U.S. DEPARTMENT OF THE INTERIOR

MINERALS MANAGEMENT SERVICE

Gulf of Mexico OCS Region

New Orleans, Louisiana

SITE-SPECIFIC ENVIRONMENTAL ASSESSMENT

for

INITIAL EXPLORATION PLAN

DeSoto Canyon Block 354

from

Marathon Oil Company

January 2004

U.S. DEPARTMENT OF THE INTERIOR

MINERALS MANAGEMENT SERVICE

Gulf of Mexico OCS Region

New Orleans, Louisiana

Date Received

September 18, 2003

Initial Exploration Plan

(N-7910)

SITE-SPECIFIC ENVIRONMENTAL ASSESSMENT DETERMINATION/ FINDING OF NO SIGNIFICANT IMPACT

Marathon Oil Company's (Marathon) Initial Exploration Plan to drill and temporarily abandon four exploration wells in DeSoto Canyon Block 354 (OCS-G 23507) has been reviewed. Our site-specific environmental assessment (SEA) on the proposed action (N-7910) is complete and results in a Finding of No Significant Impact. Based on this SEA, we have concluded that the proposed action will not significantly affect the quality of the human environment (40 CFR 1508.27). Preparation of an environmental impact statement is not required. The following mitigations are necessary to ensure environmental protection, consistent environmental policy, and safety as required by the National Environmental Policy Act, as amended, or are recommended measures needed for compliance with 40 CFR 1500.2(f) regarding the requirement for Federal agencies to avoid or minimize any possible adverse effects of their actions upon the quality of the human environment.

Mitigations

1. Drilling permits cannot be issued for the proposed wells until concurrence with Marathon's coastal zone management consistency certification has been received by this office from the Louisiana Department of Natural Resources or until concurrence with the certification has been conclusively presumed.
2. Drilling permits cannot be issued for the proposed wells until concurrence with Marathon's coastal zone management consistency certification has been received by this office from the Alabama Department of Environmental Management or until concurrence with the certification has been conclusively presumed.
3. Drilling permits cannot be issued for the proposed wells until concurrence with Marathon's coastal zone management consistency certification has been received by this office from the Florida Department of Environmental Protection or until concurrence with the certification has been conclusively presumed.
4. In response to the request accompanying your plan for a hydrogen sulfide (H_2S) classification, the area in which the proposed drilling operations are to be conducted is hereby classified, in accordance with 30 CFR 250.490(c), as "H_2S absent."
5. Exercise caution while drilling due to indications of shallow gas, faulting, and possible shallow water flow.
6. In accordance with Notice to Lessees and Operators No. 2003-G03, the Minerals Management Service has determined that Marathon will not need to conduct the two remotely operated vehicle surveys proposed in the exploration plan.

Mary C. Boatman — 1/14/04

Mary Boatman
Supervisor, Studies Plan Coordination Unit
Leasing and Environment, GOM OCS Region

Date

Dennis Chew — 1/14/04

Dennis Chew
Supervisor, NEPA/CZM Coordination Unit
Leasing and Environment, GOM OCS Region

Date

Robert M Rogers, Acting

Pat Roscigno
Chief, Environmental Sciences Section
Leasing and Environment, GOM OCS Region

1/14/04
Date

Richard Defenbaugh
Acting Regional Supervisor
Leasing and Environment, GOM OCS Region

1/15/04
Date

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ABBREVIATIONS AND ACRONYMS

BBSAP	Big Bend Seagrass Aquatic Preserve
BNWR	Breton National Wilderness Refuge
Btu	British thermal unit
CZM	Coastal Zone Management
CFR	Code of Federal Regulations
CZM	Coastal Zone Management
DOI	Department of the Interior
DP	dynamically positioned
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	environmental impact statement
EP	Exploration Plan
EPA	Eastern Planning Area
ESA	Endangered Species Act
FEL	from the east block line
FKNMS	Florida Keys National Marine Sanctuary
FMG	Florida Middle Ground
FNL	from the north block line
FSL	from the south block line
FWL	from the west block line
FWS	Fish and Wildlife Service
GOM	Gulf of Mexico
GOMR	Gulf of Mexico Region
MARPOL	International Convention for the Prevention of Pollution from Ships
MMS	Minerals Management Service
MODU	mobile offshore drilling unit
NAAQS	National Ambient Air Quality Standards
NRC	National Response Center
NEPA	National Environmental Policy Act
NERBC	New England River Basins Commission
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NTL	Notice to Lessees and Operators
OCS	Outer Continental Shelf
OCSLA	Outer Continental Shelf Lands Act
OSRP	Oil Spill Response Plan
PEA	Programmatic Environmental Assessment
PINC	Potential Incident of Noncompliance
RCRA	Resource Conservation and Recovery Act
SBF (SBM)	synthetic-based fluid (or mud)
SEA	Site-Specific Environment Assessment
USDOI	U.S. Department of the Interior
USEPA	U.S. Environmental Protection Agency
USCG	U.S. Coast Guard
WBF (WBM)	water-based fluid (or mud)

INTRODUCTION

On September 18, 2003, Marathon Oil Company (Marathon) submitted to the Minerals Management Service (MMS) an Initial Exploration Plan (EP) to drill and temporarily abandon four exploration wells in DeSoto Canyon Block 354 (OCS-G 23507)—Wells A, B, C, and D (Figures A-1 and A-2).

DeSoto Canyon Block 354 is located approximately 80 mi (129 km) from the nearest Louisiana coastline, 111 mi (179 km) from Alabama, and approximately 117 mi (188 km) from Florida. The water depth at the proposed well sites ranges from 7,344 to 7,835 ft (2,238-2,388 m).

This Site-Specific Environmental Assessment (SEA) evaluates the resources and potential impacts associated with the proposed activities. The significance of specific potential environmental consequences is evaluated to the criteria defined in 40 CFR 1508.27. In accordance with the National Environmental Policy Act (NEPA), as amended, and the Council on Environmental Quality regulations, this SEA implements the tiering process outlined in 40 CFR 1502.20. Agencies are encouraged to tier environmental documents to eliminate repetitive discussions of the same issues. This document tiers directly from a Programmatic Environmental Assessment (PEA) (USDOI, MMS, 2003) that specifically considered areawide resources and impacts from exploration or delineation drilling, and well abandonment or completion in the Eastern Planning Area (EPA) sale area. The information and discussions in the PEA are incorporated into this SEA by reference.

To a lesser extent this SEA tiers from the Final Environmental Impact Statement (EIS) for Lease Sale 181 (USDOI, MMS, 2001), the 2003-2007 CPA and WPA Multisale Final EIS (USDOI, MMS, 2002a), and the 2003-2007 EPA Multisale Final EIS (USDOI, MMS, 2002b).

1. PROPOSED ACTION

1.1. PURPOSE OF THE PROPOSED ACTION

The purpose of the proposed action outlined by Marathon in their EP is to evaluate the hydrocarbon potential of DeSoto Canyon Block 354. Exploration, discovery, and production of hydrocarbon resources would help satisfy the Nation's need for energy supplies. Under the Outer Continental Shelf Lands Act (OCSLA), as amended, the Department of the Interior (DOI) is required to manage the leasing, exploration, development, and production of oil and gas resources on the Federal OCS. The Secretary of the Interior oversees the OCS oil and gas program, and MMS is the agency charged with this oversight. The Secretary is required to balance orderly resource development with protection of the human, marine, and coastal environments while ensuring that the U.S. public receives an equitable return for resources discovered and produced on public lands.

1.2. NEED FOR THE PROPOSED ACTION

As the designated operator of DeSoto Canyon Block 354, Marathon has filed an EP with MMS consistent with its obligation to file such a plan before exploration activity commences. Listed below are some of the reasons that Marathon has submitted this proposal to MMS:

- leaseholders have a legal right to pursue exploration for hydrocarbon resources;
- commercial quantities of hydrocarbons resources may be encountered;
- leaseholders are obligated via lease terms to diligently develop the resources; and
- limited lease term (10 years) and failure to identify and develop resources could lead to loss of sunk costs for lease acquisition and yearly rentals required to maintain access to the lease.

1.3. LEASE STIPULATIONS

The lease for DeSoto Canyon Block 354 contains the following lease stipulations:

- Stipulation No. 1 — Military Areas
- Stipulation No. 2 — Evacuation
- Stipulation No. 3 — Coordination
- Stipulation No. 4 — Marine Protected Species
- Copies of these stipulations are included in Appendix B.

1.4. DESCRIPTION OF THE PROPOSED ACTION

1.4.1. Background

Lease OCS-G 23507 was acquired in Eastern Gulf of Mexico (GOM) Lease Sale 181 held on December 5, 2001. This lease was issued with an effective date of February 1, 2002, and a primary term expiration date of January 31, 2012. According to 30 CFR 250.169(a), the term of the lease will be extended for a period of time equal to the period the Gulf of Mexico Region (GOMR) has directed a suspension of operations. The following is a brief summary of correspondence related to Marathon's Initial EP (N-7910) in DeSoto Canyon Block 354.

09/18/03 — Initial EP N-7910 received by MMS.

12/22/03 — EP deemed complete.

A site-specific 3D Seismic Hazard Study for DeSoto Canyon Block 354 and a site-specific 3D Seismic Study Review for the proposed drill site locations addressed in the subject EP were also received by MMS under a separate cover. Figure A-2 shows the surface locations of the four exploratory wells in the proposed action. The following chart is a summary breakdown of the wells in the exploration program of the proposed action:

DeSoto Canyon Block 354 (OCS-G 23507)

Activity	Well Surface Location	Water Depth
Drill and temporarily abandon Well A	6,563' FNL; 2,144' FWL	7,551'
Drill and temporarily abandon Well B	7,301' FNL; 2,800' FWL	7,553'
Drill and temporarily abandon Well C	5,586' FSL; 5,166' FEL	7,584'
Drill and temporarily abandon Well D	665' FSL; 3,444' FEL	7,609'

FEL = from the east block line, FNL = from the north block line,
FSL = from the south block line, FWL = from the west block line.

1.4.2. Schedule of Activities

The exploration drilling program for the four wells in the proposed action is planned to begin on March 15, 2004, and would end on April 22, 2005. The planned duration of the proposed action is approximately 224 days (32 weeks) from beginning the first well to abandoning the last, assuming the exploration program goes to term and uses a uniform 30-day month. The total time to drill and abandon each well is estimated to be 56 days or approximately 8 weeks. Marathon provided the following schedule in the EP:

DeSoto Canyon Block 354 (OCS-G 23507)

Schedule of Activity	Estimated Start Date	Estimated End Date	Days Duration
Drill and temporarily abandon Well A	03/15/04	05/09/04	56
Drill and temporarily abandon Well B	05/10/04	07/04/04	56
Drill and temporarily abandon Well C	01/05/05	02/25/05	56
Drill and temporarily abandon Well D	02/26/05	04/22/05	56

1.4.3. Equipment and Drilling System

Offshore exploration activities are carried out from mobile offshore drilling units (MODU). The proposed action is in water depths >5,000 ft (1,525 m) that are usually referred to as ultra-deepwater. The MODU's potentially suitable for the water depths for the OCS blocks where the proposed action is located would be (1) a conventionally-moored semisubmersible anchored to the sea bottom with a chain catenary or tensioned mooring lines, (2) a dynamically positioned (DP) semisubmersible, or (3) a DP drillship. Marathon proposes to use a DP drillship similar to the Transocean SedcoForex *Deepwater Millenium* for drilling and temporarily abandoning the three proposed wells. When a rig is selected, the rig specification to be used will be made a part of the appropriate Application for Permit to Drill, and a summary of the DP drillship *Deepwater Millenium* are posted on the Rigzone (2003) website.

The DP drillship *Deepwater Millenium* has a rated water depth capability of 8,500 ft (2,591 m) and a rated drilling depth capability of 35,000 ft (10,668 m). It has a helipad and a full crew capacity of 130. Based on the planned total depths of the wells in the exploration program and the water depths of the OCS blocks, the DP drillship *Deepwater Millenium* is suitable for the proposed action.

1.4.4. Support Facilities

DeSoto Canyon Block 354 is located approximately 80 mi (129 km) from the nearest Louisiana shoreline. The water depths at the proposed well sites range from 7,344 to 7,835 ft (2,238-2,388 m). Heliport facilities to support the proposed action are located at Port Fourchon, Louisiana, which is also the debarkation point for equipment, supply boats, and crewboats. Port Fourchon is located approximately 155 mi (249 km) northwest of the project location and is capable of providing the materials and support services that are required.

1.4.5. Transportation Operations

Personal vehicles will be the main means of transportation to carry rig personnel from various locations to the Port Fourchon shore base. They will then be transported to the drilling rig by the crewboat. A helicopter will be used to transport small supplies, and on occasion, personnel. Supply boats will transport large supplies. The most practical, direct route permitted by the weather and traffic conditions will be used. The transportation route by vessel is approximately 155 mi (249 km) to DeSoto Canyon Block 354. Vessel crews will live on their respective vessels while working and will return to their temporary or permanent residences upon completion of each tour of duty. Support vessels and travel frequency per week during the 32 weeks of actual exploratory drilling are as follows:

Support Vessel	Trips/Week	Total Trips during 39 Weeks of Drilling
Crewboat/personnel and supplies	3	66
Supply boats/bulk supplies and casing	4	128
Helicopter/personnel and small supplies	7	224

1.4.6. Impacts from Potential Geological Hazards

The MMS conducts a geological and geophysical review of the proposed action for purposes of identifying shallow drilling hazards. Marathon notes that there are no shallow faults near any of these proposed locations. The potential for shallow-water flow hazards at each well site is considered negligible to low. Also, the possibility of shallow gas is negligible at these locations.

1.4.6.1. H_2S Contingency Plans

In accordance with the regulations contained in 30 CFR 490.417(c), Marathon requested that MMS classify DeSoto Canyon Block 354 as an area where the absence of hydrogen sulfide (H_2S) is confirmed and cited the absence of H_2S in the proposed action. The location and depths of the proposed exploratory drilling are hereby classified as H_2S absent based upon available geological data. As a result, a H_2S Contingency Plan is not required for the proposed action.

1.4.6.2. Subregional Oil-Spill-Response Plan

As required by MMS, Marathon provided under separate cover an oil-spill-response plan (OSRP) for alert, reporting, and cleanup procedures undertaken in the event of spilled oil.

The information included in the table below is included in the OSRP. In addition, appendices to this plan include (1) facility information, (2) training information, (3) drill information, (4) contractual agreements, (5) response equipment, (6) support services and supplies, (7) notification and reporting forms, (8) worst-case discharge scenarios, (9) oceanographic and meteorological information, and (10) bibliography.

The proposed operations will be required to be conducted under the applicable provisions of OCS regulations and notices and in the interest of safety and pollution control. Environmental safeguards including lease stipulations, inspections, and OCS laws and regulations are described in detail in Chapter 5. Additional information concerning potential oil-spill impacts is included in Chapter 4.

Topics Covered by Marathon's OSRP

(1)	OSRP quick guide	(12)	strategic response planning
(2)	preface	(13)	resource protection methods
(3)	introduction	(14)	mobilization and deployment methods
(4)	organization	(15,16)	oil/debris removal/disposal procedures
(5)	spill response operations/communications	(17)	wildlife rehabilitation procedures
(6)	spill detection and source identification	(18)	dispersant use plan
(7,8)	internal and external notifications	(19)	in-situ burn plan
(9)	available technical expertise	(20)	chemical and biological response strategies
(10)	spill assessment	(21)	documentation
(11)	resource identification		

1.5. Offshore Discharges and Waste Disposal

The proposed action would typically generate the following waste: (1) drilling fluids and cuttings discharge that occurs at the seafloor prior to installation of the marine riser, plugging and temporary abandonment, and also the discharge that occurs during drilling; (2) excess cement—wastes from equipment washdown after cementing operation; (3) well treatment, completion, and/or workover fluids—waste of chemicals and additives used for completion and testing operation of the well; (4) deck drainage—waste resulting from rainfall, rig washing, deck washing, tank cleaning, and runoff from curbs and gutters; (5) uncontaminated seawater—seawater used for cooling the machinery on board a rig; (6) desalinization unit water—water associated with the process of creating freshwater from seawater; (7) uncontaminated ballast water—seawater added or removed to maintain proper draft; (8) uncontaminated bilge water—collected in the bilges from machinery operation; (9) spent synthetic-based drill fluid; (10) waste oil, (11) diatomaceous earth filter media—filter media used to filter completion fluids or seawater; (12) sanitary waste—human body waste discharge from toilets and urinals; (13) domestic waste—discharge from galleys, sinks, and showers; and (14) solid waste and trash—plastic, paper, aluminum, glass, food, and other refuse. The proposed EP submitted by Marathon has indicated that all discharges and waste disposals associated with drilling would be in accordance with regulations implemented by MMS, the U.S. Environmental Protection Agency (USEPA), and the U.S. Coast Guard (USCG).

The MMS regulations (NTL 98-27, 30 CFR 250.300(a), 30 CFR 250.300(b)(6), and 30 CFR 250.300(c)), the USEPA National Pollutant Discharge Elimination System (NPDES) general and individual permit, and the USCG's regulations implementing MARPOL 73/78 Annex V prohibit the disposal of any solid waste, trash, and debris into the marine environment. Certain wastes intrinsic to exploration for oil and gas have been exempted from Federal regulations as hazardous waste under Subtitle C of the Resource Conservation and Recovery Act (RCRA) of 1976. The discharge of these RCRA-exempt wastes (drilling fluids, cuttings, and well treatment fluids), deck drainage, sanitary and

domestic waste, and miscellaneous waste (uncontaminated ballast water, uncontaminated bilge, desalinization water, uncontaminated seawater, diatomaceous earth filter, excess cement slurry, and muds, cuttings, and cement at the seafloor) into offshore waters is regulated by USEPA under the authority of the Clean Water Act. No wastes generated during oil and gas operations can be discharged overboard unless they meet the standards required within an USEPA NPDES permit. Marathon plans to use both water-based fluids (WBF) and synthetic-based fluids (SBF). Marathon proposes to discharge overboard WBF and cuttings and other waste generated by the proposed activities after treatment in compliance with NPDES permit. When Marathon uses SBF for drilling, all the spent SBF and cuttings wetted with SBF would be transported to shorebase for recycling and disposal.

Information on the waste types expected to be generated by Marathon for this proposed action, their composition, projected amounts, disposal method, maximum discharge rate, and the name or location of the onshore disposal facility can be found in Appendix C.

1.5.1. Description and Discharge Limitations

The complete spectrum of solid and liquid wastes generated by exploratory drilling is characterized in Chapter 4.2.4 (Drilling Unit Operational Wastes and Discharges) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003). Descriptions of the specific quantities and waste types or limitations that pertain to Marathon's proposed action are discussed below on a per well basis.

Marathon estimates that approximately 7,000 bbl of WBM, 2,250 bbl of cuttings, 4,800 bbl of gel, and 4,800 bbl of seawater and caustic per well would also be discharged at the seafloor before the marine riser is set. During drilling, 13,600 bbl of WBM and 4,150 bbl of cuttings per well would be discharged overboard at the location. In addition, 16,400 bbl of SBF and cuttings per well would be transported to the shorebase for recycling.

The NPDES permit places limitations on the concentration of mercury (<1 ppm) and cadmium (<3 ppm) in barite (the weighting agent in WBM). Also, there can be no free oil as determined by the static sheen test. The WBM and cuttings would be discharged overboard at a rate each not to exceed 1,000 bbl per hour. Discharges overboard are not permitted within 1,000 m of an area of biological concern; however, there are no areas of biological concern near DeSoto Canyon Block 354 or in the entire EPA sale area.

When an operator reaches total depth for an exploratory well, a decision to complete a well is required, whereupon it may be temporarily or permanently abandoned or moved into a well test phase. Marathon has elected to drill and then temporarily abandon each well. If a well is completed for a test phase, then treatment, completion, and/or workover fluids (primarily calcium chloride or calcium bromide) may be used. Discharges of spent fluids cannot contain any free oil as determined by the static sheen test. Oil and grease is limited to <42 mg/l daily and 29 mg/l monthly average. Waste fluids containing priority pollutants also cannot be discharged overboard without treatment. The EP indicates that the proposed action would generate 200 bbl per well of waste oil and 25 bbl per well chemical product waste that would be containerized and would be transported to the onshore base for incineration and disposal.

Routine sanitary and domestic wastes necessarily arise from people working offshore on rigs and support vessels. These wastes are characterized in Chapter 4.2.4.7.4 (Domestic and Sanitary Wastes) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003). Marathon estimates that 3,333 bbl of sanitary waste and 3,333 bbl of domestic waste per well would be discharged overboard from the DP drillship. Both categories of waste are discharged overboard after treatment.

Estimates of the amounts of sanitary and domestic wastes discharged from associated service-vessel operations were not provided by Marathon but are generally estimated to be 60 gal/person/day (NERBC, 1976). Support-vessel wastes are characterized in Chapter 4.2.4.8 (Waste from Support Vessel Operations) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003).

Deck drainage effluent is primarily oil and grease from equipment washwater and rainwater. An estimate for deck drainage is estimated by Marathon to be 0-1,000 bbl per well with the variation depending on weather and precipitation. According to the NPDES general permit, deck drainage is required to meet a visual sheen test for visible oil before discharge.

Miscellaneous wastes that are discharged overboard include per well estimates of (1) 20,000 bbl of uncontaminated ballast water, (2) 48,720 bbl of desalinization unit water, (3) 500 bbl of miscellaneous

discharge to which treatment chemicals have been added, and (4) 50 bbl of chemically treated excess cement.

Chapter 4.1.1.5 (Impacts from Drilling Rig Discharges) discusses the cumulative totals for these various discharges and their impacts.

1.5.2. Onshore Disposal of Offshore Solid Waste

Trash and solid waste from exploratory drilling is characterized in Chapter 4.2.4.7.2 (Solid Waste) in the PEA for exploration in the EPA sale area (USDOI, MMS, 2003). Trash and solid wastes generated in offshore OCS activity are brought onshore for disposal in a landfill. Marathon has indicated that general trash would be compacted and containerized and brought to the shore for disposal at a municipal landfill. Although personal items, such as hardhats or life jackets, occasionally may be lost overboard, intentional disposal of solid waste at sea is not permitted (30 CFR 250 Subpart C).

2. ALTERNATIVES TO THE PROPOSED ACTION

Marathon states that, in accordance with the requirements of 30 CFR 250, they considered the project alternatives and concluded there were none. Marathon believes they tailored the proposed exploration activities in such a way to minimize environmental impacts, including use of a DP drillship that will minimize bottom disturbances.

Other MMS considered alternatives, including approval of the proposal as indicated here, are described below:

2.1. NONAPPROVAL OF THE PROPOSAL

Marathon would not be allowed to undertake the proposed activities. This alternative could prevent the exploration for hydrocarbons and could result in the potential loss of royalty income for the citizens of the U.S. Considering this aspect and that minimal impacts are anticipated, this alternative was not judged to be acceptable.

2.2. APPROVAL WITH EXISTING AND/OR ADDED MITIGATION

The measures Marathon proposes to limit potential environmental impacts are discussed in the EP. The OCS Operating Regulations, NTL's, and other regulations and laws were identified throughout this assessment as existing mitigation for potential environmental impacts from the proposed action.

2.3. MITIGATIONS

2.3.1. Mitigation – Coastal Zone Management Concurrence – Louisiana

Drilling permits cannot be issued for the proposed wells until concurrence with Marathon's coastal zone management consistency certification has been received by this office from the Louisiana Department of Natural Resources or until concurrence with the certification has been conclusively presumed.

2.3.2. Mitigation – Coastal Zone Management Concurrence – Alabama

Drilling permits cannot be issued for the proposed wells until concurrence with Marathon's coastal zone management consistency certification has been received by this office from the Alabama Department of Environmental Management or until concurrence with the certification has been conclusively presumed.

2.3.3. Mitigation – Coastal Zone Management Concurrence – Florida

Drilling permits cannot be issued for the proposed wells until concurrence with Marathon's coastal zone management consistency certification has been received by this office from the Florida Department of Environmental Protection or until concurrence with the certification has been conclusively presumed.

2.3.4. Mitigation – H_2S Absent

In response to the request accompanying your plan for a hydrogen sulfide (H_2S) classification, the area in which the proposed drilling operations are to be conducted is hereby classified, in accordance with 30 CFR 250.490(c), as "H_2S absent."

2.3.5. Mitigation – Shallow Drilling Hazards

Exercise caution while drilling due to indications of shallow gas, faulting, and possible shallow water flow.

2.3.6. Mitigation – ROV Survey Not Required

In accordance with Notice to Lessees and Operators No. 2003-G03, the Minerals Management Service has determined that Marathon will not need to conduct the two remotely operated vehicle surveys proposed in the EP.

3. DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.1. PHYSICAL RESOURCES

Descriptions of the physical resources including (1) geographic and geologic setting, (2) physical oceanography, and (3) meteorological conditions can be found in Appendix B of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference.

3.1.1. Air Quality

The area of the proposed action in DeSoto Canyon Block 354 is located 80 mi (129 km) from the Louisiana coastline and 117 mi (188 km) from nearest Florida coastline. This proposed action will occur west of 87° 30'W. longitude and hence falls under MMS's jurisdiction for enforcement of the Clean Air Act (USDOI, MMS, 2003; Figure 1-1). The air over the OCS water is not classified but it is presumed to be better than the National Ambient Air Quality Standards (NAAQS) attained onshore for all criteria pollutants. Plaquemines Parish, Louisiana, the nearest land to the EPA sale area and DeSoto Canyon Block 354, is in attainment for all of the NAAQS, as is Baldwin County, Alabama. The proposed drilling area is located approximately 87 mi (140 km) from the Breton National Wilderness Refuge.

The air quality of coastal and offshore resources is characterized in Chapter 3.2.1 (Air Quality) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

3.1.2. Water Quality

The proposed activity occurs in DeSoto Canyon Block 354 in water depths ranging from 7,344 to 7,835 ft (2,238-2,388 m). These depths are referred to as ultra-deepwater by industry. The water quality of coastal, offshore, and deepwater resources is characterized in Chapter 3.2.2 (Water Quality) and Chapter 3.2.3 (Bottom Sediment Quality) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

3.2. BIOLOGICAL RESOURCES

3.2.1. Coastal and Nearshore Resources

Coastal biological resources include (1) barrier beaches and dunes, (2) coastal wetlands, (3) subtidal seagrass communities, and (4) beach mice and Florida salt marsh vole.

Coastal barrier beaches and dunes of the northern GOM are divided into three physiographic areas: (1) Chenier Plain, (2) Mississippi River Delta, and (3) the distant offshore islands east of the Mississippi River, which include the Chandeleur and Dog Keys. The coastal barrier habitat is characterized in Chapter 3.3.1.1 (Barrier Islands and Dunes) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

Coastal wetland habitats include fresh, intermediate, brackish, and saline marshes; mud and sand flats; and forested wetlands of mangrove swamps, cypress-tupelo swamps, and bottomland hardwoods. They occur in narrow bands around estuaries and bays and as broad expanses in shoreline areas of Louisiana, Mississippi, and Alabama. Coastal wetlands are generally characterized as being highly productive and efficient at recycling nutrients, and for providing habitats for a broad variety of plants and animals, some of which have significant economic value. Wetland habitats are characterized in Chapter 3.3.1.2 (Wetlands) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference.

Seagrass communities of submerged grasses grow in shallow, relatively clear and protected waters on predominantly sandy bottom substrates. Their distribution depends on an interrelationship among a number of environmental factors that include temperature, water depth, turbidity, salinity, turbulence, and substrate suitability. Seagrass communities are characterized in Chapter 3.3.1.3 (Seagrass Communities) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference.

Five habitats of special biological concern on the Florida inner and middle continental shelf are recognized in this SEA. These managed habitats are located within or on the edge of the EPA. These habitats include the Florida Keys National Marine Sanctuary (FKNMS), Florida Middle Ground (FMG), Big Bend Seagrass Aquatic Preserve, and two new restricted fisheries areas – Steamboat Lumps and Madison-Swanson Special Management Areas. These areas are acknowledged in Chapter 3.3.7 (Areas of Special Biological Concern) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference. They are characterized more completely in the Final EIS for Lease Sale 181 (USDOI, MMS, 2001; pages III-32 and III-86) and the EPA Multisale Final EIS (USDOI, MMS, 2002b).

3.2.1.1. Beach Mice and Salt Marsh Vole

Sixteen subspecies of field mouse (*Peromyscus polionotus*) are recognized, eight of which are collectively known as beach mice. The Alabama, Choctawhatchee, St. Andrew, and Perdido Key beach mice and the Florida salt marsh vole are designated as protected species under the Endangered Species Act (ESA) because of the loss (for mice) or just absence (for the vole) of coastal habitat.

Beach mice and the vole are characterized in Chapter 3.3.1.4 (Beach Mice and Salt Marsh Vole) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference. They are characterized more completely in the Final EIS for Lease Sale 181 (USDOI, MMS, 2001; Section III.C.7) and the EPA Multisale Final EIS (USDOI, MMS, 2002b).

3.2.2. Offshore Resources

3.2.2.1. Benthic Communities

The benthic environments in the ultra-deepwater setting of the GOM are vast expanses of soft pelagic clays in which burrowing infauna are the most abundant invertebrates. The deepwater benthic habitat is characterized in Chapter 3.3.2.2 (Other Benthic Communities) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

Chemosynthetic communities are ecosystems where symbiotic bacteria use a carbon source independent of photosynthesis and the sun-dependent photosynthetic food chain that supports most all

other life on earth. Chemosynthetic communities are characterized in Chapter 3.3.2.1 (Chemosynthetic Communities) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference. They are characterized more completely in the Final EIS for Lease Sale 181 (USDOI, MMS, 2001; Section III.C.3.a) and the EPA Multisale Final EIS (USDOI, MMS, 2002b).

3.2.2.2. Sea Turtles

Sea turtles are long-lived animals that reproduce slowly. All five species that occur in the Gulf are listed as endangered or threatened under the Endangered Species Act (ESA). Sea turtle abundance in the Gulf appears to increase dramatically east of Mobile Bay possibly due to factors such as water depth, coarser bottom sediment, lower turbidity, and available prey.

The five listed sea turtle species (Kemp's ridley, loggerhead, green, leatherback, and hawksbill) are characterized in Chapter 3.3.4 (Sea Turtles) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference.

3.2.2.3. Coastal and Marine Birds

The offshore waters, coastal beaches, and contiguous wetlands of the northeastern GOM are populated by both resident and migratory species of coastal and marine birds. Six major bird groups occur in the northern GOM: (1) seabirds, (2) shorebirds, (3) marsh and wading birds, (4) waterfowl, (5) diving birds, and (6) raptors. Many species are mostly pelagic, and therefore rarely sighted nearshore. The piping plover, bald eagle, and brown pelican are coastal and marine bird species which inhabit or frequent the northern GOM and which are listed as either endangered or threatened under the ESA.

The six major groups of coastal and marine birds, and threatened or endangered species, are characterized in Chapter 3.3.5 (Coastal and Marine Birds) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference.

3.2.2.4. Marine Mammals

Twenty-nine species of marine mammals are known to occur in the GOM. The Gulf's marine mammals are represented by members of the taxonomic order Cetacea, which is divided into the suborders Mysticeti (i.e., baleen whales) and Odontoceti (i.e., toothed whales), as well as the order Sirenia (West Indian manatee). Within the Gulf, there are reports of 28 species of cetaceans (7 mysticete and 21 odontocete species) and 1 manatee species (Jefferson et al., 1992). The distribution of cetaceans in the northern GOM is described in Chapter 3.3.3.3 (Cetacean Distribution in the Northern GOM) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

All cetacean species, including threatened and endangered whales, occurring in the GOM are characterized in Chapter 3.3.3 (Marine Mammals) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference.

The West Indian manatee is listed as endangered; however, its habitat is coastal marine, where it inhabits brackish and freshwater areas with year-round warm water, and usually it is not in deepwater settings. The manatee is characterized in Chapter 3.3.3.4 (West Indian Manatee) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

3.2.2.5. Fisheries and Essential Fish Habitat

The GOM supports a great diversity of fish resources that are related to variable ecological factors, including salinity, primary productivity, and bottom type. These factors differ widely across the GOM and especially between the inshore and offshore waters. Oceanic pelagic species include tunas, marlins, sailfish, swordfish, dolphins, wahoo, and mako sharks. In addition to these large predatory species, there are halfbeaks, flyingfishes, and driftfishes. Lesser-known oceanic pelagics include opah, snake mackerels, ribbonfishes, and escolar. Fish resources are characterized in Chapter 3.3.6 (Fisheries) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference.

Healthy fish resources and fishery stocks depend on essential fish habitat (EFH): waters and substrate necessary to fish for spawning, breeding, feeding, and growth to maturity. The EFH has been identified throughout the GOM, including all coastal and marine waters and substrates from the shoreline to the seaward limit of the Exclusive Economic Zone (EEZ).

Essential fish habitat is characterized in Chapter 3.3.6.2 (Essential Fish Habitat) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

3.2.2.5.1. Gulf Sturgeon

The Gulf sturgeon (*Acipenser oxyrhynchus desotoi*) is listed as threatened in Louisiana, Mississippi, Alabama, and Florida. It does not occur in Texas. The Gulf sturgeon occurs in most major riverine and estuarine systems from the Mississippi River to the Suwannee River, Florida, and marine waters of the Central and Eastern GOM south to Florida Bay. The decline of the Gulf sturgeon is believed to be due to overfishing, the damming of coastal rivers, and degradation of water quality.

The Gulf sturgeon is characterized in Chapter 3.3.6.4 (Gulf Sturgeon) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

3.2.2.5.2. Smalltooth Sawfish

The smalltooth sawfish (*Pristis pectinata*) was listed as endangered in a final rule on April 1, 2003, by NOAA Fisheries. The lack of smalltooth sawfish records since 1984 from the area west of peninsular Florida is a clear indication of decline of abundance in much of the northern Gulf. Peninsular Florida has been the U.S. region with the largest numbers of capture records of smalltooth sawfish and apparently is the only area that historically hosted the species year-round. Although no longer common, smalltooth sawfish were once characteristic and prominent elements of the inshore Florida fish fauna.

The smalltooth sawfish is characterized in Chapter 3.3.6.5 (Smalltooth Sawfish) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

3.3. Socioeconomic and Human Resources

3.3.1. Socioeconomic Resources

3.3.1.1. Commercial Fisheries

Fish species of principal interest in the deepwater EPA sale area are the oceanic pelagics; however, there are no managed bottom-dwelling or commercially important fish species at the water depths of DeSoto Canyon Block 354 or in the entire EPA sale area. Two rectangular areas in the northern Gulf that include DeSoto Canyon Block 354 are closed year-round to pelagic longline fishing.

Commercial fishing resources and the longline ban area are characterized in Chapter 3.4.1 (Commercial Fishing) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference.

3.3.1.2. Recreational Fisheries

Because the EPA sale area is nowhere <75 mi (120 km) from the nearest state (Louisiana) and everywhere >100 mi (160 km) from the Florida coast, only a very small population of fishermen departing from northwest Florida to coastal Alabama frequent this deepwater area. Almost all offshore recreational fishing occurs within 100 mi (160 km) of shore, which coincides approximately with the 200-m (656 ft) isobath. At its northern border the EPA sale area lies 100 mi (160 km) from shore.

Recreational fisheries are characterized in Chapter 3.4.2 (Recreational Fishing) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference.

3.3.1.3. Recreational Resources

The northern GOM coastal zone is one of the major recreational regions of the United States, particularly for marine fishing and beach-centered activities.

Recreational resources are characterized in Chapter 3.4.3 (Recreational Resources) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference.

3.3.1.4. Archaeological Resources

Archaeological resources are any material remains of human life or activities that are at least 50 years of age and that are of archaeological interest (30 CFR 250.2). Historic sites, such as shipwrecks, are the only type of archaeological resource that has the potential to occur in the water depth of these blocks. No historic archaeological resources, such as shipwrecks, are known in DeSoto Canyon Block 354.

Archaeological resources are characterized in Chapter 3.4.4. (Archaeological Resources) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference. The Final EIS for Lease Sale 181 (USDOI, MMS, 2001; pages III-103 to III-106) contains additional details pertaining to prehistoric and historic archaeological resources in the entire EPA.

3.3.2. Human Resources and Economic Activity

Modeling and studies carried out by MMS provide the data upon which impacts on human resources and economic activity are based. Two distinct geographic areas, and the populations residing in them, will be potentially affected by the proposed action, both to very small degrees.

The first area is proximal to the EPA sale area and extends in an arc from Pascagoula and Jackson Counties, Mississippi, to Panama City and Bay Counties, Florida. This area includes residents and local economies that would experience very small incremental increases in activity from the proposed action. The second, larger area envelopes the first and includes the coastal counties and parishes from the Florida Panhandle to the Louisiana/Texas state line. This second area represents the industrial and service markets for activities potentially associated with the proposed action. The results of modeling for assessment of economic and employment impacts for all OCS activity was undertaken in the Final EIS for Lease Sale 181 (USDOI, MMS, 2001; Section III.D.4.c).

The PEA for exploration in the EPA sale area contains chapters that characterized affected human and socioeconomic resources, including the following: Demographics (Chapter 3.4.4.1), Economic Factors (Chapter 3.4.4.2), OCS-Related Coastal Infrastructure (Chapter 3.4.4.3), Navigation and Port Usage (Chapter 3.4.4.4), and Environmental Justice (Chapter 3.4.4.5) (USDOI, MMS, 2003). These chapters are incorporated into this SEA by reference.

3.3.2.1. Current Industry Activity

Activity in 2002 and early 2003 has been stable to slightly declining in the GOM. Current crude oil and natural gas prices are substantially above the economically viable threshold for drilling in the GOM. On January 5, 2004, Light Sweet Crude listed for $33.78 per barrel on the New York Mercantile Exchange, while Henry Hub Natural Gas closed at $6.83 per million Btu (OILNERGY, 2003).

4. IMPACTS ON PHYSICAL, BIOLOGICAL, AND SOCIOECONOMIC RESOURCES

The potential effects and impact-producing factors caused by exploratory drilling and well completion or abandonment are discussed in Chapter 4.1 (Exploration and Delineation Activities) and Chapter 4.2 (Impact-Producing Factors) of the PEA on exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference.

4.1. IMPACTS ON PHYSICAL RESOURCES

4.1.1. Impacts on Water Quality

Impact-producing factors from exploratory drilling associated with the proposed action include (1) rig emplacement; (2) routine operations of support vessels; (3) possible oil spills and blowouts; (4) overboard discharge of operational wastes from exploratory drilling or abandonment; and (5) discharges from onshore support facilities.

4.1.1.1. Impacts from Rig Emplacement and Removal

Impacts from rig emplacement and removal (resuspension of bottom sediments) would not occur because Marathon would use a DP drillship to drill all the proposed wells. Also, no anchoring would occur. Jetting the surface casing, if that procedure is carried out, may result in localized sediment suspension and a high level of turbidity over an area of approximately 5 ac (2 ha). Likewise, the sea-bottom area affected by drilling cuttings that settle from the surface is expected to be approximately the same size area—about 5 ac (2 ha). This bottom disturbance may degrade the water quality proximal to the borehole location but will not result in significant impacts to offshore water quality.

4.1.1.2. Impacts from Support Vessel Operations

The drilling schedule submitted by Marathon indicates that drilling activity for the four wells will occur over a total of approximately 32 weeks. Support vessels will make up to 7 trips to the drill site per week for the duration of the project (Chapter 1.4.5), for a total of approximately 224 trips.

Impacts from discharges and wastes from support vessels are discussed in Chapter 4.2.4.9 (Discharges and Wastes from Support Vessels) in the PEA on exploration in the EPA sale area (USDOI, MMS, 2003). Impacts from oil or diesel spills from support vessels are discussed in Chapter 4.3.1.2.2.1 (Offshore Oil Spills) of the PEA. Both discussions are incorporated into this SEA by reference.

Port Fourchon, Louisiana, is already used extensively by the oil industry, and the addition of three vessels per day, at maximum, that is attributable to the proposed action will not alter the impacts on water quality already occurring at the port.

4.1.1.3. Impacts from a Blowout

The methodology and modeling of oil spills from well blowouts and other causes received an areawide analysis in Chapter 4.2.7.1 (Offshore Oil Spills from Exploratory Drilling) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference. Marathon has estimated a worst-case discharge scenario of 600 bbl of condensate from a blowout.

The proposed action for drilling four exploratory wells in DeSoto Canyon Block 354 involves a drilling scenario that has been taken into account in the analyses completed for the PEA. According to the analysis in Chapter 4.2.7 (Accidental Events) of the PEA, the spill risk (combined probability of an oil spill $\geq$1,000 bbl occurring from a blowout or other cause and contacting identified environmental features) is less than 0.5 percent for all modeled environmental resources or land segments for periods of 3, 10, or 30 days. This spill analysis was carried out for the entire EPA sale area and is valid for any spill occurring within this area, including the location of the proposed action in DeSoto Canyon Block 354.

Impacts from a blowout would occur from physical disturbance of the seafloor and the resuspension of bottom sediments in addition to hydrocarbons venting from the wellbore. Impacts on water quality would occur during the blowout event and for a period of days to weeks afterward. Microbial degradation, dispersion, and evaporation will quickly begin to remove hydrocarbons from the water column and the surface slick that forms from it. It is highly unlikely that oil would contact any shoreline because a blowout is a very rare event and the proposed wells in DeSoto Canyon Block 354 are located 80 mi (129 km) from the nearest shoreline.

4.1.1.4. Impacts from Oil Spills

Offshore spills from Marathon's proposed action in DeSoto Canyon Block 354 are possible if an accident were to damage the diesel storage tanks on the rig or support vessels during routine operations or the transfer of diesel fuel from tank to tank. The single largest capacity diesel fuel tank on the DP drillship has a capacity of 13,812 bbl, with a total capacity of 37,896 bbl of diesel on board. The diesel oil supply vessel has a carrying capacity of 7,364 bbl of diesel fuel and the crewboat fuel tank has a storage capacity of 833 bbl. The same areawide oil-spill analysis reported in Chapter 4.1.1.3 (Impacts from a Blowout) also considered oil spills that may occur from drilling rigs and service infrastructure. Those accident scenarios are part of the analysis in Chapter 4.2.7 (Accidental Events) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003). Also, impacts on water quality are discussed in

the PEA for exploration in the EPA sale area (USDOI, MMS, 2003; Chapter 4.3.1.2, Impacts on Water Quality).

Marathon has estimated a worst-case discharge scenario from a facility spill of 13,812 bbl, representing the rupture and complete voiding of the largest diesel storage tank on the drillship. If a diesel tank should rupture on the drillship or service vessel, depending on the type of tank failure and amount of spillage, the diesel fuel would evaporate and mix into the water column resulting in a temporary decrease in water quality around the rig for a period of days to weeks. The time to recover would depend on the size of the spill or the effectiveness of the spill response. It is highly unlikely that oil would contact any shoreline because a large spill is a rare event and because DeSoto Canyon Block 354 is 80 mi (128 km) from the nearest shoreline. If oil contacts a shoreline, it would be in a degraded and weathered state. As a result, impacts to marine and coastal water quality from an oil spill from the proposed action are expected to be negligible to minor.

4.1.1.5. Impacts from Drilling Rig Discharges

Overboard discharges are projected to occur from the proposed action (Appendix C). The types and volumes of waste discharge will be in accordance with USEPA NPDES General Permit GMG 280000 for USEPA Region 4 or an individual NPDES permit. The full range of impacts from drilling unit operational wastes and discharges is discussed in Chapter 4.2.4 (Drilling Unit Operational Wastes and Discharge) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

The types and quantities of overboard discharges are identified in Chapter 1.3.1. Cumulative estimates for overboard discharges for the proposed action are presented in Table 4-1. The average duration for a well in the proposed action is 56 days, for a total of about approximately 32 weeks for the four exploratory wells. Assuming a full crew, which includes rig crews and third-party contractors on the DP drillship, overboard discharge totals according to the data provided by Marathon (Appendix C) are indicated in Table 4-1.

Cement plugs, blowout preventer fluid, and diatomaceous earth filters are all minor discharges that can occur from the completion operations. These quantities are expected to be extremely small and of short duration. In addition, the cumulative estimate for domestic and sanitary wastes from support vessels based on the NERBC (1976) would be approximately 46,200 bbl for the entire project.

Overboard discharges should be rapidly diluted and dispersed. They would be discharged over 32 weeks during the drilling period within DeSoto Canyon Block 354. Impacts to water quality would be minimal and confined to an area within a few meters of the discharge site. None of the quantities and categories of wastes discharged overboard are expected to result in significant impacts to offshore water quality.

Table 4-1

Cumulative Estimates of Overboard Discharges for the Proposed Action

Waste Type	Cumulative for Proposed Action (4 wells) (maximum assumptions; bbl)
WBM	54,4000
WB cuttings	16,600
WBM at seafloor	28,000
WBM and gel wetted cuttings at seafloor	7,880
Gel used for drilling at seafloor	19,200
Seawater and caustic	19,200
Sanitary waste	13,333
Domestic waste	13,333
Deck drainage from rain water	0-4,000
Desalinization unit water	194,880
Uncontaminated ballast water	80,000
Miscellaneous discharges to which treatment chemicals have been added	2,000
Miscellaneous discharges (excess cement)	200

4.1.1.6. Impacts from an Onshore Support Base

Marathon plans to use the existing onshore service base at Port Fourchon, Louisiana, and commercial waste disposal facilities located in Louisiana. Point-source effluents from these facilities are controlled by requirements in the NPDES permits for these facilities. Domestic and sanitary wastewater would be collected and delivered to a municipal treatment plant or discharged through a permitted onsite wastewater treatment system. The USEPA NPDES storm-water effluent limitations control storm-water discharges from supporting facilities. Thus, effluent discharges from these facilities would be negligible and should not contribute to coastal water quality degradation.

The facility's presence, along with the associated access routes, alters the natural hydrology and geography of the area over time, resulting in increased erosion and landloss. Nonpoint source run-off, such as rainfall that has drained from a public road, may contribute hydrocarbon and trace-metal pollutants to adjacent drainage canals. Marathon does not expect to expand or construct any additional buildings at these bases with respect to the proposed activities. Thus, runoff attributable to the proposed action would be negligible.

4.1.2. Impacts on Air Quality

The projected air emissions submitted by Marathon for this project are not expected to affect the OCS air quality primarily because of the distance to shore or the distance to any Prevention of Significant Deterioration Class I air quality area such as the Breton National Wilderness Refuge (BNWR). The location of the proposed action in DeSoto Canyon Block 354 is beyond the 100-km buffer for the BNWR and no special mitigation, monitoring, or reporting requirements apply.

The impact of air emissions from exploratory drilling and accidental oil spills is discussed in Chapter 4.2.4.6 (Air Emissions) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.2. IMPACTS ON BIOLOGICAL RESOURCES

4.2.1. Impacts on Coastal and Nearshore Resources

Chapter 4.2.7.1 (Offshore Oil Spills from Exploratory Drilling) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) concludes that a very low probability (<0.5%) exists for (1) an oil spill ≥1,000 bbl resulting from an accidental blowout and (2) that spill contacting coastal resources including beaches and dunes, wetlands, seagrass communities, and beach mice or their habitat. Oil spills that may occur as a result of the proposed action are expected to be (1) infrequent, (2) volumetrically small, and (3) not significantly alter or impact beaches, seagrass communities, wetlands, or wetland configurations.

4.2.1.1. Impacts on Barrier Beaches and Dunes

An offshore spill associated with the proposed action would have a diminished probability of impacting barrier and beach shorelines largely because of their distance from the proposed action. Contact between an oil-spill slick associated with the proposed action and barrier island beaches and dunes would depend on environmental conditions (e.g., wind, wave, current, and temperature). The length of beach that might be contacted could range up to around 12.5 mi (20 km) (USDOI, MMS, 2001). Oil may disperse on beaches in diffusely scattered specks to heavy concentrations or tarballs, depending on the weathering state of the slick. Severe adverse impacts on dunes contacted by a spill associated with the proposed project are very unlikely because the storm and high-water conditions necessary to carry oil from a spill across and over barrier islands and dunes (high southerly winds persisting for an extended period of time) would also act to disperse, spread, and weather spilled oil, and thus reduce impact severity. Cleanup operations associated with large oil spills can affect the stability of barrier beaches more than the spill itself.

The potential impacts on barrier islands and dunes from oil spills and associated cleanup activities are discussed in Chapter 4.3.2.1 (Impacts on Barrier Islands and Dunes) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference.

4.2.1.2. Impacts on Wetlands and Seagrass Communities

Distant offshore spills have a diminished probability of impacting inland shorelines, wetlands, and seagrass communities largely due to their distant and sheltered locations. Adverse impacts could occur to wetlands or seagrass communities that are contacted by a large, degraded offshore oil spill that migrates inshore, or if a support vessel oil spill occurs inshore.

The data suggest that light oiling generally causes plant dieback with recovery occurring within two growing seasons without artificial replanting. Such impacts on vegetation are considered short term and reversible. Oil-spill cleanup activities that increase foot and vehicle traffic over wetlands could cause damage from trampling, which may work oil deeper or more extensively into sediments than would have otherwise occurred.

Oil slicks would impact seagrass communities primarily by shading plants from sunlight, reducing oxygen levels in the water, and degrading the quantity or diversity of epifauna on grasses that may affect the community for about 2 years. Oil spills from the proposed action would not be expected to significantly alter wetlands, wetland configurations, or seagrass communities.

A discussion of impacts on wetlands and seagrass communities from oil spills and associated cleanup activities is provided in Chapter 4.3.2.2 (Impacts on Wetlands and Seagrass Communities) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

The five areas of special biological concern discussed in Chapter 3.2.1.2 (Wetlands and Seagrass Communities) are sufficiently distant from the proposed project area so that no impacts are expected from the proposed activities. Oil spills would affect the Big Bend Seagrass Aquatic Preserve (BBSAP) in the same manner as it would affect other submerged seagrass communities; however, the BBSAP is over 140 mi (225 km) from the proposed project area. Due to the distance and weathering and dispersal that would occur, it is unlikely that any measurable impacts would occur if a spill from the proposed project made landfall in the BBSAP. The impacts on areas of special biological concern are discussed in Chapter 4.3.2.12 (Impacts on Areas of Special Biological Concern) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference.

4.2.1.3. Impacts on Beach Mice and Salt Marsh Vole

The major impact-producing factors associated with the proposed action that may affect beach mice and the Florida salt marsh vole include (1) an oil spill resulting from an accidental blowout, (2) spill-response activities, and (3) beach trash and debris from OCS activity. Direct contact with spilled oil that has washed ashore can cause skin and eye irritation, asphyxiation from inhalation of fumes, oil ingestion, and reduction or contamination of food sources. High seas would be necessary to cause a spill slick to make landfall and affect mice, voles, or their habitat. The erosion associated with high seas during storms is likely to do more damage to beach mouse habitat than oiling.

Vehicular traffic and activity associated with oil-spill cleanup activities can degrade or cause displacement from preferred habitat and trample burrows. Trash and debris may be mistakenly consumed by beach mice or it may ensnare them, but contact with trash originating from exploration in the EPA sale area is not likely. Oil spills or cleanup activity and incidental trash related to the proposed activity are not expected to significantly impact beach mice or voles.

A discussion of impacts on beach mice and voles from oil spills and cleanup activities is provided in Chapter 4.3.2.3 (Impacts on Beach Mice and the Salt Marsh Vole) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.2.2. Impacts on Offshore Resources

4.2.2.1. Impacts on Benthic Communities

Benthic communities dominated by soft-bodied infaunal organisms could be impacted by a bottom-disturbing seafloor blowout or burial from drilling cuttings. A blowout at the seafloor could resuspend large quantities of bottom sediments, create a large crater, and bury organisms within 300 m (984 ft) of the well site. An oil spill could result from such a blowout but it is assumed that all of the spill would rise to the surface. Because of the great water depths (7,344-7,835 ft; 2,238-2,388 m), discharges of drilling muds and cuttings at the surface are spread across broad areas of the seafloor and create thinner accumulations than in shallower areas on the continental shelf.

Highly motile megafauna (primarily benthic fish and some crustaceans and molluscs) would be capable of moving to new locations and avoid the majority of these physical impacts. Nonmotile fauna could be smothered. Depending on the organism type, just a few centimeters of burial could cause death. Some types of macrofauna could burrow through gradual accumulations of overlying sediments. These impacts would be very localized and reversible at the population level through recolonization. Recovery from the impact of a blowout would be similarly reversible. A discussion of impacts on the benthic environment is provided in Chapter 4.3.2.5 (Impacts on Other Benthic Communities) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

Because no chemosynthetic communities are known from the EPA sale area, no impacts are expected to these communities. A separate biological review is conducted on EP's using geophysical maps to assess the potential for chemosynthetic communities as outlined in NTL 2000-G20 (Chemosynthetic Communities). A discussion of impacts to chemosynthetic communities is provided in Chapter 4.3.2.4 (Impacts on Chemosynthetic Communities) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.2.2.2. Impacts on Sea Turtles

The major impact-producing factors related to the proposed action that could affect sea turtles include (1) water-quality degradation from operational discharges, (2) helicopter and service-vessel traffic and noise, (3) drilling unit lighting, (4) floating trash and debris, (5) oil spills, and (6) oil-spill-response activities. Four sea turtle species in the GOM are endangered: Kemp's ridley, green, leatherback, and hawksbill. The loggerhead turtle is threatened.

Drilling wastes may contaminate the food web of sea turtles. Reproductive success in the turtles may then be reduced or mortality may be increased, retarding the recovery of turtle populations. Contaminants in waste discharges and drilling muds might indirectly affect sea turtles through food-chain biomagnification, but there is uncertainty concerning the possible effect.

Sea turtles or their prey may be displaced from the turtles' feeding habitat by noise, spilled oil, or oil-spill-response activities. Noise from the proposed action may cause permanent hearing impairment, but there is uncertainty concerning the possible effect and turtles may avoid acute or long duration sound sources instead. The response of adult turtles to lights on offshore structures is unknown; however, hatchlings may be drawn to them. Discharge of debris that could be ingested to result in death or serious injury is expected to be minimal because of trash handling requirements on MODU's. When oil is spilled, inhaled oil fumes, ingested oil, or consumed prey that is oiled may increase concentration of toxic elements in tissues and raise mortality rates. Primarily sublethal effects would be expected due to possible avoidance and natural dispersion and weathering of the spill in the offshore environment. Spill-response activities could have impacts on the habitat preferred by sea turtles and cause displacement to habitat of lesser quality. The proposed action is not expected to cause fatalities or to have long-term adverse effects on the size and productivity of any turtle species or population stock in the northern GOM. A discussion of the impacts on sea turtles from the proposed action is provided in Chapter 4.3.2.7 (Impacts on Sea Turtles) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.2.2.3. Impacts on Coastal and Marine Birds

The major impact-producing factors from the proposed action that could affect coastal and marine birds are (1) air emissions, (2) noise from support vessels and traffic, (3) water-quality degradation from operational discharges, (4) trash and debris, (5) oil spills, and (6) oil-spill-response activities. The southeastern snowy plover is a species of special concern in Florida. Two bird species in the GOM are listed as threatened: bald eagle and piping plover. One species is listed as endangered is listed in the GOM in Texas, Louisiana, and Mississippi: brown pelican.

Impacts on nonlisted birds are the same as those on endangered or threatened species. Small numbers of birds could be affected sublethally or killed by oil spills or spill-response activities that disturb nests or young birds. Nesting populations could experience degradation of preferred habitats, nesting grounds, and food sources should an oil slick make landfall. Small numbers of birds could be impaired by consumption of indigestible trash, particularly plastic items, lost from exploration drilling rigs or service vessels. Birds may be disturbed by noise from support vessels and helicopters, and may be affected by operational discharges if individuals come into contact with outflows.

The proposed action is not expected to cause sublethal fatalities to endangered or threatened bird species, or bird species of special concern. No long-term adverse impacts are expected on the size or productivity of critical breeding stock or the disruption of nesting habitat in the northern GOM.

A discussion of impacts on coastal and marine birds from the proposed action is provided in Chapter 4.3.2.11 (Impacts on Coastal and Marine Birds) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.2.2.4. Impacts on Marine Mammals

The major impact-producing factors associated with the proposed action that may affect marine mammals include (1) degradation of water quality from operational discharges, (2) helicopter and vessel traffic and collision hazard, (3) underwater noise, (4) floating trash and debris, (5) oil spills, and (6) oil-spill-response activities. These impacts may result in lethal effects or chronic disturbances in marine mammals.

Five of the seven species of baleen whales that have been reported in the GOM are presently listed as threatened or endangered (the northern right, blue, fin, sei, and humpback). Of the 28 toothed whales that occur in the Gulf, only the sperm whale is currently listed as endangered. The West Indian manatee is listed as endangered; however, its habitat is coastal marine. Impacts on nonlisted cetaceans are the same as those on endangered or threatened species.

One or two marine mammals could be killed or injured by chance collision with service vessels or by eating plastic trash lost from drilling rigs or service vessels. There is no conclusive evidence whether or not anthropogenic noise causes physiologic stresses, or long-term displacements or reductions, in marine mammal populations. Although an interaction with a spill could occur, primarily sublethal to negligible effects are expected because of avoidance and because the spills in the offshore environment would be

dispersed and weathered. Trace metals in drilling muds might indirectly affect marine mammals through food-chain biomagnification, but there is uncertainty concerning the possible effect.

The proposed action is not expected to cause fatalities to endangered or threatened cetacean species or manatees. No long-term, adverse affects on the size and productivity of any marine mammal species or population stock in the northern GOM is expected.

A discussion of impacts on marine mammals is provided in Chapter 4.3.2.6 (Impacts on Marine Mammals) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.2.2.5. Impacts on Plankton, Fish, and Essential Fish Habitat

The major discharge to marine waters associated with the proposed action is the drilling muds and cuttings. Drilling muds contain materials, such as lead and cadmium that, in high concentrations, are toxic to fishery resources; however, the plume disperses rapidly, is very near background levels at a distance of 1,000 m (3,281 ft) from the discharge point, and is usually undetectable at distances greater than 3,000 m (9,843) (Kennicutt, 1995).

Discharge impacts on phytoplankton and zooplankton are expected to be minimal because of low toxicity and rapid dispersion. Organisms close to permitted discharge outfalls, or spilled diesel or oil, can receive concentrations of organic materials or chemicals that are deleterious and toxic. Individual plankters may be subject to lethal or sublethal effects for short periods ranging from minutes to hours. Permitted drilling rig discharges, or spilled oil or diesel, is not expected to alter or shift distribution or abundance of plankton in the nearshore, offshore, or pelagic environment. The impacts on plankton from permitted discharges and spilled oil are discussed in Chapter 4.3.2.8.1 (Impacts on Plankton) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference.

The effects of spilled oil on floating fish eggs and larvae that are contacted by spilled oil are expected to be lethal. The direct effects of spilled oil on fish occur through the ingestion of oil or oiled prey and through the uptake of dissolved petroleum constituents through the gills. Adult fish must experience continual exposure to relatively high levels of spilled hydrocarbons over several months before secondary toxicological compounds that represent biological harm are detected in the liver.

The major impact on EFH is pollutants in drilling mud, such as lead and cadmium, that in high concentrations are toxic to fishery resources. The discharge plume from NPDES-permitted outflows disperses rapidly and is very near background levels at a distance of 1,000 m from the discharge point. Drill cuttings discharged at the surface over deep water (>400 m) typically disperse over a large area and form a veneer less than 30 cm thick (Gallaway and Beaubien, 1999). Burial of the benthos and oxygen deprivation due to decomposition of organic components of drill muds also affect EFH. These effects are both local and temporary. Gulf oils from blowouts are usually light enough to readily form surface slicks, thereby limiting hydrocarbon contamination of EFH.

A discussion of impacts from permitted discharges and oil spills on fish and EFH is provided in Chapter 4.3.2.8 (Impacts on Fish and Essential Fish Habitat) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.2.2.5.1. Impacts on the Gulf Sturgeon

The impact-producing factor with the potential to affect the Gulf sturgeon is spilled oil. Oil from a spill that is dissolved or emulsified in the water may directly impact the Gulf sturgeon if it is absorbed through the gills or if oiled prey is ingested, causing stress on liver function. The impacts on the endangered Gulf sturgeon are expected to be negligible due to the unlikelihood of spilled oil contacting estuarine or riverine habitat where the Gulf sturgeon resides for most of the year.

A discussion of impacts on the Gulf sturgeon is provided in Chapter 4.3.2.9 (Impacts on the Gulf Sturgeon) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.2.2.5.2. Impacts on the Smalltooth Sawfish

The impact-producing factor with the potential to affect the smalltooth sawfish is spilled oil. Oil from a spill that is dissolved or emulsified in the water may directly impact the sawfish if it is absorbed through the gills or if oiled prey is ingested, causing stress on liver function. The potential impacts on the sawfish are expected to be negligible because the sawfish's year-round habitat is recognized to be in southern Florida, an area unlikely to be contacted by oil spilled from the proposed action.

A discussion of impacts on the smalltooth sawfish is provided in Chapter 4.3.2.10 (Impacts on the Smalltooth Sawfish) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.3. IMPACTS ON SOCIOECONOMIC AND HUMAN RESOURCES

4.3.1. Impacts on Socioeconomic Resources

4.3.1.1. Impacts on Commercial Fisheries

There is no evidence that commercial fisheries in the Gulf have been adversely affected by oil spills on a regional population level. A large spill could kill fish eggs and larvae in proximity to a spill, but adult fish would likely avoid the spill area. Fish overproduce eggs on an enormous scale and it is unlikely that a large oil spill (≥1,000 bbl) would have a detectable effect on the adult populations that is measurable.

Regardless of spill size, adult fish are likely to actively avoid an oil spill, thereby limiting the effects and lessening the extent of damage. This behavior explains why there has never been a commercially important fish kill on record following an oil spill (NRC, 1985).

Water depths in the blocks of the proposed action range from 7,344 to 7,835 ft (2,238-2,388 m). There are no commercially important or managed bottom-dwelling fish species. Two rectangular areas in the northern Gulf that include DeSoto Canyon Block 354 are closed year-round to pelagic longline fishing. Commercial fishing resources and the longline ban area are characterized in Chapter 3.4.1 (Commercial Fishing) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and are incorporated into this SEA by reference. An oil spill from a subsurface blowout ≥1,000 bbl is not expected to cause a decrease in commercial fish populations or degrade EFH.

A discussion of impacts on commercial fisheries is provided in Chapter 4.3.3.1 (Impacts on Commercial Fisheries) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.3.1.2. Impacts on Recreational Fisheries

There is no evidence that recreational fisheries or fishing in the EPA have been adversely affected by oil spills. It is likely that, by the time an operator completed a well in their exploration program and moved the drilling rig, recreational fishermen may not even have known it was there. Very few fishing trips go beyond the 200-m isobath in the DeSoto Canyon OCS area, or approximately 100 mi (160 km) from shore (edge of the continental shelf). No long-term effects are expected on the size or productivity of any recreational fisheries in the GOM.

The proposed activities in DeSoto Canyon Block 354 are located far offshore, in extremely deep water, and are not located near any of Alabama's Artificial Reef Areas. No adverse impacts on offshore recreational fishermen are expected; for example, space conflicts or water turbidity.

A discussion of impacts on recreational fisheries is provided in Chapter 4.3.3.2 (Impacts on Recreational Fisheries) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.3.1.3. Impacts on Recreational Resources

The proposed action is located in DeSoto Canyon Block 354, no less than 90 mi (145 km) from the nearest shore (Mississippi River Delta) in extremely deep water. Drilling rigs located farther than 15 mi (24 km) from shore cannot be seen from shore by an observer at sea level. There will be no visual or

aesthetic effects on beach users or coastal tourists in Alabama or northwest Florida from the exploration activity in the proposed action.

The probability of an oil spill resulting from an accidental blowout that contacts the coastal area or nearshore resources is less than 0.5 percent (USDOI, MMS, 2003; Table 4-9). Depending on factors such as season, length of affected beach, publicity, and effectiveness and duration of cleanup, some displacement of recreational use at specific beaches would occur during cleanup operations.

A discussion of impacts on recreational resources is provided in Chapter 4.3.3.3 (Impacts on Recreational Resources) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.3.1.4. Impacts on Archaeological Resources

DeSoto Canyon Block 354 is not located within either of MMS's designated high-probability areas for the occurrence of prehistoric or historic archaeological resources. No impacts on prehistoric or historic resources are expected from the proposed action.

Prehistoric archaeological resources are precluded from the area due to the water depth. The high-probability area for prehistoric resources is shoreward of the 200-m isobath.

Historic archaeological resources, such as shipwrecks, can be impacted as a result of seafloor disturbance from exploratory drilling and anchors that directly contact a shipwreck. Because Marathon intends to use a DP drillship for drilling the exploration wells, sea-bottom disturbance from anchors is not an issue. Exploration activity in the block of the proposed action could impact a shipwreck because of incomplete knowledge of their location in the Gulf. If a wreck were accidentally encountered, it could result in the disturbance or destruction of important historic archaeological information. In the event of an accidental discovery, all operations must be immediately ceased and the Regional Director must be notified (30 CFR 250.194). The proposed exploration activity does not occur in the area of a known shipwreck.

A discussion of impacts on archaeological resources is provided in Chapter 4.3.3.4 (Impacts on Archaeological Resources) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.3.2. Impacts on Human Resources and Economic Activity

4.3.2.1. Impacts on Human Resources

4.3.2.1.1. Impacts on Population, Age Distribution, and Education

The impact region's population will continue to grow slowly; however, there will be minimal to no effects on population levels resulting from the proposed action. The DP drillship *Deepwater Millenium* has a full crew capacity of 130. The MMS estimates 60 crew members are needed to operate each of three supply and/or crewboats in support of the deepwater MODU. If full crews are assumed, approximately 300 people could be directly affected. Most of these people, however, simply transfer from one contract to another at the discretion of the MODU operator and by arrangement of the operator requiring the drillship. Only a fraction of this number, perhaps 10 percent, will represent a net gain in population for the area, with less than half of those (approximately 15 people) expecting to relocate to a local metropolitan area. Lodging for the crews involved in the proposed action is expected to be on the drilling rig, support vessel, or in day-to-month hotels or apartments that may or may not be near the onshore support base, while permanent residences are located elsewhere.

A discussion of impacts on population and education levels is provided in Chapter 4.3.3.5 (Impacts on Human Resources) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.3.2.2. Impacts on Economic Activity

4.3.2.2.1. Impacts on Employment

An exploratory well using a DP drillship can cost from $10 to $50 million or more to complete. Both the amount and type of expenditures vary considerably. While maintenance, supplies, and services

purchased at Port Fourchon, Louisiana, will benefit commercial vendors located there and in nearby areas, the overall benefit in new job growth for the local population will be minimal, and few new net jobs will result. Employers are likely to adjust workforce structures according to the necessities of supply and demand through layoffs of surplus capacity and hiring in areas of scarcity. Some importation of skilled labor may be required on a temporary basis.

The resource costs of cleaning up an oil spill, both onshore and offshore, are not significant for two reasons: (1) the resources involved in the cleanup of an oil spill, in the absence of that spill, would produce other goods and services; and (2) the occurrence of a spill is not a certainty.

A discussion of impacts on employment is provided in Chapter 4.3.3.6 (Impacts on Economic Factors) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.3.2.2.2. Impacts on Infrastructure, Land Use, and Ports

The infrastructure, land-use patterns, and ports that support exploration activities should increase or remain stable in Port Fourchon in the short term. There is sufficient land designated in commercial and industrial parks adjacent or nearby the existing port to minimize disruption to current residential and business use patterns. Changes in land use throughout the region as a result of the proposed action are expected to be minimal and small enough so as to be difficult to isolate for measurement. A supply boat is expected to make seven trips per week, two crewboats are expected to make seven trips per week, and a helicopter is expected to make seven trips per week during the 32 weeks of the proposed activity.

Port Fourchon is capable of providing the required service boats and heliport facilities. No immediate measures for land acquisitions, new construction, or expansion of the existing onshore base facilities are required. Dredging or filling operations will not be required at Port Fourchon as a result of the proposed activities.

A discussion of impacts on infrastructure, land use, and ports is provided in Chapter 4.3.3.6 (Impacts on Economic Factors) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

4.3.3. Impacts on Environmental Justice

Executive Order 12898, entitled Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by President William J. Clinton, directs Federal agencies to assess if their proposed actions have disproportionate environmental, health, social, or economic effects on ethnic or racial minorities, or people with low incomes.

The proposed exploration activities are transient and limited in scope. They are located in an area no closer than 100 mi (160 km) from the Florida or Alabama coastlines. The MMS does not anticipate any negative or disproportionate environmental impacts on minority or poor people in Florida Panhandle counties. No disproportionate or negative effects should occur in the rest of the impact area because existing facilities, land use, and the industry employment patterns will not be altered to any significant degree. If these resources and activities change, especially if they increase and cause disruptions of local neighborhoods, then the relevant regulatory agencies should pay particular attention to how these neighborhoods are affected.

A discussion of impacts on environmental justice is provided in Chapter 4.3.3.7 (Impacts on Environmental Justice) of the PEA for exploration in the EPA sale area (USDOI, MMS, 2003) and is incorporated into this SEA by reference.

5. ENVIRONMENTAL SAFEGUARDS

5.1. INSPECTIONS

The MMS has an extensive, detailed inspection program to ensure the safety of offshore oil and gas operations. This program places MMS inspectors offshore on drilling rigs and production platforms on a daily basis to check operator compliance with extensive safety and environmental protection requirements.

The MMS will conduct onsite inspections 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 equipment listed in the operator's approved OSRP that would be used for the containment and cleanup of hydrocarbon spills. The MMS inspection program in the GOM is directed by a Regional Office located in New Orleans and six district offices, which provide closer day-to-day review and inspection of drilling plans. The New Orleans District is responsible for the inspection of exploration activities in DeSoto Canyon Block 354.

Types of Inspections: The GOM Region of MMS conducts several types of inspections. Individual operators have their drilling rig inspected before drilling commences and at least once a month while it is in operation. Unannounced inspections are conducted to foster a climate of safe operations, to maintain an MMS presence, to focus on operators with a poor performance record, and to reinspect after a safety feature was previously found defective. The MMS also inspects well-workover and completion operations, pipeline installations, and platform and well abandonments. The MMS also certifies the content of all the training courses that industry's offshore personnel are required to attend and ensures that personnel on drilling rigs have had the necessary training.

The MMS also inspects the stockpiles of industry's equipment to contain and clean up oil spills. Stockpiles are located at nine strategic sites along the Gulf Coast. The MMS has instituted a program to land unannounced at an operator's facility to conduct a surprise drill, day or night, to test the company's ability to deal with an oil spill.

Scope of Inspection Effort: The MMS has 49 inspectors who go offshore every day using 12 leased helicopters. This $12 million effort places inspectors on rigs and production platforms with great regularity. Drilling inspections, for example, are conducted to ensure that the proper equipment is used, proper procedure is followed, approved drilling plans are followed, sufficient supplies are on location, and proper techniques are followed to maintain control of the well and to prevent blowouts, spills, and other accidents.

Penalties: If an operator is found in violation of a safety or environmental requirement, a citation is issued requiring that it be fixed within 7 days. On a drilling rig, for example, 160 items are checked. If important enough, the violation may call for the particular well component or the entire complex to be shut-in. The MMS has routinely ordered shut-ins of industry operations. If the violation is serious enough and is found to be a "knowing and willful" violation, MMS refers it to the Department of Justice for criminal prosecution.

5.2. OCS LAWS AND REGULATIONS

Operators on the OCS must adhere to the OCSLA, as amended; lease terms and stipulations; MMS's Operating Regulations (30 CFR 250); Coastal Zone Management Act (15 CFR 930); National Environmental Policy Act (NEPA); and other Federal regulations and laws. The purposes of these statutes are to assure conformance with sound conservation practices and to assure operations are conducted in a manner to preserve, protect, and develop mineral resources of the OCS. Equally important is the requirement to assure operations are conducted in an environmentally safe manner in accordance with NEPA.

In 43 U.S.C. 1347(b) of the OCSLA, as amended, it is required that all OCS technologies and operations are used that the Secretary determines to be economically feasible. Conformance to the standards, codes, and practices referenced in 30 CFR 250 is considered to be the application of the best available and safest technology. Among these requirements is state-of-the-art drilling technologies, oil-spill contingency plans, and pollution control equipment.

In the MMS regulations (30 CFR 250.300), the lessee must ". . . take measures to prevent unauthorized discharge of pollutants into offshore waters. The lessee shall not create conditions that will pose unreasonable risk to the public health, life, property, aquatic life, wildlife, recreation, navigation, commercial fishing, or other uses of the ocean." Operators are required to install curbs, gutters, drip pans, and drains on drilling deck areas to collect all contaminants not authorized for discharge and to process them until they meet overboard discharge requirements or bring them to shore for proper disposal in

permitted or licensed facilities. No disposal of equipment, cables, containers, or other materials into offshore waters is permitted.

Marathon is responsible for not creating conditions that will pose unreasonable risk to the public health, life, property, aquatic life, wildlife recreation, navigation, commercial fishing, or other uses of the ocean. Safety features on the rig will include well control, pollution prevention, welding procedure, and blowout prevention equipment as described in 30 CFR 250, Subparts C, D, E, and G; and as further clarified by MMS Notices to Lessee and current policymaking invoked by MMS, USEPA, and the USCG. In addition, all appropriate life rafts, life jackets, and buoys, as prescribed by the USCG, will be maintained on the facility at all times.

In accordance with 30 CFR 250, Subpart O, Marathon is to ensure well-control training is provided for any partner or contractor personnel engaged in oil and gas operations in the GOM OCS. Supervisory and certain designated personnel onboard the facility are to be familiar with the effluent limitations and guidelines for overboard discharges into the receiving waters, as outlined in the USEPA's Region 4 NPDES General Permit GMG 280000 and/or USEPA's Region 4 NPDES Individual Permit.

6. CONSULTATION AND COORDINATION

This SEA is tiered from the PEA for exploration in the EPA sale area (USDOI, MMS, 2003). Consultation with NOAA Fisheries regarding potential impacts to EFH and with NOAA Fisheries and FWS regarding potential impacts to endangered species for the proposed action assessed in this SEA was conducted during the EIS process in preparation for Lease Sale 181 (USDOI, MMS, 2001) and in the EPA Multisale Final EIS (USDOI, MMS, 2002b).

The States of Louisiana, Alabama, and Florida have an approved Coastal Zone Management (CZM) Program. Therefore, certificates of Coastal Zone Consistency from the operator are required in the plan submission. The MMS's review of the EP determined that supplemental information was required from the operator to fully comply with the requirements of NTL 2003-G17. On December 12, 2003, MMS determined that the plan was sufficient for Florida's consistency review. The MMS mailed a public copy of the plan and other required and necessary information to the appropriate State agencies responsible for managing the CZM programs. The plans were mailed to the Louisiana Dewpartment of Natural Resources and Alabama Department of Environmental Management on January 6, 2004, and to the Florida Department of Environmental Protection on January 7, 2004. The EP was also sent to the Eglin Air Force Base Encroachment Committee on January 6, 2004, to coordinate the exploration activity in this proposed action with the Air Force as required by lease Stipulation 1 (Appendix B).

An application for permit to drill cannot be approved for the proposed wells until concurrence with Marathon's coastal zone management consistency certification has been received by MMS from the States of Louisiana, Alabama, and Florida. These approvals were not yet received by MMS prior to completion of this SEA.

7. REFERENCES

Gallaway, B.J. and D.K. Beaubien. 1999. Initial monitoring at a synthetic drilling fluid discharge site on the continental slope of the northern Gulf of Mexico: The Pompano Development. In: Proceedings: Seventeenth Annual Gulf of Mexico Information Transfer Meeting, December 1997. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study MMS 99-0042. 710 pp.

Jefferson, T.A., S. Leatherwood, L.K.M. Shoda, and R.L. Pitman. 1992. Marine mammals of the Gulf of Mexico: A field guide for aerial and shipboard observers. College Station, TX: Texas A&M University Printing Center. 92 pp.

Kennicutt II, M.C., ed. 1995. Gulf of Mexico offshore operations monitoring experiment, Phase I: Sublethal responses to contaminant exposure, final report. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study MMS 95-0045. 709 pp.

National Research Council (NRC). 1985. Oil in the sea: Inputs, fates, and effects. Washington, DC: National Academy Press. 601 pp.

New England River Basins Commission (NERBC). 1976. Factbook. In: Onshore facilities related to offshore oil and gas development. Boston, MA.

OILNERGY. 2003. Internet site (March 24, 2003), Energy commodity closure prices. http://www.oilnergy.com.

Rigzone. 2003. Internet site (November 12, 2003), Advanced rig search. http://www.rigzone.com/data/results.

U.S. Dept. of the Interior. Minerals Management Service. 2001. Gulf of Mexico OCS oil and gas lease Sale 181: Eastern Planning Area – final environmental impact statement. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS EIS/EA MMS 2001-051. 644 pp.

U.S. Dept. of the Interior. Minerals Management Service. 2002a. Gulf of Mexico OCS oil and gas lease sales: 2003-2007, Central and Western Planning Areas – final environmental impact statement. 2 vols. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS EIS/EA MMS 2002-052.

U.S. Dept. of the Interior. Minerals Management Service. 2002b. Gulf of Mexico OCS oil and gas lease Sales 189 and 197, Eastern Planning Area – final environmental impact statement. 2 vols. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS EIS/EA MMS 2002-056.

U.S. Dept. of the Interior. Minerals Management Service. 2003. Exploration activity in the Eastern sale area: Eastern Planning Area, Gulf of Mexico – programmatic environmental assessment. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS EIS/EA MMS 2003-008.

8. PREPARERS

NEPA Coordinator

Quazi T. Islam	Environmental Scientist

Reviewers and Contributors

Patrick Adkins	Information Management Specialist
David Ball	Archaeologist — Archaeological Issues
Greg Boland	Biologist — Fisheries and Benthic Issues
Darice Breeding	Physical Scientist — Hydrocarbon Spill Issues
Bonnie LaBorde Johnson	Environmental Scientist — Coastal Zone Management Issues
Herb Leedy	Biologist — Shoreline and Wetlands Issues
Margaret Metcalf	Physical Scientist — Water Quality Issues
Stacie Merritt-Hendon	Physical Scientist — Air Quality Issues
Deborah Miller	Technical Publications Editor
Dave Moran	Biologist — Endangered Species Issues
James Sinclair	Biologist — Fisheries and Benthic Issues
Kristen Strellec	Economist — Socioeconomic Issues
Wilfred Times	Visual Information Specialist

Reviewers

Mary Boatman	Supervisor, Studies Plan Coordination Unit
Dennis Chew	Supervisor, NEPA/CZM Coordination Unit
Pat Roscigno	Chief, Environmental Studies Section

9. APPENDICES

Appendix A – Figures
Appendix B – Lease Stipulations
Appendix C – Waste and Discharge Tables

Appendix A

Figures

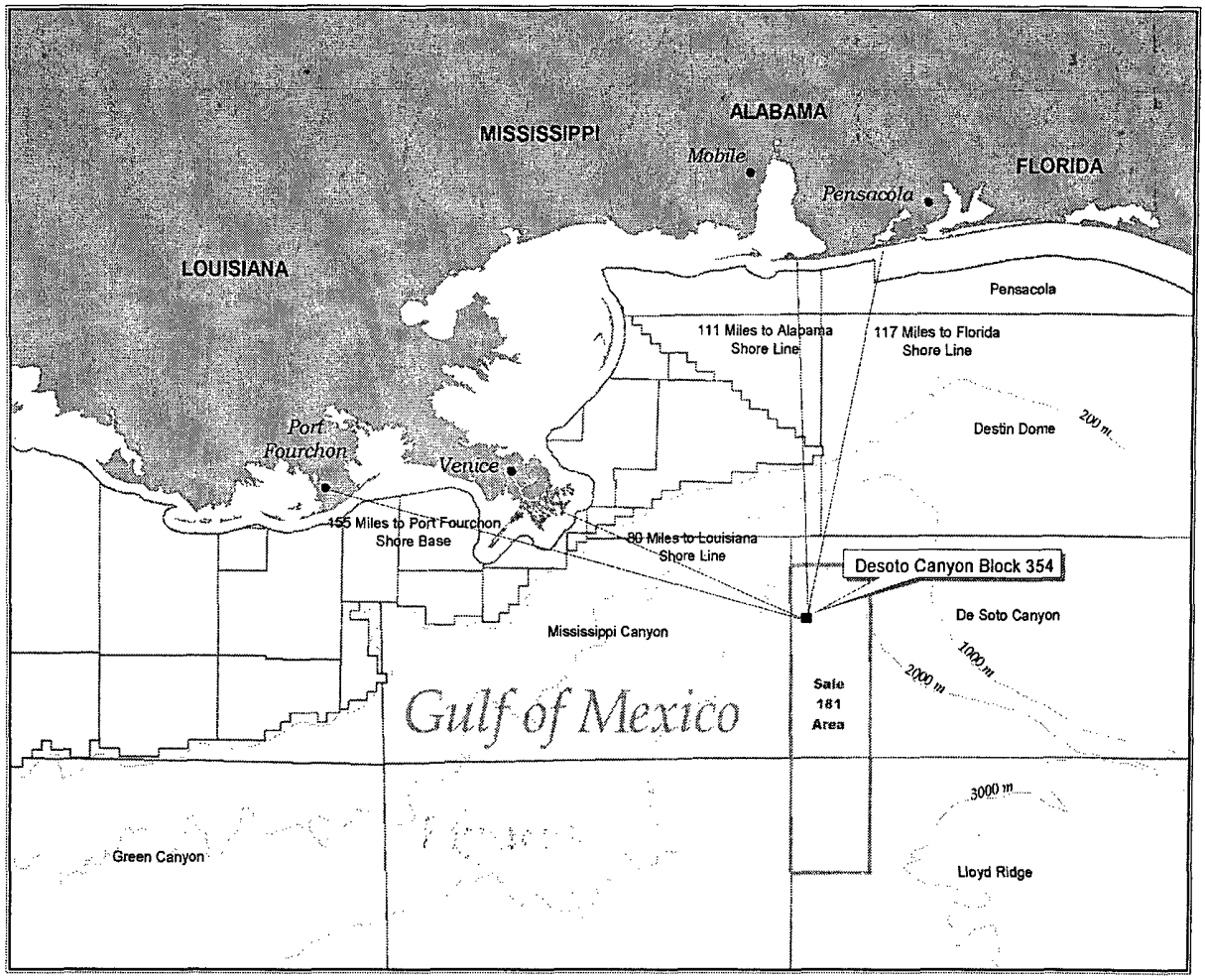
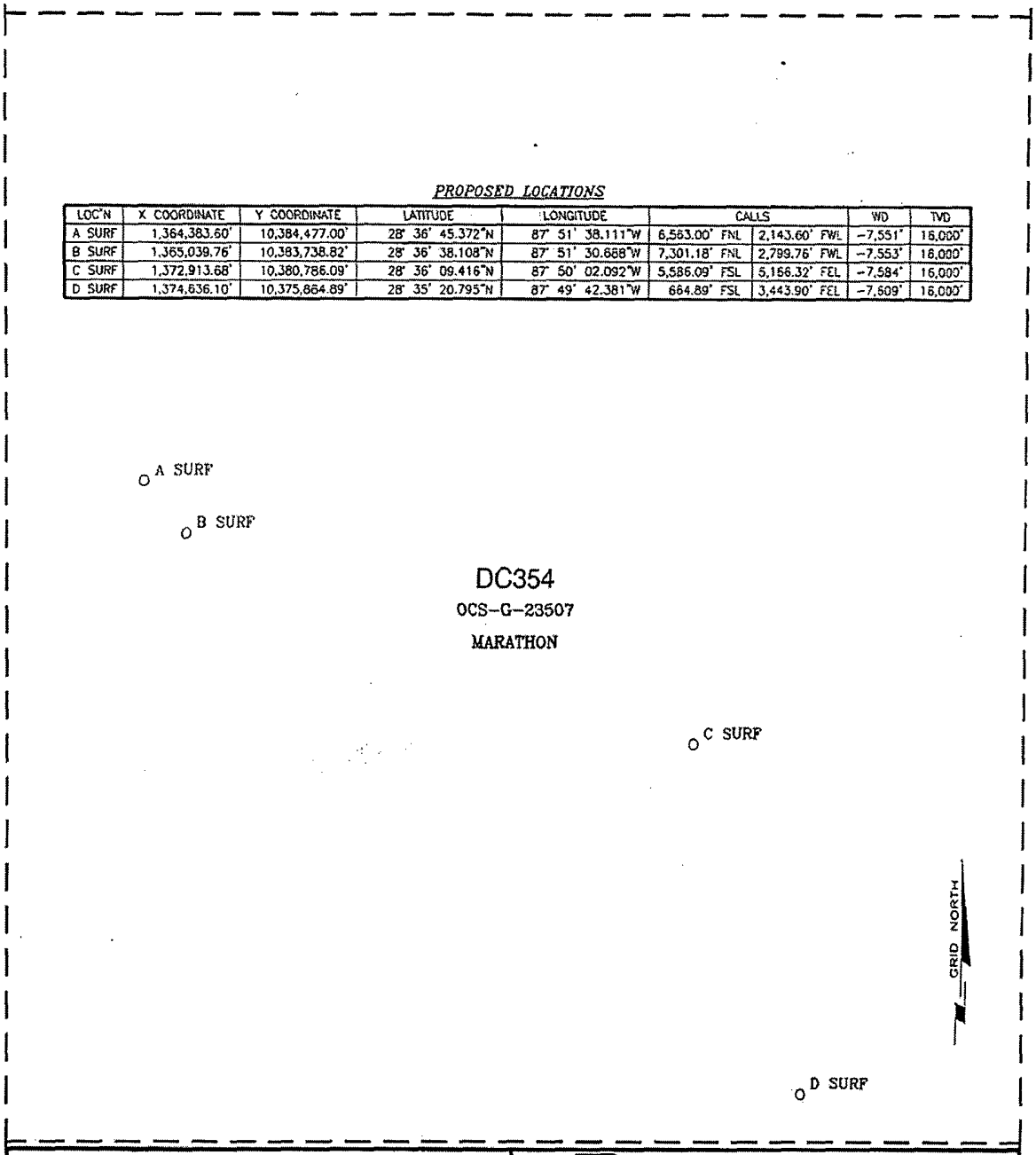


Figure A-1. Map Showing DeSoto Canyon Block 354 Relative to Shoreline and Shore Base.

PROPOSED LOCATIONS

LOC'N	X COORDINATE	Y COORDINATE	LATITUDE	LONGITUDE	CALLS		WD	TVD
A SURF	1,364,383.60'	10,384,477.00'	28° 36' 45.372"N	87° 51' 38.111"W	6,563.00' FNL	2,143.60' FWL	-7,551'	16,000'
B SURF	1,365,039.76'	10,383,738.82'	28° 36' 38.108"N	87° 51' 30.668"W	7,301.18' FNL	2,799.76' FWL	-7,553'	16,000'
C SURF	1,372,913.68'	10,380,786.09'	28° 36' 09.416"N	87° 50' 02.092"W	5,586.09' FSL	5,156.32' FEL	-7,584'	16,000'
D SURF	1,374,636.10'	10,375,864.89'	28° 35' 20.795"N	87° 49' 42.381"W	664.89' FSL	3,443.90' FEL	-7,609'	16,000'



PUBLIC INFORMATION

ATTACHMENT A-1

Printed: 6/6/03

Marathon Oil Company

EXPLORATION PLAN
OCS-G-23507
BLOCK 354
DE SOTO CANYON AREA
GULF OF MEXICO

FUGRO CHANCE INC.
200 Dulles Dr. Lafayette, Louisiana 70506-3001 (337) 237-1500

GEODETIC DATUM: NAD27 PROJECTION: U.T.M. 16 GRID UNITS: US SURVEY FEET		SCALE IN FEET 0 2,000'	
Job No.: 03-2010	Date: 6/6/03	Drwn: VAG	Chart: 01: 1 1
Dwgfile: O:\CADBASE\WPERMIT\UTM16\DC\Permit\354EP			

Figure A-2. Map of DeSoto Canyon Block 354 with Proposed Well Locations.

Appendix B

Lease Stipulations

Stipulation No. 1 -- Military Areas

(a) Hold and Save Harmless

Whether compensation for such damage or injury might be due under a theory of strict or absolute liability or otherwise, the lessee assumes all risks of damage or injury to persons or property, which occur in, on, or above the OCS, to any persons or to any property of any person or persons in connection with any activities being performed by the lessee in, on, or above the OCS, if such injury or damage to such person or property occurs by reason of the activities of any agency of the United States Government, its contractors, or subcontractors, or any of its officers, agents or employees, being conducted as a part of, or in connection with, the programs or activities of the command headquarters listed at the end of this stipulation.

Notwithstanding any limitation of the lessee's liability in Section 14 of the lease, the lessee assumes this risk whether such injury or damage is caused in whole or in part by any act or omission, regardless of negligence or fault, of the United States, its contractors or subcontractors, or any of its officers, agents, or employees. The lessee further agrees to indemnify and save harmless the United States against all claims for loss, damage, or injury in connection with the programs or activities of the aforementioned military installation, whether the same be caused in whole or in part by the negligence or fault of the United States, its contractors, or subcontractors, or any of its officers, agents, or employees and whether such claims might be sustained under a theory of strict or absolute liability or otherwise.

(b) Electromagnetic Emissions

The lessee agrees to control its own electromagnetic emissions and those of its agents, employees, invitees, independent contractors or subcontractors emanating from individual designated defense warning and water test areas in accordance with requirements specified by the commander of the command headquarters listed in the following table (hereinafter "the appropriate command headquarters") to the degree necessary to prevent damage to, or unacceptable interference with, Department of Defense flight, testing, or operational activities, conducted within individual designated warning and water test areas. Prior to entry into the particular warning or water test area, the lessee, its agents, employees, invitees, independent contractors or subcontractors, must coordinate

electromagnetic emissions with the appropriate onshore military installation command headquarters.

(c) Operational

The lessee, when conducting or causing any activities in the individual designated warning and water test areas, shall enter into an agreement with the appropriate command headquarters prior to commencing such activities. Such an agreement will provide for positive control of personnel and property associated with lessee's activity and operations existing in the warning and water test areas at any time.

Warning and Water Test Areas	Command Headquarters
Eglin Water Test Areas 1 and 3	Air Armament Center Attention: Robert J. Arnold Encroachment Committee Chairman 101 West "D" Ave., Suite 222 Eglin AFB, Florida 32542-5492 Telephone: (850) 882-3614

Stipulation No. 2 -- Evacuation

(a) The lessee, recognizing that oil and gas resource exploration, exploitation, development, production, abandonment, and site cleanup operations on the leased area of submerged lands may occasionally interfere with tactical military operations, hereby recognizes and agrees that the United States reserves and has the right to temporarily suspend operations and/or require evacuation on this lease in the interest of national security. Such suspensions are considered unlikely in this area. Every effort will be made by the appropriate military agency to provide as much advance notice as possible of the need to suspend operations and/or evacuate. Advance notice of fourteen (14) days shall normally be given before requiring a suspension or evacuation, but in no event will the notice be less than four (4) days. Temporary suspension of operations may include the evacuation of personnel, and appropriate sheltering of personnel not evacuated. Appropriate shelter shall mean the protection of all lessee personnel for the entire duration of any Department of Defense activity from flying or falling objects or substances and will be implemented by a written order from the MMS Regional Supervisor for Field Operations (RS-FO), after consultation with the appropriate command headquarters or other appropriate military agency, or higher authority. The appropriate command headquarters, military agency or higher authority shall provide information to allow the lessee to assess the degree of risk to, and provide sufficient protection for, lessee's personnel and property. Such suspensions or evacuations for national security reasons will not normally exceed seventy-two (72) hours; however, any such suspension may be extended by order of the RS-FO. During such periods, equipment may remain in place, but all production, if any, shall cease for the duration of the temporary suspension if so directed by the RS-FO. Upon cessation of any temporary suspension, the RS-FO will immediately notify the lessee such suspension has terminated and operations on the leased area can resume.

(b) The lessee shall inform the MMS of the persons/offices to be notified to implement the terms of this stipulation.

(c) The lessee is encouraged to establish and maintain early contact and coordination with the

appropriate command headquarters, in order to avoid or minimize the effects of conflicts with potentially hazardous military operations.

(d) The lessee shall not be entitled to reimbursement for any costs or expenses associated with the suspension of operations or activities or the evacuation of property or personnel in fulfillment of the military mission in accordance with subsections (a) through (c) above.

(e) Notwithstanding subsection (d), the lessee reserves the right to seek reimbursement from appropriate parties for the suspension of operations or activities or the evacuation of property or personnel associated with conflicting commercial operations.

Stipulation No. 3 -- Coordination

(a) The placement, location, and planned periods of operation of surface structures on this lease during the exploration stage are subject to approval by the MMS Regional Director (RD) after the review of an operator's Exploration Plan (EP). Prior to approval of the EP, the lessee shall consult with the appropriate command headquarters regarding the location, density, and the planned periods of operation of such structures, and to maximize exploration while minimizing conflicts with Department of Defense activities. When determined necessary by the appropriate command headquarters, the lessee will enter a formal Operating Agreement with such command headquarters, that delineates the specific requirements and operating parameters for the lessee's proposed activities in accordance with the military stipulation clauses contained herein. If it is determined that the proposed operations will result in interference with scheduled military missions in such a manner as to possibly jeopardize the national defense or to pose unacceptable risks to life and property, then the RD may approve the EP with conditions, disapprove it, or require modification in accordance with 30 CFR 250. The RD will notify the lessee in writing of the conditions associated with plan approval, or the reason(s) for disapproval or required modifications. Moreover, if there is a serious threat of harm or damage to life or property, or if it is in the interest of national security or defense, pending or approved operations may be suspended in accordance with 30 CFR 250. Such a suspension will extend the term of a lease by an amount equal to the length of the suspension, except as provided in 30 CFR 250.169(b). The RD will attempt to minimize such suspensions within the confine of related military requirements. It is recognized that the issuance of a lease conveys the right to the lessee as provided in section 8(b)(4) of the Outer Continental Shelf Lands Act to engage in exploration, development, and production activities conditioned upon other statutory and regulatory requirements.

(b) The lessee is encouraged to establish and maintain early contact and coordination with the appropriate command headquarters, in order to avoid or minimize the effects of conflicts with potentially hazardous military operations.

(c) If national security interests are likely to be in continuing conflict with an existing operating agreement, the RD will direct the lessee to modify any existing operating agreement or to enter into a new operating agreement to implement measures to avoid or minimize the identified potential conflicts, subject to the terms and conditions and obligations of the legal requirements of the lease.

Stipulation No. 4 -- Marine Protected Species

The National Marine Fisheries Service (NMFS) Biological Opinion for Lease Sale 181 requires the following non-discretionary terms and conditions:

(a) MMS will condition permits issued to oil companies to require collection and removal of flotsam resulting from activities related to exploration, development, and production of this lease.

(b) MMS will condition permits issued to oil companies requiring them to post signs in prominent places on all vessels and platforms used as a result of activities related to exploration, development, and production of this lease detailing the reasons (legal and ecological) why release of debris must be eliminated.

(c) MMS will develop, in conjunction with NMFS, a mandatory observer training program. This program will include methods by which observers are to report sightings of sea turtles and large whales and any takes of sea turtles or cetaceans resulting from vessel operations.

(d) The lessee or operator must require personnel to contact, as soon as possible, the MMS Protected Species Biologist, Gulf of Mexico Region Office of Leasing and Environment, upon discovering any injured or dead sea turtles, marine mammals, or Gulf sturgeon. Parties responsible for injured or dead sea turtles, marine mammals, or Gulf sturgeon shall assist in collecting the impacted animals at the request of the MMS.

Lessees and operators will be instructed how to implement these non-discretionary measures in Notices To Lessees to be issued in late 2001 and/or early 2002.

Appendix C

Waste and Discharge Tables

Table C-1

Waste and Discharge Table (overboard discharge)

Type of Waste Approximate Composition	Amount to be Discharged (volume or rate)	Maximum Discharge Rate	Treatment and/or Storage, Discharge Location*, and Discharge Method
Water-based drilling fluids	13,600 bbl/well	1,000 bbl/hr	DC 354, discharge from surface processing equipment
Drill cuttings associated with water-based fluids	4,150 bbl/well	1,000 bbl/hr	DC 354, discharge from surface processing equipment
Muds, cuttings, and cement at the seafloor	Gel-4,800 bbl/well WBM-7,000 bbl/well Cuttings-1,970 bbl/well Seawater and caustic-4,800 bbl/well	Not applicable	DC 354, discharge to seafloor through marine riser
Produced water	Not applicable	Not applicable	Not applicable
Sanitary waste	140,000 gal/well	Not applicable	DC 354, chlorinate and discharge
Domestic waste	140,000 gal/well	Not applicable	DC 354, remove floating solids and discharge
Deck drainage	0-1,000 bbl/well Dependent upon rainfall	15 bbl/hour (maximum separator discharge	DC 354, remove oil and grease and discharge
Well treatment workover or completion fluids	Not applicable	Not applicable	Not applicable
Uncontaminated fresh or seawater	Not applicable	Not applicable	Not applicable
Desalinization unit water	48,720 bbl/well	Not applicable	DC 354, discharge overboard
Uncontaminated bilge water	Not applicable	Not applicable	Not applicable
Uncontaminated ballast water	20,000 bbl	2,600 m^3/hr	DC 354, discharge overboard
Miscellaneous discharges to which treatment chemicals have been added	500 bbl/well	Not applicable	DC 354, discharge overboard
Miscellaneous discharges (permitted under NPDES) (excess cement with cementing chemicals)	50 bbl/well	Not applicable	DC 354, discharge overboard

* Area, block, MMS facility ID (if available).
DC — DeSoto Canyon.

Table C-2

Waste and Discharge Table (onshore disposal)

Type of Waste Approximate Composition	Amount*	Rate per Day	Name/Location of Disposal Facility	Treatment and/or Storage, Transport, and Disposal Method
Spent synthetic-based drilling fluids and cuttings	16,400 bbl/well	Not applicable	Chemical Waste Management, Carlyss, La.	Transport to Port Fourchon shore base in cuttings boxes on crewboat and then to mud company for recycling.
Waste oil	200 bbl/well	0.5 bbl/day	ASCO — Bodin Oil Recovery, Abbeville, La.	Pack in drums and transport to an onshore incineration site.
Trash and debris	10 tons/well	Not applicable	Riverbirch Landfill, Avendale, La.	Transport in storage bins on crew boat to shore base; truck to landfill.
Chemical product waste	100 bbl	2 bbl/day	Chemical Waste Management, Carlyss, La.	Transport in barrels on crewboat to shore location.

*Expressed as a volume, weight, or rate.