houma District	To be submitted
Est. Aids to Navigation	USCG	To be submitted

### B. DRILLING FLUIDS

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

### C. PRODUCTION

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

### D. OILS CHARACTERISTICS

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

### E. NEW OR UNUSUAL TECHNOLOGY

PetroQuest Energy does not propose to use any new or unusual technology to carry out the proposed activities.

### F. BONDING STATEMENT

The bond requirements for the activities and facilities proposed in this EP are satisfied by GOM area-wide bonds, furnished and maintained according to 30 CFR Part 256, subpart I; NTL No. 2000-G16, "Guidelines for General Lease Surety Bonds;" *and* a current MMS-approved deferment from providing additional security under 30 CFR 256.53(d) and national NTL No. 2003-N06, "Supplemental Bond Procedures." If, at any point, PetroQuest Energy, L.L.C. no longer qualifies for a supplemental bonding deferment, PetroQuest Energy, L.L.C. will either provide the required additional security or a third party guarantee within 60 days after such disqualification.

### G. OIL SPILL FINANCIAL RESPONSIBILITY (OSFR)

PetroQuest Energy, L.L.C., MMS company number 02222, has demonstrated oil spill financial responsibility for the activities proposed in this Exploration Plan according to 30 CFR Part 253; and NTL No. 2008-N05, "Guidelines for Oil Spill Financial Responsibility (OSFR) for Covered Facilities."

**H. DEEPWATER WELL CONTROL STATEMENT**

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

**I. SUSPENSIONS OF PRODUCTION**

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

**J. BLOWOUT SCENARIO**

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.



## **APPENDIX 3**

### **Geological and Geophysical Information**

**A. GEOLOGICAL DESCRIPTION**  
PROPRIETARY INFORMATION

**B. STRUCTURE CONTOUR MAPS**  
PROPRIETARY INFORMATION

**C. INTERPRETED 2-D OR 3-D SEISMIC LINES**  
PROPRIETARY INFORMATION

**D. GEOLOGICAL STRUCTURE CROSS-SECTIONS**  
PROPRIETARY INFORMATION

**E. SHALLOW HAZARDS REPORT**  
PROPRIETARY INFORMATION

**F. SHALLOW HAZARDS ASSESSMENT**  
A non-proprietary version of the shallow hazards assessment is included as Appendix 3 Attachments.

**G. HIGH-RESOLUTION SEISMIC LINES**  
PROPRIETARY INFORMATION

**H. STRATIGRAPHIC COLUMN**  
PROPRIETARY INFORMATION

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



# APPENDIX 3 ATTACHMENT

## Non-Proprietary Shallow Hazards Assessment



## FUGRO GEOSERVICES, INC.

Job No. 2409-1052  
June 30, 2009

200 Dulles Drive  
Lafayette, Louisiana 70506  
Phone: (337) 237-2636  
Fax: (337) 268-3221

PetroQuest Energy LLC  
400 East Kaliste Saloom Road  
Suite 6000  
Lafayette, Louisiana 70508

Attention: Lindsay C. Longman

**Re: Supplemental Exploration Plan  
Proposed Well No. 34  
Block 72 (OCS-00060)  
Ship Shoal Area, Offshore Louisiana  
Based on Job No. 2409-1052**

Fugro GeoServices, Inc. was contracted by PetroQuest Energy, LLC to assess seafloor and subbottom conditions at the proposed well surface location in Block 72, Ship Shoal Area (SS72). The survey area lies within the Louisiana South coordinate system. This letter is intended to address specific seafloor and subbottom conditions within 1,000 feet of the proposed well site. The proposed surface location has been projected on the enclosed Bathymetry Map, Seafloor Features Map, and Subbottom Features Map from the original June 2009 Archaeological and Hazard report. The original report was prepared for PetroQuest Energy, LLC by: Mike Samson, Senior Geophysicist; Ray Blackmon, Marine Archaeologist; and Ted Hampton, Marine Archaeologist.

### Introduction

Marine Management Services regulations stipulate analyses of potential cultural resources and hazards for Exploration Plans (EPs) may be made from available geophysical and geological data. The proposed well is located within coverage provided by a prior Archaeological and Hazard Survey across portions of Blocks 63 and 72, Ship Shoal Area conducted for PetroQuest Energy LLC by Fugro GeoServices, Inc. Fugro GeoServices, Inc. (FGSI) acquired the high-resolution geophysical data aboard the *R/V Universal Surveyor* during May 5, 7, and 10, 2009. Sea conditions during data acquisition were moderate with winds ranging 5 to 25 knots and seas from 1 to 5 feet. The quality of the geophysical data collected was good and fully suitable for interpretation.

Horizontal positioning of the survey vessel was accomplished with the FUGRO STARFIX<sup>®</sup> Differential Global Positioning System, which has a field accuracy of  $\pm 3$  meters. The survey grid consisted of 37 east-west primary tracklines (Lines 100 – 136) spaced 50 meters (~164 feet) apart and three north-south tie lines (Lines 200 - 202) spaced 900 meters (~2,953 feet) apart. Line 201 was run at a heading of 167 degrees in order to pass over a former proposed location and avoid the existing infrastructure. The bathymetry, sonar, and magnetometer systems were run on all survey lines. The pinger and air gun systems were run at a 300-meter spacing (every sixth trackline) and on all tie lines. The letter "S" precedes line numbers where the "seismic" systems, pinger and air gun, were run in addition to the other systems. Several lines were rerun to ensure good data quality. The rerun lines followed the same heading and course as their respective original lines. The rerun lines numbers also use the same number as their respective original lines, followed by the letter "A". Navigation fixes are spaced 12.5 meters (41 feet) apart. Every tenth fix (125 meters or 410 feet) is shown on the study maps and geophysical data. The survey grid was designed to provide complete coverage of the seafloor with the sonar records and a representative sampling with all other systems.

All aspects of the survey and this Supplemental Exploration Plan follow current Minerals Management Service Guidelines. The following hazard analysis was determined from the prior interpretation and related maps, tables, and figures. PetroQuest Energy LLC proposes to drill the Proposed Well No. 34 location within the northeast portion of Block 72, Ship Shoal Area at:

A member of the Fugro group of companies with offices throughout the world.





1,430.45' FNL, 1,650.00' FEL  
X = 2,123,150.00', Y = 112,200.00'  
Latitude: 28° 58' 28.659"N, Longitude: 90° 56' 53.660"W

### Geological Interpretation

- ◆ A single acoustic velocity of 5,000 feet per second was applied to convert record time to feet below sea level. Projected tidal variations from Ship Shoal Light tide station, Louisiana tide station were utilized to adjust the bathymetric readings to the Mean Lower Low Water (MLLW) tide level for the area. The water depth at the proposed location is -28 feet MLLW.
- ◆ Bathymetric contours indicate that the seafloor has nearly uniform slope to the south at a rate of approximately 2.6 feet/mile (.03 degrees).
- ◆ The side scan sonar records show the seafloor displays numerous patches of relatively light and dark reflectivity with gradational margins in the vicinity of the proposed well site. Seafloor sediments are reported to be clayey silt (Minerals Management Service, Visual No. 3, 1983).
- ◆ Pinger profiles at the proposed well site show approximately 29 feet of parallel deltaic sediments overlying a stepped gas front.
- ◆ Several acoustic voids were noted in the vicinity of the proposed location. The closest acoustic margin is approximately 160 feet south of the proposed well site. The closest margins of two additional acoustic voids in the vicinity are 210 feet to the southeast and 250 feet to the northwest of the proposed location.
- ◆ A channel buried 5 feet below the seafloor is present approximately 170 feet west of the proposed site.
- ◆ The processed 2D air gun records show parallel and subparallel reflectors that dip gradually to the south at 70 feet per mile (0.76°). No faults were seen within the uppermost 500 milliseconds (approximately 1,250 feet). Structural uplift and faults are likely to affect the proposed well bore at depth due to its proximity to known salt diapirism.
- ◆ A high-amplitude anomaly ("bright spot") is approximately 245 feet southwest of the proposed well site. The processed air gun records show the amplitude anomaly approximately 525 feet below the seafloor. All available 2D and 3D processed seismic data collected in the vicinity of the proposed well site should be inspected for evidence of possible additional faulting and gas anomalies prior to drilling.
- ◆ Four pipelines are within 1,000 feet of the proposed well site.
  - Mobil 4-Inch (S-2641) is approximately 545 feet to the southeast
  - Transco 8-Inch (S-1533) is approximately 625 feet to the southeast
  - PetroQuest 4-Inch (S-9725) is approximately 740 feet to the west
  - PetroQuest 4-Inch (S-9726) is approximately 755 feet to the west
- ◆ The following three unidentified magnetic anomalies are within 1,000 feet of the proposed well site:

Anomaly No.	Gammas/Duration	Distance from Proposed Well Site
101	8 <sup>δ</sup> /78'	235' to the northeast
86	10 <sup>δ</sup> /85'	435' to the southwest
72	13 <sup>δ</sup> /85'	735' to the southwest

- ◆ No sonar contacts were seen within 1,000 feet of the proposed well site.

## Archaeological Assessment

The following Archaeological Assessment is based on a 2009 Archaeological and Shallow Hazards Survey performed by Fugro GeoServices, Inc. in Block 63 and 72, Ship Shoal Area, for PetroQuest Energy LLC.

- ◆ Block 72 (OCS-00060), Ship Shoal Area, offshore Louisiana is in an area of high probability for prehistoric archaeological sites and historic shipwrecks requiring 50-meter line spacing (U.S. Department of the Interior, Mineral Management Service [USDI MMS] 2005; Coastal Environments, Inc. [CEI], 1977).
- ◆ The regional probability for shipwrecks in this area is considered to be moderate; preservation of a wreck would be moderate to high (Pearson et al. 2003). Analyses of available shipwreck sources, as well as the FUGRO CHANCE database, indicate that no shipwrecks have been reported within the current survey area. One vessel, the *Miss Ellen*, was reported lost in the northern portion of SS63 outside of the current survey area. Information for the nearest reported shipwrecks to the current survey area are listed below:

NAME	DATE	SOURCE	SHIP LAT.	SHIP LON.	Location Reliability	AREA	BLOCK
Minnie	1888	Berman	28.903339	-91.017502	3	SS	86
Miss Ellen	1965	NIMA	29.000000	-90.966660	3	SS	63
Unknown Vessel	N/A	NIMA	28.933331	-90.966667	1	SS	87
Unknown Vessel	N/A	AWOIS	28.933571	-90.966759	4	SS	87

- ◆ Three (3) unidentified magnetic anomalies were recorded within 1,000 feet of the proposed well location. These anomalies ranged in size from 8 to 13-gammas, with durations ranging from 78 to 85 feet. None of these anomalies were identified as having the potential of representing possible shipwreck remains. All three anomalies are relatively low amplitude, short duration anomalies, and are interpreted as probable modern debris.
- ◆ The evaluation of the high-resolution geophysical survey data from a survey conducted within portions of Blocks 63 and 72, Ship Shoal Area, offshore Louisiana, indicates that there were no landforms identified that would have represented a well drained and resource rich environment for prehistoric occupation.
- ◆ There were no side scan sonar contacts or seafloor features indicative of a shipwreck identified within the survey area.
- ◆ None of the remaining unidentified anomalies cluster or evidence signatures suggestive of buried shipwreck remains.
- ◆ However, it is possible that historic shipwreck materials may not be detected by the geophysical instruments or may be obscured by modern debris. If wooden planking or other cultural materials that could represent shipwreck remains are encountered, the USDI MMS archaeologists should be contacted to provide an assessment of these artifacts.

**Conclusions**

Based on the previous interpretation, the Proposed Well No. 34 surface location is clear of any evidence of historic shipwreck remains, possible high probability areas for prehistoric archaeological sites, debris or other obstacles to drilling activities. Caution should be exercised when working in the vicinities of the unidentified magnetic anomalies, sonar contacts, and man-made features. For additional information, please refer to the June 200 Archaeological and Hazard Report.

Thank you, and please call me at 337-268-3246 if you have any questions or need additional information.

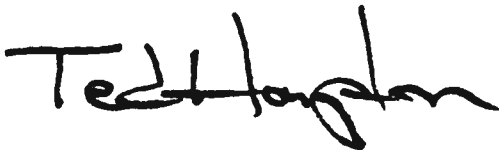
Sincerely,



Michael Samson  
Senior Geologist



Mark A. Melancon  
Marine Archaeologist



Ted Hampton  
Marine Archaeologist

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## **APPENDIX 4**

### **Hydrogen Sulfide Information**

**A. CONCENTRATION**

PetroQuest Energy does not anticipate the encounter of Hydrogen Sulfide (H<sub>2</sub>S) during the proposed operations.

**B. CLASSIFICATION**

In accordance with Title 30 CFR part 250.490(c), PetroQuest Energy requests that the Ship Shoal Block 72 OCS-00060 site of Well No. 34 to the depth of PROPRIETARY INFORMATION be classified by the Minerals Management Service as an area where the absence of hydrogen sulfide (H<sub>2</sub>S) has been confirmed by the drilling of the PROPRIETARY INFORMATION and requests a classification of H<sub>2</sub>S unknown for depths between PROPRIETARY INFORMATION.

**C. H<sub>2</sub>S CONTINGENCY PLAN**

PetroQuest Energy, L.L.C. will submit to the MMS Houma District Office an H<sub>2</sub>S Contingency Plan prepared in accordance with the terms set forth in 30 CFR 250.490(f) and in conjunction with the application for permit to drill prior to engaging in the exploratory activities proposed herein.

**D. MODELING REPORT**

Not applicable

## **APPENDIX 5**

### **Mineral Resource Conservation Information**

**A. TECHNOLOGY AND RESERVOIR ENGINEERING PRACTICES & PROCEDURES**

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

**B. TECHNOLOGY RECOVERY PRACTICES AND PROCEDURES**

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

**C. RESERVOIR DEVELOPMENT**

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

## **APPENDIX 6**

### **Biological, Physical and Socioeconomic Information**

**A. CHEMOSYNTHETIC COMMUNITIES REPORT**

This Exploration Plan does not propose activities that could disturb seafloor areas in water depths of 400 meters (1,312 feet) or greater; therefore chemosynthetic information is not required.

**B. TOPOGRAPHIC FEATURES MAP**

Activities proposed in this Exploration Plan do not fall within 305 meters (1,000 feet) of the "no activity zone"; therefore no map is required.

**C. TOPOGRAPHIC FEATURES STATEMENT (SHUNTING)**

All activities proposed under this Exploration Plan 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**

Ship Shoal Block 72 is not located within 200 feet of any pinnacle trend feature; therefore live bottom information is not required.

**E. LIVE BOTTOMS (LOW RELIEF) MAP**

Ship Shoal Block 72 is not located within 200 feet of any pinnacle trend feature; therefore live bottom (low relief) maps are not required.

**F. POTENTIALLY SENSITIVE BIOLOGICAL FEATURES**

Ship Shoal Block 72 is not located within 30 meters (100 feet) of potentially sensitive biological features; therefore biologically sensitive area maps are not required.

**G. REMOTELY OPERATED VEHICLE (ROV) MONITORING SURVEY PLAN**

This Exploration Plan does not propose activities that could disturb seafloor areas in water depths of 400 meters (1,312 feet) or greater; therefore chemosynthetic information is not required.



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

Endangered marine mammal species as listed under the Endangered Species Act that might occur in the Gulf of Mexico are the West Indian manatee (Trichechus manatus), northern right whale (Eubalaena glacialis), fin whale (Balaenoptera physalus), humpback whale (Megaptera novaeangliae), sei whale (B. borealis), sperm whale (Physeter macrocephalus), and blue whale (B. musculus) (USDOI, OCS EIS/EA MMS 2002-052). Endangered or threatened sea turtle species that might occur in the Gulf of Mexico are Kemp's ridley turtle (Lepidochelys kempii), green turtle (Chelonia mydas), hawksbill turtle (Eretmochelys imbricate), leatherback turtle (demochelys coriacea), and loggerhead turtle (Caretta caretta) (USDOI, Region IV Endangered Species Notebook). The only listed threatened fish species in the Gulf of Mexico is the Gulf sturgeon (Ancipenser oxyrinus desotoi). Ship Shoal Block 72 is not designated as a critical habitat for any of these species. PetroQuest Energy does not anticipate that any threatened or endangered species will be adversely affected as a result of proposed activities under this Supplemental Exploration Plan.

#### **I. ARCHAEOLOGICAL REPORT**

Ship Shoal 72 is in an area MMS has determined to potentially contain historic or prehistoric archaeological resources requiring 50-meter line spacing. An archaeological report is contained within the Shallow Hazard Report prepared by Fugro GeoServices in 2009 and made part of this plan herein.

#### **J. AIR & WATER QUALITY INFORMATION**

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

#### **K. SOCIOECONOMIC INFORMATION**

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

## **APPENDIX 7**

### **Waste and Discharge Information**

**A. PROJECTED GENERATED WASTES**

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

**B. PROJECTED OCEAN DISCHARGES**

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

**C. MODELING REPORT**

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

**D. NPDES PERMITS**

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

**E. COOLING WATER INTAKES**

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

## **APPENDIX 8 Air Emissions Information**

### **EMISSIONS WORKSHEETS AND SCREENING QUESTIONS**

Specific data regarding air emissions related to the operations proposed under this Exploration Plan is included as Appendix 8 Attachments.

Air Quality Screening Checklist  
Summary Sheet of Complex Total Emissions and Allowable  
Vicinity Map

Complex Total Emissions and Exemption Amounts were calculated by:

Andrea K. Wallis  
Regulatory Project Manager  
Phone: (337) 354-4545  
Fax: (337) 264-9927  
Email: [AWallis@jchance.com](mailto:AWallis@jchance.com)

## AIR EMISSIONS INFORMATION

PetroQuest Energy, L.L.C. proposes to drill, log and complete the Ship Shoal 72 No. 34 well. **There will be no production, facility installation or pipeline installation under this (S) EP.** Pending favorable exploration well results, a future development plan will be submitted for the installing of pipelines and the placing of the well on production.

Included in this section of the (Supplemental) Exploration Plan is the Air Quality Screening Checklist prepared in accordance with Notice to Lessees 2008-G04 addressing activities to drill, log and complete the Ship Shoal 72 No. 34 well.

The submersible rig to be used for this project has not been designated at this time, but will be typical of the "Noble Lester Pettus." HP values used in the attached Air Quality Report were obtained from manufacturer's specifications for this rig model.

There are no existing facilities or activities co-located with PetroQuest's proposed exploratory activities under this plan. The Complex Total Emissions are the same as the Plan Emissions.

Since all screening questions were answered "no", only the Summary Information Sheet regarding peak year emissions for the Complex Total Emissions has been attached for your review.

**Modeling Report - A Modeling Report is not required under this (S) EP.**

Listed below is the chronological order of proposed events and the travel frequencies for all associated support vessels:

Exploratory Drilling Activity Schedule	Start Date	End Date	Total Days
<b><i>Mob rig on location, utilizing tugs for anchors</i></b>		<b><i>09/30/2009</i></b>	<b><i>1</i></b>
<b><i>Drill, Log &amp; Complete Well No. 34</i></b>	<b><i>10/01/2009</i></b>	<b><i>02/05/2010</i></b>	<b><i>128</i></b>
<b><i>Demob Rig, utilizing tugs for anchors &amp; release rig</i></b>		<b><i>02/06/2010</i></b>	<b><i>1</i></b>
<b><i>Total rig days in 2009</i></b>			<b><i>93</i></b>
<b><i>Total rig days in 2010</i></b>			<b><i>37</i></b>
<b><i>Note: No production under this Plan.</i></b>			

Helicopters, crew boats, and work/supply boats will be utilized to transport personnel and supplies to the proposed location at Ship Shoal Block 72. It is anticipated the following will be utilized for transporting supplies and personnel.

Crew Boat	3 round trips/week
Work Boat	3 round trips/week
Helicopters	1 round trip/week

The route utilized by each mode of transportation will normally be the most direct route from the shore base at Fourchon, LA to the Ship Shoal Block 72 location site.

EXPLORATION PLAN (EP)  
AIR QUALITY SCREENING CHECKLIST

COMPANY	PetroQuest Energy, L.L.C.
AREA	Ship Shoal
BLOCK	72
LEASE	OCS-00060
RIG	Typical of Noble Lester Pettus
WELLS	Well No. 34
COMPANY CONTACT	Andrea Wallis
TELEPHONE NO.	(337) 354-4545
REMARKS	(SUPPLEMENTAL) EXPLORATION PLAN

**Note:** HP values were obtained from manufacturer's specifications for a Submersible Typical of the Noble Lester Pettus for calculating emissions under this Exploratory Plan.

"Yes"	"No"	Air Quality Screening Questions
	No	1. Is any calculated Complex Total (CT) Emission amount (in tons) associated with your exploration activities more than 90% of the amounts calculated using the following formulas: $CT = 3400 D^{2/3}$ for CO, and $CT = 33.3D$ for other air pollutants (where D = distance to shore in miles)?
	No	2. Do your emission calculations include any emission reduction measures or modifications?
	No	3. Are your proposed exploration activities located east of 87.5 degrees W longitude?
	No	4. Do you expect to encounter H <sub>2</sub> S at concentration greater than 20 parts per million (PPM)?
	No	5. Do your propose to flare or vent natural gas for more than 48 continuous hours? from any proposed well?
	No	6. Do you propose to burn produced hydrocarbon liquids?

If you answered no to all of the above screening questions :

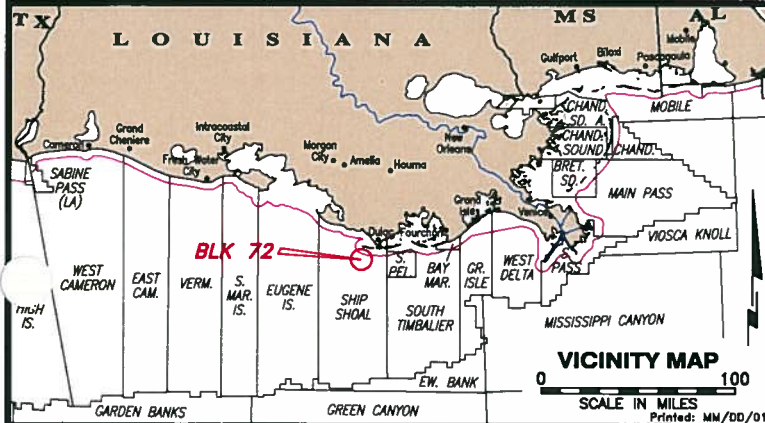
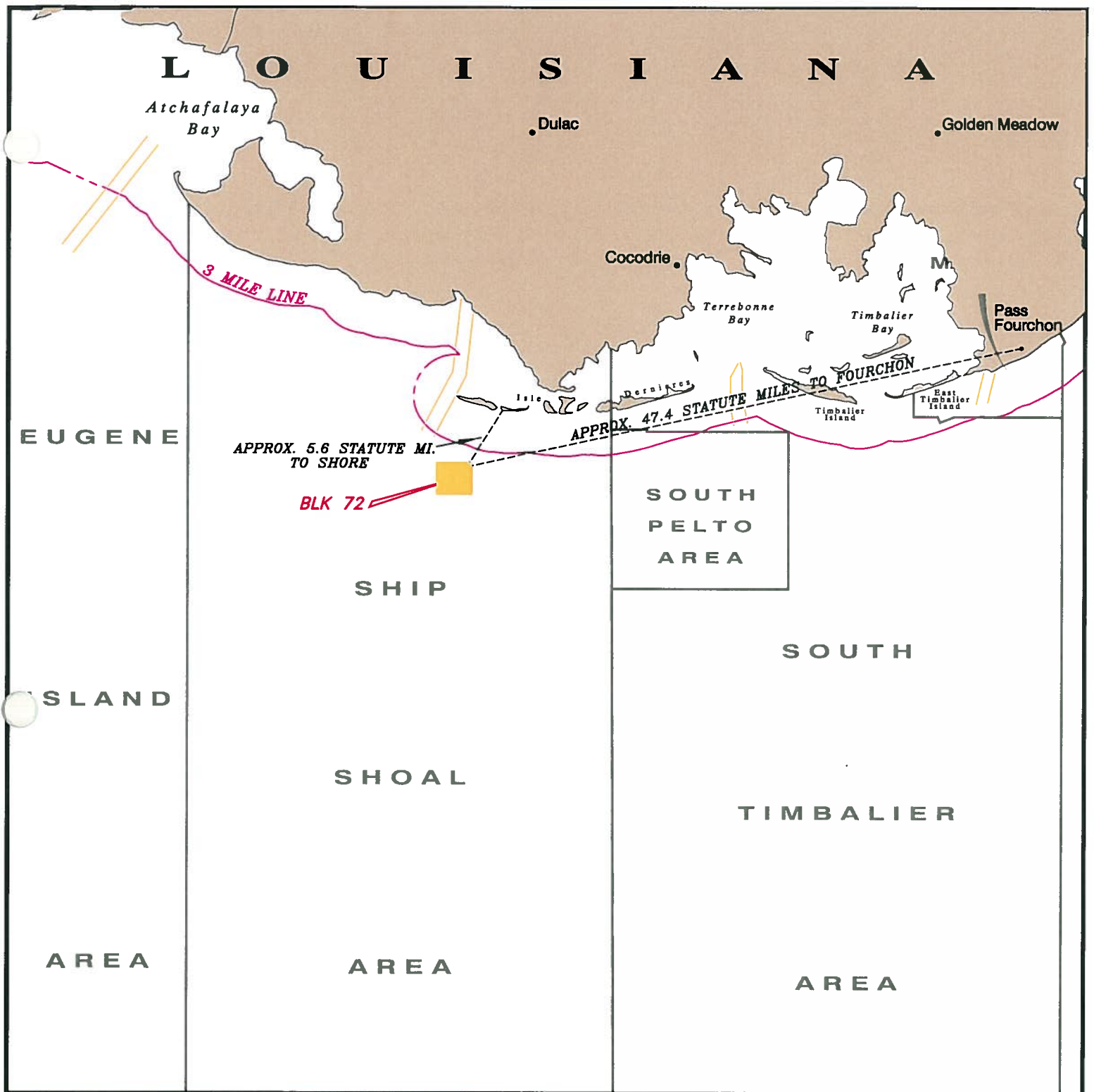
Submit only this coversheet with your plan and summary information of the peak year emissions for both Plan Emissions and Complex Total Emissions, if applicable.

If you answered yes to any of the above screening questions :

Prepare and submit a full set of EP spreadsheets with your plan emissions and, if applicable, a second set showing the emissions calculations for the Complex Total Emissions.

SUMMARY

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL
PetroQuest Energy, L.L.C.	Ship Shoal	72	OCS-00060	Typical of Noble Lester Pettus	Well No. 34
<b>Year</b>	<b>Emitted</b>				
	<b>PM</b>	<b>SOx</b>	<b>NOx</b>	<b>VOC</b>	<b>CO</b>
2009	4.99	22.24	167.28	5.16	36.49
2010	2.07	9.13	68.77	2.14	15.00
<b>Allowable</b>	<b>186.48</b>	<b>186.48</b>	<b>186.48</b>	<b>186.48</b>	<b>10721.88</b>





**PetroQuest**  
ENERGY, LLC

**VICINITY MAP**  
**OCS-0060**  
**BLOCK 72**  
**SHIP SHOAL AREA**  
**GULF OF MEXICO**

**FUGRO CHANCE INC.**   
200 Dulles Dr., Lafayette, Louisiana 70506-3001 (337) 237-1300

GEODETTIC DATUM: NAD 1927		SCALE IN FEET	
PROJECTION: LOUISIANA SOUTH		0  60,000'	
GRID UNITS: US SURVEY FEET			
Job No.: 0900836	Date: 3/23/09	Drwn: VAG	Chart: Of:
Filename: H:\2009\0900836\CAD\MARINE\0900836_VICINITY.DWG		1 1	



## APPENDIX 9 Oil Spills Information

### A. OIL SPILL RESPONSE PLANNING

All the proposed activities and facilities in this EP will be covered by the Oil Spill Response Plan filed by PetroQuest Energy, L.L.C. (MMS Company Number 02222) in accordance with 30 CFR 254 and approved on July 3, 2008.

### B. SPILL RESPONSE SITES

Primary Response Equipment Locations	Preplanned Staging Locations
Public Launch, Cocodrie, LA	Public Launch, Cocodrie, LA

### C. OSRO INFORMATION

PetroQuest Energy has contracted Clean Gulf Associates (CGA) as the primary Oil Spill Removal Organization.

### D. WORST-CASE SCENARIO COMPARISON

CATEGORY	REGIONAL OSRP WCD	PROPOSED EXPLORATION PLAN WCD
Type of Activity	Exploration    Drilling - MODU	Exploration    Drilling - MODU
Facility Location (area/block)	Ship Shoal 71	SS 72
Facility Designation	MODU	MODU
Distance to Nearest Shoreline (miles)	6.7	5.6
<b>Volume</b>		
Storage tanks (total)	0    bbls	0    bbls
Flowlines (on facility) / Lease term pipelines	0    bbls / day	0    bbls
Uncontrolled blowout (volume per day)	600    bbls / day	600    bbls / day
<b>Total Volume</b>	<b>600    bbls / day</b>	<b>600    bbls / day</b>
Type of Oil(s) (crude, condensate, diesel)	Condensate	Condensate
API Gravity(s)	50°	45°

Since PetroQuest Energy, L.L.C. has the capability to respond to the appropriate worst-case spill scenario included in its regional OSRP approved on July 3, 2008 and since the worst-case scenario determined for our EP does not replace the appropriate worst-case scenario in our regional or subregional OSRP, I hereby certify that PetroQuest Energy, L.L.C. 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.

**E. OIL SPILL RESPONSE DISCUSSION**

This information is not required for Supplemental Exploration Plans as per NTL 2008-G04.

**F. MODELING REPORT**

Not applicable

## **APPENDIX 10**

### **Environmental Monitoring Information**

#### **A. MONITORING SYSTEMS**

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

#### **B. INCIDENTAL TAKES**

In accordance with the terms set forth in Notice to Lessees and Operators 2008-G04 – “Information Requirements for Exploration Plans and Development Operations Coordination Documents”, PetroQuest Energy will comply with the following when applicable to avoid or minimize impacts to any of the protected species as listed in the Endangered Species Act of 1973 (ESA):

- NTL 2007-G02 – “Implementation of Seismic Survey Mitigation measures and Protected Species Observer Program”
- NTL 2007-G04 – “Vessel Strike Avoidance and Injured/Dead Protected Species Reporting”
- NTL 2007-G03 – “Marine Trash and Debris Awareness and Elimination”

PetroQuest Energy does not anticipate any protected species being incidentally taken as a result of the activities proposed within this Exploration Plan.

#### **C. FLOWER GARDEN BANKS NATIONAL MARINE SANCTUARY**

The activities proposed herein are not located within the Protective Zones of the Flower Garden Banks nor Stetson Bank, thus this section of the plan is not required under NTL 2008-G04.

# APPENDIX 11

## Lease Stipulations Information

### LEASE STIPULATIONS

Ship Shoal Block 72, Lease OCS-00060 carries no Lease Stipulations but under NTL 2002 G-01, dated effective March 15, 2002, is on the list of OCS Block requiring an Archaeological Resource Survey and Report. An Archaeological Survey was performed in conjunction with the Shallow Hazards survey done by Fugro GeoServices in 2009. A copy of the Archaeological Report is contained within the Shallow Hazards Report and is submitted with this Supplemental Exploration Plan.

### SPECIAL CONDITIONS

Ship Shoal Block 72 is located within the boundary of the "8G Zone", established for joint review by the designated state agency for comments on the proposed activity to determine if the activities impact a common reservoir overlying state and federal acreage. Therefore, PetroQuest Energy, L.L.C. (PetroQuest) has included the required surface and bottom-hole location coordinates for the Louisiana Governor's Office in order to provide the state with the necessary data required to make their determination. PetroQuest will mail this copy of the plan to the attention of the Louisiana Governor's Office.

## APPENDIX 12 Support Vessels and Aircraft Information

### A. GENERAL

Type	Maximum Fuel Tank Capacity	Maximum No. in Area at Any Time	Trip Frequency or Duration for Drilling/Completion
Tug Boat	3,000 bbls	3	MOB/DEMOB
Crew Boat	500 bbls	1	Daily
Supply Boat	500 bbls	1	3 times weekly

### B. DIESEL OIL SUPPLY VESSELS

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

### C. DRILLING FLUIDS TRANSPORTATION

This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.

### D. SOLID AND LIQUID WASTES TRANSPORTATION

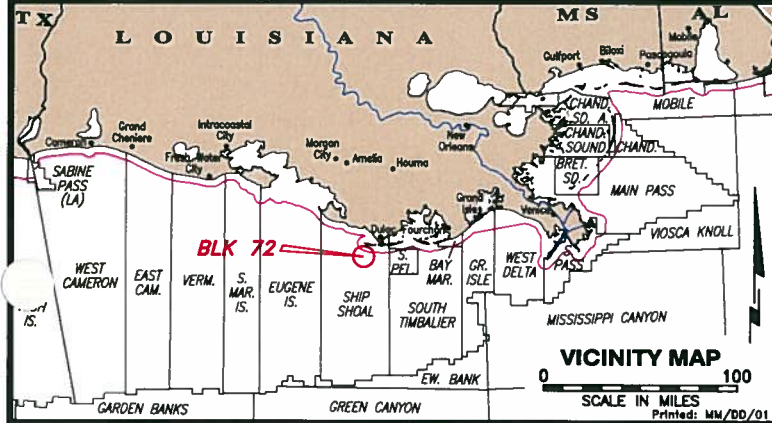
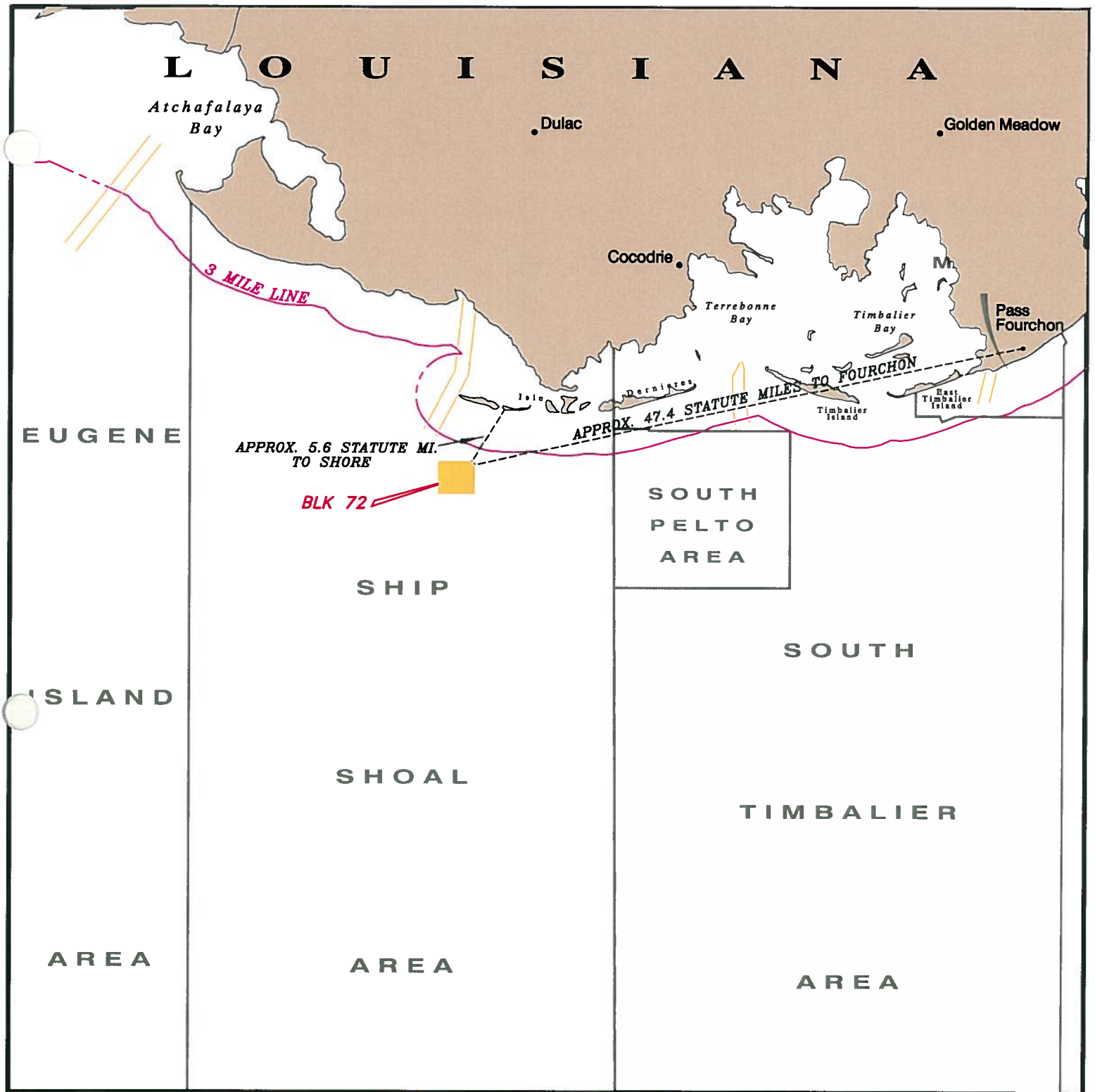
This information is not required for Supplemental Exploration Plans for which Louisiana is an affected state as defined in NTL 2008-G04.


### E. VICINITY MAP

Enclosed as Appendix 12 Attachments is a vicinity map showing the location of the activities proposed herein relative to the shoreline with the distance of the proposed activities from the shoreline and the primary route(s) of the support vessels and aircraft that will be used when traveling between the onshore support facilities and the drilling unit.

# APPENDIX 12 ATTACHMENT

## Vicinity Map






**PetroQuest**  
ENERGY, LLC

**VICINITY MAP**  
**OCS-00060**  
**BLOCK 72**  
**SHIP SHOAL AREA**  
**GULF OF MEXICO**

**FUGRO CHANCE INC.**  
200 Dulles Dr. Lafayette, Louisiana 70506-5001 (337) 237-1300

GEODETIC DATUM: NAD 1927 PROJECTION: LOUISIANA SOUTH GRID UNITS: US SURVEY FEET	SCALE IN FEET 		
Job No.: 0900836	Date: 3/23/09	Drwn: VAG	Chart: Of:
Filename: H:\2009\0900836\CAD\MARINE\0900836_VICINITY.DWG			1 1

## **APPENDIX 13**

### **Environmental Mitigation Measures Information**

#### **A. ENVIRONMENTAL MITIGATION MEASURES DISCUSSION**

Florida is not determined to be an affected state by activities occurring in the Ship Shoal Area, thus in accordance with the terms set forth in 15 CFR 930.58(a)(2) and Notice to Lessees and Operators 2008-G04 – “Information Requirements for Exploration Plans and Development Operations Coordination Documents”, this information is not required.

#### **B. INCIDENTAL TAKES**

In accordance with the terms set forth in Notice to Lessees and Operators 2008-G04 – “Information Requirements for Exploration Plans and Development Operations Coordination Documents”, PetroQuest Energy will comply with the following when applicable to avoid or minimize impacts to any of the protected species as listed in the Endangered Species Act of 1973 (ESA):

- NTL 2007-G02 – “Implementation of Seismic Survey Mitigation measures and Protected Species Observer Program”
- NTL 2007-G04 – “Vessel Strike Avoidance and Injured/Dead Protected Species Reporting”
- NTL 2007-G03 – “Marine Trash and Debris Awareness and Elimination”

PetroQuest Energy does not anticipate any protected species being incidentally taken as a result of the activities proposed within this Exploration Plan.



## APPENDIX 14

### Onshore Support Facilities Information

**A. GENERAL**

Onshore facilities that will be used to provide supply and service support for the proposed activities:

Name of Shorebase	Location	Existing/New/Modified
Baroid Dock	Fourchon, LA	Existing

**B. SUPPORT BASE CONSTRUCTION OR EXPANSION**

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

**C. SUPPORT BASE CONSTRUCTION OR EXPANSION TIMETABLE**

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

**D. WASTE DISPOSAL**

Onshore facilities that will be used to store and dispose of any solid and liquid wastes generated by the proposed activities:

Name/Location of Facility	Type of Waste	Amount	Rate	Disposal Method
USLL / Bourg, LA	Non-hazardous solid: Oil Based Drilling Muds & Cuttings	2,913 bbls	Various	Land-Farming

**E. AIR EMISSIONS**

This information is not required for Supplemental Exploration Plans submitted in the MMS GOMR.

**F. UNUSUAL SOLID AND LIQUID WASTES**

This information is not required for Supplemental Exploration Plans submitted in the MMS GOMR.

## **APPENDIX 15**

### **Coastal Zone Management Act (CMZA) Information**

The proposed supplemental exploratory activities will not require consistency determination by the State of Louisiana.

# APPENDIX 16

## Environmental Impact Analysis

### A. IMPACT PRODUCING FACTORS

Environmental Impact Analysis Worksheet

Environmental Resources	Impact Producing Factors (IPFs) Categories and Examples					
	Emissions (air, noise, light, etc.)	Effluents (muds, cuttings, other discharges to the water column or seafloor)	Physical disturbances to the seafloor (rig or anchor emplacements, etc.)	Wastes sent to shore for treatment or disposal	Accidents (e.g., oil spills, chemical spills, H <sub>2</sub> S releases)	Discarded Trash and 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)	
Chemosynthetic communities			(4)			
Water quality		X	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)			
<b>Vicinity of Offshore Location</b>						
Essential fish habitat		X	X		X(6)	
Marine and pelagic birds	X				X	X
Public health and safety					(5)	
<b>Coastal and Onshore</b>						
Beaches					X(6)	X
Wetlands					X(6)	
Shore birds and coastal nesting birds	X				X(6)	X
Coastal wildlife refuges					X	
Wilderness areas					X	
Other Resources you identify						

## Footnotes for Environmental Impact Analysis Matrix

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

## A. ANALYSIS

### Site-Specific at Ship Shoal Block 72

#### 1. Designated Topographic Features

Potential IPF's on topographic features include physical disturbances to the seafloor, effluents, and accidents.

**Physical disturbances to the seafloor:** Ship Shoal Block 72 is located approximately 58 miles north of Ewing Bank, the nearest known topographic feature; therefore, no adverse impacts are expected.

**Effluents:** Ship Shoal Block 72 is located approximately 58 miles north of Ewing Bank, the nearest known topographic feature; therefore, no adverse impacts are expected.

**Accidents:** The following discussion of topographic features is summarized from the Final Environmental Impact Statements (USDOL, OCS EIS/EA MMS 2002-052). The Topographic Lease Stipulation has been used on leases since 1973, and this experience shows conclusively that the stipulation effectively prevents damage to the biota on banks from routine oil and gas activities. In the unlikely even of an accidental surface or subsurface oil spill, concentrated oil is not expected to impact sessile biota on topographic features. Crests of designated topographic features in the northern Gulf of Mexico are found below 10 meters; therefore, concentrated oil from a surface spill is not likely to reach sessile biota. Subsurface spills should result in formation and settling of oil-saturated material. And oil sediment particles should come into contact with living coral tissue; however a subsurface spill should rise to the surface, and any oil remaining at depth would probably be swept clear of the banks by currents moving around the banks (Rezak et al., 1983). PetroQuest's Oil Spill Response Plan (OSRP) will cover activities proposed in this Initial Exploration Plan.

There are no other IPF's (including emissions, wastes sent to shore for disposal, and discarded trash and debris) from the proposed activities, which could impact topographic features.

#### 2. Pinnacle Trend Area Live Bottoms

Potential IPF's on pinnacle trend area live bottoms include physical disturbances to the seafloor, effluents, and accidents.

**Physical disturbances to the seafloor:** Ship Shoal Block 72 is located approximately 151 miles west of Main Pass Block 290, the nearest block protected by the pinnacle trend live bottom stipulation; therefore, no adverse impacts are expected. The following discussion of pinnacle trend areas live bottoms is summarized from the Final Environmental Impact Statement (USDOI, OCS EIS/EA MMS 2002-052). By identifying the individual pinnacles present at the activity site,

the lessee would be directed to avoid placement of the drilling rig and anchors on the sensitive areas. Thus, mechanical damage to the pinnacles is eliminated when measures required by the stipulation are impasse.

**Effluents:** Ship Shoal Block 72 is located approximately 151 miles west of Main Pass 290, the nearest block protected by the pinnacle trend live bottom stipulation; therefore, no adverse impacts are expected. The stipulation does not address the discharge of effluents near the pinnacles because the pinnacle trend is subject to heavy natural sedimentation and is at considerable depths. The rapid dilution of drill cuttings and muds will minimize the potential of significant concentration of effluents on the pinnacles.

**Accidents:** In the unlikely event of an accidental surface or subsurface oil spill, concentrated oil is not expected to impact biota of the pinnacle trend. Any surface oil spill resulting from a proposed action would likely have no impact on the biota of the pinnacle trend because the crests of these features are much deeper than 20 meters. All evidence to date indicated that accidental oil discharge that occur at the seafloor from pipeline or blowout would rise in the water column, surfacing almost directly over the source location, and thus not impact pinnacles. PetroQuest's Oil Spill Response Plan (OSRP) will cover activities proposed in this Initial Exploration Plan.

There are no other IPF's (including emissions, wastes sent to shore for disposal, and discarded trash and debris) from the proposed activities, which could impact pinnacle trend area live bottoms.

### **3. Eastern Gulf Live Bottoms**

Potential IPF's on Eastern Gulf live bottoms include physical disturbances to the seafloor, effluents, and accidents.

**Physical disturbances to the seafloor:** Ship Shoal Block 72 is located approximately 184 miles west of the nearest block protected by the gulf live bottom stipulation; therefore, no adverse impacts are expected. The following discussion of eastern gulf live bottom is summarized from the Final Environmental Impact Statement (USDOI, OCS EIS/EA MMS 2002-052). Through detection and avoidance, the eastern gulf live bottom lease stipulation minimizes the likelihood of mechanical damage from OCS activities associated with rig and anchor emplacement to the sessile and pelagic communities associated with the crest and flanks of such features.

**Effluents:** Ship Shoal Block 72 is located approximately 184 miles west of the nearest block protected by the gulf live bottom stipulation; therefore, no adverse impacts are expected. Since this area is subject to heavy natural sedimentation, this stipulation does not include any specific measures to protect the pinnacles from the discharge of effluents.

**Accidents:** In the unlikely event of an accidental surface or subsurface oil spill, concentrated oil is not expected to impact eastern gulf live bottoms because of the features and dilution of spills by currents and/or quickly rising oil. PetroQuest's Oil

Spill Response Plan (OSRP) will cover activities proposed in this Initial Exploration Plan.

There are no other IPF's (including emissions, wastes sent to shore for disposal, and discarded trash and debris) from the proposed activities, which could impact Eastern Gulf live bottoms.

#### **4. Chemosynthetic Communities**

Ship Shoal Block 72 is located approximately 73 miles northwest of Ewing Bank Block 1001, the nearest known chemosynthetic community. After review of impact-producing factors (including effluents, physical disturbances to the seafloor, and accidents) resulting from activities proposed in the Initial Exploration Plan, there will be no adverse impacts to chemosynthetic communities. Bottom-disturbing activities proposed in this Initial Exploration Plan will not impact any deepwater chemosynthetic communities, as the water depth at the proposed surface location in Ship Shoal 72 is 30 feet. Therefore, the proposed activities are not located within the vicinity of any known chemosynthetic communities, which typically occur in water depths greater than 400 meters.

#### **5. Water Quality**

Potential IPF's that could result in water quality degradation from the proposed activities of this Initial Exploration Plan include physical disturbances to the seafloor, effluents, wastes sent to shore for treatment or disposal, and accidents.

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

**Effluents:** The discharge generated as a result of drilling and completion activities associated with this Initial Exploration Plan will be discharged upon successful bioassay test as per NPDES discharge guidelines. All applicable Federal, State and local requirements regarding water quality and discharge for the proposed activities, as well as any other permit conditions will be complied with.

**Wastes sent to shore for treatment or disposal:** Solid wastes; typically paper, plastic, cloth, and metal, will be collected and transported to shore for disposal at an approved disposal facility. Solid wastes generated from the transportation vessels, normally just garbage, will be collected and returned to shore for disposal with the drilling rig refuse. Scrap metal and other metal wastes will be recycled or sold and will not be shipped to a disposal facility with the other refuse. Sanitary waste will be treated in approved marine sanitation devices as required by the Clean Water Act. All biodegradable wastes, such as kitchen food scraps, will be comminuted or ground and discharged in accordance with Annex V of MARPOL 73/78. Hazardous waste from the drilling rig, such as paint, or paint thinner, will be collected in sealed metal containers and transported to an approved disposal site in accordance with RCRA guidelines.

**Accidents:** The following discussion of potential impacts to water quality is summarized from the Final Environmental Impact Statement (USDOl, OCS EIS/EA MMS 2002-052). In the unlikely event of an accidental surface or subsurface oil spill, a variety of physical, chemical, and biological processes act to disperse the oil slick, such as spreading, evaporation of the more volatile constituents, dissolution into the water column, emulsification of small droplets, agglomeration sinking, microbial modification, photochemical modification, and biological ingestion and excretion. The dissolved components and small oil droplets that do not rise to the surface or are mixed down by surface turbulence would temporarily affect the water quality. Dispersion by currents and microbial degradation would remove the oil from the water column or dilute the constituents to background levels. PetroQuest's Oil Spill Response Plan (OSRP) will cover activities proposed in this Initial Exploration Plan.

There are no other IPF's (including emissions and discarded trash and debris) from the proposed activities which could cause impacts to water quality.

## **6. Fisheries**

Potential IPF's that could result in impacts to fisheries from the proposed activities of this Initial Exploration Plan 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. 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 3,000m of the discharge point, and are expected to have negligible effect on fisheries.

**Accidents:** The following discussion of potential impacts to water quality is summarized from the Final Environmental Impact Statement (USDOl, OCS EIS/EA MMS 2002-052). The Gulf sturgeon (*Ancipenser oxyrinchus desotoi*) is the only listed threatened fish species in the Gulf of Mexico. The Gulf sturgeon could be impacted by the spills. Contact with spilled oil could cause irritation of gill epithelium and disturbance of liver function in Gulf sturgeon. The likelihood of spill occurrence and contact to the Gulf sturgeon is very low.

Should a spill occur in the area of mobile adult finfish or shellfish, the effects would likely be sub lethal and the extent of the damage would be reduced to the capability of adult fish and shellfish to avoid a spill, to metabolize hydrocarbons, and to excrete both metabolites and parent compounds. PetroQuest's Oil Spill Response Plan (OSRP) will cover activities proposed in this Initial Exploration Plan.



There are no other IPF's (including emissions, wastes sent to shore for disposal, and discarded trash and debris) from the proposed activities that could cause impacts to fisheries.

## **7. Marine Mammals**

Potential IPF's that could cause impacts to marine mammals from the proposed activities of this Initial Exploration Plan include emissions, effluents, discarded trash and debris, and accidents.

Endangered or threatened marine mammal species that might occur in the Gulf of Mexico are West Indian manatee (Trichechus manatus), northern right whale (Eubalaena glacialis), fin whale (Balaenoptera physalus), humpback whale (Megaptera novaeangliae), sei whale (B. borealis), sperm whale (Physeter macrocephalus), and blue whale (B. musculus) (USDOl, OCS EIS/EA MMS 2002-052). Several non-endangered and non-threatened mammal species of whales and dolphins also occur in the Gulf of Mexico.

**Emissions:** Disturbances (e.g. noise) may stress animals, weaken their immune systems, and make them more vulnerable to parasites, diseases, environmental contaminants, and predation than normal but would not be fatal (Majors and Myrick, 1990). There is no conclusive evidence whether anthropogenic noise has or has not caused long-term displacement of, or reductions in, marine mammal populations.

**Effluents:** Contaminants in waste discharge and drilling muds might indirectly affect marine mammals through food-chain biomagnifications. Although the scope of effects and their magnitude are not known, direct or indirect effects are not expected to be lethal.

**Discarded Trash and Debris:** Both entanglement in and ingestion of debris have caused the death or serious injury of marine mammal (Laist, 1997). The limited amount of marine debris, if any, resulting from the proposed activities is not expected to substantially harm marine mammals. PetroQuest will adhere to the information and guidelines set forth by MMS NTL 2007-G03 "Marine Trash and Debris Awareness and Elimination".

**Accidents:** Small numbers of marine mammals could be killed or injured by chance collision with service vessels. Sperm whales are one of the 11 whales species that are hit commonly by ships (Laist et al., 2001). Collisions between OCS vessels and cetaceans within the project area are expected to be unusual events. Chronic and sporadic sub lethal effects could occur that may stress and/or weaken individuals of a local group or population and make them more susceptible to infection from natural or anthropogenic sources. Few lethal effects are expected from chance collisions with service vessels. PetroQuest will adhere to the information and guidelines set forth by MMS NTL 2007-G04 "Vessel Strike Avoidance and Injured/Dead Protected Species Reporting".

Oil spills of any size are estimated to be aperiodic events that may contact cetaceans. Oil spills have the potential to cause sub lethal oil-related injuries and spill-related deaths to marine mammals. Oil spill response activities may increase vessel traffic in the area, which could add to changes in marine mammals behavior

and distribution. The effect of oil dispersants on marine mammals is not known. PetroQuest's Oil Spill Response Plan (OSRP) will cover activities proposed in this Initial Exploration Plan.

The net result of any disturbance would depend on the size and percentage of population affected, ecological importance of the disturbed areas, environmental and biological parameters that influence an animal's sensitivity to disturbance and stress, and the accommodation time in response to prolonged disturbance (Geraci and St. Aubin, 1980). Routine oil and gas activities are not expected to have long-term adverse effects on the size and productivity of any marine mammal species or population stock endemic to the northern Gulf of Mexico.

There are no other IPF's (including physical disturbances to the seafloor and wastes sent to shore for treatment or disposal) from the proposed activities that could impact marine mammals.

## **8. Sea Turtles**

Potential IPF's that could cause impacts to sea turtles from the proposed activities of this Initial Exploration Plan include emissions, effluents, discarded trash and debris, and accidents.

Endangered or threatened sea turtle species that might occur in the Gulf of Mexico are Kemp's ridley turtle (*Lepidochelys kempii*), green turtle (*Chelonia mydas*), hawksbill turtle (*Eretmochelys imbricate*), leatherback turtle (*demochelys coriacea*), and loggerhead turtle (*Caretta caretta*) (USDOI, Region IV Endangered Species Notebook).

**Emissions:** Brightly lit platforms and noise from drilling activities could impact sea turtle behavior however this would only be a temporary disturbance and not lethal.

**Effluents:** Contaminants in waste discharge and drilling muds might indirectly affect sea turtles through food-chain biomagnifications; there is uncertainty concerning the possible effects. Chronic sub lethal effects (e.g. stress) resulting in persistent physiological or behavioral changes and/or avoidance of impacted areas could cause declines in survival of fecundity, and result in either population declines, however, such declines are not expected.

**Discarded Trash and Debris:** Both entanglement in and digestion 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. PetroQuest will adhere to the information and guidelines set forth by MMS NTL 2007-G03 "Marine Trash and Debris Awareness and Elimination".

**Accidents:** Collisions between OCS vessels and sea turtles within the project area are expected to be unusual events. Chronic and sporadic sub lethal effects could occur that may stress and/or weaken individuals of a local group or population and make them more susceptible to infection from natural or anthropogenic sources. Few lethal effects are expected from chance collisions with service vessels.

PetroQuest will adhere to the information and guidelines set forth by MMS NTL 2007-G04 "Vessel Strike Avoidance and Injured/Dead Protected Species Reporting"

In the unlikely event of an accidental surface or subsurface oil spill, sea turtles could be adversely impacted. Oil spills and oil-spill-response activities are potential threats that could have lethal effects on turtles. Contact with oil, consumption of oil particles, and oil-contaminated prey could seriously affect individual sea turtles. Oil-spill-response planning and the habitat protection requirements of the Oil Pollution Act of 1990 should mitigate these threats. PetroQuest's Oil Spill Response Plan (OSRP) will cover activities proposed in this Initial Exploration Plan.

There are no other IPF's (including physical disturbances to the seafloor and wastes sent to shore for treatment or disposal) from the proposed activities that could impact sea turtles.

### **9. Air Quality**

Estimated air emissions associated with the proposed activities have been calculated and were determined to be below the MMS exemption levels for particulates, sulfur oxides, nitrogen oxides, volatile organic compounds and carbon monoxides. Accidents and blowouts can release hydrocarbons or chemicals, which could cause the emission of air pollutants. There would be a limited degree of air quality degradation in the immediate vicinity of the proposed activities; however, the emissions associated with the proposed activities are not projected to have significant effects on onshore air quality because of the prevailing atmospheric conditions, emission height, emission rates and the distance to shore.

There are no other IPF's (including effluents, physical disturbance of the seafloor, wastes sent to shore for treatment or disposal, and discarded trash and debris) from the proposed activities that could impact air quality.

### **10. Shipwreck Sites**

After review of impact-producing factors (including physical disturbances to the seafloor) resulting from activities proposed in this Initial Exploration Plan, there will be no adverse impacts to known or potential shipwreck sites.

There are no other IPF's (including emissions, effluents, wastes sent to shore for treatment or disposal, accidents, and discarded trash and debris) from the proposed activities that could impact shipwreck sites. Please refer to the Archaeological and Hazard report (2004/2008) made part of this plan for further information.

### **Pre-historic Archaeological Sites**

Ship Shoal Block 72 is in an area of high probability for prehistoric and archaeological sites requiring 50-meter line spacing (U.S. Department of the Interior, Mineral Management Service [USDOI/MMS] 2002; Coastal Environments Inc. [CEI], 1977). Please refer to the Archaeological and Hazard report (2009) made part of this plan for further information.

## Vicinity of Offshore Location

### 1. Essential Fish Habitat

Potential IPF's that could cause impacts to essential fish habitat from the proposed activities of this Initial Exploration Plan include physical disturbances to the seafloor, effluents, and accidents.

**Physical disturbance to the seafloor:** The live bottom low relief stipulation, the live bottom pinnacle trend stipulation, and the Eastern Gulf live bottoms stipulation would prevent most of the potential impacts on live-bottom communities and essential fish habitat from bottom disturbing activities (ex. anchoring, structure emplacement and removal).

**Effluents:** The live bottom low relief stipulation, the live bottom pinnacle trend stipulation, and the Eastern Gulf live bottoms stipulation would prevent most of the potential impacts on live-bottom communities and essential fish habitat 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 essential fish habitat.

**Accidents:** In the unlikely event of an accidental surface or subsurface oil spill, there is the potential for some detrimental effects to essential fish habitat. The following discussion of potential impacts to marine mammals is summarized from the Final Environmental Impact Statement (USODL, OCS EIS/EA MMS 2002-052). Should a spill occur in the area of a mobile adult finfish or shellfish, the effects would likely be sub lethal and the extent of the damage would be reduced to the capability of the adult fish and shellfish to avoid a spill, to metabolize hydrocarbons, and to excrete both metabolites and parent compounds. PetroQuest's Oil Spill Response Plan (OSRP) will cover activities proposed in this Initial Exploration Plan.

There are no other IPF's (including emissions, wastes sent to shore for treatment or disposal, and discarded trash and debris) from the proposed activities that could impact essential fish habitat.

### 2. Marine & Pelagic Birds

Potential IPF's that could cause impacts to marine and pelagic birds from the proposed activities of this Initial Exploration Plan include emissions, accidents, and discarded trash and debris.

**Emissions:** Emissions of pollutants into the atmosphere from the proposed activities are below the concentrations that could harm marine and pelagic birds.

**Accidents:** Oil spills pose the greatest potential direct and indirect impacts to marine birds. Birds that are heavily oiled are usually killed. If physical oiling of individual or local groups of birds occurs, some degree of both acute and chronic physiological stress associated with direct and secondary uptake of oil would be expected. Lightly oiled birds can sustain tissues and organ damage from oil ingested during feeding

and grooming or from oil that is inhaled. Stress and shock enhance the effects of exposure and poisoning. Low levels of oil could stress birds by interfering with food detection, feeding impulses, predator avoidance, territory definition, homing of migratory species, susceptibility to physiological disorders, disease resistance, growth rates, reproduction, and respiration. Reproductive success can be affected by the toxins in oil. Indirect effects occur by fouling of nesting habitat, and displacement of individuals, breeding pairs, or populations to less favorable habitats. Dispersant used in spill cleanup activity can have toxic effects similar to oil on the reproductive success of marine birds. PetroQuest's Oil Spill Response Plan (OSRP) will cover activities proposed in this Initial Exploration Plan.

**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. The limited amount of marine debris, if any, resulting from the proposed activities is not expected to substantially harm marine and pelagic birds. PetroQuest will adhere to the information and guidelines set forth by MMS NTL 2007-G03 "Marine Trash and Debris Awareness and Elimination".

The majority of effects on endangered/threatened and non-endangered/non-threatened marine birds are expected to be sub lethal: behavioral effects, sub lethal exposure to or intake of OCS-related contaminants or discharge debris, temporary disturbance, and displacement of localized groups from impacted habitats. Chronic sub lethal stress, however, is often undetectable in birds. As a result of stress, individuals may weaken, facilitating infection and disease; then migratory species may not have the strength to reach their destination. No significant habitat impacts are expected to occur directly from routine activities resulting from a proposed action.

There are no other IPF's (including physical disturbance to the seafloor, effluents, and wastes sent to shore for treatment or disposal) from the proposed activities that could impact marine and pelagic birds.

### **3. Public Health & Safety**

After review of impact-producing factors (including an accidental H<sub>2</sub>S release) resulting from activities proposed in this Initial Exploration Plan, there will be no adverse impacts to public health and safety. Ship Shoal Block 72 has been classified as an area where the absence of H<sub>2</sub>S has been confirmed to depths of 17,030 ft.

## Coastal and Onshore

### 1. Beaches

Potential IPF's that could cause impacts to beaches from the proposed activities of this Initial Exploration Plan include accidents and discarded trash and debris.

**Accidents:** Ship Shoal Block 72 is located approximately 5.6 miles from the coast of Terrebonne Parish, Louisiana. An accidental oil spill from the proposed activities would have an 8/12/13 percent chance (based on 3, 10, or 30 days from spill) of causing impacts to the shore area. Additionally, Ship Shoal Block 72 is located approximately 51 miles from the coast of Vermilion Parish, Louisiana. An accidental oil spill from the proposed activities would have a 3/13/15 percent chance (based on 3, 10, or 30 days from spill) of causing impacts to the shore area. Due to the distance from shore and the available oil spill response capabilities, no adverse impacts to beaches are anticipated as a result of the proposed activities. PetroQuest's Oil Spill Response Plan (OSRP) will cover activities proposed in this Initial Exploration Plan.

**Discarded trash and debris:** Trash on the beach is recognized as a major threat to the enjoyment and use of beaches. The limited amount of marine debris, if any, resulting from the proposed activities is not expected to substantially impact beaches. PetroQuest will adhere to the information and guidelines set forth by MMS NTL 2007-G03 "Marine Trash and Debris Awareness and Elimination".

There are no other IPF's (including physical disturbance to the seafloor, effluents, emissions, and wastes sent to shore for treatment or disposal) from the proposed activities that could impact beaches.

### 2. Wetlands

Potential IPF's that could cause impacts to wetlands from the proposed activities of this Initial Exploration Plan include accidents.

**Accidents:** Ship Shoal Block 72 is located approximately 5.6 miles from the coast of Terrebonne Parish, Louisiana. An accidental oil spill from the proposed activities would have an 8/12/13 percent chance (based on 3, 10, or 30 days from spill) of causing impacts to the shore area. Additionally, Ship Shoal Block 72 is located approximately 51 miles from the coast of Vermilion Parish, Louisiana. An accidental oil spill from the proposed activities would have a 3/13/15 percent chance (based on 3, 10, or 30 days from spill) of causing impacts to the shore area. Due to the distance from shore and the available oil spill response capabilities, no adverse impacts to wetlands are anticipated as a result of the proposed activities. PetroQuest's Oil Spill Response Plan (OSRP) will cover activities proposed in this Initial Exploration Plan.

There are no other IPF's (including physical disturbance to the seafloor, effluents, emissions, wastes sent to shore for treatment or disposal, and discarded trash and debris) from the proposed activities that could impact wetlands.

## 2. Shore & Coastal Nesting Birds

Potential IPF's that could cause impacts to shore and coastal nesting birds from the proposed activities of this Initial Exploration Plan include accidents and discarded trash and debris.

**Accidents:** Oil spills pose the greatest potential direct and indirect impacts to shore birds and coastal nesting birds. Birds that are heavily oiled are usually killed. If physical oiling of individual or local groups of birds occurs, some degree of both acute and chronic physiological stress associated with direct and secondary uptake of oil would be expected. Lightly oiled birds can sustain tissues and organ damage from oil ingested during feeding and grooming or from oil that is inhaled. Stress and shock enhance the effects of exposure and poisoning. Low levels of oil could stress birds by interfering with food detection, feeding impulses, predator avoidance, territory definition, homing of migratory species, susceptibility to physiological disorders, disease resistance, growth rates, reproduction, and respiration. The toxins in oil can affect reproductive success. Indirect effects occur by fouling of nesting habitat, and displacement of individuals, breeding pairs, or populations to less favorable habitats. Dispersant used in spill cleanup activity can have toxic effects similar to oil on the reproductive success of marine birds. The majority of effects on endangered/threatened and non-endangered/non-threatened shore birds and coastal nesting birds are expected to be sub lethal: behavioral effects, sub lethal exposure to or intake of OCS-related contaminants or discharge debris, temporary disturbance, and displacement of localized groups from impacted habitats. Chronic sub lethal stress, however, is often undetectable in birds. As a result of stress, individuals may weaken, facilitating infection and disease; then migratory species may not have the strength to reach their destination. No significant habitat impacts are expected to occur directly from routine activities resulting from a proposed action. Secondary impacts to coastal habitats will occur over the long-term and may ultimately displace species from traditional sites to alternative sites.

Ship Shoal Block 72 is located approximately 5 miles from the coast of Terrebonne Parish, Louisiana. An accidental oil spill from the proposed activities would have an 8/12/13 percent chance (based on 3, 10, or 30 days from spill) of causing impacts to the shore area. Additionally, Ship Shoal Block 72 is located approximately 51 miles from the coast of Vermilion Parish, Louisiana. An accidental oil spill from the proposed activities would have a 3/13/15 percent chance (based on 3, 10, or 30 days from spill) of causing impacts to the shore area. Due to distance from shore and the available oil spill response capabilities, no adverse impacts to shore birds and coastal nesting birds are anticipated as a result of the proposed activities. PetroQuest's Oil Spill Response Plan (OSRP) will cover activities proposed in this Initial Exploration Plan.

**Discarded trash and debris:** Shore birds and coastal nesting birds could become entangled and snared in discarded trash and debris, or ingest small plastic debris, which can cause permanent injuries and death. The limited amount of marine debris, if any, resulting from the proposed activities is not expected to substantially harm marine and pelagic birds. PetroQuest will adhere to the information and guidelines set forth by MMS NTL 2007-G03 "Marine Trash and Debris Awareness and Elimination".

There are no other IPF's (including physical disturbance to the seafloor, effluents, emissions, and wastes sent to shore for treatment or disposal) from the proposed activities that could impact shore and coastal nesting birds.

### **3. Coastal Wildlife Refuges**

Potential IPF's that could cause impacts to coastal wildlife refuges from the proposed activities of this Initial Exploration Plan include accidents.

**Accidents:** Ship Shoal Block 72 is located approximately 103 miles southwest of Delta National Wildlife Refuge, the nearest coastal wildlife refuge. An accidental oil spill from the proposed activities would have a -/-1 percent chance (based on 3, 10, or 30 days from spill) of causing impacts to the coastal wildlife refuges that occur on shore, in Plaquemines Parish, Louisiana. Due to the distance from this refuge and the available oil spill response capabilities, no adverse impacts to coastal wildlife refuges are anticipated as a result of the proposed activities. PetroQuest's Oil Spill Response Plan (OSRP) will cover activities proposed in this Initial Exploration Plan.

There are no other IPF's (including physical disturbance to the seafloor, effluents, emissions, wastes sent to shore for treatment or disposal, and discarded trash and debris) from the proposed activities that could impact coastal wildlife refuges.

### **5. Wilderness Areas**

Potential IPF's that could cause impacts to wilderness areas from the proposed activities of this Initial Exploration Plan include accidents.

**Accidents:** Ship Shoal Block 72 is located approximately 5.6 miles from the coast of Terrebonne Parish, Louisiana. An accidental oil spill from the proposed activities would have an 8/12/13 percent chance (based on 3, 10, or 30 days from spill) of causing impacts to the shore area. Additionally, Ship Shoal Block 72 is located approximately 51 miles from the coast of Vermilion Parish, Louisiana. An accidental oil spill from the proposed activities would have a 3/13/15 percent chance (based on 3, 10, or 30 days from spill) of causing impacts to the shore area. Due to the distance from shore and the available oil spill response capabilities, no adverse impacts to wilderness areas are anticipated as a result of the proposed activities. PetroQuest's Oil Spill Response Plan (OSRP) will cover activities proposed in this Initial Exploration Plan.

Louisiana has three areas designated by Congress as Wilderness Areas, namely the Breton Wilderness Area, Kisatchie Hills Wilderness Area, and Lacassine Wilderness Area. The only wilderness area located along the coastal region of Louisiana is the Breton Wilderness Area. Breton Wilderness Area is located on the eastern side of the Mississippi River over 110 miles from Ship Shoal Block 72. Due to the distance from shore and the available oil spill response capabilities, no adverse impacts to wilderness areas are anticipated as a result of the proposed activities. PetroQuest's Oil Spill Response Plan (OSRP) will cover activities proposed in this Initial Exploration Plan.



There are no other IPF's (including physical disturbance to the seafloor, effluents, emissions, wastes sent to shore for treatment or disposal, and discarded trash and debris) from the proposed activities that could impact wilderness areas.

### **(C) IMPACTS ON PROPOSED ACTIVITIES**

A Shallow Drilling Hazards – Archaeological Statement was prepared for the proposed surface location. The surface locations were evaluated for any seafloor and subsurface geological and manmade features and conditions that may adversely affect operations. 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, Ship Shoal Block 72 may experience hurricane and tropical 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 material (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:

#### **Drilling and Completion**

- Secure Well
- Secure rig/platform
- Evacuate personnel

#### **Caisson Installation**

- Operator will not conduct caisson installation operations during Tropical Storm or Hurricane threat

### **C) Alternatives**

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

### **D) Mitigation Measures**

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

### **E) 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.

**F) Preparer**

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**G) References**

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