

Initial Exploration Plan
Mississippi Canyon Block 252

OCS-G 32306

BP Exploration & Production Inc.
February 2009

EXHIBIT #	768
WIT:	

CONFIDENTIAL

BP-HZN-2179MDL00001095

TABLE OF CONTENTS

Section

- 1.0 **PlanContents**
 - 1.1 Plan Information Form
 - 1.2 Location Information
- 1.3 Safety and Pollution Prevention Features
- 1.4 Storage Tanks and Production Vessels
- 1.5 Pollution Prevention Measures
- 1.6 Attachments to Section 1.0
- 2.0 **General Information**
 - 2.1 Applications and Permits
 - 2.2 Drilling Fluids
- 2.3 New or Unusual Technology
- 2.4 Bonding Information
- 2.5 Oil Spill Financial Responsibility (OSFR)
- 2.6 Deepwater Well Control
- 2.7 Blowout Scenario
- 3.0 **Geological, Geophysical, and H₂S Information**
 - 3.1 Geological and Geophysical Information
 - 3.2 H₂S Information
- 3.3 Attachments to Section 3.0
- 4.0 **Biological, Physical, and Socioeconomic Information**
 - 4.1 Chemosynthetic Information
- 4.2 Topographic Features Information
- 4.3 Live Bottoms (Pinnacle Trend)
- 4.4 Live Bottoms (Low Relief)
- 4.5 Potentially Sensitive Biological Features
- 4.6 Remotely Operated Vehicle (ROV) Monitoring Survey Plan
- 4.7 Archaeological Report
- 5.0 **Waste and Discharge Information**
 - 5.1 Projected Generated Wastes
 - 5.2 Projected Ocean Discharge
- 6.0 **Air Emissions Information**
 - 6.1 Emissions Worksheets and Screening Questions
 - 6.2 Contact Information
 - 6.3 Modeling Report
- 7.0 **Oil Spills Information**
 - 7.1 Oil Spill Response Planning
 - 7.2 Modeling Report
- 8.0 **Environmental Monitoring Information**
 - 8.1 Monitoring Systems
- 8.2 Flower Garden Banks National Marine Sanctuary
- 9.0 **Lease Stipulation Information**
 - 9.1 Lease Stipulations for MC 252
- 10.0 **Environmental Mitigation Measures Information**
 - 10.1 Description of Mitigation Measures
 - 10.2 Incidental Takes

TABLE OF CONTENTS

11.0	Support Vessels and Aircraft Information	
11.1	General	
11.2	Diesel Oil Supply Vessels	
11.3	Diesel Fluids	Transportation
11.4	Solid and Liquid Wastes	Transportation
11.5	Vicinity Map	
11.6	Attachments to Section 10.0	
12.0	Onshore Support Facilities Information	
12.1	General Information	
12.2	Support Base construction or Expansion	
12.3	Waste Disposal	
13.0	Coastal Zone Management Act (CZMA) Information	
13.1	Consistency Certification	
13.2	Other Information	
13.3	Attachments to Section 12.0	
14.0	Environmental Impact Analysis (EIA)	
14.1	Impact Producing Factors	
14.2	Analysis	
14.3	Impacts on Proposed Activities	
14.4	Environmental Hazards	
14.5	Alternatives	
14.6	Mitigation Measures	
14.7	Consultation	
14.8	Preparers	
14.9	References	
15.0	Administrative Information	
15.1	Exempted Information Description	(Public Information Copies Only)
15.2	Bibliography	

SECTION 1.0
Plan Contents (250.211 and 250.241)

1.0 Plan Contents

Under this Exploration Plan, BP Exploration & Production Inc. proposes to drill and temporarily abandon two (2) exploratory wells in the Macondo project area.

1.1. Plan Information Form

Included in Section 1.0 is Form MMS-137 "OCS Plan Information Form" which provides details concerning the activities proposed in this plan. The dates shown are tentative.

1.2 Location Information

A well location plat prepared in accordance with Notice to Lessees (NTL) 2008-G04 is included in Section 1.0.

1.3 Safety and Pollution Prevention Features

The proposed wells will be drilled with Transocean's *Marianas* rig. Rig specifications will be made a part of the appropriate Applications for Permit to Drill.

Please note that if the aforementioned semi-submersible drilling rig is not available and another rig is contracted, any differences regarding air emissions, drilling equipment, pollution control and safety equipment will be addressed at that time.

Safety features on the MODU will include well control, pollution prevention, welding procedure, and blowout prevention equipment as described in Title 30 CFR Part 250, Subparts C, D, E, G and O and as further clarified by MMS Notices to Lessees and current policy making invoked by the MMS. The *Marianas* is ISO 14001 certified.

The MMS is required to conduct onsite inspection of offshore facilities to confirm operators are complying with lease stipulations, operating regulations, approved plans, and other conditions, as well as to assure safety and pollution prevention requirements are being met. The National Potential Incident of Noncompliance (PINC) List serves as the baseline for these inspections. The MMS also inspects the stockpiles of equipment listed in the operator's approved Regional Oil Spill Response Plan that would be used for the containment and cleanup of hydrocarbon spills.

Appropriate life rafts, life jackets, rig buoys, etc. will be maintained on the facility at all times as mandated by the U.S. Coast Guard regulations contained in Title 33 CFR.

Supervisory and certain designated personnel on-board the facility will be familiar with the effluent limitations and guidelines for overboard discharges into the receiving waters, as outlined in the NPDES General Permit GMG290000.

- 1.4 Storage Tanks and Production Vessels** - Information regarding the storage tanks that will be used to conduct the drilling operations proposed in this plan that will store oil, as defined at 30 CFR 254.6 is provided in the table below. Only those tanks with a capacity of 25 barrels or more are included.

Type of Storage Tank	Type of Facility	Tank Capacity (bbls)	Number of Tanks	Total Capacity (bbls)	Fluid Gravity (API)
Fuel Oil	Semi-Submersible	4794	4	19176	27.489
Waste Oil	Semi-Submersible	31	1	31	34.971
Fuel Oil	Semi-Submersible	123	2	246	27.489
Fuel Oil	Semi-Submersible	137	1	137	27.489

SECTION 1.0
Plan Contents (250.211 and 250.241)

Type of Storage Tank	Type of Facility	Tank Capacity (bbls)	Number of Tanks	Total Capacity (bbls)	Fluid Gravity (API)
Fuel Oil	Semi-Submersible	115	1	115	27.489
Fuel Oil	Semi-Submersible	32	1	32	27.489
Hydraulic	Semi-Submersible	29	3	87	31.144
Lube Oil	Semi-Submersible	134	1	134	34.971
Helix-Fuel	Semi-Submersible	50	3	150	

- 1.5 **Pollution Prevention Measures** - A discussion of measures to prevent the discharge of oils and greases from drilling rigs during rainfall and routine operations is not required for the operations proposed in this plan.
- 1.6 **Additional Measures** - A discussion of additional safety, pollution prevention, or early spill detection measures beyond those required by 30 CFR 250 is not required in this plan.
- 1.7 **Attachments to Section 1.0**
☐ OCS Plan Information Form (Form MMS 137)
☐ Well Location Maps

OCS PLAN INFORMATION FORM

General Information			
Type of OCS Plan	<input checked="" type="checkbox"/>	Exploration Plan (EP) Development	Operations Coordination Document (DOCD)
Company Name: BP Exploration & Production, Inc. MMS Operation Number: 02481			
Address: 200 Westlake Park Blvd Contact Person: Scherie Douglas			
Houston, TX 77079 Phone Number: 281-366-6843			
E-Mail Address: scherie.douglas@bp.com			
Lease(s): OCS-G 32306	Area: MC Block(s):	252	Project Name (If Applicable): Macondo
Objective(s): <input checked="" type="checkbox"/> Oil <input type="checkbox"/> Gas	<input type="checkbox"/> Sulphur <input type="checkbox"/> Salt	Onshore Base: Fourchon, LA	Distance to Closest Land (Miles): 48
Description of Proposed Activities (Mark all that apply)			
<input checked="" type="checkbox"/> Exploration drilling	<input type="checkbox"/> Development drilling		
<input type="checkbox"/> Well completion	<input type="checkbox"/> Installation of production platform		
<input type="checkbox"/> Well test flaring (for more than 48 hours)	<input type="checkbox"/> Installation of production facilities		
<input type="checkbox"/> Installation of caisson or platform as well protection structure	<input type="checkbox"/> Installation of satellite structure		
<input type="checkbox"/> Installation of subsea wellheads and/or manifolds	<input type="checkbox"/> Commence production		
<input type="checkbox"/> Installation of lease term pipelines	<input type="checkbox"/> Other (Specify and describe)		
Have you submitted or do you plan to submit a Conservation Information Document to accompany this plan?			Yes <input type="checkbox"/> No <input type="checkbox"/>
Do you propose to use new or unusual technology to conduct your activities?			Yes <input type="checkbox"/> No <input type="checkbox"/>
Do you propose any facility that will serve as a host facility for deepwater subsea development?			Yes <input type="checkbox"/> No <input type="checkbox"/>
Do you propose any activities that may disturb an MMS-designated high-probability archaeological area?			Yes <input type="checkbox"/> No <input type="checkbox"/>
Have all of the surface locations of your proposed activities been previously reviewed and approved by MMS?			Yes <input type="checkbox"/> No <input type="checkbox"/>
Tentative Schedule of Proposed Activities			
Proposed Activity	Start Date	End Date	No. of Days
Drill and temporarily abandon well location "A"	04/15/2009	07/24/2009	100
Drill and temporarily abandon well location "B"	04/15/2010	07/24/2010	100
Description of Drilling Rig		Description of Production Platform	
<input type="checkbox"/> Jackup	<input type="checkbox"/> Drillship/Caisson	<input type="checkbox"/> Tension	<input type="checkbox"/> Leg Platform
<input type="checkbox"/> Gorilla Jackup	<input type="checkbox"/> Platform rig	<input type="checkbox"/> Well protector Compliant tower	
<input checked="" type="checkbox"/> Semi-submersible	<input type="checkbox"/> Submersible	<input type="checkbox"/> Fixed Platform Guyed tower	
<input type="checkbox"/> DP Semi-submersible	<input type="checkbox"/> Other (Attach description)	<input type="checkbox"/> Subsea manifold	<input type="checkbox"/> Floating production system
Drilling Rig Name (if known): Transocean's Marianas Spar		<input type="checkbox"/> Other (Attach	<input type="checkbox"/> Description)
Description of Lease Term Pipelines			
From (Facility/Area/Block)	To (Facility/Area/Block)	Diameter (Feet)	Length (Feet)
NA			

MMS Form MMS-137 (August 2003 - Supersedes all previous editions of form MMS-137, which may not be used.)

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

MMS Form MMS-137 (August 2003 – Supersedes all previous editions of form MMS-137, which may not be used.)

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

MMS Form MMS-137 (August 2003 – Supersedes all previous editions of form MMS-137, which may not be used.)

Y = 10,438,560.00ft

X = 1,188,000.00ft

Proposed Surface Hole locations:

	Block Ties FEL x FNL	UTM Zone 16 North NAD27 - US Survey Feet		NAD27 Lat/Long		NAD83 Lat/Long		Water Depth
		Northing (Y)	Easting (X)	Latitude	Longitude	Latitude	Longitude	
"A"	1036.12' X 6943.00'	10431617.00ft	1202803.88ft	28°44'17.277"N	88°21'57.340"W	28°44'18.129"N	88°21'57.362"W	-4992ft
"B"	1326.00' X 7066.00'	10431494.00ft	1202514.00ft	28°44'16.027"N	88°22'00.581"W	28°44'16.977"N	88°22'00.603"W	-4992ft

MC252
BP E&P Inc
OCS-G32306

SHL "A"
SHL "B"



BHL
001 ST00BP01
BHL
001 ST00EP00

BHL
001 ST00SP02

SHL
001

Y = 10,422,720.00ft

X = 1,203,840.00ft

Notes:

- 1) All coordinate data in UTM Zone 16 North, NAD27, US survey feet unless otherwise noted;
- 2) All geodetic conversions transformed utilizing NADCON version 2.0 or better equivalent software;
- 3) Locations NOT in a Military Warning Area

"Confidential Information"

Sheet 2 of 2



BP EXPLORATION AND PRODUCTION

EP Locations OCS-G32306 MC 252 "A" and "B"

Mississippi Canyon Area (OPD# NH16-10) Block 252

Offshore Federal - Louisiana

Plot prepared by: Brian D. Autio, APLS BP IT&S CoM SPU

Scale 1" = 2000 ft

Date: 11 February 2009

SECTION 2.0
General Information
(250.213 and 250.243)

- 2.1 Applications and Permits** - The table below provides information on the filing or approval status of the individual and/or site-specific Federal, State and local application approvals or permits that must be obtained to conduct the proposed activities.

Application/Permit	Issuing Agency	Status
Application for Permit to Drill	MMS - New Orleans District	To be submitted
Emergency Evacuation Plan	USCG	To be submitted

- 2.2 Drilling Fluids** - A table providing information on the types (including chemical constituents) and amounts of the drilling fluids that are planned to drill the proposed wells is included below:

Type of Drilling Fluid	Estimated Volume of Drilling Fluid to be Used per Well
Water-based (seawater, freshwater, barite)	20,000 bbls
Synthetic-based (internal olefin, ester)	10,000 bbls

- 2.3 New or Unusual Technology**
 BP Exploration & Production Inc. does not propose to utilize new techniques or unusual technologies for these operations; however, the best available and safest technologies (BAST) as referenced in Title 30 CFR 250 will be incorporated as standard operational procedures.
- 2.4 Bonding Information**
 The bond requirements for the activities and facilities proposed in this Exploration Plan are satisfied by a \$3,000,000 area-wide bond furnished and maintained according to Title 30 CFR Part 256, Subpart I, and NTL No. 2000-G16 "Guidelines for General Lease Surety Bonds", dated September 7, 2000.
- 2.5 Oil Spill Financial Responsibility (OSFR)**
 BP Exploration & Production Inc., MMS company number 02481, has demonstrated oil spill financial responsibility for the facilities proposed in this Exploration Plan according to Title 30 CFR Part 253 and National NTL No. 2008-N05, "Guidelines for Oil Spill Financial Responsibility for Covered Facilities".
- 2.6 Deepwater Well Control**
 BP Exploration & Production Inc., MMS company number 02481, has the financial capability to drill a relief well and conduct other emergency well control operations.
- 2.7 Blowout Scenario**
 A scenario for a potential blowout of the well from which BP would expect to have the highest volume of liquid hydrocarbons is not required for the operations proposed in this EP.

SECTION 3.0
Geological, Geophysical, and H₂S Information
(250.214, 250.215, 250.244 and 240.245)

3.1 Geological and Geophysical Information

The following subsections describe the various geological and geophysical data that has been included with this plan. Maps and cross-sections can be found at the end of this descriptive section or as attachments to the overall Plan.

- 3.1.1 Geological description-** The Macondo Prospect is a NNW to SSE trending channel levee system draped across the crest of a large Mesozoic Turtle structure. The main trapping elements are structural.

3.1.2 Structure contour maps - Current structure contour maps at a scale of 1 inch = 2,000 feet (depth-based, expressed in feet subsea) drawn on the top of each prospective hydrocarbon sand, showing the entire lease block and the location of each proposed well and the locations of geological cross-sections.

3.1.3 Interpreted two-dimensional (2-D) and/or three dimensional (3D) seismic lines - 3D seismic data for shallow hazards identification as per the guidelines outlined in NTL 2008-G05.

3.1.4 Geological structure cross-sections - Interpreted geological structure cross-sections showing the location and depth of each proposed well and showing at least one key horizon and the objective sands.

3.1.5 Shallow hazards report - The proposed surface location of this well was selected based on the results of a regional shallow hazards survey and study of MC208, MC252 and MC296 and portions of surrounding blocks conducted by KC Offshore in 1998 for Texaco Exploration and Production Inc. (Texaco) using HR2D seismic data integrated with 3D exploration seismic data; AND a shallow hazards report for MC252 and MC296 and vicinity produced by Fugro GeoServices, Inc. (Fugro) in 2003 for Dominion Exploration and Production Inc. (Dominion) based on exploration 3D seismic data- thesea floor mapping area for this report covered all of MC252 and MC296, whereas the subsurface mapping area only covered the southern half of MC252 and the northern half of MC296. Copies of the 1998 KC Offshore report have already been submitted to the MMS in support of the Texaco EP documentation for five proposed wells (A through E) with surface locations in MC252 (Plan Control N 6521, approved 16 July, 1999) and copies of the 2003 Fugro report were submitted in support of the Dominion EP documentation for four proposed wells (A through D) with surface locations in MC252 and MC296 (Plan Control N 7743, approved 29 May, 2003).

A site-specific Shallow Hazards and Archaeological Assessment for the proposed well site and mooring pattern was commissioned by BP and produced by C&C Technologies (C&C) in 2009 based on AUV data acquired during January 2009 over a larger area.

3.1.6 Shallow hazards assessment- A shallow hazard analysis prepared, in accordance with NTL No. 2008-G05, for all proposed surface location evaluating seafloor and subsurface geologic and manmade features and conditions.

3.1.7 High resolution seismic lines - An annotated copy of the high-resolution survey line closest to each of the proposed well locations.

3.1.8 Stratigraphic column - Generalized biostratigraphic/lithostratigraphic column from the seafloor to the total depth of the proposed wells.

3.1.9 Time vs. depth tables - A table providing seismic time versus depth for the proposed well locations.

SECTION 3.0
Geological, Geophysical, and H₂S Information
(250.214, 250.215, 250.244 and 240.245)

3.2 H₂S Information

3.2.1 Concentration - It is not expected that H₂S will be encountered during the operations proposed in this plan.

3.2.2 Classification - Pursuant to Title 30 CFR 250.490(c), BP requests a determination that Mississippi Canyon Block 252 is located in an area where the absence of H₂S has been confirmed. Similar fields situated around the proposed well locations such as Kepler (MC283), Ariel (MC429), and Isabela (MC 562), indicate that H₂S should be absent. Moreover, temperatures won't be high enough to encounter in-reservoir cracking resulting in the formation of H₂S.

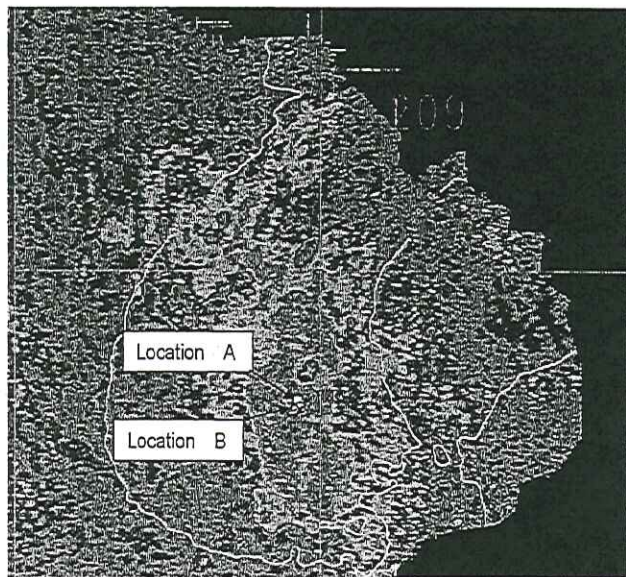
3.2.3 H₂S Contingency Plan - An H₂S Contingency Plan prepared according to 30 CFR 250.4990(f) will not be required for the operations proposed in this plan.

3.2.4 Modeling Report - H₂S at concentrations greater than 500 parts per million (ppm) are not expected in the operations proposed in this plan; therefore a modeling report is not required.

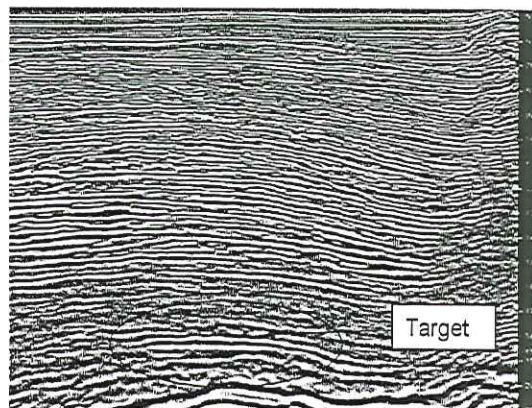
3.3 Attachments to Section 3.0

- ☐ Structure contour map
- ☐ Interpreted seismic lines
- ☐ Geological structure crosssections
- ☐ Shallow hazard assessment and associated maps
- ☐ Stratigraphic column
- ☐ Time vs. Depth table
- ☐ C&C Technologies Shallow Hazards and Archaeological Assessment - 2009 (4 copies)

MC_0252 Macundo Well Location



Geologist Chuck Bordurant
Geophysicist BinhNguyen
Drilling Engineer Mark Halfe



Proposed Locations

Primary Location A MC0252_A
(x,y) = 1202803.88, 10431617.00
(il,xl) = 17282, 14150 (SW=mcmosai3)

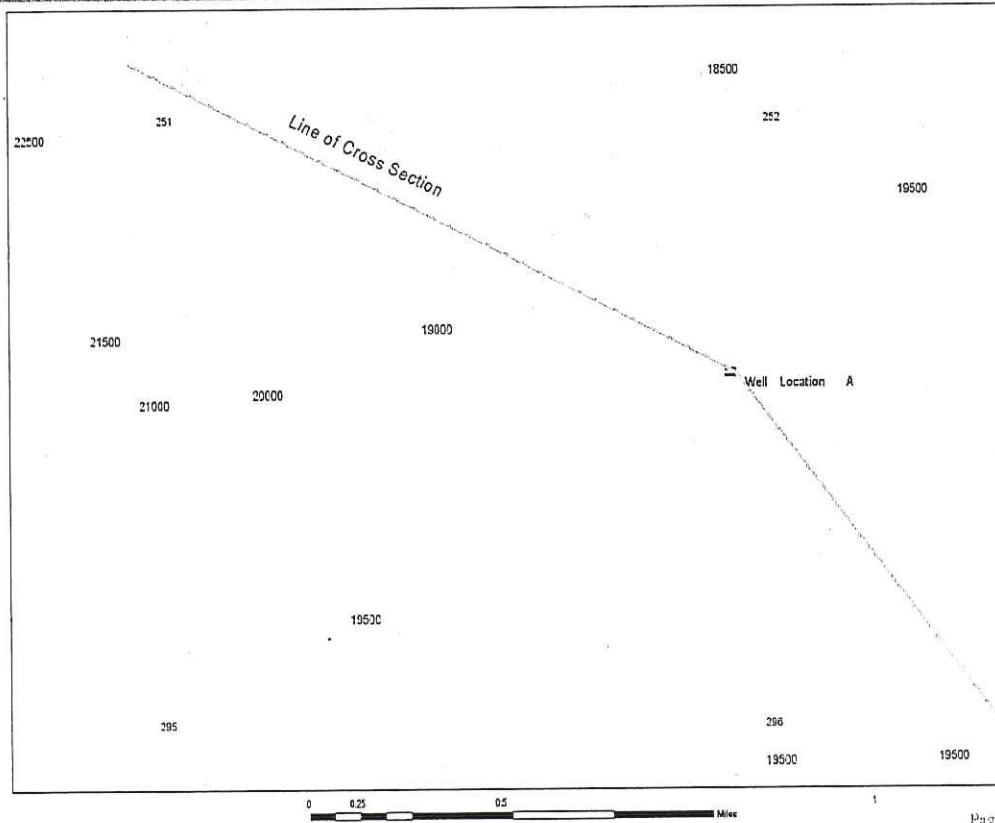
Location B MC0252_B
(x,y) = 1202514.00, 10431494.00
(il,xl) = 17277, 14152 (SW=mcmosai3)

CartographicInformation: UTM16 - Nad27 - Feet
OW projectDEEPWATER
SW project mcmosai3

Location A is our primary location

Page 1: 2/17/2009 1

M56 Depth Structure Map: Well Location Case A

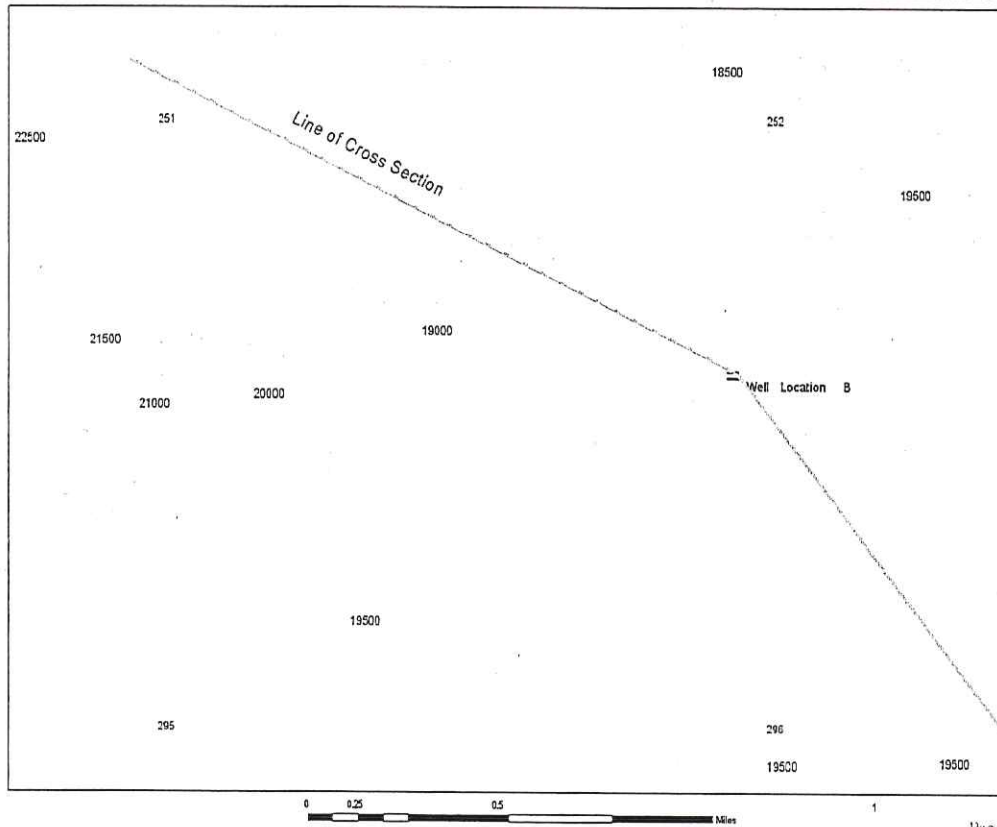


BP
Mississippi Canyon MC0252
M56Structure Contour Map
C.I. : 100 FEET

3

Page 1: 1.5 2/17/2009 2

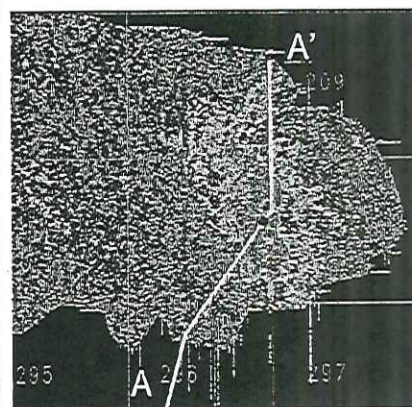
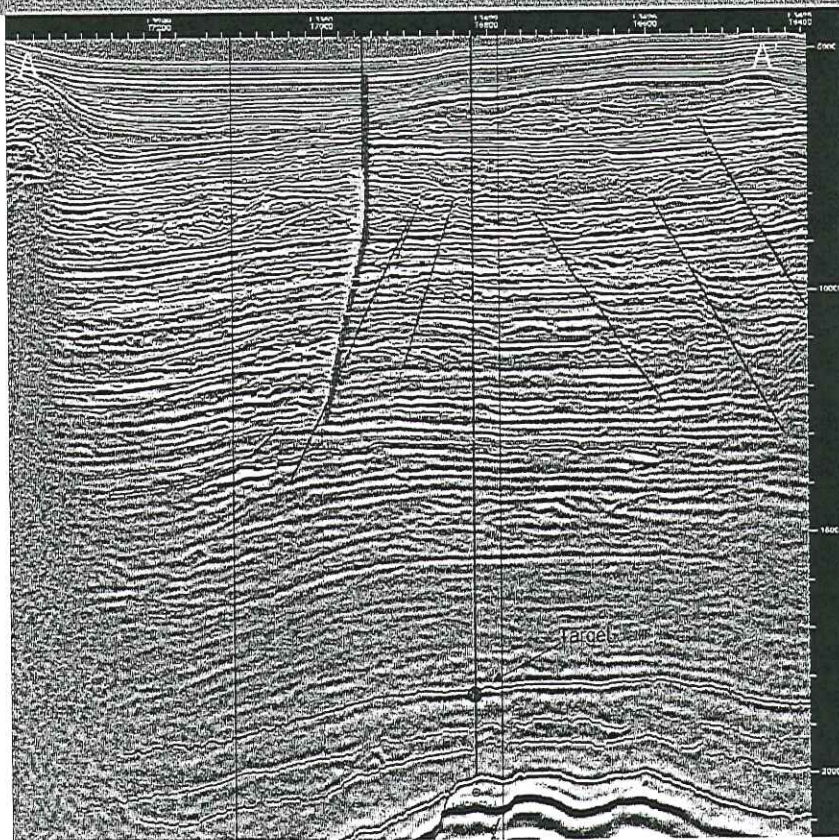
M56 Depth Structure Map: Well Location Case B



BP
Mississippi Canyon MC0252
M56Structure Contour Map
C.I. : 100 FEET

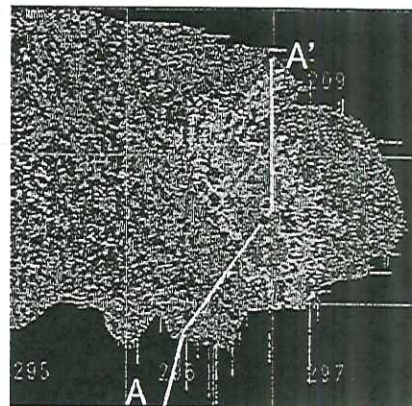
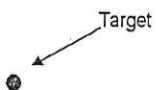
3

Seismic Line of Section: Well Location Case A



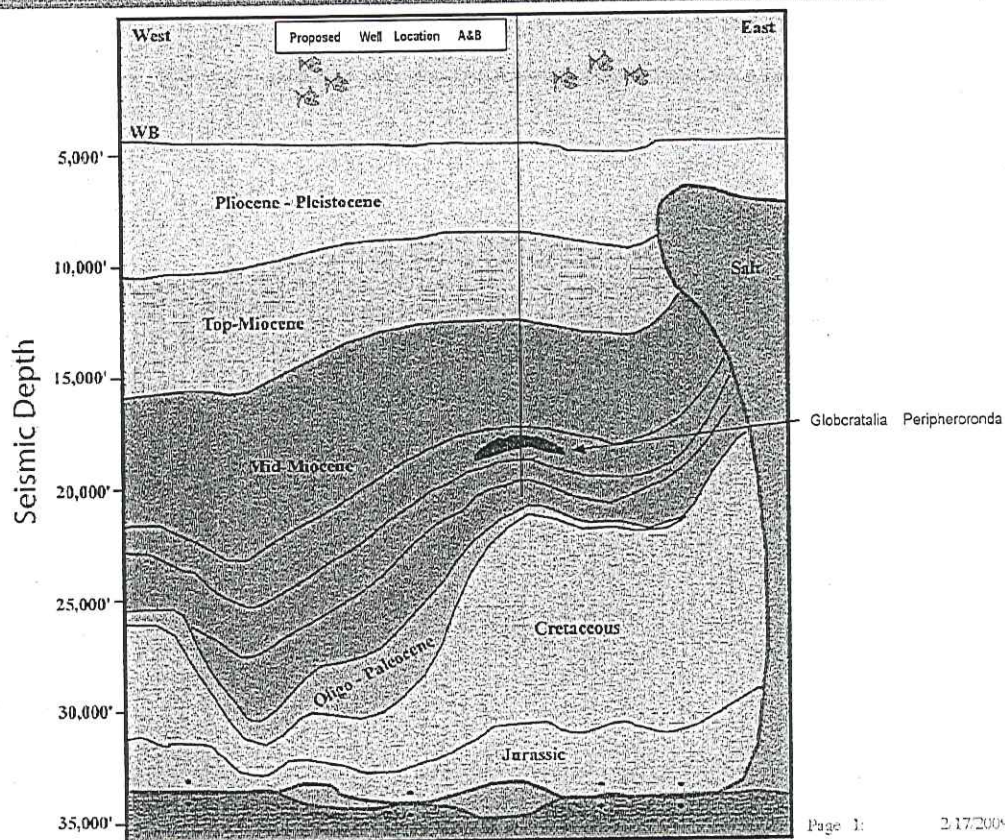
Page 1: 2/17/2009 4

Seismic Line of Section: Well Location Case B



Page 1: 2/17/2009 5

Geologic Cross Section - Well Location Case A&B



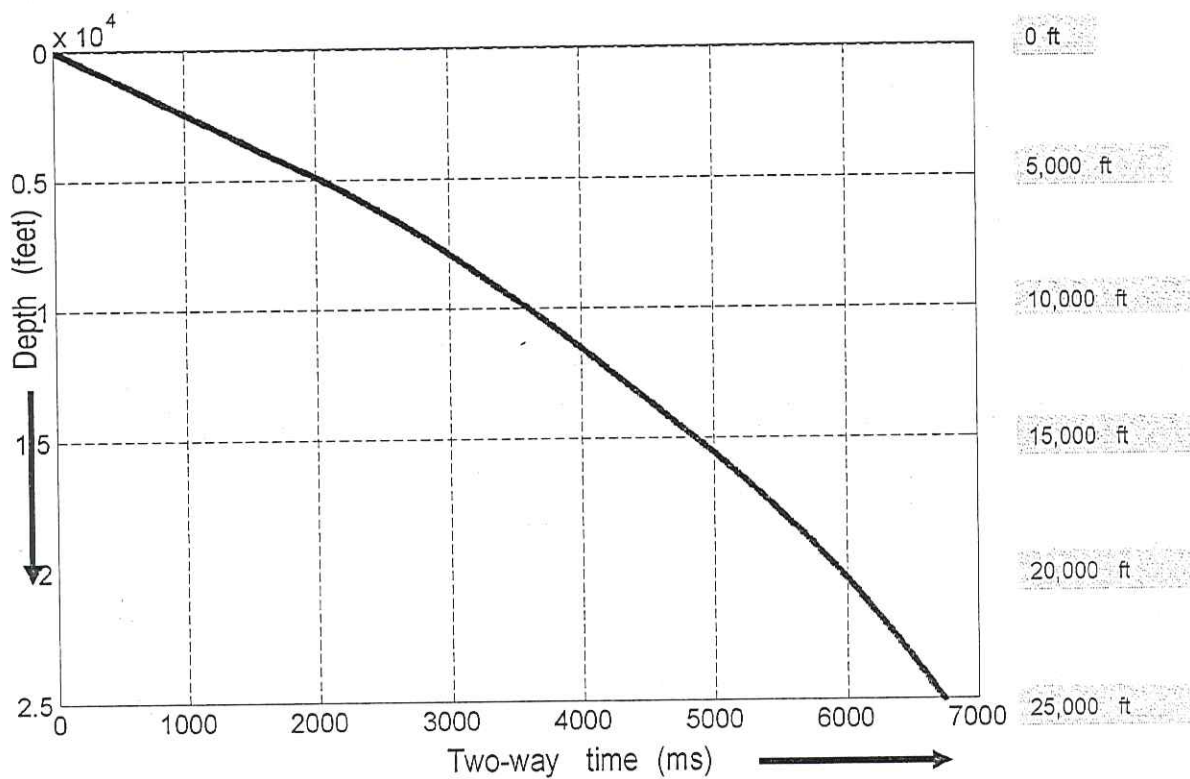
Page 1:

2/17/2009

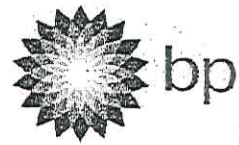
6

Sequence	Age MYA	Depth TVDSS	Lithologic Description	Lithologic Column	Biostratigraphic Zones	Objective Section
Recent		5000	Sea Floor @ 4994'			
Pleistocene	1.77	6000				
Pliocene	5.3	7000	Shale with interbedded silts and thin sands		Reticulofenestra pseudoumbilicus; Globorotalia margaritae	
		8000				
		9000	Minor Sand Units			
		10000	Minor Sand Units		Catinaster mexicanus	
Late Miocene		11000	Possible Sand Units			
		12000				
		13000	Minor Sand Unit		Catinaster coalitus	
		14000	Minor Sand Unit		Uvigerina 3	
	11.5	15000	Minor Sand Unit		Discoaster kugleri; Globorotalia foehi robusta	
		16000			Discoaster sanmiguelensis; Elgenerina humboldi	
Middle Miocene		17000	Shale with interbedded silts and thin sands			
		18000			Cyclicargolithus floridanus	
	13.2	18200	Major Sand Units		Globorotalia peripheroronda	
	13.4	19300			Sphenolithus heteromorphus	
Early Miocene	18.5				Discoaster petaliformis	
Oligocene	23.1	20000	Marls & Carbonates		Globorotalia Kugleri	

Macondo Time-depth Curve (pre-drill)



Page 1: 2/17/2009 8



SITE CLEARANCE NARRATIVE

PROPOSED MC252 "A" LOCATION
BLOCK 252, OCS-G-32306
MISSISSIPPI CANYON AREA
GULF OF MEXICO

PROPOSED MC252 "A" (Vertical well)	
28 ° 44' 17.277" N	88 ° 21' 57.340" W
X = 1,202,803.88 ft E	Y = 10,431,617.00 ft N
6,943 ft FNL	1,036 ft FEL

WATER DEPTH:
4,992 ft MSL

PROPOSED TOTAL DEPTH:
20,600 ft MD
20,600 ft TVD

X and Y Coordinates in UTM Zone 16N (US ft)
Geodetic Datum: NAD 1927
Spheroid: Clarke 1866



SITE CLEARANCE NARRATIVE

PROPOSED MC252 "A" LOCATION BLOCK 252, OCS-G-32306 MISSISSIPPI CANYON AREA GULF OF MEXICO

This document summarizes shallow conditions at the proposed drilling location MC252 "A" in Mississippi Canyon Block 252 (OCS-G-32306) in the north-central Gulf of Mexico (Plate 1).

The surface location of the proposed MC252 "A" well is defined as:

MC252 "A"	
6,943 ft FNL	1,036 ft FEL
X = 1,202,803.88	Y = 10,431,617.00
Latitude: 28° 44' 17.277" N	Longitude: 88° 21' 57.340" W

UTM (US Survey Feet)	Zone 16N
Datum: NAD 1927	Spheroid: Clarke 1866

The proposed surface location of this well, which will be drilled vertically outboard of salt, was selected based on the results of: a regional shallow hazards survey and study of MC208, MC252 and MC296 and portions of surrounding blocks conducted by KC Offshore in 1998 for Texaco Exploration and Production Inc. (Texaco) using HR2D seismic data integrated with 3D exploration seismic data; a shallow hazards report for MC252 and MC296 and vicinity produced by Fugro GeoServices, Inc. (Fugro) in 2003 for Dominion Exploration and Production Inc. (Dominion) based on exploration 3D seismic data – the seafloor mapping area for this report covered all of MC252 and MC296, whereas the subsurface mapping area only covered the southern half of MC252 and the northern half of MC296; mapping performed internally in 2008 and 2009 by BP America Inc. for MC252 and vicinity using a merged data volume (mosaic) re-processed by TGS in 2004 and covering a large portion of the Mississippi Canyon Lease Area; results of a site-specific Shallow Hazards and Archaeological Assessment for the proposed wellsite and mooring pattern commissioned by BP and produced by C&C Technologies (C&C) in 2009 based on AUV data acquired during January 2009 over a larger area; and well information for the nearby MC252#1 and MC296#1 wells. Plate 2 outlines the various shallow hazard survey reports available for the area as listed above.



Copies of the 1998 KC Offshore report have already been submitted to the MMS in support of the Texaco EP documentation for five proposed wells (A through E) with surface locations in MC252 (Plan Control N 6521, approved 16 July, 1999) and copies of the 2003 Fugro report were submitted in support of the Dominion EP documentation for four proposed wells (A through D) with surface locations in MC252 and MC296 (Plan Control N 7743, approved 29 May, 2003). Site-specific clearance letters for the proposed MC252 "A" well and mooring pattern (C&C, 2009) are included with this submittal.

This document contains a site-specific shallow hazards review of the proposed MC252 "A" well location and includes data examples from the geophysical data sets listed above. The depth of investigation is from the seafloor to Horizon 60, located about 5,328 ft below the mud line (bml). The depth of the first pressure containment string (22" casing) is currently planned for 2,619 ft bml.

The exploration 3D seismic data used by Fugro (2003) for identifying shallow hazards was acquired by CGG and GECO in 1999/2000 on an S grid (4180 cu.in. and 5400 cu.in. airgun sources; 7.5 m and 6 m source depths; 7,200 m and 8,000 m streamers with 288 and 320 channels per streamer, a group interval of 25 m and a streamer tow depth of 9 m; a record length of 12 secs. with a 2 msec. sample interval and a 62.5 m shotpoint interval giving nominal folds of 57 and 64). The data was originally processed by CGG using a 2 km x 2 km velocity grid, pre-stack FK time migration and post-stack 3D finite difference migration, re-sampled to 4 msec and output at a bin spacing of 12.5 m x 20 m. The data used internally by BP is a re-processed version of this 1999/2000 data, which was produced by TGS in 2004 as part of their Mississippi Canyon Revival 3D Project. The re-processed data was output on a diagonal grid with a bin spacing of 12.5 m x 20 m having undergone Kirchhoff pre-stack curved ray migration and velocity analysis at every CDP (12.5 m x 20 m every 4 msec) to produce a "High-resolution interval velocity volume."

In order to address data quality and, specifically, 3D seismic data frequency content in the immediate vicinity of the proposed location, as required by MMS NTL 2008-G05, power spectra diagrams were extracted from the above re-processed 3D seismic data cube using the PostStack/PAL attribute function in Landmark Graphics' SeisWorks software (Plates 3 and 4). The spectra were generated for a one-second time-window below the seafloor and for a radius of 1,500 ft around the proposed well site. The x-axis represents the frequency of the data between 0 and 100 Hertz, and the y-axis represents power attributed to each component frequency either as a percentage or as a dB value relative to the reference values of 100% or -1.0, respectively. The results demonstrate that the re-processing has increased the frequency range of the data so that approximately 50% of the data exceeds a quality threshold of at least 50 Hertz within the first second of Two-Way Travel Time beneath the seafloor.



BP GoM SPU Appraisal Tiger Team
Site Clearance Narrative
Proposed MC252 "A" Well Location



The seafloor reflector over the proposed location is shown on Plate 5 and is taken from a SeisWorks/Seismic View display using parameters of 27.44 Inches/Second and 3.91 Traces/Inch. The wiggle display is variable area with a "Varifill" positive and negative infill. The auto-correlation pick for the seafloor, which is shown in red, shows the reflector to be free of gaps and is defined by a wavelet of stable shape and phase. The display on Plate 5 was constructed from the re-processed exploration 3D data volume.

BP proposes to drill the MC252 "A" well with the moored rig the TransOcean Marianas. C&C (2009) has prepared a site clearance document for the proposed anchor locations, which will be included with this EP submittal.

The key findings of the shallow hazards assessment for the proposed "A" location are as follows :

Proposed Primary Well Location MC252 "A":

**Water Depth and
Seafloor Gradient:**

Water depth at the proposed "A" location is estimated as 4,992 ft below Mean Sea Level from the 2009 C&C AUV survey. The bathymetry map shown as Plate 6 was constructed in Fledermaus using water bottom time picks from exploration 3D seismic data converted to feet using an average seawater velocity of 4,922 ft/sec derived from known water depths at the MC252#1 and MC296#1 wells, and then adjusted to the AUV-derived depth at the proposed location. The seafloor appears smooth and has an average slope of ~3.0° (5.2%) down to the southeast (Plate 7).

**Seafloor Morphology
and sediments:**

The proposed well location is sited within a large basin, open to the northwest and south, but bordered to the north, northeast, southeast and southwest by the prominent relief features, the Whiting, Mitchell, Gloria and Biloxi salt domes, respectively (Plates 2 and 8). The seabed is relatively smooth and featureless within the basin except for a series of seafloor furrows that trend northwest-southeast through MC251, the southwest corner of MC252 and the north of MC296. A raised plateau-like area is in the north occupying most of MC207 and MC208 and the northern half of MC252 (Plates 8 and 9). The proposed "A" location lies approximately 1,000 ft to the north of the southeast margin of this plateau, which has a relief of about 20 ft and a gradient of about 6°, and which represents the seafloor expression of a buried scarp (~300 to 500 ft bml) related to a massive slope failure event (Plates 7, 8 and 9).

The sidescan sonar data from the C&C 2009 AUV survey exhibited a moderate seafloor reflectivity indicative of a uniform clayey seafloor.

Seafloor Obstructions :

Two existing wells, the MC252#1 well and MC296#1 well (with surface hole location in MC252), are ~1.3 miles and ~1.9 miles to the southwest of the proposed MC 252 "A" location, respectively



BP GoM SPU Appraisal Tiger Team
Site Clearance Narrative
Proposed MC252 "A" Well Location



(Plates 8, 9 and 10). A Shell 18" oil pipeline trends northwest-southeast through the basin and crosses the southwest corner of MC252, ~2.4 miles southwest of the proposed "A" location. Paralleling Eni 3" umbilical and 8" gas lines trend roughly east-west close to the southern boundary of MC252, with connections to the MC296#1 well, and are ~1.7 miles to the south of the proposed "A" location.

An anchored drilling rig, the TransOcean Marianas, is currently proposed to drill the well. The positioning of, and any seafloor disturbances caused by, the anchor and pre-lay of anchor ropes is addressed in the C&C 2009 report accompanying this EP submittal.

Archaeological
Stipulations:

An archaeological assessment for MC252 and vicinity was carried out by C&C using the sidescan sonar data from their 2009 AUV survey. One unidentified sonar target (Contact No. 38, measuring 13.8 ft x 2.2 ft and with a relief of 2.6 ft) was mapped ~4,700 ft to the northwest of the proposed "A" location, but the Marine Archaeologist at C&C concluded that there is *no evidence for shipwreck debris or sites of archaeological significance at or within 1,500 ft of the proposed well location.*

Chemosynthetic
Communities:

The sidescan sonar data from the 2009 AUV survey shows the seafloor within a 1,500 ft radius of the proposed well location to comprise of uniform soft clays. Areas of higher reflectivity indicating possible gas-saturated soils and/or hard seafloor are not evident in the vicinity of the proposed "A" location. The seafloor amplitude map (Plate 11) shows areas of high seafloor amplitude associated with the Mitchell, Gloria and Biloxi Domes, and the Fugro 2003 report mapped isolated seafloor mounds and areas of possible rocky authigenic carbonates, which could be related to hydrocarbon seepage sites, atop Gloria Dome (Plate 9). The nearest of these features is ~2.4 miles to the southeast of the proposed "A" location. *Therefore, seafloor conditions capable of supporting chemosynthetic communities are not expected at, or within 1,500 ft of, the proposed well location.*

Shallow Geology :

Plate 10 shows the locations of the example seismic sections, Line 17282 (Plates 12 and 13) and Trace 14150 (Plates 14 and 15), through the proposed "A" location, which illustrate the shallow geology in the area. Based on the Fugro 2003 report, six seismic-stratigraphic units (Units 1 thru 6) separated by seven horizons (Seafloor and Horizons 10, 20, 30, 40, 50 and 60) are identified at the proposed "A" location between the seafloor and a depth of 5,328 ft bml. The Seafloor and Horizons 30, 40 and 60 were mapped across MC252 and vicinity by BP in order to produce interval amplitude extractions. The remaining horizons, Horizons 10, 20 and 50 are correlated to the Fugro mapping area. Intermediate horizons, Horizons 15, 34, 36, 38 and 45 are interpreted across the wellsite by BP to aid in the description of the shallow geology.

The shallow geology between the seabed and Horizon 60 is



BP GoM SPU Appraisal Tiger Team
Site Clearance Narrative
Proposed MC252 "A" Well Location



extremely complex, comprising well-bedded turbidite sections which have been eroded by several episodes of debris flows (Plates 13 and 15). Plate 19 gives the depths of interpreted horizons and thicknesses of units.

- Unit 1 is about 250 ft thick and comprises hemipelagic clays interbedded with possible thin clay-prone debris flows.
- Unit 2 is about 594 ft thick and comprises an upper portion (476 ft) of interbedded clays and thin clay-prone debris flows, with a lower portion (118 ft) of interbedded clays and marls. Mass wasting of this lower section of Unit 2 has resulted in the low-relief seafloor scarp to the south and east of the proposed "A" location.
- Unit 3 is about 198 ft thick and comprises interbedded marls and clays. To the east of the proposed "A" location, Unit 3 thickens considerably where it infills a prominent channel complex (Plates 13 and 15). High amplitudes associated with the western margin of the channel complex indicate possible sand-prone overbank or channel levee deposits. These sands, at the base of Unit 3, appear to pinch-out ~1,000 ft to the southeast of the proposed "A" location.
- Unit 4 has a total thickness of about 902 ft and comprises an upper portion (447 ft) and lower portion (212 ft) of fine-grained turbidites and debris flows, which are separated by a central interval (131 ft thick) of fine-grained overbank and levee deposits with possible sands. This central lithologic variant to Unit 4 thins to the west of the proposed "A" location, but thickens markedly to the east, where it occupies much of the unit within the channel complex (Plates 13 and 15). A 112 ft thick sequence of continuous sands and silts forms the base of Unit 4 and is truncated by the central overbank/levee unit to the east.
- Unit 5 is about 888 ft thick and comprises an upper sequence (589 ft) of predominantly fine-grained turbidites and debris flows with possible discontinuous sands overlying a 299 ft thick massive clay-prone debris flow with possible silts.
- The deepest unit identified, Unit 6, is about 2,496 ft thick and contains predominantly fine-grained turbidites and debris flows, but with three sequences of continuous sands with thicknesses of 165 ft, 197 ft and 246 ft within the central part of the unit.

Drilling Hazards:

Plate 19 is a Top-Hole Formation and Geohazards Summary Sheet for the proposed well showing the interpreted stratigraphy and predicted drilling hazards.

Faulting : The proposed well bore will not intersect any faults between the seafloor and Horizon 60. There are two approximately southwest-northeast trending down to the southeast



buried faults to the northwest of the proposed location (Plate 13). These faults reach shallowest limits of ~1,600 ft bml and ~2,830 ft bml, approximately 8,500 ft and 10,000 ft from the proposed well location, respectively, and appear to dip beneath the proposed well, but below the depth limit of this investigation (Horizon 60 or 5,328 ft bml).

Shallow Gas: The potential shallow gas distribution within MC252 and MC253 is shown on the amplitude extractions produced internally by BP for the Seafloor to Horizon 30, Horizon 30 to Horizon 40 and Horizon 40 to Horizon 60 intervals (Plates 16, 17 and 18, respectively).

Units 1 and 2 appear clay-prone and do not exhibit any anomalous amplitudes in the vicinity of the proposed "A" location and are therefore risked as Negligible for shallow gas.

The most prominent area of potential shallow gas appears associated with the sand-prone overbank and levee deposits of Unit 3 within the channel complex to the east of the proposed "A" location (Plates 13, 15 and 16). These sands appear to pinch-out ~1,000 ft to the southeast of the proposed "A" location and Unit 3 is therefore risked as Negligible for shallow gas at the proposed "A" location.

Several scattered anomalous amplitudes appear to be associated with the central overbank and levee sequence within Unit 4 and also with the continuous sand and silt sequence at the base of the unit (Plates 13, 15 and 17). The most prominent anomaly is associated with the basal coarse-grained sequence ~500 ft to the northwest of the proposed location, with minor anomalies associated with the central sequence ~300 ft to the northeast. The risk for shallow gas within Unit 4 at the proposed "A" location is therefore assessed as Low for the central portion of the unit (1,489 ft to 1,620 ft bml) and for the basal portion of the unit (1,832 ft to 1,944 ft bml).

Unit 5 contains clay-prone turbidites and debris flows overlying a thick clay-prone debris flow. Scattered, minor amplitude anomalies within the unit suggest potential shallow gas pockets associated with discontinuous sands. The nearest isolated shallow gas pockets to the proposed "A" location are ~400 ft to the northeast and ~1,000 ft to the northwest and southeast (Plates 13, 15 and 18). The risk for shallow gas at the proposed "A" location is therefore assessed as Low for the upper portion of Unit 5 (1,944 ft to 2,533 ft bml) and Negligible for the lower portion of the unit.

Several prominent northwest-southeast trending amplitude anomalies are identified within Unit 6 to the west of the proposed "A" location (Plate 18). These appear to be associated with three sand sequences within the overall interbedded fine-grained turbidite and debris flow unit, with the most prominent anomalies ~1,500 ft to the southwest of the proposed "A" location. Unit 6 is



assessed an overall Negligible risk for shallow gas, which increases to Low for the upper sand sequence (3,202 ft to 3,367 ft bml) and Moderate for the middle and lower sand sequences (3,761 ft to 3,958 ft bml and 4,372 ft to 4,618 ft bml, respectively).

No shallow gas has been reported from the offset wells in the south of MC252.

Shallow Water Flow (SWF): MC252 is in the northeast of the Mississippi Canyon Lease Area, to the northeast of the highest Pleistocene/Pliocene sediment accumulations in the lease area (Thomson, et al, 1999), to the north of the main Late Pleistocene depocenter, which contains the Blue and Green sand-prone SWF units (Winker, et al, 2000), and in an area of low potential for shallow water flow (Pelletier, et al, 1999). The MMS SWF website (2005) shows the nearest SWF block to be MC292, where a low severity SWF was experienced at a depth of 1,784 ft bml at Chevron's #1 (Gemini) well, ~14 miles to the west-southwest of the proposed MC252 "A" location.

Potential sand sequences at the proposed "A" location are indicated on the annotated seismic sections (Plates 13 and 15) and on the Tophole Formation Sheet (Plate 19).

Moderate risks for SWF are assessed for the continuous sandy sequences at the base of Unit 4 (1,832 ft to 1,944 ft bml), and within Unit 6 (3,202 ft to 3,367 ft bml, 3,761 ft to 3,958 ft bml, and 4,372 ft to 4,618 ft bml).

Low risks for SWF are assessed for the sands within the overbank levee deposit in the central portion of Unit 4 (1,489 ft to 1,620 ft bml), and the discontinuous sands within the predominantly fine-grained turbidite sequence forming the upper portion of Unit 5 (1,944 ft to 2,533 ft bml).

Negligible SWF risks are assessed for all the remaining units or portions of units which are interpreted as predominantly clay-prone.

The above assessments are based on seismic facies analysis at the proposed wellsite. No SWF events were recorded from either of the offset wells, MC252#1 or MC296#1, even though the amplitude extractions, Plates 16, 17 and 18, indicate a higher likelihood of sands within the equivalent potential SWF units than at the proposed MC252 "A" location. Sands were identified within Unit 6 at the MC252#1 well, however any risk of SWF was mitigated by the topsetting of Unit 6 with the 22-inch casing followed by drilling with a higher mudweight fluid. The current proposed casing program for the MC252 "A" location (shown on Plate 19) has the 28-inch casing shoe topsetting the potential SWF sands within Unit 4, and the 22-inch casing shoe topsetting the potential SWF sands at the base of Unit 5 and within Unit 6.

Shallow Oil: Shallow oil has recently been encountered in

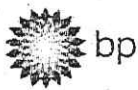


BP GoM SPU Appraisal Tiger Team
Site Clearance Narrative
Proposed MC252 "A" Well Location



relatively thin, faulted supra-salt sediments of sub-salt wells located on leases lying just north of the Sigsbee Escarpment in areas to the west of Mississippi Canyon. The proposed well will be drilled outboard of salt within relatively unfaulted sediments. No oil shows were seen in the riserless sections of the offset wells and the risk for shallow oil at the proposed well location is considered Negligible.

Hydrates : Bottom Simulating Reflectors (BSRs) are not observed on the seismic profiles throughout the MC252 area, and no instances of gas hydrates were reported during drilling of the MC252#1 and MC296#1 wells. The risk of encountering hydrates in the proposed well is therefore considered Negligible.



CONCLUSIONS

This Shallow Hazards Assessment for location "A" in Mississippi Canyon Block 252 (OCS-G-32306) supplements the Exploration Plan (EP) to be submitted to the Minerals Management Service (MMS). This narrative defines the proposed location and documents the anticipated top-hole drilling conditions within a radius of 1,500 ft of the primary location.

Conditions at the proposed drilling location have been evaluated on the basis of: a regional shallow hazards survey and study conducted by KC Offshore in 1998 for Texaco Exploration and Production Inc. using HR2D seismic data integrated with 3D exploration seismic data; a shallow hazards report for MC252 and MC296 produced by Fugro GeoServices, Inc. (Fugro) in 2003 for Dominion Exploration and Production Inc. based on exploration 3D seismic; mapping performed internally in 2008 and 2009 by BP America Inc. for MC252 and vicinity using a merged data volume (mosaic) re-processed by TGS in 2004 and covering a large portion of the Mississippi Canyon Lease Area; results of a site-specific Shallow Hazards and Archaeological Assessment for the proposed wellsite and mooring pattern commissioned by BP and produced by C&C Technologies (C&C) in 2009 based on AUV data acquired during January 2009 over a larger area; and well information for the nearby MC252#1 and MC296#1 wells.

Results of the data review indicate

- The seafloor at the proposed "A" location is in a water depth of 4,992 ft and dips to the southeast at ~3.0°. The only seafloor feature identified on the exploration 3D seismic data within the vicinity is a low-relief escarpment approximately 1,000 ft to the south of the "A" location, which is the seafloor expression of a deeply-buried scarp associated with mass-wasting.
- There is no evidence for the existence of high-density chemosynthetic communities within 1,500 ft of the proposed well location.
- There is no evidence for shipwreck debris or sites of archaeological significance at or within 1,500 ft of the proposed well location.
- The proposed wellbore will not intersect any faults between the seafloor and the depth limit of this investigation at Horizon 6 or 5,328 ft bml.
- The risk of encountering **shallow gas** is ranked as: Moderate for two sand-prone sequences within the middle and lower portions of Unit 6; Low for the central portion of Unit 4 and a sandy sequence at the base of Unit 4, the upper portion of Unit 5 and an interval within the top of Unit 6; and Negligible for all other units or portions of units between the Seafloor and Horizon 60.



BP GoM SPU Appraisal Tiger Team
Site Clearance Narrative
Proposed MC252 "A" Well Location



- The risk of encountering **shallow water flow** is ranked as: Moderate within sands at the base of Unit 4 and within three sandy intervals within Unit 6; Low for sands within the middle portion of Unit 4 and in the upper portion of Unit 5; and Negligible for all other units or portions of units between the Seafloor and Horizon 60.
- The risk of encountering **shallow oil and gas hydrates** is ranked as Negligible between the Seafloor and Horizon 60.

We advise caution, but believe that the risk of danger to personnel and damage to the borehole, equipment and environment is Low, provided strict adherence to proper drilling and cementing procedures is followed concerning these hazards until the first pressure containment string is in place at about 2,619 ft bml.

Prepared By:

Bernie Care
Senior Geohazards Specialist,
BP GoM SPU, Appraisal Tiger Team
12 February 2009

Reviewed By:

Craig Scherschel
Geohazards Specialist,
BP GoM SPU, Exploration Tiger Team
13 February 2009



REFERENCES:

- C&C Technologies, Inc., 2009, "Site Specific Archaeological and Hazard Study, Macondo Prospect Blocks 252 (OCS-G-32306) and Block 253 (OCS-G-24062), Mississippi Canyon Area." Report prepared for BP America Inc., February 2009.
- Fugro GeoServices, Inc., 2003, "Shallow Hazards Assessment, Rigel Prospect, Blocks 252, 296, and Vicinity, OCS-G-18207 and OCS-G-21164, Mississippi Canyon Area, Gulf of Mexico." FGSi Report No. 2402-2055 prepared for Dominion Exploration and Production, Inc., April 9, 2003.
- KC Offshore, L.L.C., 1998, "Geophysical Survey Report, Blocks 208, 252, 296 & Parts of 163, 164, 165, 207, 209, 251, 253, 295, 297 Mississippi Canyon, Offshore Louisiana, OCS-G-18202, 18207, 9796, 14633, 14636, 15472 and 15473." Report prepared for Texaco Exploration and Production, Inc., April 1998.
- Minerals Management Service, 2005, shallow water flow data published on the MMS Gulf of Mexico website <http://www.gomr.mms.gov/homepg/offshore/safety/wtrflow.html>
- Pelletier, J.P., Ostermeier, R.M., Winker, C.D., Nicholson, J.W., and Rambow, F.H., 1999, "Shallow Water Flow Sands in the Deepwater Gulf of Mexico: Some Recent Shell experience". Conference Proceedings, 1999 International Forum on Shallow Water Flows, October 6-8, 1999, South Shore Harbour Resort, League City, Texas.
- Thomson, J.A., Dodd, T., and Hill, A., 1999, "Formation of Shallow Water Flows". Conference Proceedings, 1999 International Forum on Shallow Water Flows, October 6-8, 1999, South Shore Harbour Resort, League City, Texas.
- Winker, C. D., and J. R. Booth, 2000, "Sedimentary dynamics of the salt-dominated continental slope, Gulf of Mexico: integration of observations from the seafloor, near-surface, and deep subsurface", Proceedings of the GCSSEPM Foundation 20th Annual Research Conference, p. 1059-1086.



PLATES:

- Plate 1: Location Map, Northern Gulf of Mexico
- Plate 2: Regional Seafloor Morphology, Northeast Mississippi Canyon Area,
Showing Existing Survey Coverage and Offset Wells
- Plate 3: Exploration 3D Seismic Data - Power Spectrum (% Power)
- Plate 4: Exploration 3D Seismic Data - Power Spectrum (dB Power)
- Plate 5: Exploration 3D Seismic Data - Seafloor Reflection Wavelet
- Plate 6: Bathymetry Map
- Plate 7: Seafloor Gradient Map
- Plate 8: 3-D Perspective View Looking to North Over MC252
- Plate 9: Seafloor Features Map - Fugro 2003
- Plate 10: Infrastructure Map Showing the Location of Example Seismic Sections
- Plate 11: Seafloor Amplitude Map
- Plate 12: Uninterpreted 3D Seismic Line 17282 Through Proposed Well Location "A"
- Plate 13: Interpreted 3D Seismic Line 17282 Through Proposed Well Location "A"
- Plate 14: Uninterpreted 3D Seismic Trace 14150 Through Proposed Well Location "A"
- Plate 15: Interpreted 3D Seismic Trace 14150 Through Proposed Well Location "A"
- Plate 16: Maximum Negative Amplitude Display - Seafloor to Horizon 30 (Units 1, 2 and 3)
- Plate 17: Maximum Negative Amplitude Display - Horizon 30 to Horizon 40 (Unit 4)
- Plate 18: Maximum Negative Amplitude Display - Horizon 40 to Horizon 60 (Units 5 and 6)
- Plate 19: Tophole Formation and Geohazards Summary Sheet



BP GoM SPU Appraisal Tiger Team
Site Clearance Narrative
Proposed MC252 "A" Well Location



PLATES

Proposed MC 252 "A" Location Shallow Hazards Assessment Data Examples

CONTENTS

- Plate 1: Location Map, Northern Gulf of Mexico
- Plate 2: Regional Seafloor Morphology, Northeast Mississippi Canyon Area,
Showing Existing Survey Coverage and Offset Wells
- Plate 3: Exploration 3D Seismic Data - Power Spectrum (% Power)
- Plate 4: Exploration 3D Seismic Data - Power Spectrum (dB Power)
- Plate 5: Exploration 3D Seismic Data - Seafloor Reflection Wavelet
- Plate 6: Bathymetry Map
- Plate 7: Seafloor Gradient Map
- Plate 8: 3-D Perspective View Looking to North Over MC 252
- Plate 9: Seafloor Features Map - Fugro 2003
- Plate 10: Infrastructure Map Showing the Location of Example Seismic Sections
- Plate 11: Seafloor Amplitude Map
- Plate 12: Uninterpreted 3D Seismic Line 1728.2 Through Proposed Well Location "A"
- Plate 13: Interpreted 3D Seismic Line 1726.2 Through Proposed Well Location "A"
- Plate 14: Uninterpreted 3D Seismic Trace 1415.0 Through Proposed Well Location "A"
- Plate 15: Interpreted 3D Seismic Trace 1415.0 Through Proposed Well Location "A"
- Plate 16: Maximum Negative Amplitude Display - Seafloor to Horizon 30 (Units 1, 2 and 3)
- Plate 17: Maximum Negative Amplitude Display - Horizon 30 to Horizon 40 (Unit 4)
- Plate 18: Maximum Negative Amplitude Display - Horizon 40 to Horizon 60 (Units 5 and 6)
- Plate 19: Top hole Formation and Geohazards Summary Sheet

Bernie Car e, February 2009





Location Map, Northern Gulf of Mexico
Proposed Mississippi Canyon Block 252 "A" Location

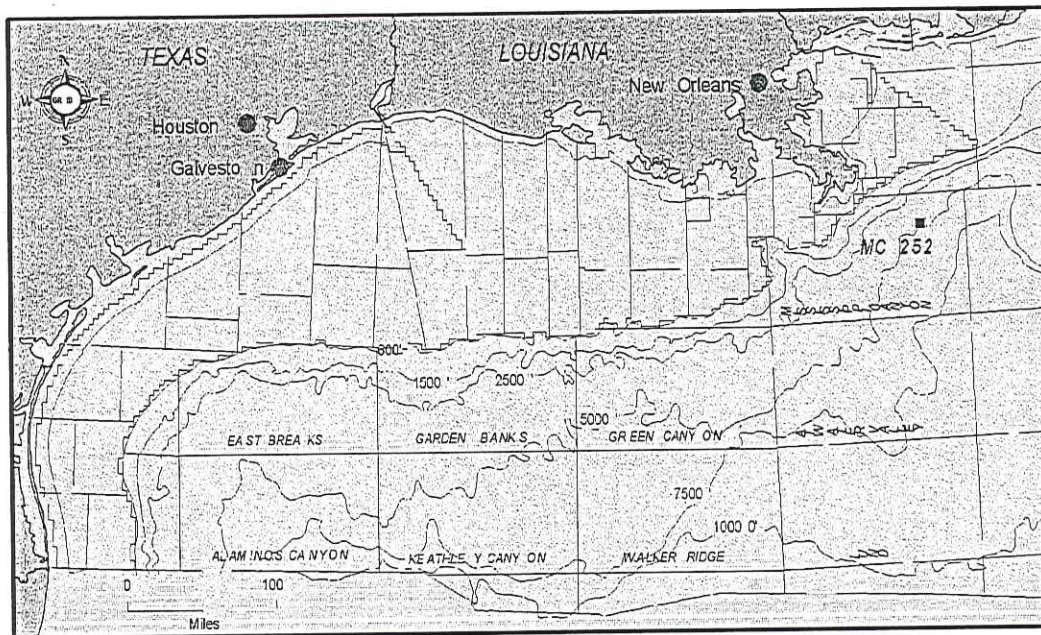


Plate 1



Regional Seafloor Morphology, Northeast Mississippi Canyon Area
Showing Existing Survey Coverage and Offset Wells
Proposed Mississippi Canyon Block 252 "A" Location

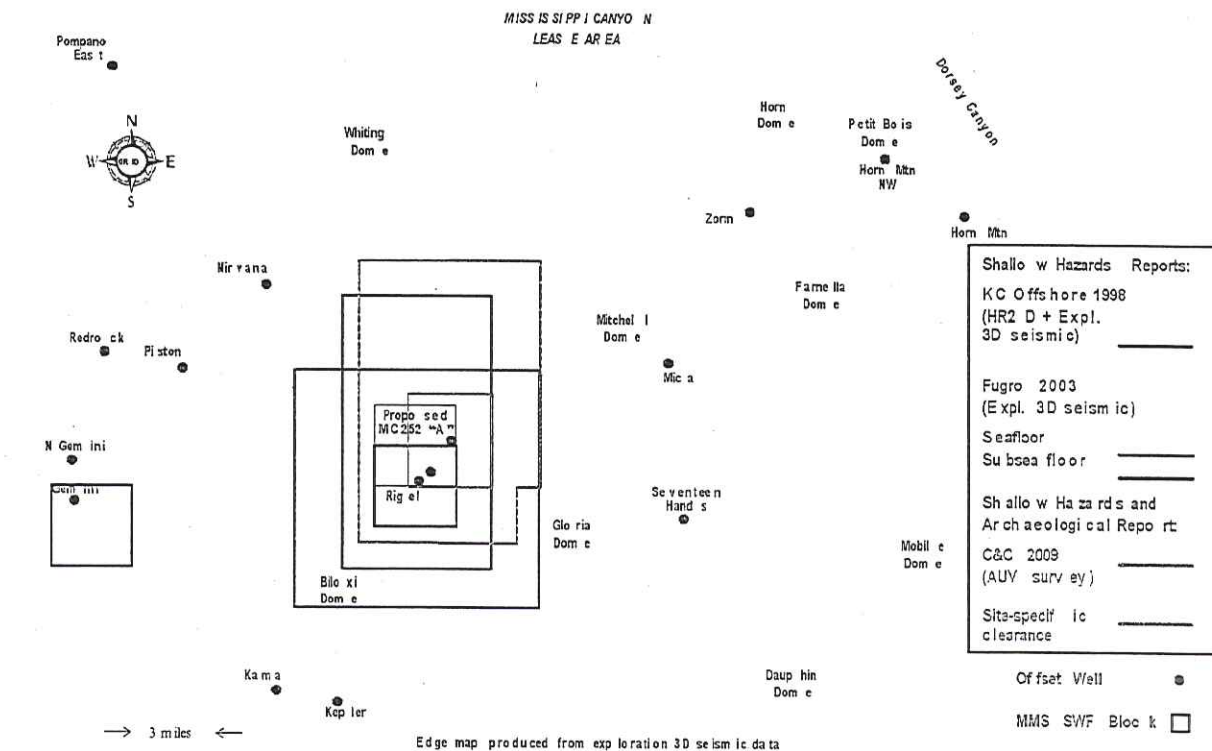
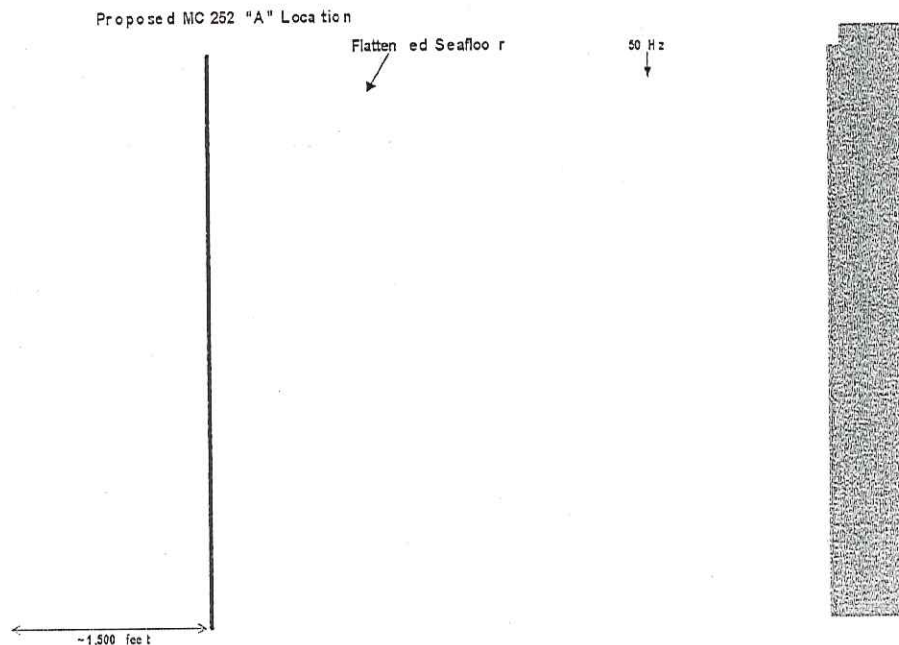


Plate 2



Exploration 3D Seismic Data - Power Spectrum (% Power)
Proposed Mississippi Canyon Block 252 "A" Location



BP Seismic Project: mcm00014 Seismic Volume: 001T_REG_P rST M_Kir_TGS07.b ri (2002 /3 TGS/ NO PEC. oMC3 D Area 1 Survey)

Plate 3



Exploration 3D Seismic Data - Power Spectrum (dB Power)
Proposed Mississippi Canyon Block 252 "A" Location

Proposed MC 252 "A" Location

Flattened Seafloor

50 Hz

~1,500 feet

BP Seismic Project: mcm0014 Seismic Volume: C01T_REG_P rSTM_Kir_TGS07.b ri (2002 /3 TGS/ NO PEC eMC3 D Area 1 Survey)

Plate 4

CONFIDENTIAL

BP-HZN-2179MDL00001133



Exploration 3D Seismic Data - Seafloor Reflection Wavelet
Proposed Mississippi Canyon Block 252 "A" Location

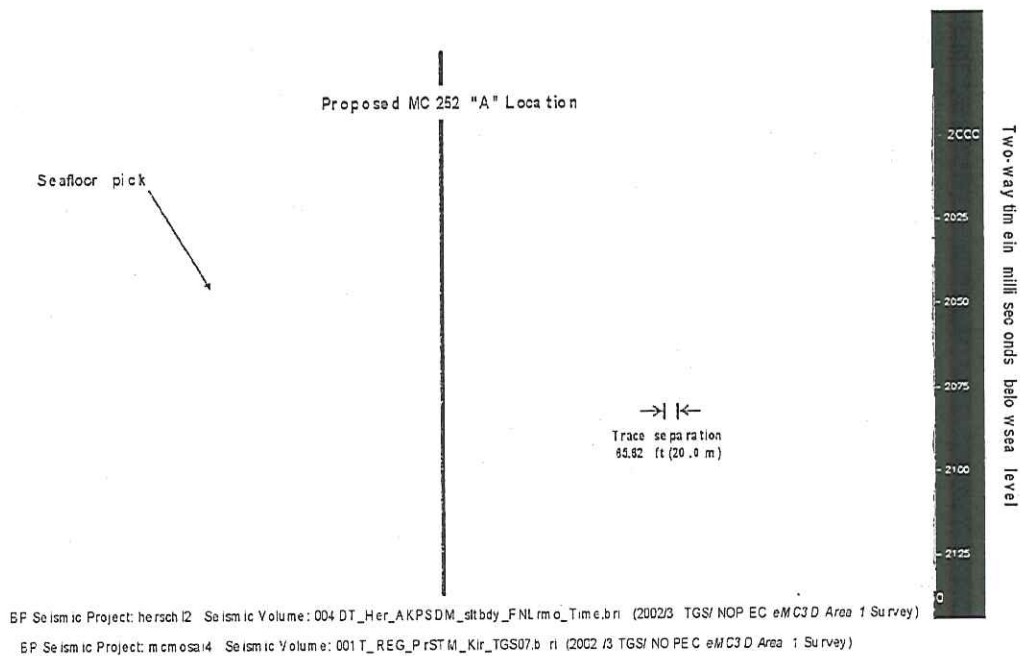


Plate 5



Bathymetry Map

Proposed Mississippi Canyon Block 252 "A" Location

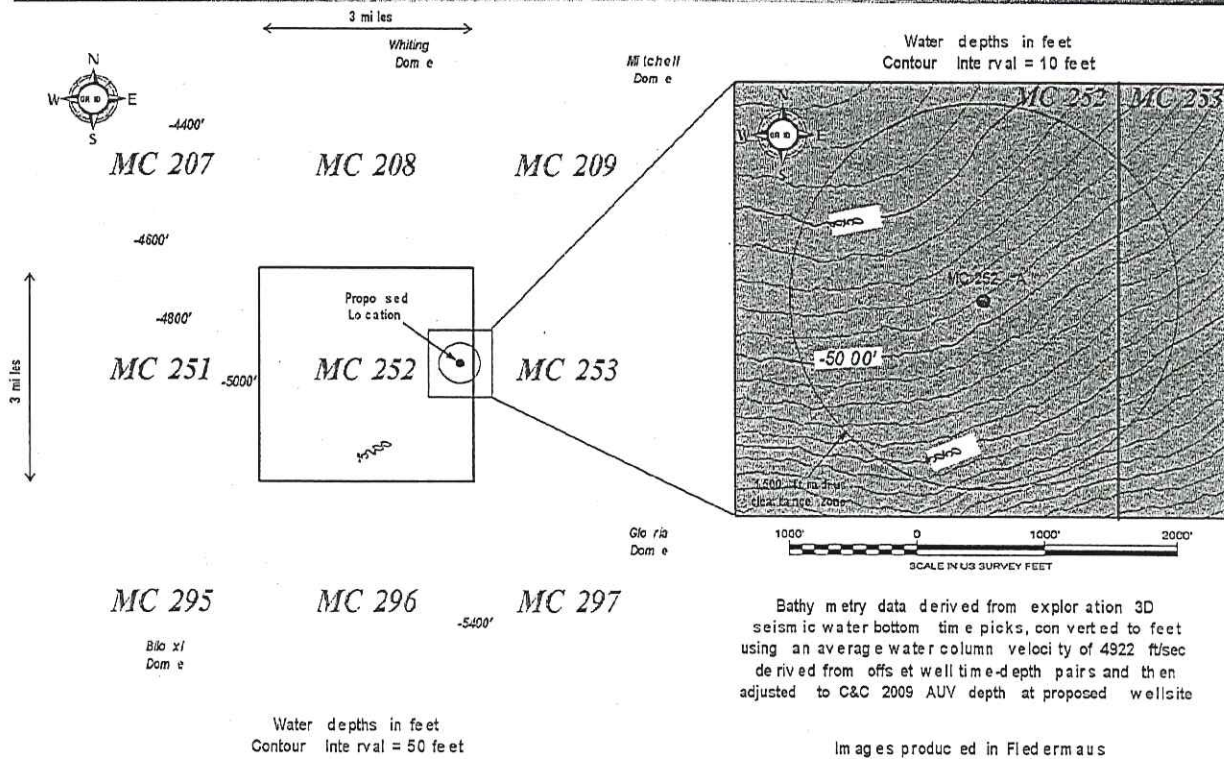
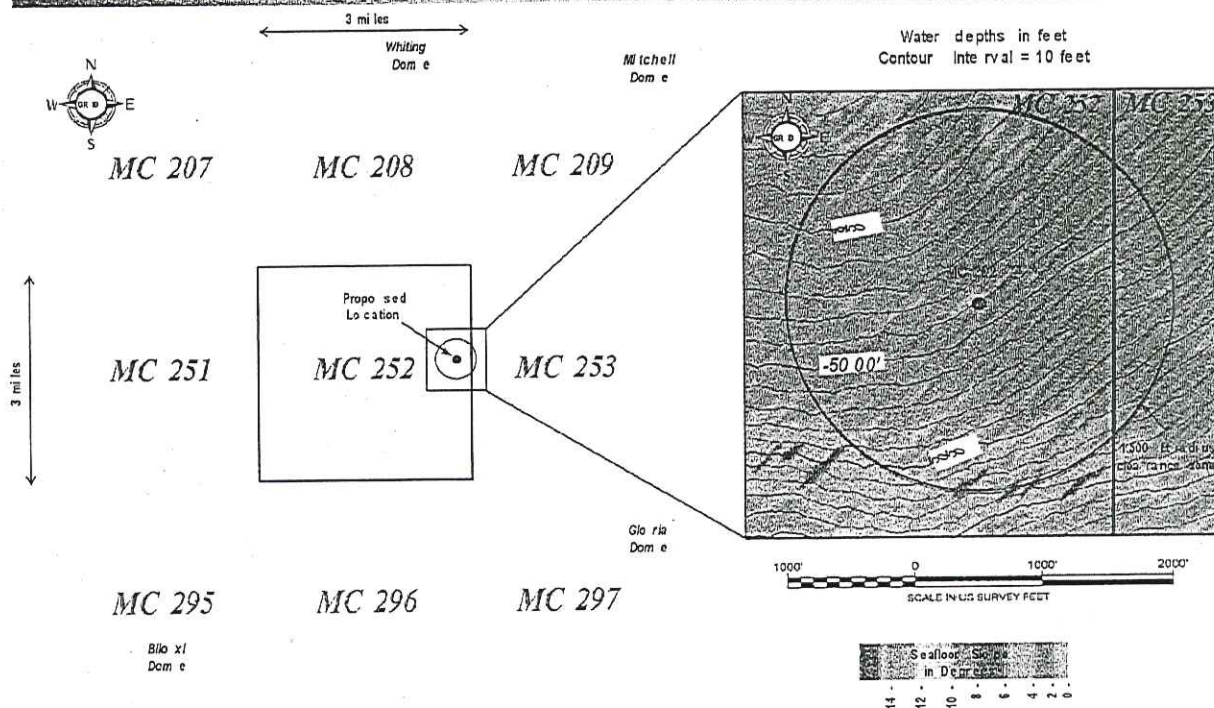


Plate 6



Seafloor Gradient Map Proposed Mississippi Canyon Block 252 "A" Location



Images produced in Fledermaus from 3-D seismic water bottom picks.
Vertical exaggeration = x0.1

Plate 7



3D Perspective View Looking to North Over MC25 2
Proposed Mississippi Canyon Block 252 "A" Location

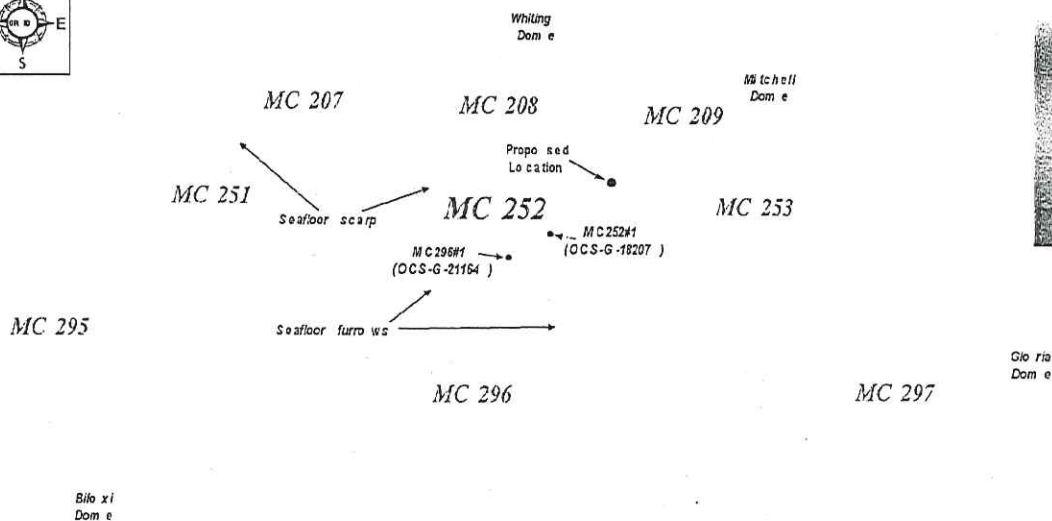
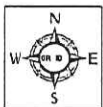


Image produced in Fledermaus from 3D seismic bathymetry data. Vertical exaggeration = x4
Sun illumination azimuth = 30°/180°

Plate 8



Seafloor Features Map - Fugro 2003 Proposed Mississippi Canyon Block 252 "A" Location

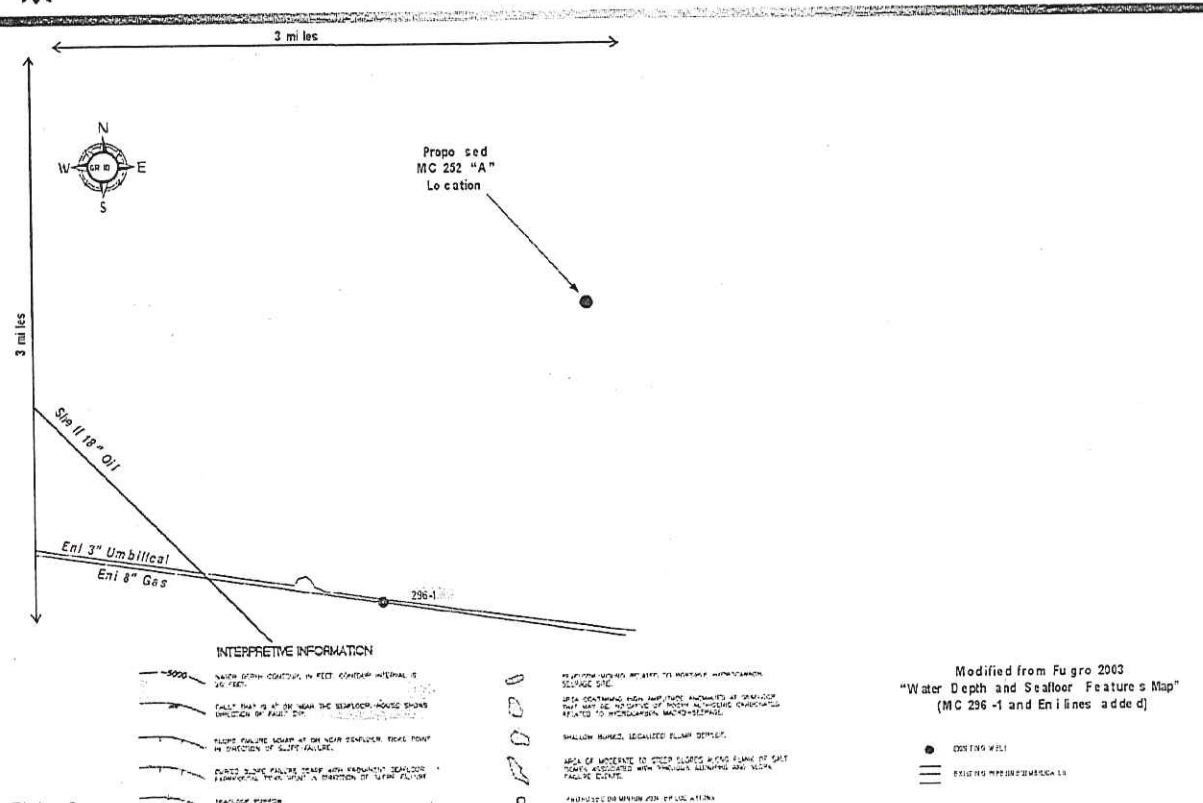
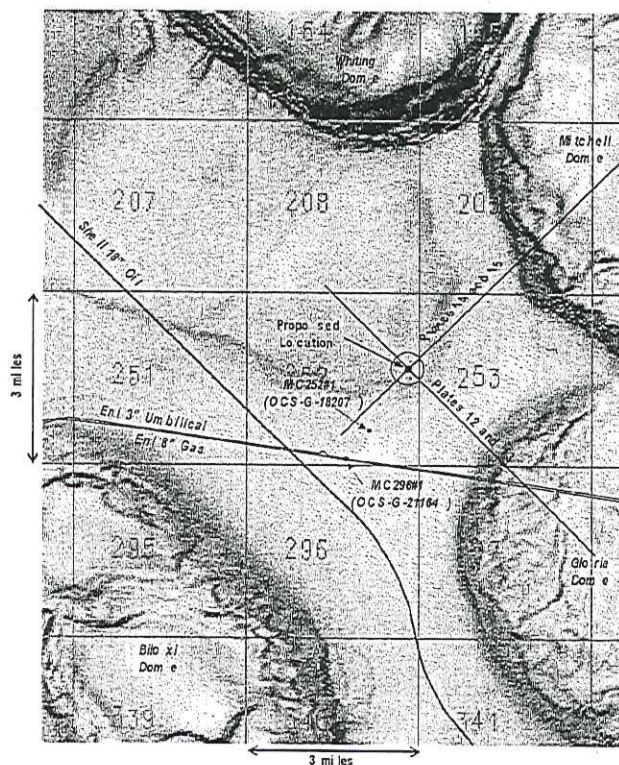


Plate 9



Infrastructure Map Showing the Location of Example Seismic Sections
Proposed Mississippi Canyon Block 252 "A" Location



Edge map produced from
exploration 3D seismic data

Plate 10



Seafloor Amplitude Map
Proposed Mississippi Canyon Block 252 "A" Location

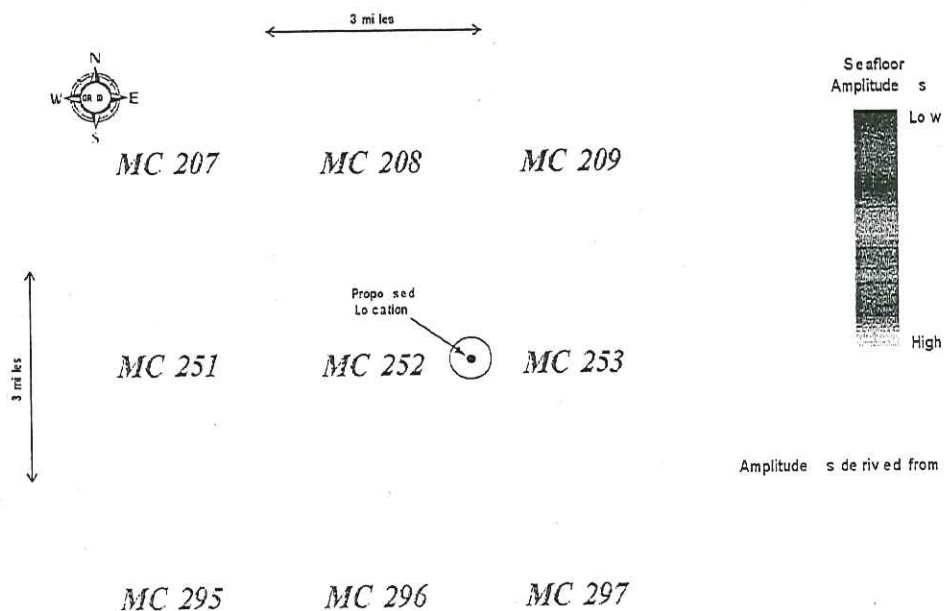


Plate 11



Uninterpreted 3D Seismic Line 17282 Through Proposed Well Location "A"
Proposed Mississippi Canyon Block 252 "A" Location

NW

MC 252

SE

Proposed Location

(See Plate 10 for line location)

1,500 ft 1,500 ft



Gloria Salt

Relative Amplitudes

Max Pos

Max Neg

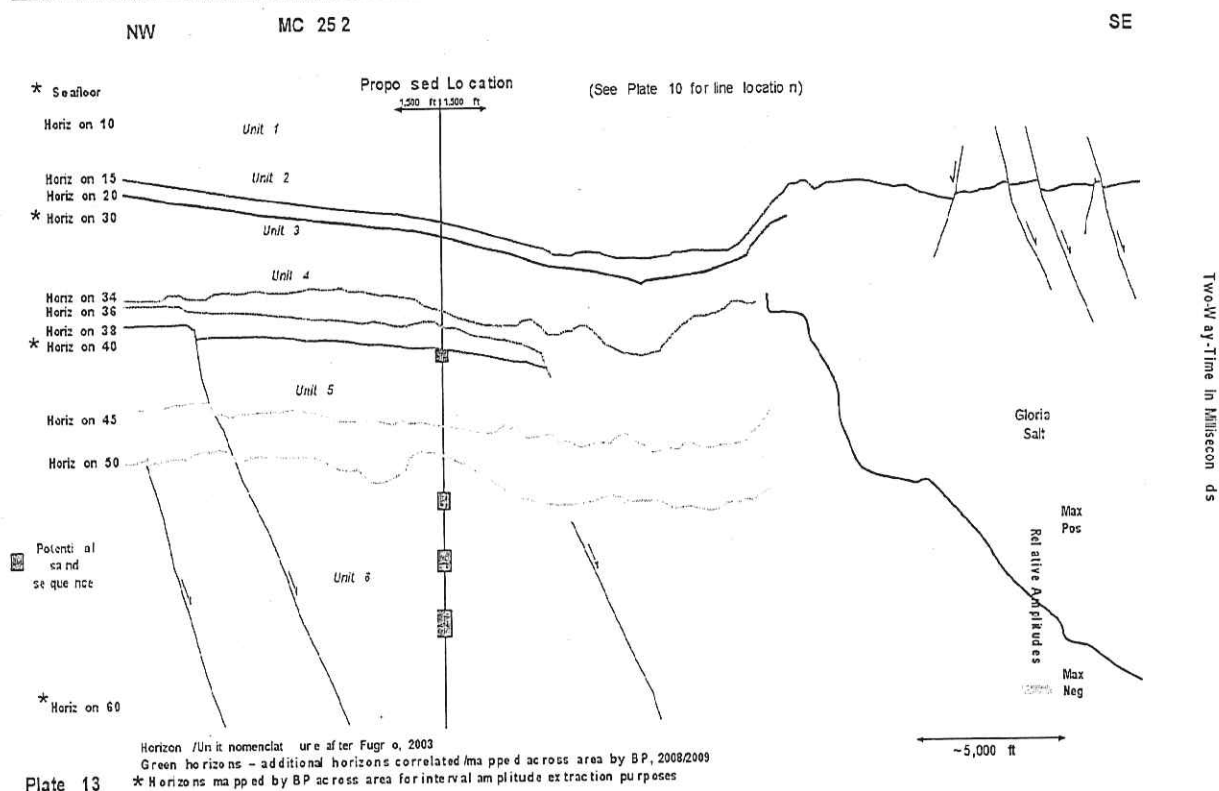
Two-Way-Time in Milliseconds

~5,000 ft

Plate 12



Interpreted 3D Seismic Line 17 282 Through Proposed Well Location "A"
Proposed Mississippi Canyon Block 252 "A" Location





Uninterpreted 3D Seismic Trace 14150 Through Proposed Well Location "A"
Proposed Mississippi Canyon Block 252 "A" Location

SW MC 252

NE

Proposed Location

(See Plate 10 for line location)

1,500 ft 1,500 ft

Mitchell
Salt

Max
Pos
Relative Amplitudes
Max
Neg

Two-Way-Time in Milliseconds

~5,000 ft

Plate 14



Interpreted 3D Seismic Trace 14150 Through Proposed Well Location "A"
Proposed Mississippi Canyon Block 252 "A" Location

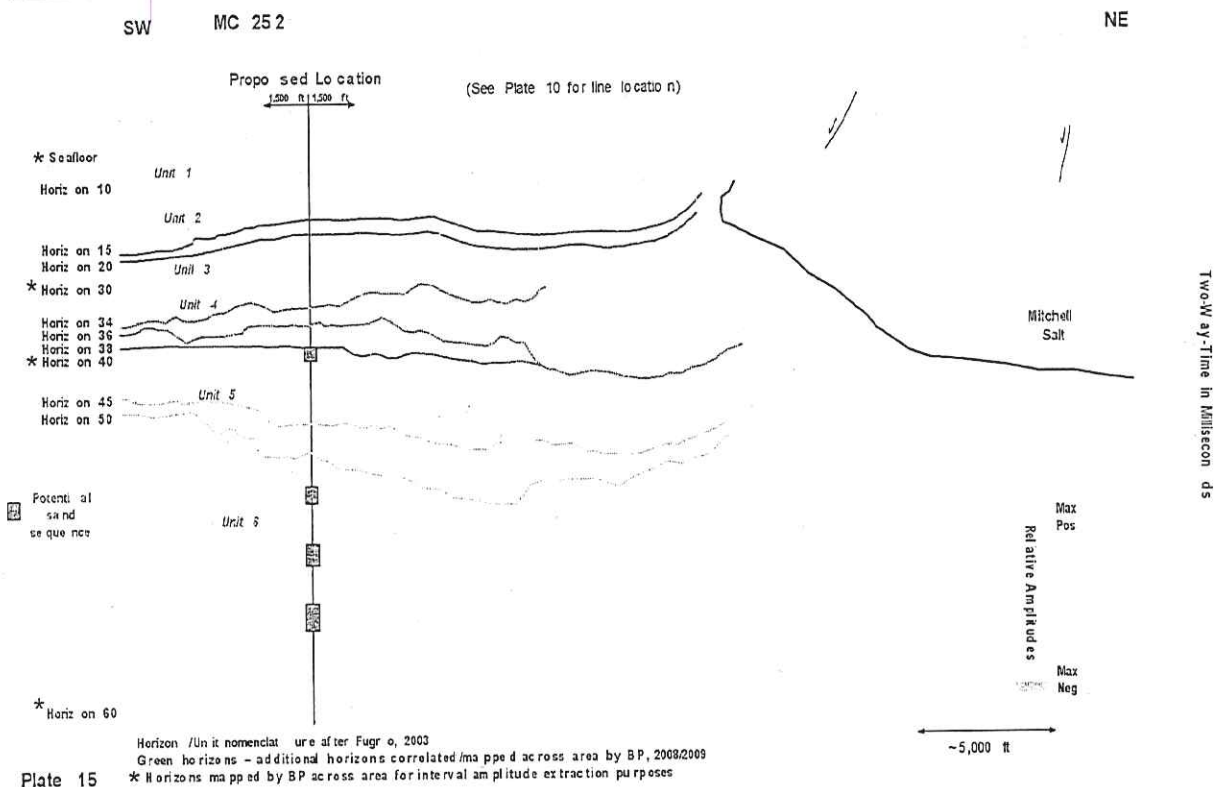


Plate 15



Maximum Negative Amplitude Display - Seafloor to Horizon 30 (Units 1, 2 & 3)
Proposed Mississippi Canyon Block 252 "A" Location

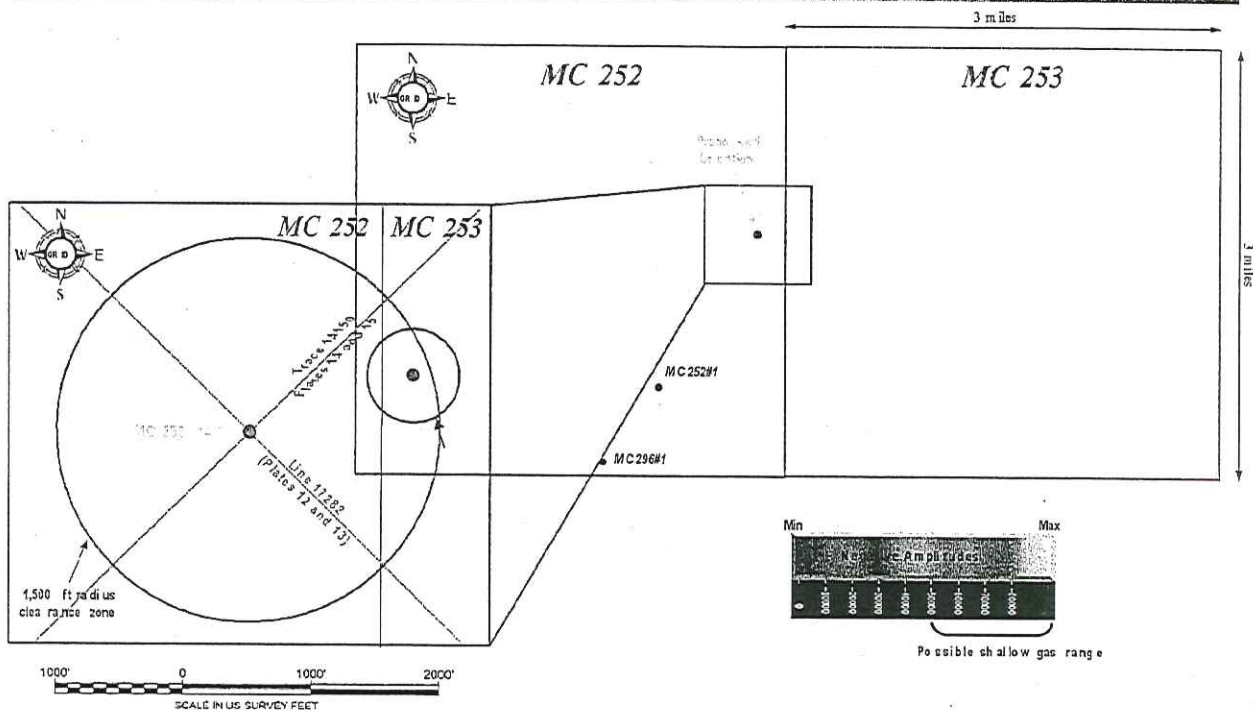


Plate 16



Maximum Negative Amplitude Display - Horizon 30 to Horizon 40 (Unit 4)
Proposed Mississippi Canyon Block 252 "A" Location

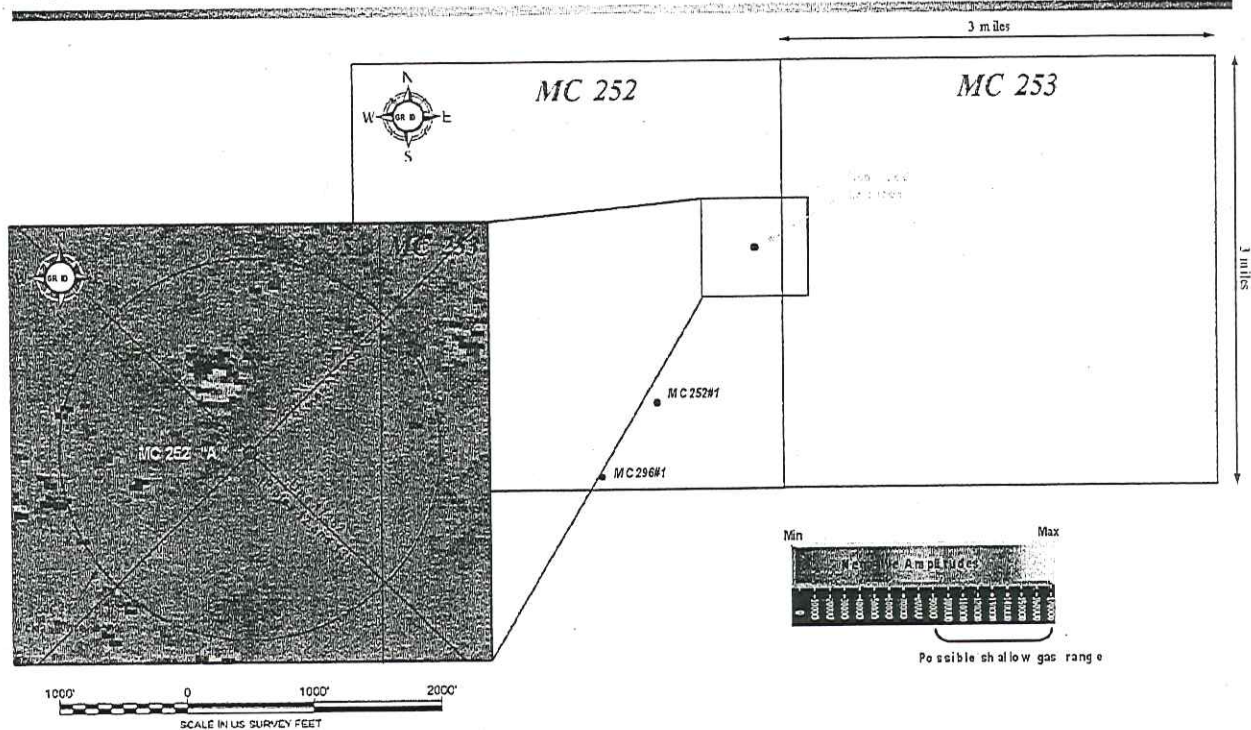


Plate 17



Maximum Negative Amplitude Display - Horizon 40 to Horizon 60 (Units 5 & 6)
Proposed Mississippi Canyon Block 252 "A" Location

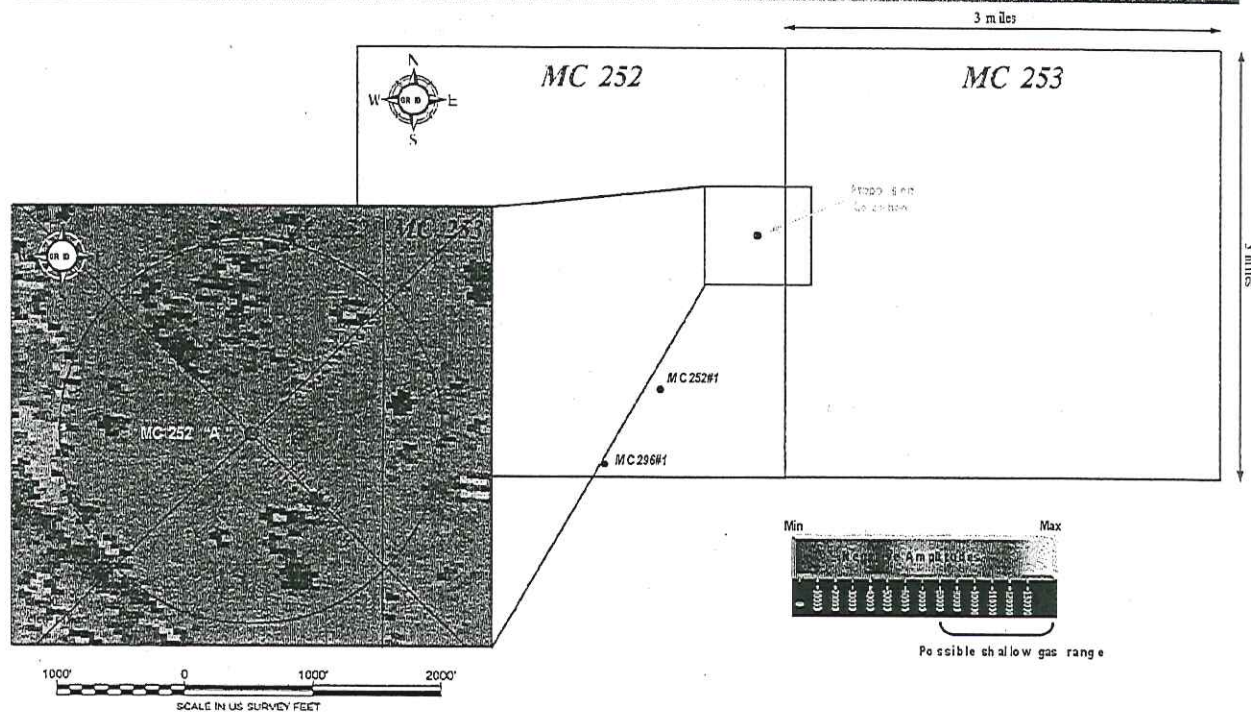


Plate 18



Tophole Formation and Geohazards Summary Sheet
Proposed Mississippi Canyon Block 252 "A" Location

MC 252 "A" Mississippi Canyon 252 (CCS-G -3230 S)	Interpretation		Depth BM L (ft)	Depth BS L (ft)	TWT BS L (sec)	Interval Thickness (ft)	Comments	Hazards Risk	
	Stratigraphy	Lithology						Shallow Gas	Shallow Water Flow
	Seafloor		0	4392	1.036		Subsided zone with sea floor, slope ~20° to SE		
	L1	Clay	250	5212	1.130	280	Hard silty clay with possible thin clay debris flows		
	L2	Clay	478	594	1.198	116	Interbedded marine clays and thin claystone debris flows		
	L3	Clay with silt	704	6718	1.304	190	Interbedded marine clay and possible more		
	L4	Clay with silt	844	6824	1.348	140	Interbedded marine clay and possible more		
	L5	Clay with silt	1042	6934	1.418	190	Potential sands with silts and silts related with rough and deposits in zone		
	L6	Clay	1428	7148	1.570	402	Clay turbidites and debris flows		
	L7	Clay with silt and sand	1610	7412	1.614	272	On top of channel levee clays and possible silts and sand		
	L8	Clay	1832	7624	1.688	212	Clay turbidites and thin debris flows		
	L9	Sands and silts	1944	7824	1.722	112	Continuous sands and silts with silts and silts to no flow silts		
	L10	Clay and possible sands	2332	7932	1.812	100	Interbedded clay turbidites and thin clay-prone debris flows with possible sands		
	L11	Clay and possible silts	2502	7932	1.812	18	Massive clay-prone debris flow with possible silts		
	L12	Continuous sands	3144	8194	1.920	644			
	L13	Clay, silts and sands	3352	8352	1.970	160	Interbedded clay turbidites and debris flows with locally continuous sands		
	L14	Continuous sands	3564	8452	1.998	212			
	L15	Continuous sands	4172	8764	2.108	612			
	L16	Continuous sands	4412	8910	2.168	248			
	L17	Continuous sands	4612	9010	2.208	200			
	L18	Continuous sands	5228	9320	2.318	612			
	L19	Deposits likely of unconsolidated	5328	9320	2.318	100			
Risk level: Very High High Moderate Low Very Low								(Unit and Horizon from enclosure taken from Fugro, 2002)	

Plate 19



SITE CLEARANCE NARRATIVE

PROPOSED MC252 "B" LOCATION
BLOCK 252, OCS-G-32306
MISSISSIPPI CANYON AREA
GULF OF MEXICO

PROPOSED MC252 "B" (Vertical well)	
28 ° 44' 16.027" N	88 ° 22' 00.581" W
X = 1,202,514.00 ft E	Y = 10,431,494.00 ft N
7,066 ft FNL	1,326 ft FEL

WATER DEPTH:
4,992 ft MSL

PROPOSED TOTAL DEPTH:
20,600 ft MD
20,600 ft TVD

X and Y Coordinates in UTM Zone 16N (US ft)
Geodetic Datum: NAD 1927
Spheroid: Clarke 1866



SITE CLEARANCE NARRATIVE

PROPOSED MC252 "B" LOCATION BLOCK 252, OCS-G-32306 MISSISSIPPI CANYON AREA GULF OF MEXICO

This document summarizes shallow conditions at the proposed drilling location MC252 "B" in Mississippi Canyon Block 252 (OCS-G-32306) in the north-central Gulf of Mexico (Plate 1).

The surface location of the proposed MC252 "B" well is defined as:

MC252 "B"	
7,066 ft FNL	1,326 ft FEL
X = 1,202,514.00	Y = 10,431,494.00
Latitude: 28° 44' 16.027" N	Longitude: 88° 22' 00.581" W

UTM (US Survey Feet)	Zone 16N
Datum: NAD 1927	Spheroid: Clarke 1866

The proposed surface location of this well, which will be drilled vertically outboard of salt, was selected based on the results of: a regional shallow hazards survey and study of MC208, MC252 and MC296 and portions of surrounding blocks conducted by KC Offshore in 1998 for Texaco Exploration and Production Inc. (Texaco) using HR2D seismic data integrated with 3D exploration seismic data; a shallow hazards report for MC252 and MC296 and vicinity produced by Fugro GeoServices, Inc. (Fugro) in 2003 for Dominion Exploration and Production Inc. (Dominion), based on exploration 3D seismic data – the seafloor mapping area for this report covered all of MC252 and MC296, whereas the subsurface mapping area only covered the southern half of MC252 and the northern half of MC296; mapping performed internally in 2008 and 2009 by BP America Inc. for MC252 and vicinity using a merged data volume (mosaic) re-processed by TGS in 2004 and covering a large portion of the Mississippi Canyon Lease Area; results of a site specific Shallow Hazards and Archaeological Assessment for the proposed wellsite and mooring pattern commissioned by BP and produced by C&C Technologies (C&C) in 2009 based on AUV data acquired during January 2009 over a larger area; and well information for the nearby MC252#1 and MC296#1 wells. Plate 2 outlines the various shallow hazard survey reports available for the area as listed above.



Copies of the 1998 KC Offshore report have already been submitted to the MMS in support of the Texaco EP documentation for five proposed wells (A through E) with surface locations in MC252 (Plan Control N 6521, approved 16 July, 1999) and copies of the 2003 Fugro report were submitted in support of the Dominion EP documentation for four proposed wells (A through D) with surface locations in MC252 and MC296 (Plan Control N 7743, approved 29 May, 2003). Site-specific clearance letters for the proposed MC252 "B" well and mooring pattern (C&C, 2009) are included with this submittal.

This document contains a site-specific shallow hazards review of the proposed MC252 "B" well location and includes data examples from the geophysical data sets listed above. The depth of investigation is from the seafloor to Horizon 60, located about 5,292 ft below the mud line (bml). The depth of the first pressure containment string (22" casing) is currently planned for 2,619 ft bml.

The exploration 3D seismic data used by Fugro (2003) for identifying shallow hazards was acquired by CGG and GECO in 1999/2000 on an S grid (4180 cu.in. and 5400 cu.in. airgun sources; 7.5 m and 6 m source depths; 7,200 m and 8,000 m streamers with 288 and 320 channels per streamer, a group interval of 25 m and a streamer tow depth of 9 m; a record length of 12 secs. with a 2 msec. sample interval and a 62.5 m shotpoint interval giving nominal folds of 57 and 64). The data was originally processed by CGG using a 2 km x 2 km velocity grid, pre-stack FK time migration and post-stack 3D finite difference migration, re-sampled to 4 msec and output at a bin spacing of 12.5 m x 20 m. The data used internally by BP is a re-processed version of this 1999/2000 data, which was produced by TGS in 2004 as part of their Mississippi Canyon Revival 3D Project. The re-processed data was output on a diagonal grid with a bin spacing of 12.5 m x 20 m having undergone Kirchhoff pre-stack curved ray migration and velocity analysis at every CDP (12.5 m x 20 m every 4 msec) to produce a "High-resolution interval velocity volume."

In order to address data quality and, specifically, 3D seismic data frequency content in the immediate vicinity of the proposed location, as required by MMS NTL 2008-G05, power spectra diagrams were extracted from the above re-processed 3D seismic data cube using the PostStack/PAL attribute function in Landmark Graphics's SeisWorks software (Plates 3 and 4). The spectra were generated for a one-second time-window below the seafloor and for a radius of 1,500 ft around the proposed well site. The x-axis represents the frequency of the data between 0 and 100 Hertz, and the y-axis represents power attributed to each component frequency either as a percentage or as a dB value relative to the reference values of 100% or -1.0, respectively. The results demonstrate that the re-processing has increased the frequency range of the data so that approximately 50% of the data exceeds a quality threshold of at least 50 Hertz within the first second of Two-Way Travel Time beneath the seafloor.



BP GoM SPU Appraisal Tiger Team
Site Clearance Narrative
Proposed MC252 "B" Well Location



The seafloor reflector over the proposed location is shown on Plate 5 and is taken from a SeisWorks/Seismic View display using parameters of 27.44 Inches/Second and 3.91 Traces/Inch. The wiggle display is variable area with a "Varifill" positive and negative infill. The auto-correlation pick for the seafloor, which is shown in red, shows the reflector to be free of gaps and is defined by a wavelet of stable shape and phase. The display on Plate 5 was constructed from the re-processed exploration 3D data volume.

BP proposes to drill the MC252 "B" well with the moored rig the TransOcean Marianas. C&C (2009) has prepared a site clearance document for the proposed anchor locations, which will be included with this EP submittal.

The key findings of the shallow hazards assessment for the proposed "B" location are as follows :

Proposed Primary Well Location MC252 "B":

**Water Depth and
Seafloor Gradient:**

Water depth at the proposed "B" location is estimated as 4,992 ft below Mean Sea Level from the 2009 C&C AUV survey. The bathymetry map shown as Plate 6 was constructed in Fledermaus using water bottom time picks from exploration 3D seismic data converted to feet using an average seawater velocity of 4,922 ft/sec derived from known water depths at the MC252#1 and MC296#1 wells, and then adjusted to the AUV-derived depth at the proposed location. The seafloor appears smooth and has an average slope of ~3.0° (5.2%) down to the southeast (Plate 7).

**Seafloor Morphology
and sediments:**

The proposed well location is sited within a large basin, open to the northwest and south, but bordered to the north, northeast, southeast and southwest by the prominent relief features, the Whiting, Mitchell, Gloria and Biloxi salt domes, respectively (Plates 2 and 8). The seabed is relatively smooth and featureless within the basin except for a series of seafloor furrows that trend northwest-southeast through MC251, the southwest corner of MC252 and the north of MC296. A raised plateau-like area is in the north occupying most of MC207 and MC208 and the northern half of MC252 (Plates 8 and 9). The proposed "B" location lies approximately 950 ft to the north of the southeast margin of this plateau, which has a relief of about 20 ft and a gradient of about 6°, and which represents the seafloor expression of a buried scarp (~300 to 500 ft bml) related to a massive slope failure event (Plates 7, 8 and 9).

The sidescan sonar data from the C&C 2009 AUV survey exhibited a moderate seafloor reflectivity indicative of a uniform clayey seafloor.

Seafloor Obstructions :

Two existing wells, the MC252#1 well and MC296#1 well (with surface hole location in MC252), are ~1.2 miles and ~1.9 miles to the southwest of the proposed MC 252 "B" location, respectively



(Plates 8, 9 and 10). A Shell 18" oil pipeline trends northwest-southeast through the basin and crosses the southwest corner of MC252, ~2.4 miles southwest of the proposed "B" location. Paralleling Eni 3" umbilical and 8" gas lines trend roughly east-west close to the southern boundary of MC252, with connections to the MC296#1 well, and are ~1.7 miles to the south of the proposed "B" location.

An anchored drilling rig, the TransOcean Marianas, is currently proposed to drill the well. The positioning of, and any seafloor disturbances caused by, the anchor and pre-lay of anchor ropes is addressed in the C&C 2009 report accompanying this EP submittal.

**Archaeological
Stipulations:**

An archaeological assessment for MC252 and vicinity was carried out by C&C using the sidescan sonar data from their 2009 AUV survey. One unidentified sonar target (Contact No. 38, measuring 13.8 ft x 2.2 ft and with a relief of 2.6 ft) was mapped ~4,600 ft to the northwest of the proposed "B" location, but the Marine Archaeologist at C&C concluded that there is *no evidence for shipwreck debris or sites of archaeological significance at or within 1,500 ft of the proposed well location.*

**Chemosynthetic
Communities:**

The sidescan sonar data from the 2009 AUV survey shows the seafloor within a 1,500 ft radius of the proposed well location to comprise of uniform soft clays. Areas of higher reflectivity indicating possible gas-saturated soils and/or hard seafloor are not evident in the vicinity of the proposed "B" location. The seafloor amplitude map (Plate 11) shows areas of high seafloor amplitude associated with the Mitchell, Gloria and Biloxi Domes, and the Fugro 2003 report mapped isolated seafloor mounds and areas of possible rocky authigenic carbonates, which could be related to hydrocarbon seepage sites, atop Gloria Dome (Plate 9). The nearest of these features is ~2.4 miles to the southeast of the proposed "B" location. *Therefore, seafloor conditions capable of supporting chemosynthetic communities are not expected at, or within 1,500 ft of, the proposed well location.*

Shallow Geology :

Plate 10 shows the locations of the example seismic sections, Line 17277 (Plates 12 and 13) and Trace 14152 (Plates 14 and 15), through the proposed "B" location, which illustrate the shallow geology in the area. Based on the Fugro 2003 report, six seismic-stratigraphic units (Units 1 thru 6) separated by seven horizons (Seafloor and Horizons 10, 20, 30, 40, 50 and 60) are identified at the proposed "B" location between the seafloor and a depth of 5,292 ft bml. The Seafloor and Horizons 30, 40 and 60 were mapped across MC252 and vicinity by BP in order to produce interval amplitude extractions. The remaining horizons, Horizons 10, 20 and 50 are correlated to the Fugro mapping area. Intermediate horizons, Horizons 15, 34, 36, 38 and 45 are interpreted across the wellsite by BP to aid in the description of the shallow geology.

The shallow geology between the seabed and Horizon 60 is



extremely complex, comprising well-bedded turbidite sections which have been eroded by several episodes of debris flows (Plates 13 and 15). Plate 19 gives the depths of interpreted horizons and thicknesses of units.

- Unit 1 is about 223 ft thick and comprises hemipelagic clays interbedded with possible thin clay-prone debris flows.
- Unit 2 is about 604 ft thick and comprises an upper portion (484 ft) of interbedded clays and thin clay-prone debris flows, with a lower portion (120 ft) of interbedded clays and marls. Mass wasting of this lower section of Unit 2 has resulted in the low-relief seafloor scarp to the south and east of the proposed "B" location.
- Unit 3 is about 184 ft thick and comprises interbedded marls and clays. To the east of the proposed "B" location, Unit 3 thickens considerably where it infills a prominent channel complex (Plates 13 and 15). High amplitudes associated with the western margin of the channel complex indicate possible sand-prone overbank or channel levee deposits. These sands, at the base of Unit 3, appear to pinch-out ~1,050 ft to the southeast of the proposed "B" location.
- Unit 4 has a total thickness of about 915 ft and comprises an upper portion (455 ft) and lower portion (191 ft) of fine-grained turbidites and debris flows, which are separated by a central interval (154 ft thick) of fine-grained overbank and levee deposits with possible sands. This central lithologic variant to Unit 4 thins to the west of the proposed "B" location, but thickens markedly to the east, where it occupies much of the unit within the channel complex (Plates 13 and 15). A 115 ft thick sequence of continuous sands and silts forms the base of Unit 4 and is truncated by the central overbank/levee unit to the east.
- Unit 5 is about 925 ft thick and comprises an upper sequence (594 ft) of predominantly fine-grained turbidites and debris flows with possible discontinuous sands overlying a 331 ft thick massive clay-prone debris flow with possible silts.
- The deepest unit identified, Unit 6, is about 2,441 ft thick and contains predominantly fine-grained turbidites and debris flows, but with three sequences of continuous sands with thicknesses of 207 ft, 176 ft and 217 ft within the central part of the unit.

Drilling Hazards:

Plate 19 is a Top-Hole Formation and Geohazards Summary Sheet for the proposed well showing the interpreted stratigraphy and predicted drilling hazards.

Faulting : The proposed well bore will not intersect any faults between the seafloor and Horizon 60. There are two approximately southwest-northeast trending down to the southeast



increases to Low for the upper sand sequence (3,143 ft to 3,350 ft bml) and Moderate for the middle and lower sand sequences (3,755 ft to 3,931 ft bml and 4,285 ft to 4,502 ft bml, respectively).

No shallow gas has been reported from the offset wells in the south of MC252.

Shallow Water Flow (SWF): MC252 is in the northeast of the Mississippi Canyon Lease Area, to the northeast of the highest Pleistocene/Pliocene sediment accumulations in the lease area (Thomson, et al, 1999), to the north of the main Late Pleistocene depocenter, which contains the Blue and Green sand-prone SWF units (Winker, et al, 2000), and in an area of low potential for shallow water flow (Pelletier, et al, 1999). The MMS SWF website (2005) shows the nearest SWF block to be MC292, where a low severity SWF was experienced at a depth of 1,784 ft bml at Chevron's #1 (Gemini) well, ~14 miles to the west-southwest of the proposed MC252 "B" location.

Potential sand sequences at the proposed "B" location are indicated on the annotated seismic sections (Plates 13 and 15) and on the Tophole Formation Sheet (Plate 19).

Moderate risks for SWF are assessed for the continuous sandy sequences at the base of Unit 4 (1,811 ft to 1,926 ft bml), and within Unit 6 (3,143 ft to 3,350 ft bml, 3,755 ft to 3,931 ft bml, and 4,285 ft to 4,502 ft bml).

Low risks for SWF are assessed for the sands within the overbank levee deposit in the central portion of Unit 4 (1,466 ft to 1,620 ft bml), and the discontinuous sands within the predominantly fine-grained turbidite sequence forming the upper portion of Unit 5 (1,926 ft to 2,520 ft bml).

Negligible SWF risks are assessed for all the remaining units or portions of units which are interpreted as predominantly clay-prone.

The above assessments are based on seismic facies analysis at the proposed wellsite. No SWF events were recorded from either of the offset wells, MC252#1 or MC296#1, even though the amplitude extractions, Plates 16, 17 and 18, indicate a higher likelihood of sands within the equivalent potential SWF units than at the proposed MC252 "B" location. Sands were identified within Unit 6 at the MC252#1 well, however any risk of SWF was mitigated by the topsetting of Unit 6 with the 22-inch casing followed by drilling with a higher mudweight fluid. The current proposed casing program for the MC252 "B" location (shown on Plate 19) has the 28-inch casing shoe topsetting the potential SWF sands within Unit 4, and the 22-inch casing shoe topsetting the potential SWF sands at the base of Unit 5 and within Unit 6.

Shallow Oil: Shallow oil has recently been encountered in relatively thin, faulted supra-salt sediments of sub-salt wells



BP GoM SPU Appraisal Tiger Team
Site Clearance Narrative
Proposed MC252 "B" Well Location



located on leases lying just north of the Sigsbee Escarpment in areas to the west of Mississippi Canyon. The proposed well will be drilled outboard of salt within relatively unfaulted sediments. No oil shows were seen in the riserless sections of the offset wells and the risk for shallow oil at the proposed well location is considered Negligible.

Hydrates : Bottom Simulating Reflectors (BSRs) are not observed on the seismic profiles throughout the MC252 area, and no instances of gas hydrates were reported during drilling of the MC252#1 and MC296#1 wells. The risk of encountering hydrates in the proposed well is therefore considered Negligible.



CONCLUSIONS

This Shallow Hazards Assessment for location "B" in Mississippi Canyon Block 252 (OCS-G-32306) supplements the Exploration Plan (EP) to be submitted to the Minerals Management Service (MMS). This narrative defines the proposed location and documents the anticipated top-hole drilling conditions within a radius of 1,500 ft of the primary location.

Conditions at the proposed drilling location have been evaluated on the basis of: a regional shallow hazards survey and study conducted by KC Offshore in 1998 for Texaco Exploration and Production Inc. using HR2D seismic data integrated with 3D exploration seismic data; a shallow hazards report for MC252 and MC296 produced by Fugro GeoServices, Inc. (Fugro) in 2003 for Dominion Exploration and Production Inc. based on exploration 3D seismic; mapping performed internally in 2008 and 2009 by BP America Inc. for MC252 and vicinity using a merged data volume (mosaic) re-processed by TGS in 2004 and covering a large portion of the Mississippi Canyon Lease Area; results of a site-specific Shallow Hazards and Archaeological Assessment for the proposed wellsite and mooring pattern commissioned by BP and produced by C&C Technologies (C&C) in 2009 based on AUV data acquired during January 2009 over a larger area; and well information for the nearby MC252#1 and MC296#1 wells.

Results of the data review indicate

- The seafloor at the proposed "B" location is in a water depth of 4,992 ft and dips to the southeast at ~3.0°. The only seafloor feature identified on the exploration 3D seismic data within the vicinity is a low-relief escarpment approximately 950 ft to the south of the "B" location, which is the seafloor expression of a deeply-buried scarp associated with mass-wasting.
- There is no evidence for the existence of high-density chemosynthetic communities within 1,500 ft of the proposed well location.
- There is no evidence for shipwreck debris or sites of archaeological significance at or within 1,500 ft of the proposed well location.
- The proposed wellbore will not intersect any faults between the seafloor and the depth limit of this investigation at Horizon 6 or 5,292 ft bml.
- The risk of encountering shallow gas is ranked as: Moderate for two sand-prone sequences within the middle and lower portions of Unit 6; Low for the central portion of Unit 4 and a sandy sequence at the base of Unit 4, the upper portion of Unit 5 and an interval within the top of Unit 6; and Negligible for all other units or portions of units between the Seafloor and Horizon 60.



BP GoM SPU Appraisal Tiger Team
Site Clearance Narrative
Proposed MC252 "B" Well Location



- The risk of encountering **shallow water flow** is ranked as: Moderate within sands at the base of Unit 4 and within three sandy intervals within Unit 6; Low for sands within the middle portion of Unit 4 and in the upper portion of Unit 5; and Negligible for all other units or portions of units between the Seafloor and Horizon 60.
- The risk of encountering **shallow oil and gas hydrates** is ranked as Negligible between the Seafloor and Horizon 60.

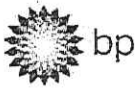
We advise caution, but believe that the risk of danger to personnel and damage to the borehole, equipment and environment is Low, provided strict adherence to proper drilling and cementing procedures is followed concerning these hazards until the first pressure containment string is in place at about 2,619 ft bml.

Prepared By:

Bernie Care
Senior Geohazards Specialist,
BP GoM SPU, Appraisal Tiger Team
16 February 2009

Reviewed By:

Craig Scherschel
Geohazards Specialist,
BP GoM SPU, Exploration Tiger Team
17 February 2009



REFERENCES:

- C&C Technologies, Inc., 2009, "Site Specific Archaeological and Hazard Study, Macondo Prospect Blocks 252 (OCS-G-32306) and Block 253 (OCS-G-24062), Mississippi Canyon Area." Report prepared for BP America Inc., February 2009.
- Fugro GeoServices, Inc., 2003, "Shallow Hazards Assessment, Rigel Prospect, Blocks 252, 296, and Vicinity, OCS-G-18207 and OCS-G-21164, Mississippi Canyon Area, Gulf of Mexico." FGSi Report No. 2402-2055 prepared for Dominion Exploration and Production, Inc., April 9, 2003.
- KC Offshore, L.L.C., 1998, "Geophysical Survey Report, Blocks 208, 252, 296 & Parts of 163, 164, 165, 207, 209, 251, 253, 295, 297 Mississippi Canyon, Offshore Louisiana, OCS-G-18202, 18207, 9796, 14633, 14636, 15472 and 15473." Report prepared for Texaco Exploration and Production, Inc., April 1998.
- Minerals Management Service, 2005, shallow water flow data published on the MMS Gulf of Mexico website <http://www.gomr.mms.gov/homepage/offshore/safety/wtrflow.html>
- Pelletier, J.P., Ostermeier, R.M., Winker, C.D., Nicholson, J.W., and Rambow, F.H., 1999, "Shallow Water Flow Sands in the Deepwater Gulf of Mexico: Some Recent Shell experience". Conference Proceedings, 1999 International Forum on Shallow Water Flows, October 6-8, 1999, South Shore Harbour Resort, League City, Texas.
- Thomson, J.A., Dodd, T., and Hill, A., 1999, "Formation of Shallow Water Flows". Conference Proceedings, 1999 International Forum on Shallow Water Flows, October 6-8, 1999, South Shore Harbour Resort, League City, Texas.
- Winker, C. D., and J. R. Booth, 2000, "Sedimentary dynamics of the salt-dominated continental slope, Gulf of Mexico: integration of observations from the seafloor, near-surface, and deep subsurface", Proceedings of the GCSSEPM Foundation 20th Annual Research Conference, p. 1059-1086.



PLATES:

- Plate 1: Location Map, Northern Gulf of Mexico
- Plate 2: Regional Seafloor Morphology, Northeast Mississippi Canyon Area,
Showing Existing Survey Coverage and Offset Wells
- Plate 3: Exploration 3D Seismic Data - Power Spectrum (% Power)
- Plate 4: Exploration 3D Seismic Data - Power Spectrum (dB Power)
- Plate 5: Exploration 3D Seismic Data - Seafloor Reflection Wavelet
- Plate 6: Bathymetry Map
- Plate 7: Seafloor Gradient Map
- Plate 8: 3-D Perspective View Looking to North Over MC252
- Plate 9: Seafloor Features Map - Fugro 2003
- Plate 10: Infrastructure Map Showing the Location of Example Seismic Sections
- Plate 11: Seafloor Amplitude Map
- Plate 12: Uninterpreted 3D Seismic Line 17277 Through Proposed Well Location "B"
- Plate 13: Interpreted 3D Seismic Line 17277 Through Proposed Well Location "B"
- Plate 14: Uninterpreted 3D Seismic Trace 14152 Through Proposed Well Location "B"
- Plate 15: Interpreted 3D Seismic Trace 14152 Through Proposed Well Location "B"
- Plate 16: Maximum Negative Amplitude Display - Seafloor to Horizon 30 (Units 1, 2 and 3)
- Plate 17: Maximum Negative Amplitude Display - Horizon 30 to Horizon 40 (Unit 4)
- Plate 18: Maximum Negative Amplitude Display - Horizon 40 to Horizon 60 (Units 5 and 6)
- Plate 19: Tophole Formation and Geohazards Summary Sheet



BP GoM SPU Appraisal Tiger Team
Site Clearance Narrative
Proposed MC252 "B" Well Location



PLATES

Proposed MC 252 "B" Location Shallow Hazards Assessment Data Examples

CONTENTS

- Plate 1: Location Map, Northern Gulf of Mexico
- Plate 2: Regional Seafloor Morphology, Northeast Mississippi Canyon Area,
Showing Existing Survey Coverage and Offset Wells
- Plate 3: Exploration 3D Seismic Data - Power Spectrum (% Power)
- Plate 4: Exploration 3D Seismic Data - Power Spectrum (dB Power)
- Plate 5: Exploration 3D Seismic Data - Seafloor Reflection Wavelet
- Plate 6: Bathymetry Map
- Plate 7: Seafloor Gradient Map
- Plate 8: 3-D Perspective View Looking to North Over MC 252
- Plate 9: Seafloor Features Map - Fugro 2003
- Plate 10: Infrastructure Map Showing the Location of Example Seismic Sections
- Plate 11: Seafloor Amplitude Map
- Plate 12: Uninterpreted 3D Seismic Line 17277 Through Proposed Well Location "B"
- Plate 13: Interpreted 3D Seismic Line 17277 Through Proposed Well Location "B"
- Plate 14: Uninterpreted 3D Seismic Trace 14152 Through Proposed Well Location "B"
- Plate 15: Interpreted 3D Seismic Trace 14152 Through Proposed Well Location "B"
- Plate 16: Maximum Negative Amplitude Display - Seafloor to Horizon 30 (Units 1, 2 and 3)
- Plate 17: Maximum Negative Amplitude Display - Horizon 30 to Horizon 40 (Unit 4)
- Plate 18: Maximum Negative Amplitude Display - Horizon 40 to Horizon 60 (Units 5 and 6)
- Plate 19: Top hole Formation and Geohazards Summary Sheet

Bernie Carre, February 2009





Location Map, Northern Gulf of Mexico
Proposed Mississippi Canyon Block 252 "B" Location

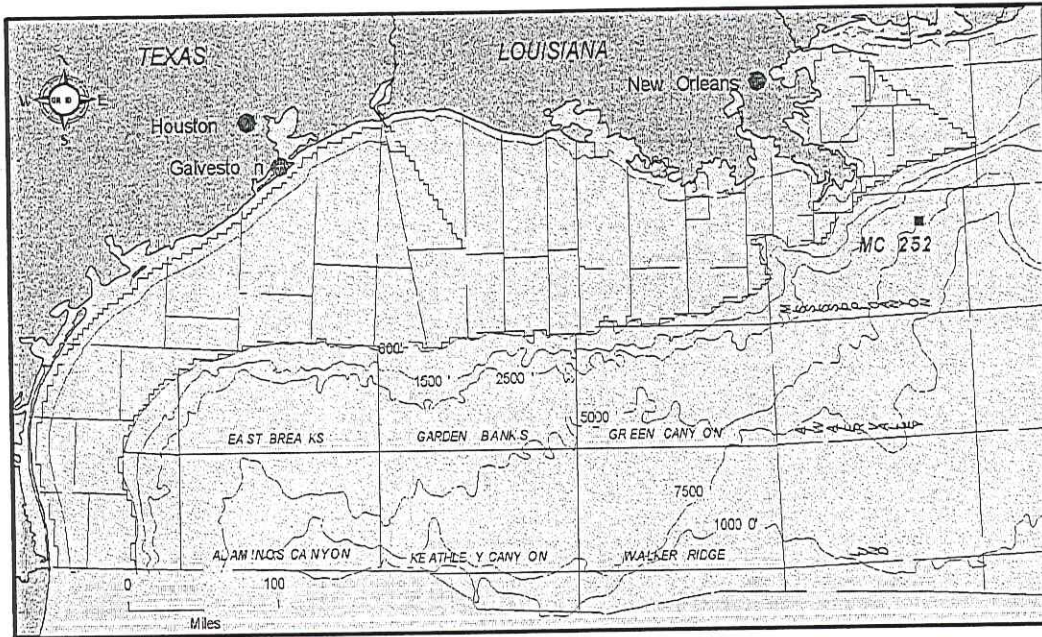
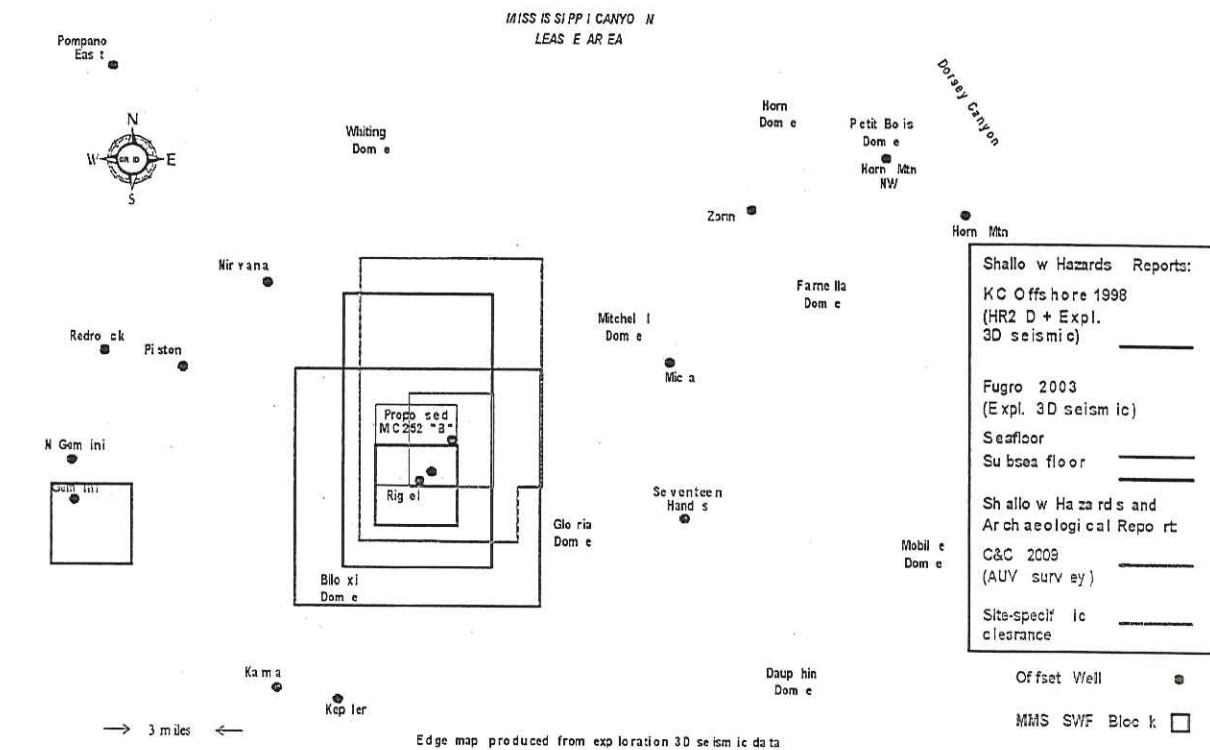


Plate 1



Regional Seafloor Morphology, Northeast Mississippi Canyon Area
Showing Existing Survey Coverage and Offset Wells
Proposed Mississippi Canyon Block 252 "B" Location



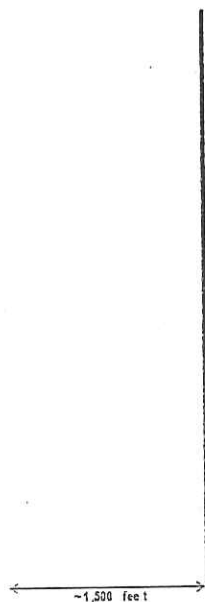


Exploration 3D Seismic Data - Power Spectrum (% Power)
Proposed Mississippi Canyon Block 252 "B" Location

Proposed MC 252 "B" Location

Flattened Seafloor

50 Hz



BP Seismic Project: mcm00014 Seismic Volume: C01T_REG_PrSTM_Kir_TGS07.b ri (2002 /3 TGS/ NO PEC @MC3 D Area 1 Survey)

Plate 3

CONFIDENTIAL

BP-HZN-2179MDL00001166



Exploration 3D Seismic Data - Power Spectrum (dB Power)
Proposed Mississippi Canyon Block 252 "B" Location

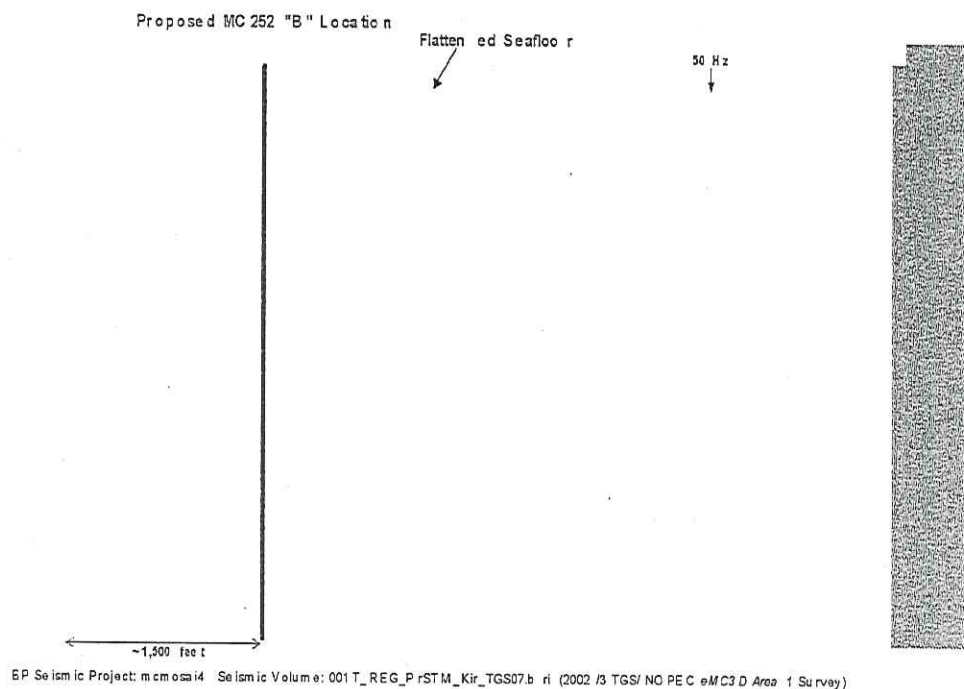


Plate 4



Exploration 3D Seismic Data - Seafloor Reflection Wavelet
Proposed Mississippi Canyon Block 252 "B" Location

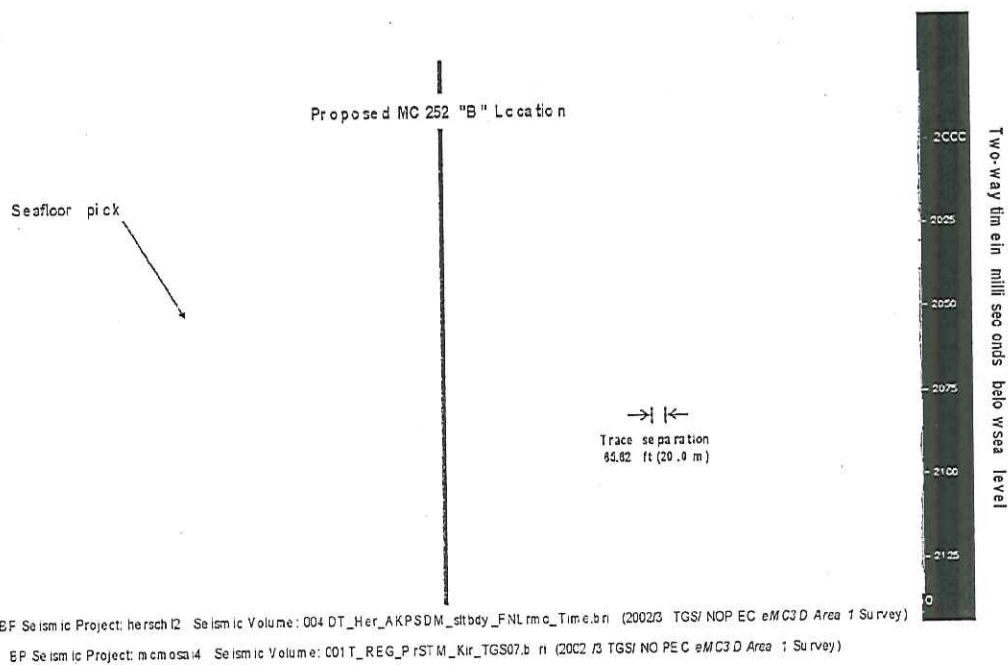


Plate 5

CONFIDENTIAL

BP-HZN-2179MDL00001168



Bathymetry Map

Proposed Mississippi Canyon Block 252 "B" Location

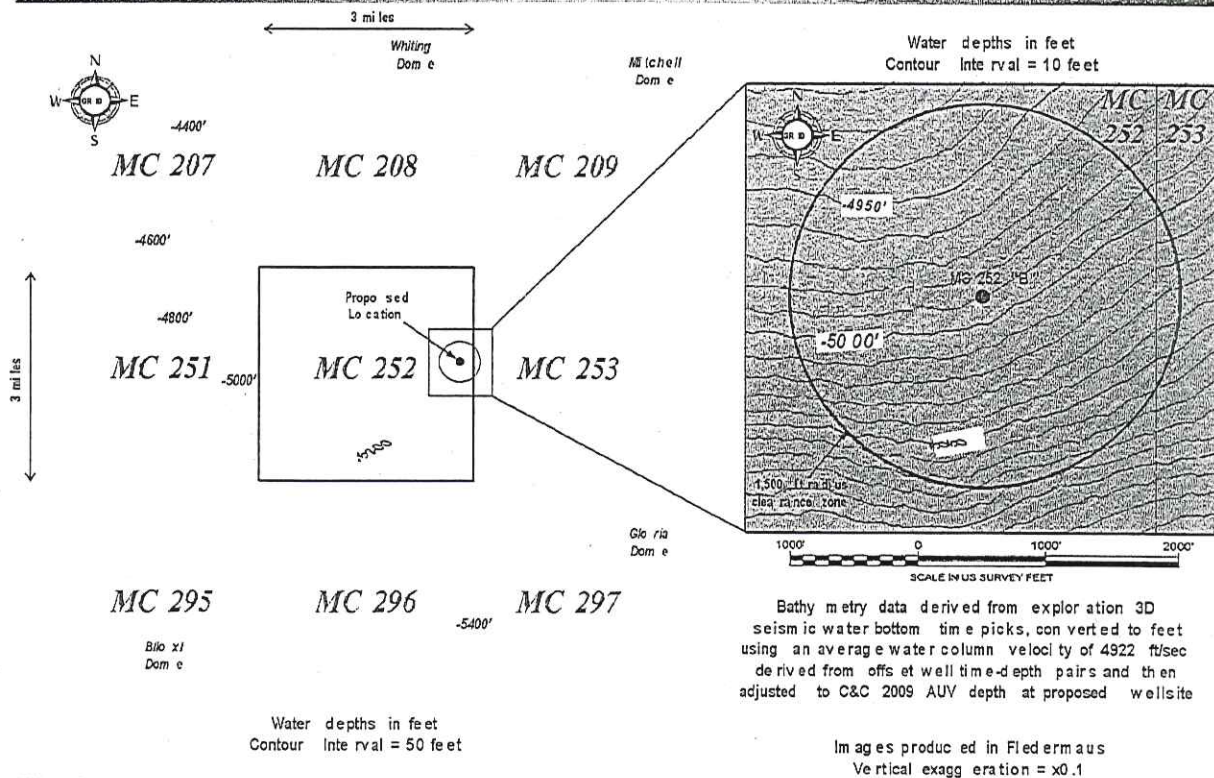
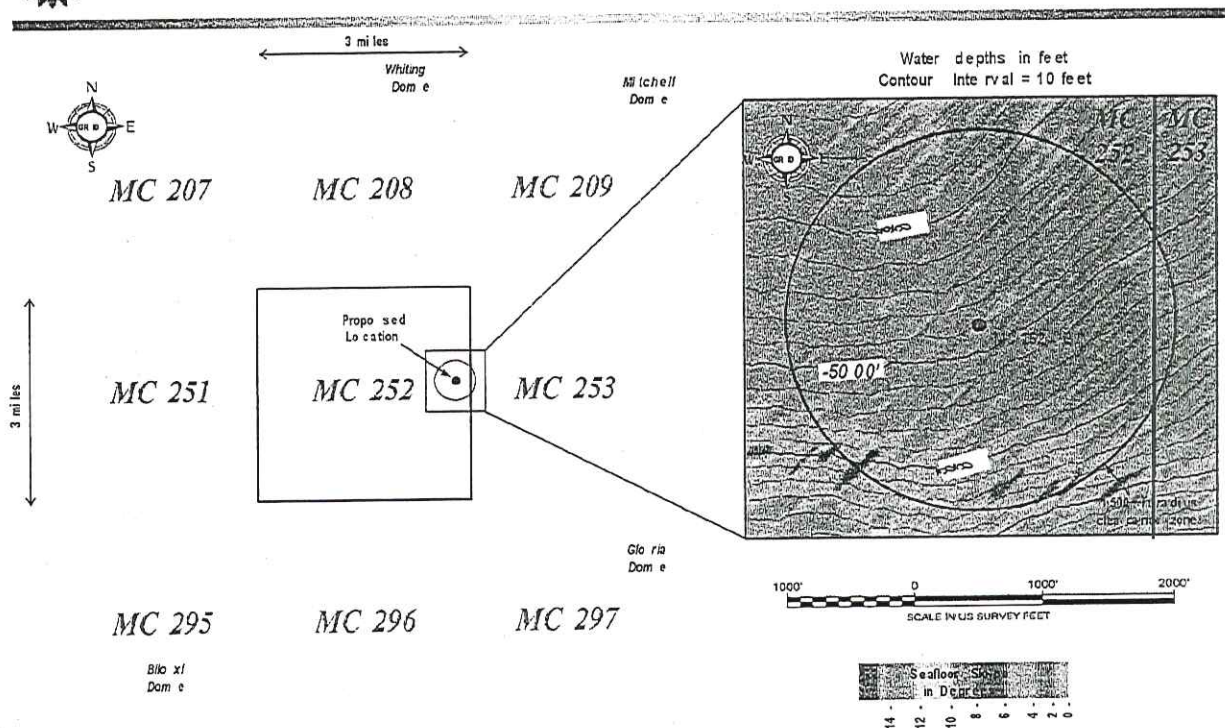


Plate 6



Seafloor Gradient Map Proposed Mississippi Canyon Block 252 "B" Location



Images produced in Fledermaus from 3-D seismic water bottom picks.
Vertical exaggeration = x0.1

Plate 7



3D Perspective View Looking to North Over MC25 2
Proposed Mississippi Canyon Block 252 "B" Location

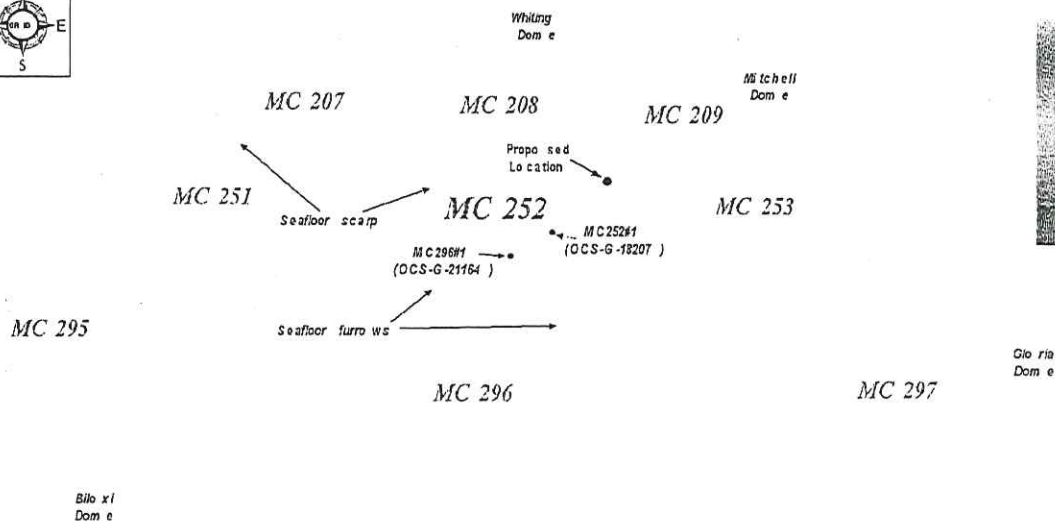
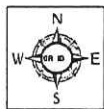


Image produced in Fledermaus from 3D seismic bathymetry data. Vertical exaggeration = x4
Sun illumination azimuth = 30°/180°

Plate 8



Seafloor Features Map - Fugro 2003
Proposed Mississippi Canyon Block 252 "B" Location

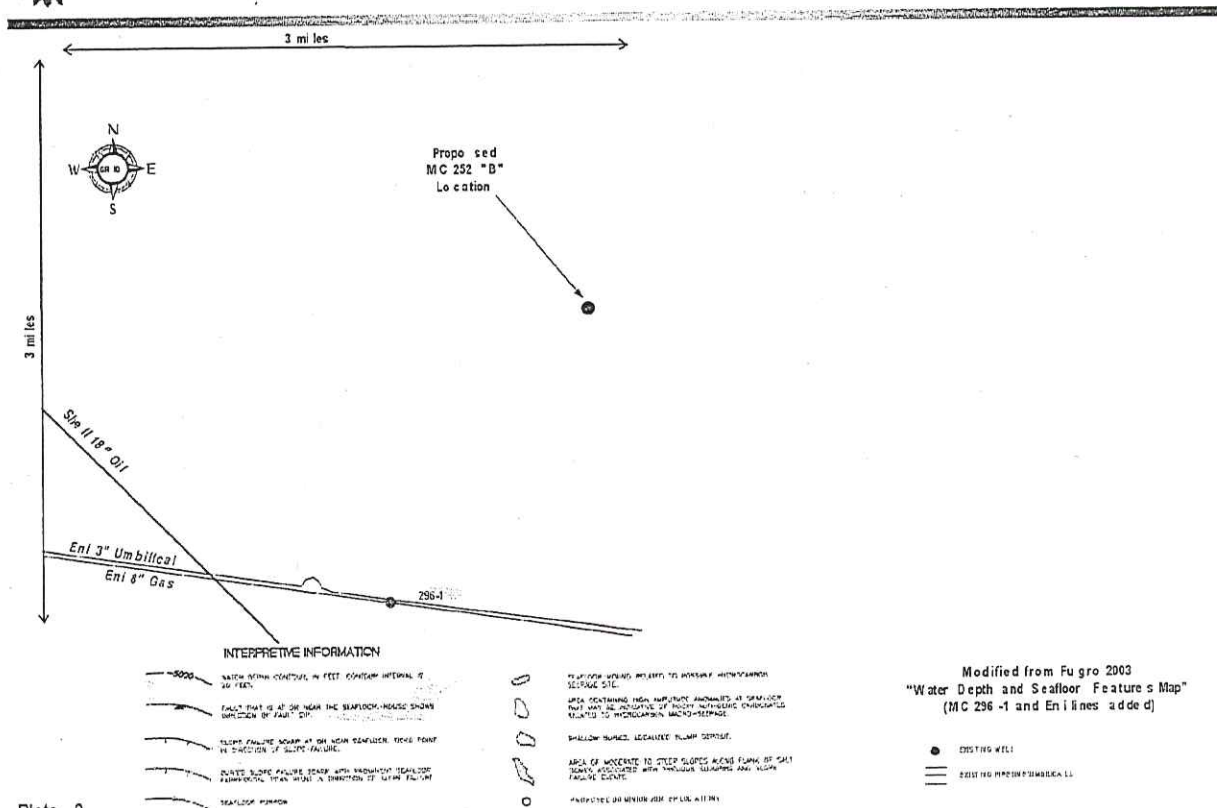


Plate 9



Seafloor Amplitude Map
Proposed Mississippi Canyon Block 252 "B" Location

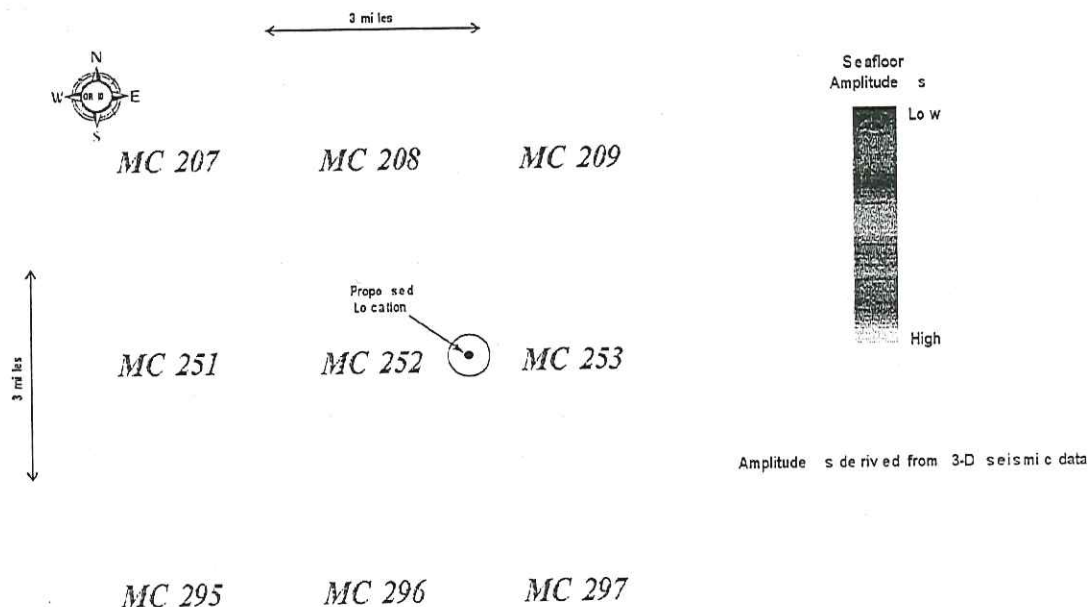


Plate 11

CONFIDENTIAL

BP-HZN-2179MDL00001174



Uninterpreted 3D Seismic Line 17277 Through Proposed Well Location "B"
Proposed Mississippi Canyon Block 252 "B" Location

NW

MC 25.2

SE

Proposed Location
1,500 ft 1,500 ft

(See Plate 10 for line location)

Two-Way-Time in Milliseconds

Gloria Salt

Max Pos

Relative Amplitudes

Max Neg

~5,000 ft

Plate 12



Interpreted 3D Seismic Line 17 277 Through Proposed Well Location "B"
Proposed Mississippi Canyon Block 252 "B" Location

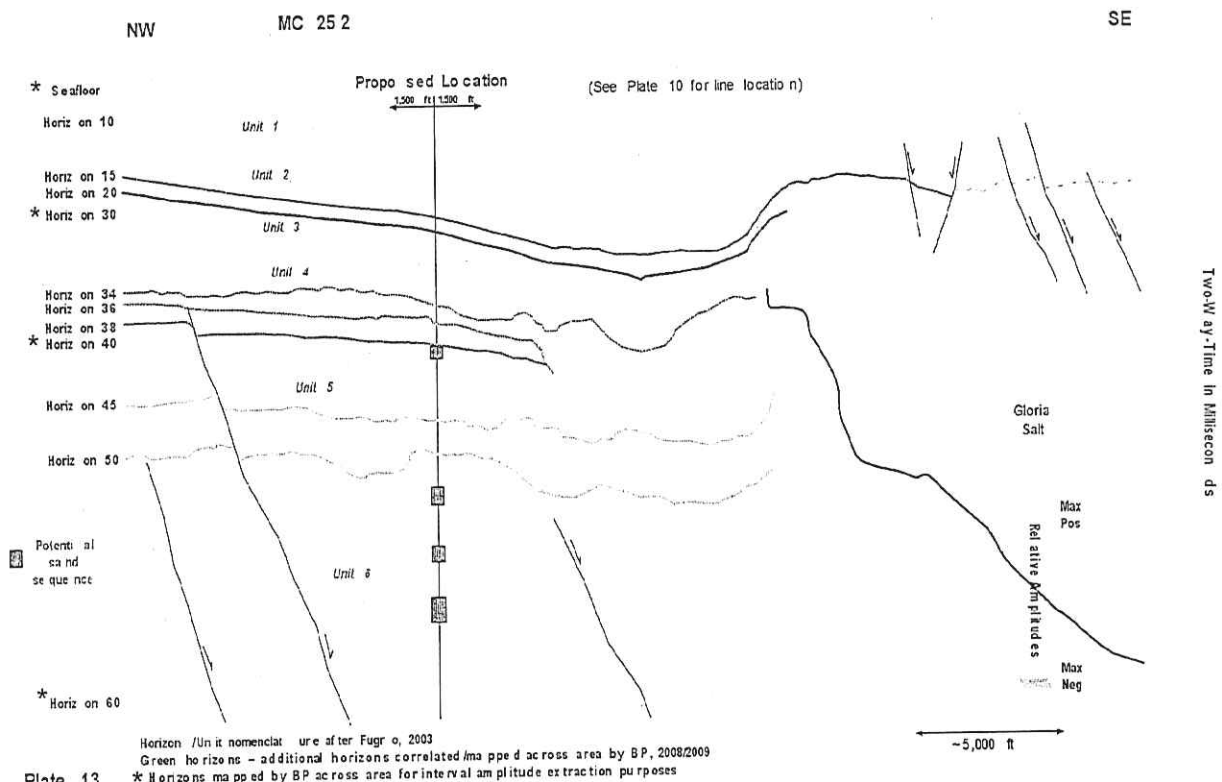


Plate 13



Uninterpreted 3D Seismic Trace 14152 Through Proposed Well Location "B"
Proposed Mississippi Canyon Block 252 "B" Location

SW

MC 252

NE

Proposed Location

1500 ft 1500 ft

(See Plate 10 for line location)

Mitchell
Salt

Relative Amplitudes
Max Pos
Max Neg

Two-Way-Time in Milliseconds

~5,000 ft

Plate 14



Interpreted 3D Seismic Trace 14152 Through Proposed Well Location "B"
Proposed Mississippi Canyon Block 252 "B" Location

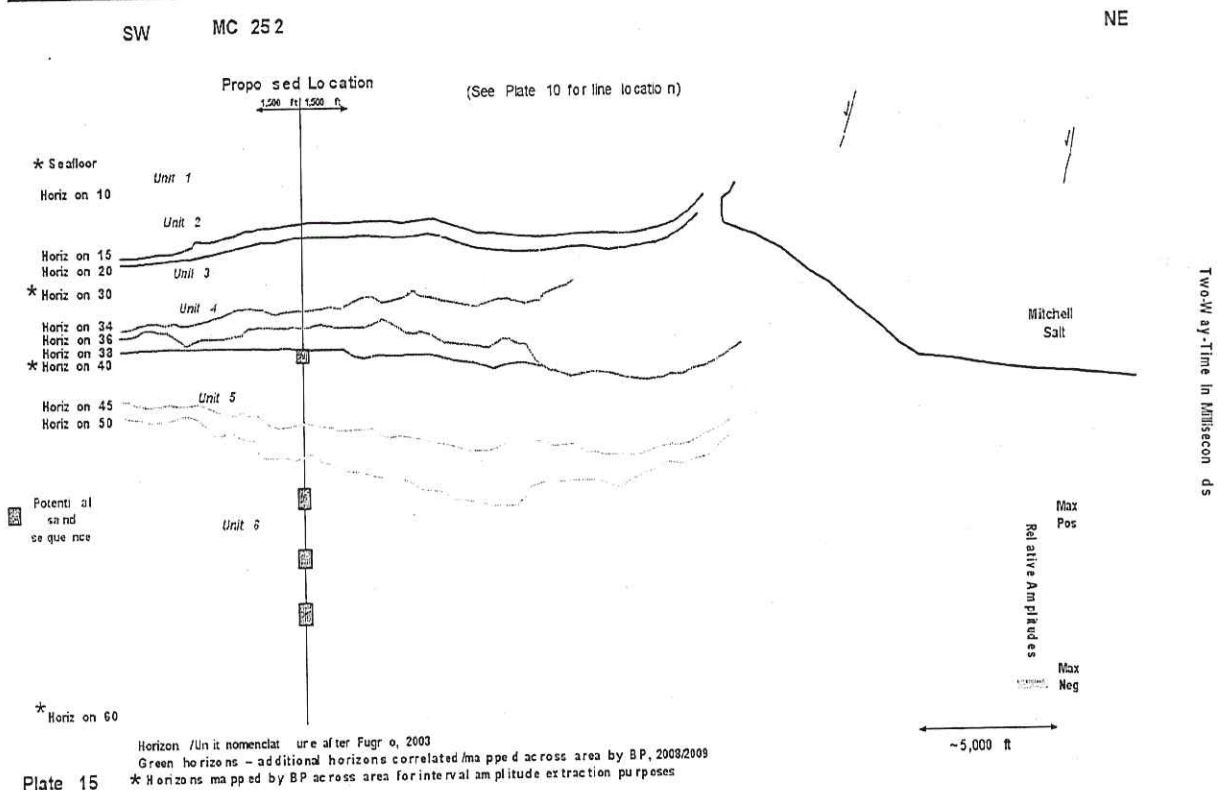


Plate 15

CONFIDENTIAL

BP-HZN-2179MDL00001178



Maximum Negative Amplitude Display - Seafloor to Horizon 30 (Units 1, 2 & 3)
Proposed Mississippi Canyon Block 252 "B" Location

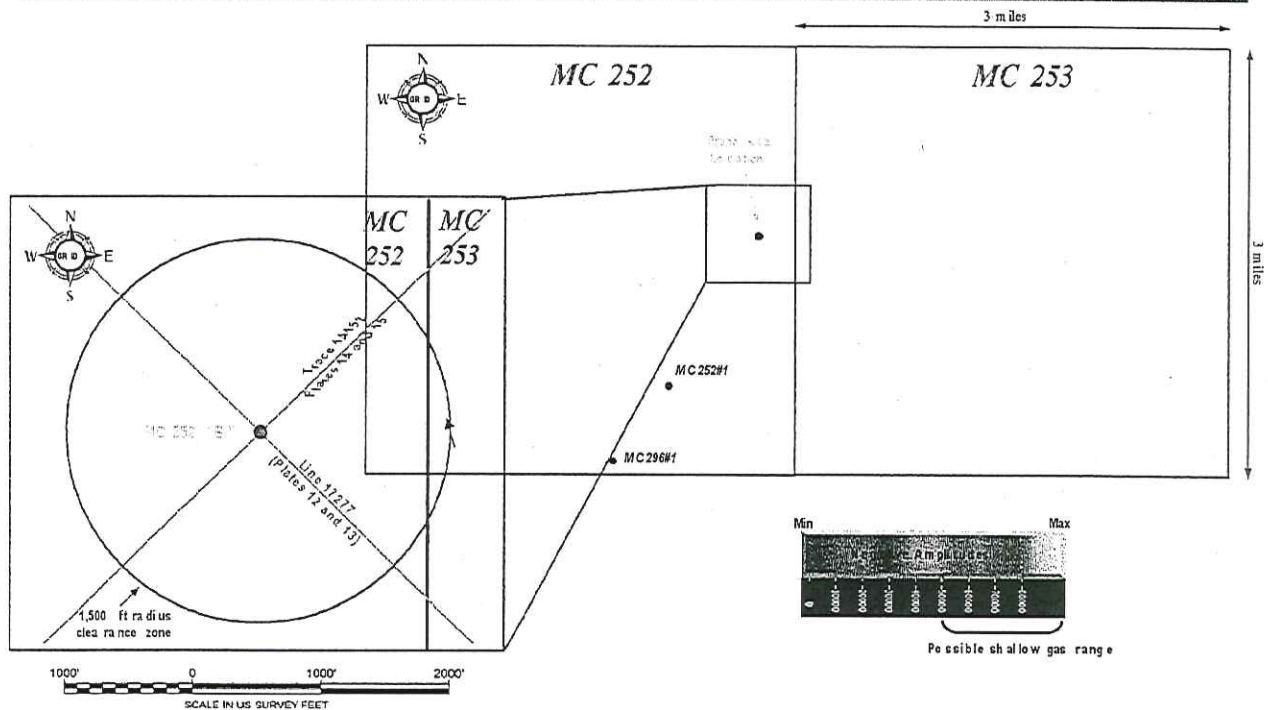


Plate 16



Maximum Negative Amplitude Display - Horizon 30 to Horizon 40 (Unit 4)
Proposed Mississippi Canyon Block 252 "B" Location

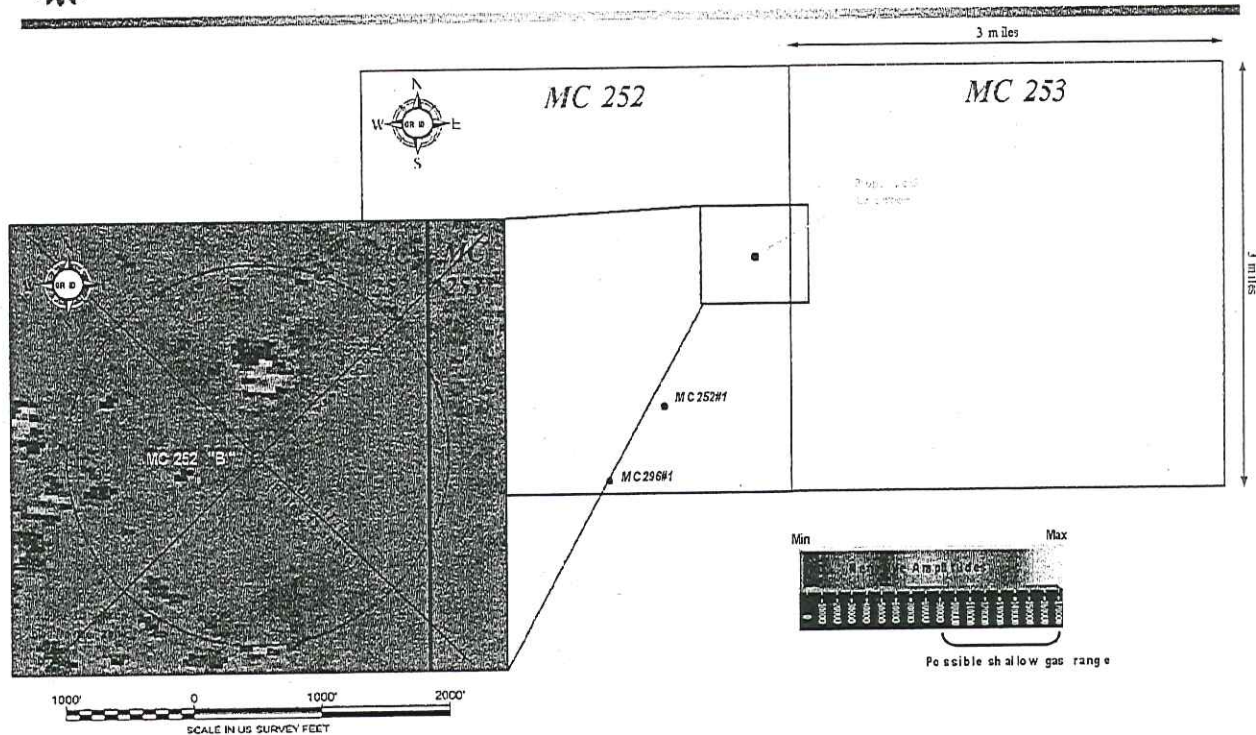


Plate 17



Maximum Negative Amplitude Display - Horizon 40 to Horizon 60 (Units 5 & 6)
Proposed Mississippi Canyon Block 252 "B" Location

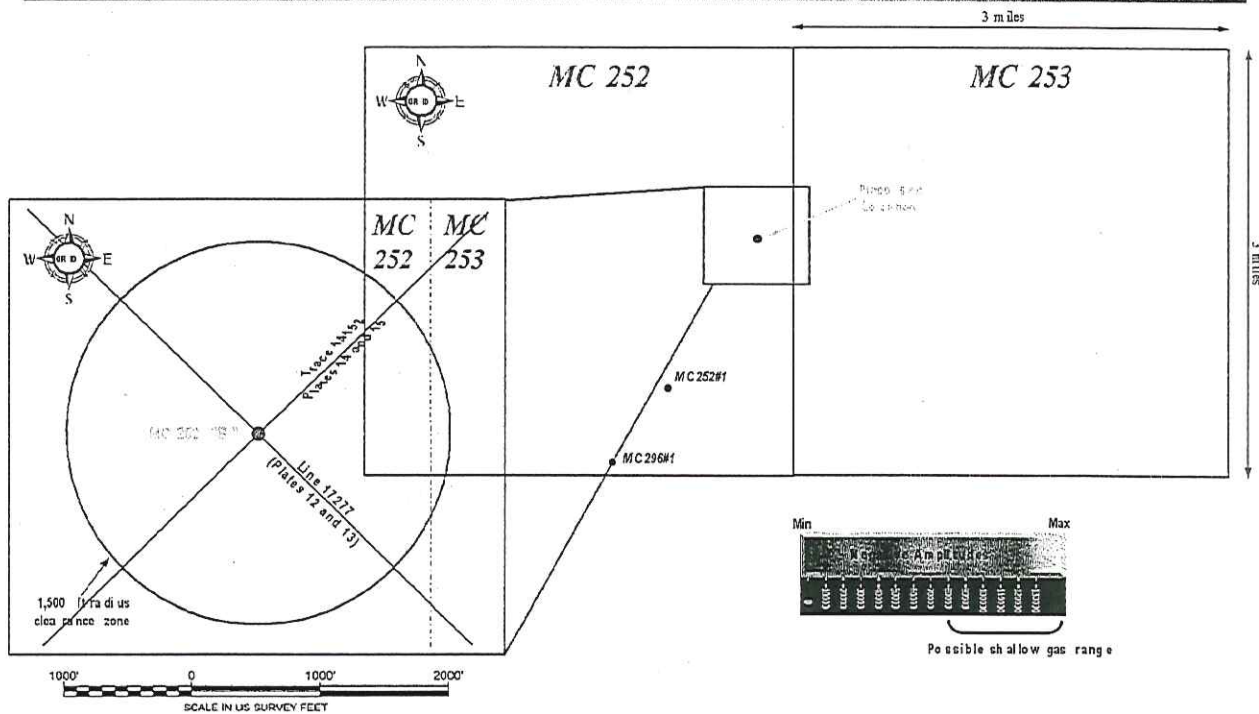


Plate 18



Tophole Formation and Geohazards Summary Sheet
Proposed Mississippi Canyon Block 252 "B" Location



MC252 "B" Mississippi Canyon 252 (CCS-G 3238 S)	Interpretation		Depth BS L (ft)	Depth SS L (ft)	TWT BS L (sec)	Interval Thickness (ft)	Comments	Hazards Risk	
	Stratigraphy	Lithology						Shallow Gas	Shallow Water Flow
	U1	Clay	0	1,992	2,036	323	Thinly bedded clay with sandstone, no gas - 323 to 324		
	U2	Clay	223	5,215	2,120	362	Massive clay with sandstone and thin clay-prone debris flows		
	U3	Clay	707	8,698	2,287	190	Interbedded marine clays and thin clay-prone debris flows		
	U4	Clay	827	8,818	2,340	184	Interbedded marine clays and thin clay-prone debris flows		
	U5	Clay	1,011	8,883	2,403	432	Interbedded marine clays and thin clay-prone debris flows		
	U6	Clay	1,466	8,498	2,962	154	Clay turbidites and debris flows		
	U7	Clay and sand	1,620	8,412	2,614	189	Clay and sandstone layers and possible debris flows		
	U8	Clay	1,811	8,883	2,673	172	Clay turbidites and thin debris flows		
	U9	Sand and silt	1,926	8,918	2,718	394	Continuous sand and silt with shallow gas to north		
	U10	Clay and possible sand	2,520	7,812	2,988	321	Interbedded clay turbidites and thin clay-prone debris flows with possible sand		
	U11	Clay and possible silt	2,851	7,813	3,012	382	Massive clay-prone debris flow with possible silt		
	U12	Continuous sand	3,142	8,115	3,142	382			
	U13	Continuous sand	3,164	8,144	3,185	485	Interbedded clay turbidites and debris flows with thin clay-prone debris flows		
	U14	Clay and sand	3,155	8,147	3,218	176			
	U15	Continuous sand	3,197	8,173	3,218	384			
	U16	Continuous sand	3,195	8,277	3,421	277			
	U17	Continuous sand	3,420	8,404	3,543	790			
	U18	Basal sand	5,232	8,284	3,721				
	U19	Basal sand							
	U20	Basal sand							
Risk level:  (Unit and Horizon name enclosure taken from Fugro, 2003)									

Plate 19

SECTION 4.0
Biological, Physical, and Socioeconomic Information
(250.216 and 250.247)

4.1 **Chemosynthetic Information**

Since the proposed seafloor disturbing activities are in water depths greater than 400 meters, maps, analysis, and a statement prepared using the guidance in Attachment B of NTL No. 2000-G20, "Deepwater Chemosynthetic Communities" are provided as attachments to Section 3.0.

Seafloor conditions capable of supporting high-density chemosynthetic communities are not expected within the mooring pattern or within 1,500 ft. of any proposed SEPL A anchor locations.

4.2 **Topographic Features Information**

MMS and NOAA Fisheries have entered into a programmatic consultation agreement for Essential Fish Habitat, which requires that no bottom disturbing activities may occur within 500 feet of the no-activity zone of a topographic feature. If such bottom disturbing activities are proposed, the MMS is required to consult with NOAA Fisheries.

4.2.1 Topographic features map - No bottom-disturbing activities (including rig placement, and rig or construction barge use of anchors, chains, cables, and wire ropes) proposed in this plan are within 305 meters (1000 feet) of the "No Activity Zone" of an identified topographic feature. Therefore the map described in Attachment 2, Section A, Item No. 1 of NTL No. 2004-G05, "Biologically Sensitive Areas of the Gulf of Mexico," dated April 1, 2004 is not required.

4.2.2 Topographic features statement (shunting) - This exploration plan does not propose to drill more than two wells from the same surface location located outside the 1-mile Zone but within the Protective Zone of an identified topographic feature. Therefore the statement described in Attachment 2, Section A, Item No. 2 of NTL No. 2004-G05 "Biologically Sensitive Areas of the Gulf of Mexico," dated April 1, 2004 is not required.

4.3 **Live Bottoms (Pinnacle Trend)**

MMS and NOAA Fisheries have entered into a programmatic consultation agreement for Essential Fish Habitat that relates to bottom-disturbing activities occurring within 100 feet of any Pinnacle Trend feature with vertical relief greater than or equal to 8 feet. Any such proposed activities would require MMS to consult with the NOAA Fisheries pursuant to the agreement.

Mississippi Canyon Block 252 is not located in the vicinity of a Pinnacle Trend area.

4.4 **Live Bottoms (Low Relief)**

The Live Bottom (low relief) stipulation is not attached to the lease for Mississippi Canyon Block 252. Therefore the map described in Attachment 6, Section A of NTL No. 2004-G05 "Biologically Sensitive Areas of the Gulf of Mexico," dated April 1, 2004 is not required.

4.5 **Potentially Sensitive Biological Features**

No bottom disturbing activities (including rig placement and rig or construction barge use of anchors, chains, cables, and wire ropes) within 30 meters (100 feet) of potentially sensitive biological features are proposed in this plan. Therefore the map described in Attachment 8, Section A of NTL No. 2004-G05 "Biologically Sensitive Areas of the Gulf of Mexico," dated April 1, 2004 is not required.

4.6 **Remotely Operated Vehicle (ROV) Monitoring Survey Plan**

Pursuant to NTL No. 2008-G06 "Remotely Operated Vehicle Surveys in Deepwater," operators may be required to conduct remotely operated vehicle (ROV) surveys during pre-spud and post-drilling operations for the purpose of biological and physical observations.

MC 252 is located in Grid 16. Therefore, according to the MMS website Grid EA and ROV Status Report, the ROV surveys will not be required for the proposed operations.

SECTION 4.0
Biological, Physical, and Socioeconomic Information
(250.216 and 250.247)

4.7 **Threatened or endangered species, critical habitat, and marine mammal information**

Twenty-nine species of marine mammals occur in the GOM. There are 28 species of cetaceans (7 mysticete and 21 odontocete species) and 1 sirenian species, the manatee. Five baleen whales, one toothed whale, and one sirenian occur in the GOM and are listed as endangered under the Endangered Species Act (ESA):

- ☐ The Northern Right Whale
- ☐ The Blue Whale
- ☐ The Fin Whale
- ☐ The Sei Whale
- ☐ The Humpback Whale
- ☐ The Sperm Whale
- ☐ The West Indian Manatee

The sperm whale is common in oceanic waters of the northern GOM and appears to be a resident species, while the baleen whales are considered rare or extralimital in the Gulf. The West Indian manatee typically inhabits only coastal marine, brackish, and freshwater areas.

Five sea turtles inhabit the waters of GOM and are listed as endangered: the Leatherback, Green, Hawksbill, Kemp's Ridley, and Loggerhead turtle. These five species are all highly migratory, and no individual members of any of these species are likely to be year-round residents of the proposed area of interest.

There are no critical habitats designated within the Gulf of Mexico for the threatened and endangered species listed above.

Additional information can be found in Section 14.0 of this Plan.

4.7 **Archaeological Report**

Pursuant to NTL No. 2005-G07 "Archaeological Resource Surveys and Reports", and further clarified in NTL NO. 2006-G07 "Revisions to the List of OCS Lease Blocks Requiring Archaeological Resource Surveys and Reports", lessees proposing bottom-disturbing activities in areas that have been identified as "High Probability Shipwreck blocks or Prehistoric areas" must submit an archaeological report or reference to such a report if it has already been provided to the Regional Supervisor.

Mississippi Canyon Block 252 is located in a block designated as a High Probability Shipwreck or Prehistoric Area. An Archaeological Assessment is included with the plan.

SECTION 5.0
Waste and Discharge Information
(250.217 and 250.248)

The Minerals Management Service (MMS), U.S. Coast Guard (USCG) and the U.S. Environmental Protection Agency regulate the overboard discharge and/or disposal of operational waste associated with oil and gas exploration and production activities.

5.1 Projected Generated Wastes

The term disposed wastes describes those wastes generated by the proposed activities that are disposed of by means other than by releasing them into the waters of the Gulf of Mexico at the site where they are generated. These wastes can be disposed of by offsite release, injections, encapsulation, or placement at either onshore or offshore permitted locations for the purpose of returning them back to the environment.

A table providing information on the projected solid and liquid wastes likely to be generated by the proposed activities is included below:

Type of Waste	Composition	Projected Amount
Spent drilling fluids	Water-based drilling muds	20,000 bbls/well
Cuttings containing synthetic-based mud	Cuttings coated with synthetic based drilling muds	4000 bbls/well
Trash	Trash and Debris	18,000 cu. ft.
Drill cuttings associated with water-based fluids	Cuttings coated with water based drilling muds	1800 bbls
Sanitary wastes (Onniture unit)	Sanitary wastes from living quarters	10,000 bbls

5.2 Projected Ocean Discharge

The term discharges describes those wastes generated by the proposed activities that will be disposed of by releasing them into the waters of the Gulf of Mexico at the site where they are generated, usually after receiving some form of treatment before they are released, and in compliance with applicable NPDES permits or State requirements.

BP has requested coverage under the EPA Region VI NPDES General Permit GMG290110 for discharges associated with exploration activities in Mississippi Canyon Block 252, and will take applicable steps to ensure all offshore discharges associated with the proposed operations will be conducted in accordance with the permit.

A table describing solid and liquid wastes to be discharged overboard is included below:

Type of Waste	Total Amount to be Discharged	Discharge Rate	Discharge Method
Water-based Drilling Fluid	20,000 bbls	1800 bbls/hr	Riserless drilling, discharged at the mudline
Drill cuttings associated with water-based fluids	1,800 bbls	400 bbls/hr	Riserless drilling discharged at the mudline
Drill cuttings associated with	4000 bbl	100 bbl/hr	Discharge overboard through

SECTION 5.0
Waste and Discharge Information
(250.217 and 250.248)

Type of Waste	Total Amount to be Discharged	Discharge Rate	Discharge Method
synthetic based fluids			shunt line to 40' below waterline.
Sanitary wastes (Omnipure unit)	10,000 bbls	3600 gallons/day	Block Chlorinate and Discharge overboard
Domesticwastes	30 gal/person/day	Not applicable	Block Remove floating solids, discharge overboard
Deck drainage	Dependant upon rainfall and deck washdown	Not applicable	Block Remove oil and grease, discharge overboard

SECTION 6.0
Air Emissions Information
(250.218 and 250.249)

Offshore air emissions related to the proposed activities result mainly from the drilling rig operations, helicopters and service vessels. These emissions occur mainly from combustion or burning of fuels and natural gas and from venting or evaporation of hydrocarbons. The combustion of fuels occurs primarily on diesel-powered generators, pumps, motors and from lighter fuel motors.

Primary air pollutants associated with OCS activities are nitrogen oxides, carbon monoxide, sulphur oxides, volatile organic compound and suspended particulate.

- 6.1 Emissions worksheets and screening questions** - Plan emissions were calculated using the methodology, emission factors, and worksheets in Form MMS-138 for Exploration Plans and are attached to this section of the Exploration Plan.

Screening questions and emissions summary are described in the tables below. The Plan Emissions and the Complex Total Emissions are the same.

Yes	No	Air Quality Screening Questions
	X	Is any calculated Complex Total (CT) Emission amount (in tons) associated with your proposed exploration activities more than 90% of the amounts calculated using the following formulas: $CT = 2400D^{2/3}$ for CO, and $CT = 33.3D$ for the other air pollutants (where D = distance to shore in miles)?
	X	Do your emission calculations include any emission reduction measures or modified emission factors?
X		Are your proposed exploration activities located east of 87.5° W longitude?
	X	Do you expect to encounter H ₂ S at concentrations greater than 20 parts per million (ppm)?
	X	Do you propose to flare or vent natural gas for more than 48 continuous hours from any proposed well?
X		Do you propose to burn produced hydrocarbon liquids?

Air Quality Emissions Summary					
Year	Emitted Substance				
	PM	SO _x	NO _x	VOC	CO
2009	38.60177.051326.70			39.80289.46	
2010	38.60177.051326.70			39.80289.46	
Allowable	1598.40	1598.40	1598.40	1598.40	44906.21

- 6.2 Contact Information** - Information for a contact who calculated the projected Plan Emissions and exemption amounts and can answer questions regarding the same is listed below:

Megan Parks
 BP Exploration & Production Inc.
 281.366.8296
Megan.parks@bp.com

- 6.3 Modeling Report** - An Offshore Coastal Dispersion (OCD) Modeling Report for the proposed operations is not required for the operations proposed in this EP.

SECTION 6.0
Air Emissions Information
(250.218 and 250.249)

6.4 Attachments to section 6.0

☐ Form MMS-138 worksheets

EXPLORATION PLAN (EP)
AIR QUALITY SCREENING CHECKLIST

OMB Control No. 1010-0049
OMB Approval Expires: August 31, 2006

COMPAN Y	BP Exploration & Production Inc.
ARE A	Mississippi Canyon
BLOC K	252
LEASE	OCS-G32306
PLATFORM	
WELL	A & B
COMPANY CONTACT	Megan Parks
TELEPHONE NO.	281-366-8296
REMARK S	Drill and temporarily abandon 2 exploratory wells.

EMISSIONS CALCULATIONS 1ST YEAR

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL		CONTACT	PHONE	REMARKS							
3P Exploration & Production	Marathon 20000	252	OCC-G2208	A & J			Myer, Pam	201-365-0794								
OPERATIONS	EQUIPMENT	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR					ESTIMATED TONS				
	Diesel Engines	HP	GAL/HR	SCFD												
	Nat. Gas Engines	HP	SCFH-R	SCFD												
	Burners	MBTU/HR	SCFH-R	SCFD	HRD	DAYS	PN	SOx	NOx	VOC	CO	PM	SOx	NOx	VOC	CO
DRILLING Marianas MODU	PRIME MOVER-600hp diesel	3800	173.33	11128.00	24	100	7.54	11.84	87.22	2.82	18.03	3.12	17.75	278.14	3.37	88.88
	PRIME MOVER-600hp diesel	3800	173.33	4173.12	24	100	2.54	11.84	87.22	2.82	18.03	3.04	13.87	164.87	3.14	22.34
	PRIME MOVER-600hp diesel	3800	173.33	4173.12	24	100	2.54	11.84	87.22	2.82	18.03	3.04	13.87	164.87	3.14	22.34
	PRIME MOVER-600hp diesel	3800	173.33	4173.12	24	100	2.54	11.84	87.22	2.82	18.03	3.04	13.87	164.87	3.14	22.34
	PRIME MOVER-600hp diesel	3800	173.33	4173.12	24	100	2.54	11.84	87.22	2.82	18.03	3.04	13.87	164.87	3.14	22.34
	PRIME MOVER-600hp diesel	3800	173.33	4173.12	24	100	2.54	11.84	87.22	2.82	18.03	3.04	13.87	164.87	3.14	22.34
Tugs to move MODU	VESSLS-600hp diesel(support)	18500	788.85	19128.00	24	8	11.83	53.35	389.72	11.99	87.22	1.12	5.12	38.38	1.15	8.37
	VESSLS-600hp diesel(support)	13500	852.85	15848.20	24	8	9.52	43.85	327.89	9.31	71.37	0.91	4.19	31.40	0.94	6.25
	VESSLS-600hp diesel(support)	13500	852.85	15848.20	24	8	9.52	43.85	327.89	9.31	71.37	0.91	4.19	31.40	0.94	6.25
	VESSLS-600hp diesel(support)	15000	724.5	17388.00	24	8	10.57	48.50	363.44	10.00	78.30	1.01	4.88	34.39	1.05	7.61
	VESSLS-600hp diesel(support)	15000	724.5	17388.00	24	8	10.57	48.50	363.44	10.00	78.30	1.01	4.88	34.39	1.05	7.61
Anchor handling	VESSLS-600hp diesel(support)	15000	724.5	17388.00	24	36	10.57	48.50	363.44	10.00	78.30	3.01	17.48	110.34	3.93	28.55
Anchor handling	VESSLS-600hp diesel(support)	15000	724.5	17388.00	24	12	10.57	48.50	363.44	10.00	78.30	1.52	8.08	52.33	1.57	11.42
Support vessels for rig	VESSLS-600hp diesel(crow)	6800	310.78	7850.72	8	100	4.85	21.34	159.91	4.30	34.39	1.28	3.54	63.88	1.02	13.36
	VESSLS-600hp diesel(support)	3400	184.22	3941.28	8	100	2.40	10.99	82.38	2.47	17.97	0.72	3.30	24.71	0.74	5.39
	VESSLS-600hp diesel(support)	3400	184.22	3941.28	8	100	2.40	10.99	82.38	2.47	17.97	0.72	3.30	24.71	0.74	5.39
	MISC	BPD	SCFH-R	COUNT							0.00				0.00	
	TANK	0			0	0					0.00				0.00	
DRILLING	OIL BURN	0		0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.80
WELL TEST	GAS FLARE	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2009 YEAR TOTAL							99.00	454.14	3402.97	102.09	742.47	38.60	177.05	1326.70	39.80	289.45
EXEMPTION CALCULATION	DISTANCE FROM LAID IN MILES											1598.40	1598.40	1598.40	1598.40	44506.21
	43.0															

EMISSIONS CALCULATIONS 1ST YEAR

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL	CONTACT					PHONE	REMARKS				
BP Exploration & Production	Marathon, De Wier	222	CCO-022204	A-4-3		Major Path					701-350 0094					
OPERATIONS	EQUIPMENT	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR					ESTIMATED TONS				
	Diesel Engines	HP	GAL/HR	GAL/D												
	Nat. Gas Engines	HP	SCFH-R	SCFD												
	Burners	MMBTU/HR	SCFH-R	SCFD	HWD	DAYS	PM	SOx	NOx	VOC	CO	PM	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>800hp diesel	3000	173.33	11179.00	24	100	2.54	11.84	87.22	2.82	19.03	3.12	17.75	278.14	2.37	80.40
Varianas MODU	PRIME MOVER>800hp diesel	3000	173.33	4173.12	24	100	2.54	11.84	87.22	2.82	19.03	3.84	13.87	164.87	3.14	22.34
	PRIME MOVER>800hp diesel	3000	173.33	4173.12	24	100	2.54	11.84	87.22	2.82	19.03	3.84	13.87	164.87	3.14	22.34
	PRIME MOVER>800hp diesel	3000	173.33	4173.12	24	100	2.54	11.84	87.22	2.82	19.03	3.84	13.87	164.87	3.14	22.34
	PRIME MOVER>800hp diesel	3000	173.33	4173.12	24	100	2.54	11.84	87.22	2.82	19.03	3.84	13.87	164.87	3.14	22.34
	PRIME MOVER>800hp diesel	3000	173.33	4173.12	24	100	2.54	11.84	87.22	2.82	19.03	3.84	13.87	164.87	3.14	22.34
Tugs to move MODU	PRIME MOVER>800hp diesel	1950	84.125	2288.44	24	100	1.37	6.31	47.25	1.42	10.31	1.85	7.57	58.70	1.70	12.37
	VESSEL>800hp diesel(support)	18500	788.85	19126.30	24	8	11.83	53.35	389.71	11.89	87.22	1.12	5.12	30.38	1.15	8.37
	VESSEL>800hp diesel(support)	13500	852.85	15849.20	24	8	9.52	43.85	327.09	9.01	71.37	0.91	4.19	31.40	0.94	6.25
	VESSEL>800hp diesel(support)	13500	852.85	15849.20	24	8	9.52	43.85	327.09	9.01	71.37	0.91	4.19	31.40	0.94	6.25
	VESSEL>800hp diesel(support)	15000	724.5	17388.00	24	8	10.57	48.50	363.44	10.80	79.30	1.81	4.88	34.39	1.85	7.61
Anchor handling	VESSEL>800hp diesel(support)	15000	724.5	17388.00	24	38	10.57	48.50	363.44	10.80	79.30	3.81	17.48	130.04	3.93	28.55
	VESSEL>800hp diesel(support)	15000	724.5	17388.00	24	12	10.57	48.50	363.44	10.80	79.30	1.52	8.03	52.33	1.57	11.42
Support vessels for rig	VESSEL>800hp diesel(crew)	8000	319.78	7658.72	8	100	4.86	21.34	159.81	4.30	34.80	1.20	8.54	63.06	1.02	13.98
	VESSEL>800hp diesel(support)	3400	184.22	3841.23	8	100	2.40	10.99	82.38	2.47	17.97	6.72	3.30	24.71	0.74	5.19
	VESSEL>800hp diesel(support)	3400	184.22	3841.23	8	100	2.40	10.99	82.38	2.47	17.97	6.72	3.30	24.71	0.74	5.19
	MISC	BPD	SCFH-R	COUNT												
	TANK-	0			0	0					0.00				0.00	
DRILLING	OIL BURN	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WELL TEST	GAS FLARE	0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2009 YEAR TOTAL							99.00	454.14	3402.97	102.09	742.47	38.60	177.05	1326.70	39.80	289.46
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											1598.40	1598.40	1598.40	1598.40	44506.21
	43.0															

SUMMARY

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL
BP Exploration	Mississippi Canyon	252	CCS-G32308	A & B	
Year	Emitted		Substance		
	PM	SOx	NOx	VOC	CO
2009	38.60	177.05	1326.70	39.80	289.46
2010	38.60	177.05	1326.70	39.80	289.46
Allowable	1598.40	1598.40	1598.40	1598.40	44906.21

SECTION 7.0
Oil Spills Information
(250.219 and 250.250)

7.1 Oil Spill Response Planning

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

7.1.1 Regional OSRP Information - All proposed activities and facilities in this Exploration Plan will be covered by the Oil Spill Response Plan filed by BP America Inc. (MMS company number 21591) and includes BP Exploration & Production Inc. (MMS company number 02481) in accordance with 30 CFR 254 and approved on November 14, 2008.

7.1.2 Spill Response Sites- Information on the location of the primary spill response equipment and the location of planned staging area(s) that would be used in the unlikely event of an oil spill resulting from the activities proposed in this plan is provided in the table below.

Primary Response Equipment Location	Preplanned Staging Location(s)
Belle Chasse, LA	Port Fourchon, LA
New Iberia, LA Morgan City, LA	

7.1.3 OSRO Information - BP utilizes the National Response Corporation (NRC) and the Marine Spill Response Corporation (MSRC) as the primary providers for oil spill removal equipment. The MSRC STARS network provides for the closest available personnel, as well as an MSRC supervisor to operate the equipment.

7.1. Worst-Case Scenario Determination - A comparison of the appropriate worst-case scenario from BP's approved regional OSRP with the worst-case scenario from the proposed activities in this Exploration Plan is provided in the table below. The proposed activities are within ten miles seaward of the coastline therefore the "near-shore" worst-case scenario is provided as well as the "exploration" worst-case scenario.

Category	Regional OSRP (Exploration)	EP
Type of Activity	Exploration Drilling	Exploration Drilling
Facility Location	MC 727	MC 252
Facility Designation	MODU	MODU
Distance to Nearest Shoreline	50	49 miles
Volume Uncontrolled Blowout (per day)	300,000	162,000
Type of Oil(s)	Crude Oil	Crude Oil
API Gravity	28°	33° (estimated)

Since BP Exploration & Production Inc. has the capability to respond to the appropriate worst-case spill scenario included in its regional OSRP approved on November 14, 2008, and since the worst-case scenario determined for our Exploration Plan does not replace the appropriate worst-case scenario in our regional OSRP, I hereby certify that BP Exploration & Production Inc. 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 Exploration Plan.

7.1.5 Oil spill response discussion - a discussion of response to an oil spill resulting from the activities proposed in this plan is not required for this Exploration Plan.

SECTION 7.0
Oil Spills Information
(250.219 and 250.250)

7.2 Modeling report

A model of a potential oil or hazardous substance spill is not required for the activities proposed in this plan.

SECTION 8.0
Environmental Monitoring Information
(250.221 and 250.252)

8.1 Monitoring Systems

8.1.1 Operational personnel have been instructed to check for pollution frequently during their tour of duty and, in the event pollution is spotted, to identify and shut-off the source and make immediate notifications as per instructions provided in Section 2 and 3 of BP's approved OSRP, Volume II.

8.1.2 In accordance with the provisions of Title 30 CFR Part 250.417(e) and NTL 2009-G02 "Deepwater Ocean Current Monitoring on Floating Facilities" dated January 27, 2009, the MODU will be equipped with an Acoustic Doppler Current Profile (ADCP) current monitoring system onboard to ensure continuous monitoring and gathering of ocean current data on a real-time basis from the ocean surface and seafloor.

8.2 Incidental Takes

BP does not anticipate that any protected species might be incidentally taken during operations proposed in this plan. All activities will be conducted in adherence to NTL 2007-G03 "Marine Trash and Debris Awareness Training and Elimination", NTL 2007-G04 "Vessel Strike Avoidance and Injured/Dead Protected Species Reporting" and NTL 2007-G-02 "Implementation of Seismic Survey Mitigation and Protected Species Observer Program". Monitoring activities are conducted by all personnel on vessels, rigs and platforms to prevent accidental loss of materials overboard and to report sightings of injured/dead protected species. Vessel personnel conduct continual watch while underway to prevent takes through avoidance and to immediately report any observations of injured or dead mammals/turtles, regardless of cause.

Visual and/or passive acoustic monitoring of the area surrounding the sound source will be done by trained marine mammal observers as part of borehole seismic surveys. Visual observers will conduct the NTL prescribed monitoring program during day light hours. Passive acoustic monitoring will be used to monitor and clear the exclusion zone if a night time operation is scheduled.

8.3 Flower Garden Banks National Marine Sanctuary

The proposed activities are not located within the Protective Zones of the Flower Garden Banks or Stetson Bank.

SECTION 9.0
Lease Stipulation Information
(250.222 and 250.253)

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

9.1 Stipulation 3 - Military Area (ETWA-1F)

The military warning area stipulation has been applied to blocks in military warning areas to mitigate potential multiple-use conflicts. The stipulation reduces potential impacts, primarily those associated with safety, by curtailing OCS operations and support activities in areas where military operations are being conducted. One of the requirements of this stipulation is that the operator notify the military prior to conducting oil and gas activities; and if required, enter into an agreement to provide for positive control of boats, ships, and aircraft operating into the warning areas.

Mississippi Canyon 252 is located within the designated Eglin Water Test Area EWTA-1F. Therefore, in accordance with the requirements of the referenced stipulation, BP will contact the Air Force Development Test Center, Eglin AFB in order to coordinate and control the electromagnetic emissions, boats, ships, and aircraft in the area during the proposed operations.

SECTION 10.0
Environmental Mitigation Measures Information
(250.223 and 250.254)

10.1 A description of the measures that would be taken to avoid, minimize, and mitigate impacts to the marine and coastal environments and habitats, biota, and threatened and endangered species is not required for this plan.

10.2 Incidental Takes - BP does not anticipate that any protected species might be incidentally taken during operations proposed in this plan. All activities will be conducted in adherence to NTL 2007-G03 "Marine Trash and Debris Awareness Training and Elimination", NTL 2007-G04 "Vessel Strike Avoidance and Injured/Dead Protected Species Reporting" and NTL 2007-G-02 "Implementation of Seismic Survey Mitigation and Protected Species Observer Program". Mitigation to prevent takes varies based on the activity underway and it can include 1) worker training on waste management and trash and debris containment procedures to avoid accidental loss overboard and its potential impact on protected species; 2) vessel procedures to slow down or stop when a protected species is observed; 3) protected species observer program with associated ramp up, shut down and shot pause procedures during seismic operations (VSP).

SECTION 11.0
Support Vessels and Aircraft Information
(250.224 and 250.257)

11.1 General

The table below provides information regarding the vessels and aircraft that will be used to support the activities proposed in this plan.

Type	Maximum Fuel Tank Storage Capacity	Maximum No. in Area at Any time	Trip Frequency or Duration
Aircraft-Helicopter	300 gallons	1	1 trip daily
Crew boat	36,000 gallons	1	1 trip daily
Work boat	152,000 gallons	2	1 trip daily

11.2 Diesel Oil Supply Vessels

Additional information on the vessels used to supply diesel oil is not required for the activities proposed in this plan.

11.3 Drilling Fluids Transportation

The proposed activities are not located in an area where the State of Florida is an affected state. Therefore, information on the projected drilling fluids transported from the onshore support facilities to the drilling unit is not required.

11.4 Solid and Liquid Wastes Transportation

Information regarding the transport of any of the solid and liquid wastes from the site of the proposed activities to other offshore structures or to temporary or permanent onshore facilities for storage disposal is not required for the operations proposed in this plan.

11.5 Vicinity Map

A map showing the location of the proposed activities relative to the shoreline, 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 drilling unit is provided as an attachment to this section.

11.6 Attachments to Section 10.0

□ Vicinity Map

SECTION 12.0
Onshore Support Facilities Information
(250.225 and 250.258)

The onshore support base for the proposed operations will be in Fourchon, Louisiana. Block 252 is located approximately 190 miles from the nearest Louisiana shoreline and approximately 242 miles from the onshore support base located in Fourchon, Louisiana.

12.1 General

The following table provides information of the onshore facility that will be used to provide supply and service support for the activities proposed in this plan.

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

The C-Port Fourchon, Louisiana facility provides a vehicle parking lot, office space, radio communication equipment, outside and warehouse storage space, crane, forklifts, water and fueling facilities, and boat dock space. The base is owned by Chouest and is leased by BP Exploration & Production Inc. The base is in operation 24 hours each day.

A small amount of vessel and helicopter traffic may originate from bases other than those described above in order to address changes in weather, market, and operational conditions. It is expected that this vessel traffic will originate from bases and locations that are in the near vicinity of the base previously described.

12.2 Support Base Construction or Expansion

The proposed operations are temporary in nature and do not mandate any immediate measures for additional land acquisition or expansion of the existing onshore base facilities.

12.3 Waste Disposal

The table below provides information on the 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	Max Rate/Day	Disposal Method
BHI / Fourchon	Spent synthetic-based drilling fluids	15,000 bbls/well	50 bbls/day	Return to supplier for reclamation
Aaron Oil Co. or Omega Waste Management	Waste Oil / Used oil filters	365 bbl/yr	1.0 bbl/day	Packed in MPT tanks or USCG drums and transport to shorebase for disposal
Omega	Trash and debris	18,000 ft ³	100 ft ³ /day	Compacted into canvas bags and transported to shorebase for disposal
Vendor or Omega Waste Management	Chemical product wastes	360 bbls	2 bbl/day	Transport in approved containers to shorebase for disposal

SECTION 13.0
Coastal Zone Management Act (CZMA) Information
(250.226 and 250.260)

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

13.1 Consistency Certification

A Coastal Zone Management Act consistency certification according to 15 CFR 930.76(c) and (d) for Louisiana is attached to this section.

13.2 Other Information

Issues identified in the Louisiana CZMP include the following: general coastal use guidelines, levees, linear facilities (pipelines); dredges soil deposition; shoreline modifications, surface alterations, hydrologic and sediment transport modifications; waste disposal; uses that result in the alteration of waters draining into coastal waters; oil, gas or other mineral activities; and air and water quality.

BP has considered all of Louisiana's and Mississippi's enforceable policies and certifies the consistency for the proposed operations.

13.2.1 The following Louisiana guidelines are applicable to the proposed operations:

TOPIC	GUIDELINE NO.	CROSS REFERENCE
Air Quality	1.2	Section 6.0
Water Quality 1.2 Section 5.0		
Permitting Authority	1.6	Sections 4.0 thru 14.0
Adverse Effects	1.7	Section 14.0
Multiple Use	1.9	Section 1.0 and 2.0
Waste Storage, Treatment and Disposal Facilities	8.1	Section 5.0 and 12.0
Hazardous Waste Storage, Treatment and Disposal	8.2	Section 5.0 and 12.0
Approved Disposal Sites	8.8	Section 5.0 and 12.0
Radioactive Waste	8.9	Section 5.0 and 12.0
Siting of Exploration, Production Activities	10.3	Sections 2.0 and 14.0
Access to Site	10.5	Section 2.0 and 12.0
Best Practical Techniques for Drilling/Production Sites	10.6	Sections 2.0 and 5.0
Drilling and Production Equipment Guidelines for Preventing Adverse Environmental Effects	10.10	Section 1.0
Effective Environmental Protection and Emergency or Contingency Plans	10.11	Sections 1.0, 7.0 and 14.0

13.2.2 The following Mississippi guidelines are applicable to the proposed operations:

SECTION 13.0
Coastal Zone Management Act (CZMA) Information
(250.226 and 250.260)

TOPIC	GUIDELINE NO.	CROSS REFERENCE
To provide for reasonable industrial expansion in the coastal area and to insure the efficient utilization of waterfront industrial sites so that suitable sites are conserved for waterdependent industry.	Goal 1	Section 2.0 and 12.0
To favor the preservation of the coastal wetlands and ecosystems, except where a specific alternation of specific coastal wetlands would serve a higher public interest in compliance with the public purposes of the public trust in which the coastal wetlands are held.	Goal 2	Sections 2.0 and 14.0
To protect, propagate, and conserve the state's seafood and aquatic life in connection with the revitalization of the seafloor industry of the state of Mississippi.	Goal 3	Sections 2.0 and 14.0
To conserve the air and waters of the state, and to protect, maintain, and improve the quality thereof for public use, for the propagation of wildlife, fish, and aquatic life, and for domestic, agricultural, industrial, recreational, and other legitimate beneficial uses.	Goal 4	Sections 5.0 through 14.0
To put to benefit use to the fullest extent of which they are capable the water resources of the state, and to prevent the waste, unreasonable use, or unreasonable method of use of water.	Goal 5	Section 5.0 and 14.0
To preserve the state's historical and archaeological resources, to prevent their destruction, and to enhance these resources whenever possible.	Goal 6	Section 4.0 and 14.0
To encourage the preservation of natural scenic qualities in the coastal area.	Goal 7	Section 14.0
To assist local governments in the provision of public facilities and services in a manner consistent with the coastal program.	Goal 8	Section 2.0

13.3 Attachments to Section 12.0

- ☐ Certificate of Coastal Zone Consistency for the State of Louisiana
- ☐ Certificate of Coastal Zone Consistency for the State of Mississippi

COASTAL ZONE MANAGEMENT

CONSISTENCY CERTIFICATION

Initial Exploration Plan

Type of OCS Plan

Mississippi Canyon Block 252

Area and Block

OCS-G 32306

Lease Number

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

BP Exploration and Production, Inc.

Lessee or Operator

Certifying Official

February 20, 2009

Date

COASTAL ZONE MANAGEMENT

CONSISTENCY CERTIFICATION

Initial Exploration Plan

Type of OCS Plan

Mississippi Canyon Block 252

Area and Block

OCS-G 32306

Lease Number

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

BP Exploration and Production, Inc.

Lessee or Operator

Certifying Official

February 20, 2009

Date

SECTION 14.0
Environmental Impact Analysis (EIA)
(250.227 and 250.261)

14.1 Impact Producing Factors (IPF's)

Environmental Resources	Impact Producing Factors (IPF's)					
	Categories and examples					
	Refer to a recent GOMCS Lease Sale EIS for a more complete list of IPF's					
	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, H2S releases)	Marine 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					
Fisheries	x					
Marine mammals (8)x	(8)x	x				x
Sea turtles (8)x	(8)x	x				
Air quality (9)x						
Shipwreck sites (known or potential)	(7)x					
Prehistoric archaeological sites	(7)x					
Vicinity of Offshore Location						
Essential fish habitat	X	(6)x				
Marine and pelagic birds	X	X	x			
Public health and safety (5)						
Coastal and Onshore						
Beaches				(6)		xx
Wetlands				(6)		x
Shore birds and coastal nesting birds			(6)	x		
Coastal wildlife refuges	(6)x					
Wilderness areas	(6)x					
Other Resources You Identify						

Footnotes for Environmental Impact Analysis Matrix

- Activities that may affect a marinesanctuary or topographic feature. Specifically, if the well or platform site or any anchors will be on the seafloor within the:
 - 4-mile zone of the Flower Garden Banks, or the 3-mile zone of Stetson Bank;
 - 1000-m, 1-mile or 3-mile zone of any topographic feature (submarine bank) protected by the Topographic Features Stipulation attached to an OCS lease;
 - Essential Fish Habitat (EFH) criteria of 500 ft from any no-activity zone; or
 - Proximity of any submarine bank (500 ft buffer zone) with relief greater than 2 meters that is not protected by the Topographic Features Stipulation attached to an OCS lease.
- Activities with any bottom disturbance within an OCS lease block protected through the Live Bottom Activities (Pinnacle Trend) Stipulation attached to an OCS lease.

SECTION 14.0
Environmental Impact Analysis (EIA)
(250.227 and 250.261)

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 H₂S concentrations greater than 500 ppm might be encountered.
6. All activities that could result in an accidental spill of produced liquid hydrocarbons or diesel fuel that you determine would impact these environmental resources. If the proposed action is located a sufficient distance from a resource that no impact would occur, the EIA can note that in a sentence or two.
7. All activities that involve seafloor disturbances, including anchor emplacements, in any OCS block designated by the 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 mammals or sea turtles or their critical habitats.
9. Production activities that involve transportation of produced fluids to shore using shuttle tankers or barges.

14.2 Analysis

14.2.1 Site Specific at Offshore Location

14.2.1.1 Designated Topographic Features - There are no IPF's (including effluents, physical disturbances to the seafloor, and accidents) from the proposed activities that could cause impacts to topographic features. The site-specific offshore location of the proposed activities (Mississippi Canyon Block 252) is outside the 3-mile zone of any identified topographic feature.

14.2.1.2 Pinnacle Trend Area Live Bottoms - There are no IPF's (including effluents, physical disturbances to the seafloor, and accidents) from the proposed activities that could cause impacts to pinnacle trend area live bottoms. The site-specific offshore location of the proposed activities (Mississippi Canyon Block 252) is not in a pinnacle trend live bottom stipulated block.

14.2.1.3 Eastern Gulf Live Bottoms - The eastern gulf live bottoms are not in the vicinity of the operations proposed in this plan.

14.2.1.4 Chemosynthetic communities - The proposed activities would occur in deep water (water depths >400 meters). Therefore, IPF's (e.g. physical disturbances to the seafloor, effluents) from the proposed activities have the potential to cause impacts to chemosynthetic communities. However, the proposed activities would be conducted in accordance with current regulations. Accordingly, BP has provided MMS with the required maps, analyses and statement(s) prepared using the guidance in Attachment B of NTL No. 2000-G20 "Deepwater Chemosynthetic Communities". As shown in the shallow hazards report accompanying this plan, and the seafloor amplitude map included in Section 3.0 of this plan, no indications of the presence of chemosynthetic communities are recognized on the 3-D seismic data at and around the proposed locations. The risk of chemosynthetic communities at or close to this location is therefore believed to be negligible.

SECTION 14.0
Environmental Impact Analysis (EIA)
(250.227 and 250.261)

14.2.1.5 Water Quality - Effluents and accidents from the proposed activities in Mississippi Canyon Block 252 could potentially cause impacts to water quality. However, since all discharges will be made in accordance with a general National Pollutant Discharge Elimination System (NPDES) permit issued by the U.S. Environmental Protection Agency, operational discharges are not expected to cause significant adverse impacts to water quality. It is unlikely that an accidental oil spill release would occur from the proposed activities. In the event of such an accidental release, the water quality would be temporarily affected by the dissolved components and small droplets. Currents and microbial degradation would remove the oil from the water column or dilute the constituents to background levels.

14.2.1.6 Fisheries - An accidental oil spill that might occur as a result of the proposed operation in Mississippi Canyon Block 252 has the potential to cause some detrimental effects to fisheries. However, it is unlikely that an accidental surface or subsurface oil spill would occur from the proposed activities. If such a spill were to occur in open waters of the OCS proximate to mobile adult finfish or shellfish, the effects would likely be sub-lethal and the extent of 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. No adverse activities to fisheries are anticipated as a result of the proposed activities.

14.2.1.7 Marine Mammals - Marine mammals may be adversely impacted by several IPF's, including vessel traffic, noise, accidental oil spills, and loss of trash and debris, all of which could occur due to the proposed action. 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 oil spills, chance collisions with service vessels and ingestion of plastic material. Oil spills of any size are estimated to be a periodic event that may contact cetaceans. Disturbance (e.g., noise) may stress animals, weaken their immune systems, and make them more vulnerable to parasites and diseases that normally would not be fatal.

The net result of any disturbance would depend on the size and percentage of the population affected, ecological importance of the disturbed area, 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, et al., 2001). Sperm whales are one of 11 whale 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. No adverse impacts to endangered or threatened marine mammals are anticipated as a result of the proposed activities in Mississippi Canyon Block 252.

14.2.1.8 Sea Turtles - IPF's that could impact sea turtles include vessel traffic, noise, trash and debris, and accidental oil spills. Small numbers of turtles could be killed or injured by chance collision with service vessels or by eating indigestible trash, particularly plastic items, accidentally lost from drill rigs, production facilities and service vessels. Drill rigs and project vessels produce noise that could disrupt normal behavior patterns and create some stress potentially making sea turtles more susceptible to disease. 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 the threats.

SECTION 14.0
Environmental Impact Analysis (EIA)
(250.227 and 250.261)

Most OCS related impacts on sea turtles are expected to be sub-lethal. Chronic sub-lethal effects (e.g., stress) resulting in persistent physiological or behavioral changes and/or avoidance of effected areas could cause declines in survival or productivity, resulting in gradual population declines.

No adverse impacts to endangered or threatened sea turtles are anticipated as a result of the proposed activities in Mississippi Canyon Block 252.

14.2.1.9 Air Quality - The proposed activities are located approximately 190 miles offshore. There would be a limited degree of air quality degradation in the immediate vicinity of the proposed activities. Air quality analysis (included in Section 6.0 of this plan) is below the MMS exemption level.

14.2.1.10 Shipwreck Sites (known or potential) - Mississippi Canyon Block 252 is on the MMS list of blocks determined to have a high probability of historic shipwrecks. A review of the Shallow Hazards Study included with this plan in accordance with NTL 2005-G07 and NTL 98-20 indicates there are no known or potential shipwreck sites located within the survey area. Therefore, no impacts on such sites are expected as a result of the proposed operations.

However, should BP discover man-made debris that appears to indicate the presence of a shipwreck (e.g. a sonar image or visual confirmation of an iron, steel or wooden hull, wooden timbers, anchors, concentrations of man-made objects such as bottles or ceramics, piles of ballast rock) within or adjacent to our lease area, BP will immediately halt operations, take steps to ensure that the site is not disturbed in anyway and contact the Regional Supervisor, Leasing and Environment, within 48 hours of its discovery. BP will cease all operations within 1000 feet (305 meters) of the site until the Regional Director instructs our office on what steps to take to assess the site's potential historic significance and what steps to protect it.

14.2.1.11 Prehistoric Archaeological Sites - The lease is on the MMS list of blocks determined to have a high probability of prehistoric archaeological resources. A review of the Shallow Hazards Study included with this plan in accordance with NTL 2005-G07 and NTL 2006-G07 indicates there are no known or potential archaeological sites located within the survey area. Shallow Hazard survey performed in the area indicates no known or potential archaeological sites at the proposed locations. Therefore, no impacts on such sites are expected as a result of the proposed operations.

14.2.2 Vicinity of Offshore Location

14.2.2.1 Essential Fish Habitat - An accidental oil spill that might occur as a result of the proposed action has the potential to cause some detrimental effects on essential fish habitat. However, it is unlikely that an accidental surface or subsurface oil spill would occur from the proposed activities. If such a spill were to occur in open waters of the OCS proximate to mobile adult finfish or shellfish, the effects would likely be sub-lethal and the extent of 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. No adverse impacts to essential fish habitat are anticipated as a result of the proposed activities in Mississippi Canyon Block 252.

In the event of an unanticipated blowout resulting in an oil spill, it is unlikely to have an impact based on the industry wide standards for using proven equipment and technology for such responses, implementation of BP's Regional Oil Spill Response Plan which

SECTION 14.0
Environmental Impact Analysis (EIA)
(250.227 and 250.261)

address available equipment and personnel, techniques for containment and recovery and removal of the oil spill.

14.2.2.1 Marine and Pelagic Birds - An accidental oil spill that might occur as a result of the proposed action has the potential to impact marine and pelagic birds - birds could become oiled. However, it is unlikely that an accidental oil spill would occur from the proposed activities. No adverse impacts to marine and pelagic birds are anticipated as a result of the proposed activities in Mississippi Canyon Block 252.

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

BP will operate in accordance with the regulations and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass.

Informational placards will be posted on vessels and facilities that have sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g. helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures and will view the marine trash and debris training video annually. Debris, if any, from these proposed activities in Mississippi Canyon Block 252 will seldom interact with marine and pelagic birds. Therefore the effects will be negligible.

14.2.2.3 Public Health and Safety - There are no anticipated IPFs (including any accidental H₂S releases) from the proposed activities that could impact public health and safety. BP has requested MMS classify the proposed objective area as "H₂S absent" and "H₂S Unknown".

14.2.3 Coastal and Onshore

14.2.3.1 Beaches - An accidental oil spill from the proposed activities could cause impacts to beaches. However, due to the distance to shore (48 miles) and the response capabilities that would be implemented, no significant adverse impacts are expected. Both the historical spill data and the combined trajectory/risk calculations referenced in the publication OCS EIS/EA MMS 2002-052 indicate there is little risk of contact or impact to the coastline and associated environmental resources. The activities proposed in the plan will be covered by our regional OSRP (refer to information submitted in Section 7.0 of this plan).

Trash on the beach is recognized as a major threat to the enjoyment and use of beaches. Only a limited amount of marine debris, if any, should result from the proposed activities. Operators are prohibited from deliberately discharging debris as mandated by MARPOL - Annex V and the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies including the U. S. Coast Guard and the Environmental Protection Agency.

SECTION 14.0
Environmental Impact Analysis (EIA)
(250.227 and 250.261)

BP will operate in accordance with the regulations and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass.

Informational placards will be posted on vessels and facilities that have sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g. helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures and will view the marine trash and debris training video annually.

14.2.3.2 Wetlands- An accidental oil spill from the proposed activities could cause impacts to wetlands. However, due to the distance to shore (48 miles) and the response capabilities that would be implemented, no significant adverse impacts are expected. Both the historical spill data and the combined trajectory/risk calculations referenced in the publication OCS EIS/EA MMS 2002-052 indicate there is little risk of contact or impact to the coastline and associated environmental resources. The activities proposed in the plan will be covered by our regional OSRP (refer to information submitted in Section 7.0 of this plan).

14.2.3.3 Shore Birds and Coastal Nesting Birds - An accidental oil spill from the proposed activities could cause impacts to shore birds and coastal nesting birds. However, due to the distance to shore (48 miles) and the response capabilities that would be implemented, no significant adverse impacts are expected. Both the historical spill data and the combined trajectory/risk calculations referenced in the publication OCS EIS/EA MMS 2002-052 indicate there is little risk of contact or impact to the coastline and associated environmental resources. The activities proposed in the plan will be covered by our regional OSRP (refer to information submitted in Section 7.0 of this plan).

Coastal and marine birds could become entangled and snared in discarded trash and debris, or ingest small plastic debris that can cause permanent injuries and death. Operators are prohibited from deliberately discharging debris as mandated by MARPOL - Annex V and the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies including the U. S. Coast Guard and the Environmental Protection Agency.

BP will operate in accordance with the regulations and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass.

Informational placards will be posted on vessels and facilities that have sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g. helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures and will view the marine trash and debris training video annually.

SECTION 14.0
Environmental Impact Analysis (EIA)
(250.227 and 250.261)

14.2.3.4 Coastal WildlifeRefuges - An accidental oilspill from the proposed activities could cause impacts tocoastalwildliferefuges. However, due tothedistanceto shore (48 miles) and the response capabilities that would be implemented, nosignificant adverse impacts are expected. Both thehistorical spill data and thecombined trajectory/risk calculations referenced in the publication OCS EIS/EA MMS2002-052 indicate there is little risk of contact or impact to the coastline and associated environmental resources.The activities proposed in theplan will be covered by our regional OSRP (refer to information submitted in Section 7.0 of this plan).

14.2.3.5 WildernessAreas- An accidental oilspill from the proposed activities could cause impacts tocoastalwilderness areas.However, due tothedistance from shore (48 miles) and the response capabilities that wouldbe implemented, no significant adverse impacts areexpected. Both the historical spill data and the combined trajectory/risk calculations referenced in the publication OCS EIS/EA MMS 2002-052 indicate there is little risk ofcontactor impact to thecoas tline and associatedenvironmental resources. The activities proposed in the planwill be covered by ourregional OSRP(refer to information submitted in Section 7.0 of this plan).

14.2.3.6 Other Environmental Resources Identified - BP has not identified any other environmental resources other than those addressed above.

14.3 Impacts on Proposed Activities- The site-specific environmental conditions have beentaken into account for the proposed activities and no impacts areexpected as a result ofthese conditions.

A shallow hazardssurvey andshallow hazards as sessment of anyseafloor andsubsurface geological or manmade features and conditions that may adversely affect operations has been submitted in accordance withNTL 2008-G05. Based on theabove reportand analysis, BP has concluded there are nosurfaceor subsurface geolog ical or manmade features or conditionsthat may adversely affect the proposed activities.

14.4 EnvironmentalHazards- The proposedactivities could be adversely impactedby strong environmental phenomena suchas ahurricane. In the eventa hurricane seems likely, the following procedures from BP's SevereWeather Contingency Plan would be followed.

14.4.1 Safety Precautions

14.4.1.1 DuringHurricaneSeason, the followingsafety precautions should be exercised:

- ☐ Maintain an adequate supply of mud on board to return to work per rig capabilities.
- ☐ Maintain enough fuel on board to allowrig to operate for 3-4 days after restart.
- ☐ Maintain a near capacity supply of drilling water on board
- ☐ Secure all loose equipment that will not be usedor moved in normal operations.
Check rig's supply of cable, cableclamps , rope and other material which might be needed to secure any equipment or material during a hurricane. An order shall be placed for any material needed. Have tie-down cables, chains, turnbuckles, etc., prepared for tying down all equipment inthe event of a hurricane shut down
- ☐ Lay down all excess drill pipe and drill collars standing in derrick
- ☐ At all times, have the following equipment on the rig:
 - ? Halliburton RTTS full borestormpacker , complete with Sub-Surface Control (SSC II or SSC III) Valve. RTTS is to beof propersize to fit inside the last casingstring, as required
 - ? Baker Model "G" Full Flow Float Sub.

SECTION 14.0
Environmental Impact Analysis (EIA)
(250.227 and 250.261)

? Gray inside BOP (to be kept for back-up)

Make sure above equipment is always in good working condition and subbed for running in the drill string, as required.

- ☐ Familiarize all personnel with hurricane securing procedures. Hold safety meetings with all crews to review hurricane evacuation plan and keep personnel aware of their role in carrying out the procedure
- ☐ Make frequent checks of aids-to-navigation and communication equipment. Report any defect immediately for repair
- ☐ Report the "Time Required To Secure Rig" on the Drilling Report. This estimate will include time to plug and suspend well for the current hole section. A detailed list of required operations and associated times to complete the same should be documented and kept current on the rig
- ☐ Review the POB Roster to ensure that it is current
- ☐ Monitor Weather Service reports twice daily. Monitor more often as necessary
- ☐ Prepare an inventory of all rental equipment onboard that shows vendors, serial numbers and dates of arrival and departure
- ☐ Maintain an estimate of variable loads on board and record this estimate on the IADC Daily report
- ☐ Ensure all hatches, vents, etc. are in good working order
- ☐ Ensure system which operates emergency generator is in good working order
- ☐ Ensure marine transportation is able to accommodate a full rig crew in one trip if necessary
- ☐ Maintain a minimum of 500 sacks of cement on board or enough to properly plug the open hole where applicable

14.4.2 Phase I

A hurricane or severe tropical disturbance develops which could impact BP's Offshore GoM operations, or which forms and enters the Gulf of Mexico. Upon announcement of this Phase, the Well Site Leader on each rig will:

- ☐ Continue present operation, recognizing that deteriorating weather conditions may dictate changes in operations. Incorporate a ported drill pipe float into the BHA on the next trip out of hole. When drilling at depths where high pressures are expected or at a depth where salt may be encountered, drilling operations may be suspended, the mud conditioned and the bit pulled up into the casing until the hurricane danger has passed or orders to commence Phase II are received. Do not commence any potentially hazardous operations. Discuss operations with the Operations Superintendent or delegate and obtain approval to change operations if necessary
- ☐ Set up a 24-hour weather watch. Post a weather map and see that the storm's position is plotted and kept current at all times. Report any important changes in weather to the Operations Superintendent.
- ☐ Develop Initial Action Plan
- ☐ Keep POB Roster current. The roster shall include name, company, and title of each person on board
- ☐ Make a thorough inspection of all equipment. All movable objects which are not in use or expected to be used within 72 hours will be firmly secured or removed from the rig. Any objects which are placed in service will again be secured after use

SECTION 14.0
Environmental Impact Analysis (EIA)
(250.227 and 250.261)

- ☐ Lay down extra drill pipe, drill collars or tubing standing in the derrick. If drilling in open hole, do this on next trip out
- ☐ Make preparations to lay down drill pipe that is in open hole
- ☐ Make preparations to set either a storm packer or mechanical plug. Check storm packer and connections. Super glue all O-rings in the SSC Valve
- ☐ Start and run emergency air compressor; make sure it will build 100psi pressure and ensure the batteries have adequate power to start emergency generator, depending on system installed.
- ☐ Check auxiliary power for aid to navigation lights and fog horn and battery status.
- ☐ Check all communication facilities and be certain they are operable. Make necessary repairs immediately
- ☐ Ensure storm calculations and evacuation lists are prepared
- ☐ Determine what equipment and/or liquids will have to be off-loaded to reduce variable load to storm survival limits
- ☐ Maintain flexible marine transportation schedule wherein necessary boats can be in the field with minimum notice to assist with possible evacuation
- ☐ After preparations for Phase I have been completed, the Well Site Leader shall report same to the Operations Superintendent.

14.4.3 Phase II

A hurricane or high winds, equal to 45 knots (52mph) ahead of the storm are within twenty-four (24) to seventy-two (72) hours of a location. During Phase II, all rig operations will be secured, and all non-essential personnel will be evacuated. Under most anticipated conditions, action should be taken that would permit support vessels to leave location twenty-four (24) hours ahead of the hurricane or high winds, and personnel on the jack-up rig to start leaving twenty-four (24) ahead of the hurricane or predicted high winds and seas (winds over 40 mph and seas greater than 10 ft).

Upon announcement of this Phase, the Well Site Leader on each rig will:

- ☐ Condition mud and get hole in condition for securing well. If open hole conditions allow, POOH and incorporate a ported drill pipe float into the BHA if not previously done during Phase I. Have drilling crews start out of the hole laying down drill pipe. Pipe will be pulled up into the casing, with the remainder laid down, where conditions permit. Do not strip pipe on pipe rack. Takeout? Set a storm packer or mechanical plug in the casing. If unable to secure well with a storm packer, set a cement plug

NOTE: If workover, recompletion, or well-testing operations are in progress, the procedures to secure the well will depend on the exact operation being undertaken. Have plan outlined at all times and consult with Completion/Drilling Team Leader for final approval.

- ☐ Make up the Halliburton RTTS Full Bore Pack and SSC II or SSC III Storm Valve in the drill string (Appendix B, RTTS Storm packer Instructions) and run in hole. Install and set packers so that the bit will be near the casing shoe, but not in the open hole.

SECTION 14.0
Environmental Impact Analysis (EIA)
(250.227 and 250.261)

The packer is to be positioned as sufficient distance below the mudline to allow the well to be abandoned if the packer cannot be pulled

- ☐ Check and tighten snub lines on blowout preventer if applicable.
- ☐ Communicate preparedness priorities to all personnel
- ☐ Stop all non-essential traffic to the work site and prepare to evacuate all non-essential personnel. Determine evacuation point and arrangements
- ☐ Skid rig package
- ☐ Make a personal inspection of all equipment to be sure that everything is ready for a hurricane and have key contract personnel do the same
 - ? Finalize all variable deck load calculations. Ensure variable load is distributed evenly on all legs
 - ? Secure drill pipe and drill collars on rack
 - ? Secure hoses and tension top drive
 - ? Secure all other related equipment
 - ? Dump/pump out shale shaker sand traps and pits. Leave valves open and secure water-tight plate over return line.
 - ? Dump liquids as required. Discuss with Operations Superintendent prior to dumping any mud!!
 - ? Secure crane booms in boom rests. Close all doors on cranes
 - ? Secure all water-tight doors and vents. Close all doors on leg units. Install boards around control room. Close and secure all fan vent covers
 - ? Secure all equipment below deck. Secure all oil drums
 - ? Remove lights and electric motors where necessary and store below deck
 - ? Close air valves off at tanks. Check auxiliary air compressor for fuel
 - ? Secure all manhole covers
 - ? If possible, remove and store all radio and dish antennas
 - ? Pump out bilges and sumps
 - ? Store and secure all oxygen and acetylene bottles
 - ? Remove and secure life rafts
 - ? Ensure primary engine diesel day tank and emergency engine day tank are full
 - ? Securely close jacking motor covers or cover exposed motors with visqueen and duct tape per Contractor Guidelines.
 - ? Fill drill water tanks as near full as possible and close equalizing valves
 - ? Blank flanges on cement unit exhaust
 - ? Raise water well tower
 - ? Stow away all take on hoses and tie up ropes in the lower hull area.
 - ? Place all breakable accommodation/office items on floor (TVs, monitors, computers)
- ☐ Have workboats and crew boats in field to evacuate personnel. Inform them of rig readiness condition
- ☐ Evacuate all non-essential personnel by available air or sea transportation. Each facility will develop a list of personnel to be evacuated. Keep POB Roster current. Record all times of departure
- ☐ Record the following on the IADC report:

SECTION 14.0
Environmental Impact Analysis (EIA)
(250.227 and 250.261)

- ☐ Estimate of variable load
 - ? Any adjustments made in variable load (i.e., pump off water, barite, etc.)
 - ? Total amount of casing, drill pipe, drill collars and HWDP left on deck
 - ? Describe any pipe left in the derrick or in wellbore,
 - ? Document the status of the rig and equipment on the IADC Report prior to final evacuation. Example: Navigation lights, rig tracking system, battery status etc.
- ☐ Contact the Operations Superintendent and the Logistics Group once the rig is secure and all non-essential personnel have been evacuated.
- ☐ The Well Site Leader on each facility is given full authority to do whatever he thinks is necessary to protect people, wells and equipment in the event communications with shore is no longer possible

14.4.4 Phase III

A hurricane or high winds, equal to 45 knots (52 mph) ahead of a storm are within twenty-four (24) hours of the location. When Phase III becomes effective, evacuation of all remaining personnel on the facility will commence.

Upon announcement of this phase, the Well Site Leader on each rig will:

- ☐ Ensure well is properly suspended and a document stating how the wellbore has been secured.
- ☐ Make final check that all equipment and supplies are secured
- ☐ Shut down all engines except emergency generator
- ☐ Turn on aid-to-navigation and fog horn and confirm battery power adequate. Document any issues and explain what the condition of the rig and equipment is prior to final evacuation.
- ☐ Consult with contract Tool pusher and record preparations that have been made to ready the rig for the storm on the IADC report. The IADC reports, along with a current list of all rental equipment on board and critical irreplaceable paperwork, will be carried by the Rig Tool pusher upon evacuation of the rig
- ☐ The Well Site Leader and contract Tool pusher will maintain a list of all personnel evacuated and the telephone numbers where they can be contacted after the hurricane
- ☐ Commence evacuation of remaining personnel to shore by available air or sea transportation
- ☐ Contact the Operations Superintendent and the Logistics Support Group when rig is secured just prior to final evacuation and again when all personnel have reached shore
- ☐ The Operations Superintendent is responsible for keeping Management current on all critical operations

SECTION 14.0
Environmental Impact Analysis (EIA)
(250.227 and 250.261)

14.4.5 Phase IV

A Hurricane or Tropical Storm has made landfall or is sufficiently away from a location and no longer poses a threat to that location to allow personnel to begin the return to the work process.

During this Phase, the following procedures will apply:

- ☐ Contact contractors to return to rig
- ☐ Contact contract boats and start them to shore base
- ☐ Upon arrival at rig, inspect for damage and start up engines
- ☐ Test all lines for integrity (service, high pressure mud)
- ☐ Lower waterwell tower
- ☐ Install bell nipple and BOP fluid lines
- ☐ Test choke and kill lines as required by well program
- ☐ Open choke line below blind rams and check for pressure
- ☐ Test Bops as required by well program
- ☐ Pick-up drill pipe with centralizers and RIH. Ratchet into the storm valve, pick up 10,000 lbs on the packer to open the ball valve and check for drill pipe pressure. Close annular preventer, release packer. Retrieving procedure is described in Appendix B. Check for pressure through choke line. Open annular preventer
- ☐ Pull out of hole. Lay down packer and stage in hole

- 14.5 Alternatives-** No alternatives to the proposed activities were considered to reduce environmental impacts.
- 14.6 Mitigation Measures-** No mitigation measures other than those required by regulation and BP policy will be employed to avoid, diminish or eliminate potential impacts on environmental resources.
- 14.7 Consultation** No agencies or persons were consulted regarding potential impacts associated with the proposed activities.
- 14.8 Preparers-** The EIA was prepared by the following:

Scherie D. Douglas
Sr. Regulatory Specialist
BP Exploration & Production, Inc.

- 14.9 References:-** Although not always cited, the following were utilized in preparing the EIA:

- ☐ Regional Geohazard Assessment Study, GEMs
- ☐ OCS EIS/EAMMS 2002-052, 2002
- ☐ MMS EIS - Lease Sale 187

SECTION 14.0
Environmental Impact Analysis (EIA)
(250.227 and 250.261)

- [NPDES Permit GMG290110
- [Air Quality Review
- [BP Regional Oil Spill Response Plan
- [Title 30 CFR Part 250 Subpart B
- [MMS NTL 2006-N06 "Flaring and Venting Regulations"
- [MMS NTL 2004-G05 "Biologically Sensitive Areas of the Gulf of Mexico"
- [MMS NTL 2007-G04 "Vessel Strike Avoidance and Injured/Dead Protective Species"
- [MMS NTL 2007-G03 "Marine Trash & Debris Awareness and Elimination"
- [MMS NTL 2005-G07 "Archaeological Resource Surveys and Reports"
- [MMS NTL 2006-G07 "Revisions to the List of OCS Lease Blocks Requiring Archaeological Resource Surveys and Reports"
- [MMS NTL 2000-G20 "Chemosynthetic Communities"

SECTION 15.0
Administrative Information
(250.228 and 250.262)

15.1 Exempted Information Description (public information copies only)

15.2 Bibliography

Any previously submitted EP, DPP, DOCD, studyreport, survey report or any other material referenced in this plan is listed below:

- ☐ Regional Geohazard Assessment Study (N-6521 and N-7743)