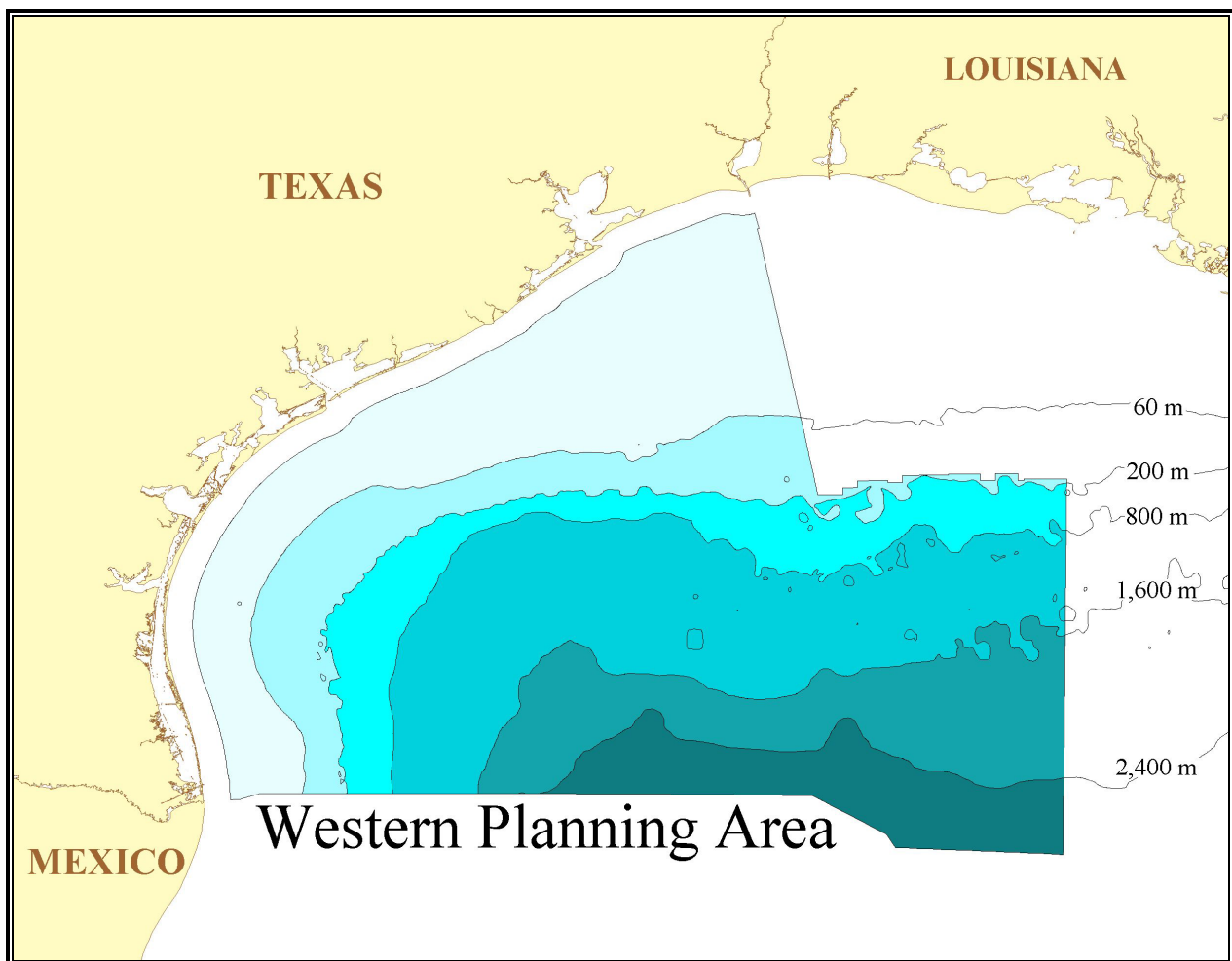




Environmental Assessment

Proposed OCS Lease Sale 200, Western Gulf of Mexico



Environmental Assessment

Proposed OCS Lease Sale 200, Western Gulf of Mexico

Author

Minerals Management Service
Gulf of Mexico OCS Region

Published by

U.S. Department of the Interior
Minerals Management Service
Gulf of Mexico OCS Region

New Orleans
March 2006

FINDING OF NO NEW SIGNIFICANT IMPACT

The U.S. Department of the Interior, Minerals Management Service (MMS) has prepared an environmental assessment (EA) for proposed Lease Sale 200 in the Western Planning Area (WPA) of the Gulf of Mexico (GOM) Outer Continental Shelf (OCS) to determine whether MMS can make a Finding of No New Significant Impact (FONNSI) or should prepare a supplemental environmental impact statement (EIS).

In November 2002, MMS filed with the U.S. Environmental Protection Agency a Final EIS covering CPA Lease Sales 185, 190, 194, 198, and 201; and Western Planning Area Lease Sales 187, 192, 196, and 200 in the GOM (multisale EIS). Because the multisale EIS examined the environmental impacts of a sale similar in size, nature, and potential level of development as Lease Sale 200, the EA tiers off the multisale EIS and incorporates much of the material by reference. It also reexamines the potential environmental effects of the proposed action and alternatives based on any new information regarding potential impacts or issues that were not available at the time the multisale EIS was prepared.

The purpose of the EA is to analyze whether new information indicates that there are likely to be significant new impacts as a result of proposed Lease Sale 200 that were not addressed in the multisale EIS. As part of the scoping process for the EA, MMS reviewed new information to determine if any resources should be reevaluated or if the new information would alter conclusions of the multisale EIS, with particular emphasis on the impacts caused by Hurricanes Katrina and Rita. New information has been added to the EA to describe changes caused by the hurricanes to the affected environment and potential impacts to environmental and socioeconomic resources. The EA also provides updates for several Notices to Lessees and discusses concerns related to the impacts of Hurricanes Katrina and Rita to coastal areas and onshore oil and gas infrastructure. The new information incorporated into this EA further supports or elaborates on analyses or information presented in the multisale EIS, but it does not change any of the analyses or conclusions in the multisale EIS.

Based on the analyses in the EA, no new significant impacts were identified for proposed Lease Sale 200 that were not already assessed in the multisale EIS, nor is it necessary to change the conclusions of the kinds, levels, or locations of impacts described in that document. Therefore, MMS has determined that a supplemental EIS is not required and is issuing this FONNSI.

Supporting Documents

Proposed OCS Lease Sale 200, Western Gulf of Mexico—Environmental Assessment (USDOI, MMS, 2005a) (attached).

Gulf of Mexico OCS Oil and Gas Lease Sales: 2003-2007; Central Planning Area Sales 185, 190, 194, 198, and 201; Western Planning Area Sales 187, 192, 196, and 200—Final Environmental Impact Statement; Volumes I and II (USDOI, MMS, 2002b) (available upon request).



Director

3-27-06

Date

TABLE OF CONTENTS

	Page
FIGURES.....	vii
TABLES	vii
ABBREVIATIONS AND ACRONYMS	ix
1. OBJECTIVES OF THE ENVIRONMENTAL ASSESSMENT	1
2. PURPOSE OF AND NEED FOR THE PROPOSED ACTION.....	1
3. ALTERNATIVES INCLUDING THE PROPOSED ACTION	2
3.1. Alternative A—Proposed Action	2
3.2. Alternatives to the Proposed Action	3
3.3. Mitigation Measures	3
3.3.1. Notices to Lessees and Operators.....	4
4. IMPACT ANALYSIS.....	6
4.1. Update of Projections of Potential Activity from the Proposed Action.....	6
4.1.1. Resource Estimates and Timetables	6
4.1.2. Damage Caused by Hurricanes to OCS Facilities.....	7
4.1.3. Structure Removal Operations	7
4.2. Update of Information on the Affected Environment.....	7
4.2.1. Marine Mammals and Sea Turtles.....	8
4.2.2. Wetlands and Coastal Barrier Beaches.....	9
4.2.2.1. Wetlands.....	9
4.2.2.2. Barrier Islands.....	9
4.3. Impacts from Alternative A—The Proposed Action	10
4.3.1. Summary of Analysis Incorporated by Reference from the Multisale EIS.....	10
4.3.1.1. Impacts on Coastal Resources.....	10
4.3.1.2. Impacts on Offshore Environments	14
4.3.2. Updated Impact Analysis for the Proposed Action.....	16
4.3.2.1. Marine Mammals	16
4.4. Alternative B—The Proposed Action Excluding the Blocks Near Biologically Sensitive Topographic Features.....	17
4.5. Alternative C—No Action	17
4.6. Cumulative Analysis.....	17
5. CONSULTATION AND COORDINATION	18
5.1. Scoping for the Environmental Assessment for the Western Planning Area’s Proposed Lease Sale 200	18
5.2. Consultation and Coordination Calendar.....	19
5.3. Response to Louisiana’s Comments Regarding Hurricane Impacts.....	21
6. REFERENCES	22

APPENDIX A.	PROPOSED LEASE STIPULATIONS	26
APPENDIX B.	NOTICES TO LESSEES AND OPERATORS (NOVEMBER 2002 —PRESENT)	35
APPENDIX C.	RECENT PUBLICATIONS OF THE ENVIRONMENTAL STUDIES PROGRAM, GULF OF MEXICO REGION, 1999-PRESENT	37

FIGURES

	Page
Figure 1. GOM OCS Planning Areas and WPA Offshore Subareas	3

TABLES

Table 1. Estimated Abundance of Cetaceans in the Northern GOM Oceanic Waters	8
--	---

ABBREVIATIONS AND ACRONYMS

5-Year Program	Outer Continental Shelf Oil and Gas Leasing Program, 2002-2007	MMPA	Marine Mammal Protection Act of 1972
AAPA	American Association of Port Authorities	MMS	Minerals Management Service
ADCP	Acoustic Doppler Current Profile	MODU	mobile offshore drilling unit
AHTS	Anchor-handling tug/supply vessel	MSA	metropolitan statistical area
APD	Application for Permit to Drill	NDBC	National Data Buoy Center
bbl	barrel	NEPA	National Environmental Policy Act
BBO	billion barrels of oil	NMFS	National Marine Fisheries Service
Btu	British thermal unit	NOAA	National Oceanic and Atmospheric Administration
CBD	Congressional Budget Office	NOS	National Ocean Service
CMI	Coastal Marine Institute	NO _x	nitrogen oxide
COE	U.S. Army Corps of Engineers	NTL	Notice to Lessees and Operators
CPA	Central Planning Area	OCD	Offshore and Coastal Dispersion
CRS	Congressional Research Service	OCS	Outer Continental Shelf
CZM	Coastal Zone Management	OSRA	Oil-Spill Risk Analysis
DOCD	Development Operations Coordination Document	OSV	offshore service vessel
EA	Environmental Assessment	PEA	Programmatic Environmental Assessment
EIA	Energy Information Administration	PSD	Prevention of Significant Deterioration
EIS	Environmental Impact Statement	PEIS	Programmatic EIS
EP	Exploration Plan	PM ₁₀	particulate matter smaller than 10 microns
ft	feet	ROV	remotely operated vehicle
ESA	Endangered Species Act of 1973	SBF	synthetic-based drilling fluids
FONNSI	Finding of No New Significant Impact	Secretary	Secretary of the Interior
FWS	U.S. Fish and Wildlife Service	SO _x	sulphur oxide
GOM	Gulf of Mexico	SWSS	Sperm Whale Seismic Survey
LDNR	Louisiana Department of Natural Resources	TAOS	Technical Assessment and Operation Support
LEO	Louisiana Economic Outlook	Tcf	trillion cubic feet
LSU	Louisiana State University	USCG	United States Coast Guard
		USDOJ	United States Department of the Interior
		WPA	Western Planning Area

1. OBJECTIVES OF THE ENVIRONMENTAL ASSESSMENT

This environmental assessment (EA) addresses one proposed Federal action: oil and gas Lease Sale 200 in the Western Planning Area (WPA) of the Gulf of Mexico (GOM) Outer Continental Shelf (OCS) as scheduled in the *Outer Continental Shelf Oil and Gas Leasing Program 2002-2007* (5-Year Program) (USDOJ, MMS, 2002a). This EA incorporates by reference all of the relevant material in the multisale environmental impact statement (EIS) from which it tiers (*Gulf of Mexico OCS Oil and Gas Lease Sales: 2003-2007; Central Planning Area Sales 185, 190, 194, 198, and 201; Western Planning Area Sales 187, 192, 196, and 200; Final Environmental Impact Statement; Volumes I and II*) (USDOJ, MMS, 2002b). Additionally, since new information was identified and analyzed in the Lease Sale 196 EA (USDOJ, MMS, 2005a), this EA also incorporates by reference all of the relevant material in the Lease Sale 196 EA and the Lease Sale 192 EA (USDOJ, MMS, 2004). The EA has been prepared to aid in the determination of whether or not new available information indicates that the proposed lease sale would result in new significant impacts not addressed in the multisale EIS.

In preparation for this EA, the U.S. Department of the Interior (USDOJ), Minerals Management Service (MMS), reexamined the potential environmental effects of the proposed action and the alternatives based on any new information regarding potential impacts and issues not available at the time MMS prepared the multisale EIS in November 2002. New information was reviewed by subject matter experts to determine if any resources should be reevaluated or if the new information would alter conclusions of the multisale EIS. Particular emphasis was placed on changes that have occurred as a result of Hurricanes Katrina and Rita. New information regarding environmental and socioeconomic resources has been added to this EA. Information has also been added regarding mitigation measures for marine mammals. No new information was discovered that would require the full reevaluation of any resource nor alter the conclusions of the multisale EIS.

Federal regulations allow for an agency to analyze related or similar proposals in one EIS (40 CFR 1502.4). Since WPA Lease Sales 187, 192, 196, and 200 and their projected activities are very similar, if not almost identical, MMS addressed the four WPA lease sales in a single EIS. The multisale approach focuses the National Environmental Policy Act (NEPA) EIS process on the differences between the proposed lease sales and new information and issues. Although the multisale EIS addressed four proposed WPA lease sale actions, the Secretary of the Interior (Secretary) makes a separate decision for each lease sale.

The multisale EIS can be obtained from the Minerals Management Service, Gulf of Mexico OCS Region, Attention: Public Information Office (MS 5034), 1201 Elmwood Park Boulevard, Room 114, New Orleans, Louisiana 70123-2394 (1-800-200-GULF) or viewed on the MMS website at <http://www.gomr.mms.gov>. A list of libraries that have copies of the multisale EIS and their locations is also available on the MMS Internet website.

2. PURPOSE OF AND NEED FOR THE PROPOSED ACTION

Purpose of the Proposed Action

The purpose of this proposed action (WPA Lease Sale 200) is to offer for lease all unleased blocks in the proposed lease sale area (**Figure 1**) that may contain economically recoverable oil and natural gas resources. The proposed lease sale would provide qualified bidders the opportunity to bid upon and lease acreage in the proposed lease sale area in order to explore, develop, and produce oil and natural gas.

Need for the Proposed Action

The GOM constitutes one of the world's major oil- and gas-producing areas and has proved to be a steady and reliable source of crude oil and natural gas for more than 50 years. Oil from the GOM would help reduce the Nation's need for oil imports and reduce the environmental risks associated with tankering of imported oil. Natural gas is generally considered to be an environmentally preferable alternative to oil in terms of both production and consumption.

3. ALTERNATIVES INCLUDING THE PROPOSED ACTION

3.1. ALTERNATIVE A—PROPOSED ACTION

Alternative A—The Proposed Action: Under proposed WPA Lease Sale 200, MMS would offer for lease all unleased blocks within the WPA for oil and natural gas operations, with the following exceptions: High Island Area East Addition, South Extension, Blocks A-375 and A-398 and portions of other blocks within the Flower Garden Banks National Marine Sanctuary are deferred from leasing. Sigsbee Escarpment Area Blocks 11, 57, 103, 148, 149, 194, 239, 284, and 331-341; portions of Sigsbee Escarpment Area Blocks 12-14, 58-60, 104-106, 150, 151, 195, 196, 240, 241, 285-298, and 342-349; and portions of Keathley Canyon Blocks 978-980 are deferred from the proposed action under the “Treaty Between The Government of the United States of America And The Government Of The United Mexican States on the Delimitation Of The Continental Shelf In the Western Gulf of Mexico Beyond 200 Nautical Miles,” which took effect in January 2001.

Mustang Island Area Blocks 793, 799, and 816 have been considered crucial to Naval Mine Warfare Command operations and were deferred from past lease sales. The MMS has been informed by the Navy that these blocks are still used for testing equipment and for training mine warfare personnel; however, the Navy does not object to these blocks being offered for lease under the condition of no surface occupancy. The no surface occupancy condition could change; however, a consultation with the Commander, Mine Warfare Command, would be required and a revision to the applicable stipulation would follow. Therefore, MMS proposes to offer those three blocks for lease in WPA Lease Sale 200 and to add the following to the Operations in the Naval Mine Warfare Area Stipulation. This will apply to Mustang Island Area Blocks 793, 799, and 816.

- (a) For below seabed operations, the lessee agrees that no activity including, but not limited to, structures, drilling rigs, pipelines, and/or anchoring will be located on the seabed or in the water column above within any portion of the lease. All exploration, development, and production activities or operations must take place from outside the lease by the use of directional drilling or other techniques.
- (b) Prior to the submission of Exploration Plans (EP) and Development Operations Coordination Documents (DOCD) regarding any operations on or under the seabed of these blocks, the lessee will consult with the Commander, Mine Warfare Command, in order to determine the compatibility of the lessee’s plans with scheduled military operations. The EP and DOCD shall contain a statement certifying the consultation and indicating whether the Commander, Mine Warfare Command, has any objection to activities and schedule of the EP or DOCD.

The addition of these three blocks does not change the range of resource projections and associated activities; therefore, it does not change any conclusions from the multisale EIS.

In the multisale EIS, a proposed action is presented as a set of ranges for resource estimates, projected exploration and development activities, and impact-producing factors. All of the proposed WPA lease sales analyzed in the multisale EIS are expected to be within the scenario ranges presented for a typical WPA lease sale; therefore, a proposed action is representative of each proposed lease sale. The WPA encompasses about 35.9 million ac in water depths ranging from 8 to 3,000 m (28 to 9,843 ft) (**Figure 1**). The estimated amount of resources projected to be developed as a result of proposed WPA Lease Sale 200 is 0.136-0.262 billion barrels of oil (BBO) and 0.810-1.440 trillion cubic feet (Tcf) of natural gas.

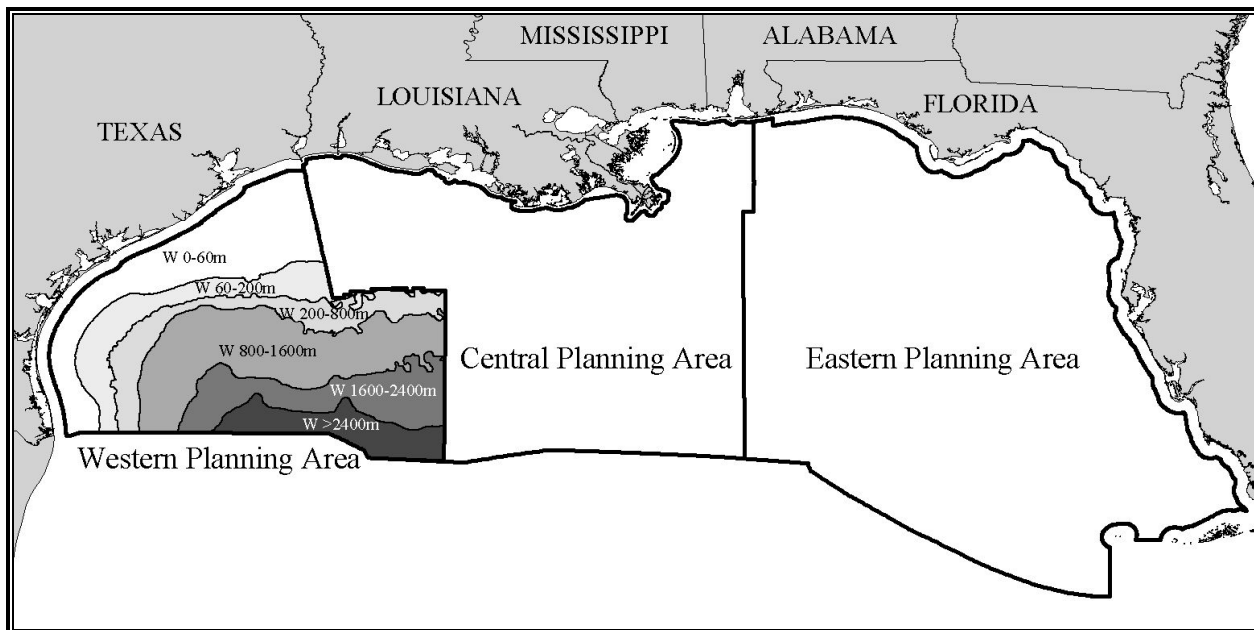


Figure 1. GOM OCS Planning Areas and WPA Offshore Subareas.

3.2. ALTERNATIVES TO THE PROPOSED ACTION

Alternative B—The Proposed Action Excluding the Unleased Blocks Near Biologically Sensitive Topographic Features: This alternative would offer for lease all unleased blocks in the WPA, as described for the proposed action, with the exception of any unleased blocks within the 200 blocks subject to the Topographic Features Stipulation (**Appendix A**).

Alternative C—No Action: This alternative is equivalent to the cancellation of proposed WPA Lease Sale 200. The opportunity for development of the estimated 0.136-0.262 BBO and 0.810-1.440 Tcf of natural gas resources that could have resulted from the proposed action would be precluded or postponed. Any potential environmental impacts resulting from the proposed action would not occur or would be postponed.

3.3. MITIGATION MEASURES

The proposed action and all subsequent activities resulting from it are subject to the existing regulations and proposed lease stipulations designed to reduce environmental risks. Lease stipulations are legally binding restrictions and operating requirements that, if adopted, become part of lease contracts. Five stipulations are proposed to be applied to leases resulting from WPA Lease Sale 200. Four of the stipulations (Topographic Features, Military Areas, Operations in the Naval Mine Warfare Area, and Law of the Sea Convention Royalty Payment) are included in the multisale EIS. **Chapter 2.4.1.3.** of the multisale EIS discusses the effectiveness of these stipulations.

Additionally, MMS published a proposed rule on Subpart B, extended the comment period due to Hurricanes Katrina and Rita, and is currently evaluating all comments received on the proposed rule (<http://www.mms.gov/federalregister/PDFs/AD10ExtendCmtPer.pdf>). This proposed rule would require lessees of Federal oil and gas leases in the OCS to provide information on how they will meet the requirements of the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). It identifies environmental, monitoring, and mitigation information that lessees must submit with plans for exploration and development and production. This rulemaking clarifies our regulations about what information MMS needs to help ensure compliance with the ESA and MMPA requirements. The proposed rule would assure that lessees conduct their activities in a manner consistent with the provisions of the ESA and MMPA.

Following the completion of the multisale EIS, the Protected Species Stipulation was developed in consultation with the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Fish and

Wildlife Service (FWS). Its requirements, which are described in **Chapter 3.3.1** of the Lease Sale 196 EA (USDOJ, MMS, 2005a), were adopted for WPA Lease Sale 196 and are proposed for WPA Lease Sale 200. Each of the five lease stipulations proposed for WPA Lease Sale 200 are presented in **Appendix A**.

The MMS has also issued 50 Notices to Lessees and Operators (NTL) since the completion of the multisale EIS in order to

- clarify, describe, or interpret regulation or OCS standards;
- provide guidelines on the implementation of a special lease stipulation or regional requirement;
- provide a better understanding of the scope and meaning of a regulation by explaining MMS interpretation of a requirement; or
- transmit administrative information.

A list of the new NTL's can be found in **Appendix B**, while the actual NTL's are on the MMS Internet website at www.gomr.mms.gov/homepg/regulate/regs/ntls/ntl_lst.html. The requirements addressed in these NTL's apply to all existing and future oil and natural gas operations on the GOM OCS. Several of the new NTL's ("Vessel Strike Avoidance and Injured/Dead Protected Species Reporting"; "Marine Trash and Debris Awareness and Elimination"; "Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program"; "Biologically Sensitive Areas of the Gulf of Mexico; Structure-Removal Operations"; "Production Activities Information Collection and Reporting for Calculations of Air Emissions in the Western Gulf of Mexico"; "Damage Caused by Hurricane Ivan (Parts 1-3)"; and "Deepwater Ocean Current Monitoring on Floating Facilities") were discussed in the Lease Sale 196 EA (USDOJ, MMS, 2005a).

3.3.1. Notices to Lessees and Operators

Several new or revised NTL's have been generated since the completion of the Lease Sale 196 EA (USDOJ, MMS, 2005a). Summarized below are three NTL's that are either new or have been updated or revised with new information.

Hurricane and Tropical Storm Evacuation and Production Curtailment Statistics (NTL 2005-G15) Damage Caused by Hurricanes Rita and Katrina (NTL 2005-G20)

The MMS works to reduce potential hurricane-associated risks to workers, structures, and the environment. When a hurricane threatens offshore activities, NTL 2005-G15 ("Hurricane and Tropical Storm Evacuation and Production Curtailment Statistics"), and its earlier versions, require operators to notify MMS of employee evacuations, production curtailment, and resumption. This information is shared with the U.S. Coast Guard (USCG) who would respond to any rescue calls or oil spills. At the peak of Hurricane Katrina on August 29, 2005, 95 percent of daily oil production and 88 percent of daily gas production was shut in. Three weeks later at the peak of Hurricane Rita on September 26, 2005, 100 percent of daily oil production and 78 percent of daily gas production remained or was additionally shut in.

The NTL 2005-G20 specified four levels of inspection for platforms and structures following the passage of Hurricanes Katrina and Rita. Operators must perform a Level I survey (above-water visual inspection) on those platforms that were exposed to hurricane force winds (74 mph or greater). A Level II survey (general underwater visual inspection by divers or a remotely operated vehicle (ROV)) must be performed if the platform is located within a prescribed area or when the Level I survey indicates that underwater damage may have occurred. When a Level II survey detects significant structural damage, a Level III survey (underwater visual inspection of areas of known or suspected damage) must be performed. A Level IV inspection (underwater nondestructive testing of areas of known or suspected damages) is necessary if significant structural damage is noted during the Level III survey or if visual inspection is insufficient to determine the extent of the damage. This same NTL also specified inspections of underwater tie-ins, crossings, pipeline risers, pipeline steel catenary risers, and a plan of corrective action for OCS pipelines.

Archaeological Resource Surveys and Reports (NTL 2005-G07)

Section 106 of the National Historic Preservation Act of 1966 (NHPA) (16 U.S.C. 470(f)) requires that MMS take into account the effect of a proposed project on any historic property (i.e., archaeological resource) and affords the Advisory Council on Historic Preservation an opportunity to comment. Based on data from a recently completed study to revise and refine the predictive model for historic shipwrecks in the GOM and because recent discoveries of significant historic shipwrecks in the deepwater portion of the GOM along the approach to the Mississippi River, the guidelines for conducting archaeological surveys and preparing assessments of data collected during these surveys were recently revised.

This revised NTL provides guidance on MMS regulations regarding archaeological surveys, assessments, and discoveries. It clarifies when discoveries must be reported to MMS, reminds operators of their responsibility for conducting discovery investigations and assessments, and identifies penalties that could be assessed for noncompliance. It also announces changes to deepwater survey requirements by increasing the number of archaeologically sensitive OCS blocks in the deepwater approach to the Mississippi River.

Deepwater Ocean Current Monitoring on Floating Facilities (NTL 2005-G05)

A limited number of high-speed, ocean water current events, at times approaching 1 kt, were observed recently at depths exceeding 1,500 m (4,922 ft) in the northern GOM (Hamilton et al., 2003; USDO, MMS 2002c and 2003a). Similar high-speed current events have been identified in ongoing MMS current measurement studies in the north-central GOM. In addition, high-speed current events do not appear to be an isolated or exceptionally unusual occurrence in the northern GOM. Mega-furrows on the seafloor have been discovered in the northern GOM, apparently because of the erosional effects of high-speed currents. Further, several deepwater oil and gas operators also have observed very high-speed midwater jets exceeding 3 kt over the upper continental slope. Causes of these jet events remain uncertain until further data is collected (Dimarco et al., 2004).

Ocean current speeds used by industry in the design, operation, and function of mobile offshore drilling units (MODU's), floating production platforms, and their ancillary equipment (i.e., drilling and production risers, tendons, and mooring systems) may be underestimated. At some locations in the GOM, 10-year Loop Current events have been exceeded and, in certain instances, deeper ocean currents were not empirically measured or underestimated current speeds were considered in designs. Recent incidents have demonstrated to the MMS GOM Region a need for more site-specific data for use in hindcasting and forecasting ocean currents that may affect structural design, fatigue criteria, or daily operations.

The MMS has issued a new NTL, "Deepwater Ocean Current Monitoring on Floating Facilities", relevant to these concerns; it became effective April 30, 2005. The new NTL establishes and implements the following program to monitor ocean currents and share the data for all floating MODU's and production facilities operating or installed in waters depths >400 m (1,312 ft). While the core of this program follows, the NTL should be consulted for further details on data collection, processing, recording, and reporting.

Floating MODU's

- (1) Floating MODU's will continuously monitor and gather ocean current data on a real-time basis from near the ocean surface (~30 m (100 ft)) to ~1,000 m (3,280 ft) using an Acoustic Doppler Current Profile (ADCP) current monitoring system or comparable equipment, mounted as near to the ocean surface as practicable.
- (2) In water depths >1,100 m (3,608 ft), an additional current meter, preferably an upward looking ADCP, must be installed near the ocean bottom (~100 m (328 ft) from the seafloor).
- (3) During drilling operations, if currents are measured with speeds >0.75 kt at the maximum range of the ADCP (or comparable equipment) for more than 24 hours, all current data below the maximum range of the ADCP will be monitored and gathered while normal ROV operations or inspections are conducted.

- (4) During rig moves or nonstationary operations such as drifting, data will not be reported and NOAA's National Data Buoy Center (NDBC) will be notified.

Data collected by floating MODU's under this program must be recorded and reported to the publicly available NDBC Internet website. Details for data collection, recording, processing, and reporting are available in the NTL.

Planned Floating Production Facilities

Prior to installing a floating production facility after April 30, 2005, at least one year of site-specific current data at the planned floating production facility location must be collected. A full water-column mooring may be deployed to collect current data from near the ocean surface (~30 m (100 ft)) to near the ocean bottom (~100 m (328 ft) from the seafloor). The moorings should include point current meters spaced no more than 500 m (1,640 ft) apart, an ADCP array, or some combination of point current meters and ADCP's. The NTL describes details for data collection, processing, recording, and reporting to the publicly available NDBC Internet website. A full year of data is not needed prior to initiating design; see the NTL for further information. The MMS GOMR does not generally intend that current monitoring impede the installation of new facilities.

Existing Floating Production Facilities

- (1) An ADCP current monitoring system or comparable equipment must be used to continuously monitor and gather ocean current data on a real-time basis from near the surface (~30 m (100 ft)) to ~1,000 m (3,280 ft) for existing floating production facilities. The ADCP (or comparable equipment) must be mounted as near to the ocean surface as possible. Details for data collection, processing, recording, and reporting to the publicly available NDBC Internet website are discussed in the NTL.
- (2) For floating production facilities located in water depths >1,100 m (3,608 ft) install an additional current meter, preferably an upward looking ADCP, to continuously monitor and record speed and direction of the near-bottom current (~100 m (328 ft) from the seafloor). Once every 6 months and whenever a near-bottom current event >1 kt is presumed to have occurred, the data must be retrieved and examined. Whenever average currents >1 kt are measured for more than 24 hours by any component, the MMS GOM Region Technical Assessment and Operation Support (TAOS) Section must be immediately notified and a full water-column mooring must be installed that contains point current meters spaced no more than 500 m (1,640 ft) apart, an ADCP array, or some combination of point current meters and ADCP's. Details for data collection, processing, recording, and reporting to the publicly available NDBC Internet website are discussed in the NTL.

Suggested or recommended methods for nonrequired data time averaging and the reporting of any additional current data are specified in the NTL. The NTL also lists exclusions, operational and general concerns, discussion of the Application for Permit to Drill (APD), and other details related to data collection, processing, recording, and reporting.

4. IMPACT ANALYSIS

4.1. UPDATE OF PROJECTIONS OF POTENTIAL ACTIVITY FROM THE PROPOSED ACTION

4.1.1. Resource Estimates and Timetables

The multisale EIS discusses projections for activities associated with a typical proposed WPA lease sale. The estimated amounts of resources projected to be leased, discovered, developed, and produced as a result of proposed WPA Lease Sale 200 are 0.136-0.262 BBO and 0.810-1.440 Tcf of natural gas. The oil and gas resource projections and associated activities used in the multisale EIS are based on the 2000

Assessment of Conventionally Recoverable Hydrocarbon Resources of the Gulf of Mexico and Atlantic Outer Continental Shelf as of January 1, 1999 (Lore et al., 2001). The MMS is currently in the process of updating the 2000 National Resource Assessment and has recently revised the deep gas resource estimate on the shelf. This revision is based on knowledge gained from recent deep drilling activity in this area, prompting the addition of a new “Deep Shelf Mesozoic” play to the assessment. Although MMS anticipates a significant increase in total undiscovered conventionally recoverable deep gas resources on the shelf as reported, a significant portion of these newly assessed deep gas resources are either currently under lease or are uneconomic at this time. The MMS GOM Region’s Office of Resource Evaluation reviewed the oil and natural gas resource projections and associated activities for WPA Lease Sale 200 and confirmed that they are still valid; they are therefore incorporated by reference.

4.1.2. Damage Caused by Hurricanes to OCS Facilities

As discussed in **Chapter 1.5.** of the multisale EIS, criteria, models, and procedures for shutdown operations and the orderly evacuation of personnel prior to a pending hurricane have been in place on the GOM OCS for more than 30 years. Operating experience from extensive drilling activities and the presence of more than 4,000 platforms during the 30-plus years of the GOM OCS Program has proven the effectiveness and safety of securing wells and evacuating a facility in advance of severe weather conditions. Of the 3,050 platforms that were in the path of Hurricanes Katrina and Rita, about 200 offshore platforms and drilling rigs were destroyed or seriously damaged (Powers, 2006). The preliminary damage assessment indicated that older “end of life” facilities not built to MMS’s upgraded design standards were more likely to sustain damage (USDOJ, MMS, 2005a). There have also been reports of damage to approximately 125 pipeline segments.

The loss of hydrocarbons from the offshore wells was minimal because of the successful operation of the safety valves that are installed below the mudline in each wellbore. Refined fuels and processing chemicals were also lost overboard. A final estimate of oil spillage is not available. Because damage to platforms and rigs was greater in the 2005 hurricane season than in the 2004 hurricane season, it is probable that offshore cumulative crude and refined oil losses will be also higher in 2005 than they were in 2004. The onshore events resulted in nine significant inland oil spills where an estimated 191,000 bbl of oil were released.

4.1.3. Structure Removal Operations

The MMS prepared a Programmatic EA (PEA) (USDOJ, MMS, 2005b) that assesses the potential impacts of decommissioning activities related to the severing and removal of seafloor obstructions and facilities (e.g., wellheads, caissons, casing strings, platforms, mooring devices, etc.) and subsequent salvage operations on the GOM. The PEA and its associated Finding of No Significant Impact were published in March 2005; MMS received seven comments. Topics of primary concern addressed in the PEA include pre-severance operations, severance technologies, industry needs related to water depth and location, and the potential impacts of decommissioning operations on the marine environment.

The PEA is an important step in the decision process for future permitting for the removal of offshore structures and for further consultation and coordination with other Federal agencies. Information from the PEA was used to prepare a petition/request for rulemaking by the National Marine Fisheries Service (NMFS) for incidental take regulations under Subpart I of the MMPA. The MMS has also requested initiation of a new formal consultation for explosive-severance activities under Section 7 of the ESA using information from the PEA. Work is proceeding on both the MMPA and ESA efforts, and MMS expects to have new take regulations and the consultation finalized in the summer of 2006.

4.2. UPDATE OF INFORMATION ON THE AFFECTED ENVIRONMENT

Chapter 3 and **Appendix 9** of the multisale EIS provide a complete description as of 2002 of the affected environment for the proposed lease sale and are incorporated by reference (USDOJ, MMS, 2002b). For this EA, a number of resources addressed in the EIS have been reanalyzed with regard to recent impacts from Hurricanes Katrina and Rita to determine if these extraordinary natural events may have altered conclusions in that document. Updated information is provided below. For the Lease Sale 196 EA, new information on three resources (marine mammals, sea turtles, and snowy plover) was discussed and analyzed in that EA and is incorporated by reference (USDOJ, MMS, 2005a). Information

regarding beach mice, Gulf sturgeon, and the pinnacle trend is not included in this EA; these resources do not occur in the WPA. In the multisale EIS, they are addressed only for the Central Planning Area (CPA).

The following section provides an update of the new abundance numbers for cetaceans in the northern GOM (**Table 1**). The MMS discussed and analyzed this resource in the Lease Sale 196 EA because there was new information that was unavailable during the preparation of the multisale EIS. It was determined that the incremental contribution of impacts stemming from the proposed action is expected to be small and primarily sublethal and the cumulative conclusions for marine mammals remain unchanged (USDOJ, MMS, 2005a).

4.2.1. Marine Mammals and Sea Turtles

Chapter 3.2.4 of the multisale EIS discusses nonendangered/nonthreatened and endangered/threatened species of marine mammals known to occur in the GOM. Five mysticete (or baleen) whales (the northern right, blue, fin, sei, and humpback), one odontocete (or toothed) whale (the sperm whale), and one sirenian (the West Indian manatee) are listed as endangered. Sperm whale sightings are common in all seasons and recent tag results indicate that there may be a resident population in the GOM in addition to migratory visitors. Baleen whales are not common and all five of the endangered species are considered rare or extralimital (Würsig et al., 2000). The most frequently observed baleen whale, the nonendangered Bryde's whale, is considered uncommon in GOM waters. The West Indian manatee (*Trichechus manatus*) inhabits only coastal marine, brackish, and freshwater areas.

Newly updated information from NOAA Fisheries concerning estimated population numbers for cetaceans in the northern GOM is presented in **Table 1** (Waring et al., 2004). **Chapter 4.2.1** of the Western Lease Sale 196 EA (USDOJ, MMS, 2005a) discusses the new information regarding marine mammals. Although these data are more specific than the relative occurrence estimates provided in the multisale EIS, the new estimates are in agreement with the previous data; therefore, no new analysis is required as a result of the update. **Chapter 4.3.2.1** of the Lease Sale 196 EA reevaluates the proposed action's potential impact on marine mammals with the Protected Species Stipulation and NTL's described in **Chapter 3.3** of the Western Lease Sale 196 EA (USDOJ, MMS, 2005a).

For offshore marine mammals and sea turtles, which are the source of greatest concern for possible oil and gas industry impacts, there is no documentation that Hurricanes Katrina and Rita caused a change in the baseline. Any effects to the offshore marine mammal community would be very difficult to detect. As the hurricanes were "natural events" in the offshore environment (with the possible exception of spilled oil and other substances from offshore structures), the marine mammal and sea turtle populations are not expected to have been directly impacted. Recent findings by NOAA Fisheries indicate that fish are not contaminated, reducing the concern that marine mammals or sea turtles may be indirectly affected by ingesting tainted prey.

Table 1

Estimated Abundance of Cetaceans in the Northern GOM Oceanic Waters

Species	Common Name	Estimated Number of Individuals
<i>Balaenoptera edeni</i>	Bryde's whale	40
<i>Physeter macrocephalus</i>	Sperm whale	1,349
<i>Kogia spp.</i>	Dwarf or pygmy sperm whale	742
<i>Ziphius cavirostris</i>	Cuvier's beaked whale	95
Unidentified ziphiid	Unidentified beaked whales	146
<i>Feresa attenuata</i>	Pygmy killer whale	408
<i>Pseudorca crassidens</i>	False killer whale	1,038
<i>Orcinus orca</i>	Killer whale	133
<i>Globicephala sp.</i>	Pilot whale	2,388
<i>Peponocephala electra</i>	Melon-headed whale	3,451
<i>Grampus griseus</i>	Risso's dolphin	2,169
<i>Tursiops truncatus</i>	Bottlenose dolphin	27,559
<i>Steno bredanensis</i>	Rough-toothed dolphin	2,223
<i>Lagenodelphis hosei</i>	Fraser's dolphin	726

<i>Stenella frontalis</i>	Atlantic spotted dolphin	30,947
<i>Stenella longirostris</i>	Spinner dolphin	11,971
<i>Stenella attenuata</i>	Pantropical spotted dolphin	91,321
<i>Stenella clymene</i>	Clymene dolphin	17,355
<i>Stenella coeruleoalba</i>	Striped dolphin	6,505

Source: USDOC, NOAA Fisheries, 2004.

4.2.2. Wetlands and Coastal Barrier Beaches

4.2.2.1. Wetlands

In the aftermath of Hurricanes Katrina and Rita, scientists with State and Federal agencies, universities, and nongovernmental organizations have begun analyzing the losses to the coastal wetlands and barrier islands of the Gulf Coast. Louisiana's coast, in particular, is highly susceptible to hurricanes. Although Louisiana's coastal marshes and barrier islands provide a front line of defense against storm surge, 90 percent of these wetlands are at or below sea level elevation. Furthermore, Louisiana is historically prone to major storm events. According to Louisiana State University's (LSU) Hurricane Center, the central Louisiana coast has experienced landfall of more major Category 3 and above hurricanes than anywhere in the continental U.S. over the past century.

The U.S. Geological Survey's (USGS) National Wetlands Research Center is reporting that a total of 118 mi² of land has been transformed to new water areas in a 9,742 mi² area from the Chandeleur Islands to the Atchafalaya River (USGS, 2006). The permanency of this loss may not be known for several growing seasons as some of the shallow areas may recover rapidly while others may remain open ponds. According to the report, the change from land to water in all of coastal Louisiana east of the Mississippi River from 2004 to 2005 was 72.9 mi². The Louisiana Coastal Area Ecosystem Restoration Study projected only 60 mi² of landloss for this area for the 50-year period ending 2050.

In general, brackish and saline marshes appeared to have fared better than fresh and intermediate marsh. The greatest impacts were observed in the fresh and intermediate marshes of the Mississippi River Basin, upper Breton Sound Basin, and Pearl River Basin. A breakdown by basin shows the following:

- Breton Sound Basin water area increased by 40.9 mi²;
- Terrebonne Basin water area increased by 19.4 mi²;
- Pontchartrain Basin water area increased by 19.1 mi²;
- Mississippi River Basin water area increased by 17.8 mi²;
- Barataria Basin water area increased by 17.6 mi²;
- Pearl River Basin water area increased by 4.4 mi²; and
- Atchafalaya Basin showed no change.

4.2.2.2. Barrier Islands

The eye of Hurricane Katrina passed directly over the 50-mi Chandeleur Island chain. Aerial surveys conducted by USGS on September 1, 2005, show that these islands were heavily damaged by the storm (USGS, 2005). Initial estimates suggest that Hurricane Katrina reduced the Chandeleur Islands by one-half of their pre-storm land area. Although barrier islands and shorelines have some capacity to regenerate over time, the process is very slow and often incomplete. With each passing storm, the size and resiliency of these areas can be diminished, especially when major storms occur within a short time period. Hurricane Katrina was the fifth hurricane to impact the Chandeleur Island chain in the past eight years. The other storms were Hurricanes Georges (1998), Lili (2002), Ivan (2004), and Dennis (2005).

Grand Isle was also heavily damaged by Katrina. Although Katrina made landfall more than 50 mi east of Grand Isle, it received extremely high winds and a 12- to 20-ft storm surge that caused tremendous structural damage to most of the island's camps, homes, and businesses (Caffey, R. 2005).

4.3. IMPACTS FROM ALTERNATIVE A—THE PROPOSED ACTION

4.3.1. Summary of Analysis Incorporated by Reference from the Multisale EIS

The multisale EIS analyzed the effects of a typical WPA lease sale by presenting a set of ranges for resource estimates, projected exploration and development activities, and impact-producing factors for any of the proposed WPA lease sales held over the 5-year period. This EA tiers off the multisale EIS and the Lease Sale 196 EA and incorporates those documents by reference. All unleased blocks in the WPA will be available for lease under the proposed action (as described in **Chapter 3.1**). The MMS expects only a small percentage of blocks would be leased, and an even smaller percentage would actually produce oil and gas. The following is a summary of impacts to resources taken from the multisale EIS (USDOJ, MMS, 2002b). Information on the impacts of Hurricanes Katrina and Rita are included and the impacts of the proposed action (WPA Lease Sale 200) have been put into context; i.e., are the impacts of the proposed sale exacerbated because of the hurricanes.

4.3.1.1. Impacts on Coastal Resources

Coastal Barrier Beaches: No significant impacts to the physical shape and structure of barrier beaches and associated dunes are expected to occur as a result of the proposed action. Should a spill contact a barrier beach, sand removal during cleanup activities is expected to be minimal.

Wetlands: Adverse initial impacts and more importantly secondary impacts of pipeline and navigation canals are considered the greatest proposed-action-related impacts to wetlands. The installation of 0-1 pipeline landfalls is projected as a result of the proposed action. The use of new pipe emplacement technologies, such as horizontal or trenchless directional drilling, decreases impacts to sensitive coastal and wetland habitats to levels approaching zero. Some loss of wetlands could occur along existing pipeline and navigation canals due to vessel wakes from OCS-related traffic. An ongoing study by the USGS National Wetlands Science Center, *The Outer Continental Shelf Pipeline and Navigation Canal Impacts and Mitigation Effects on Wetland Habitats of Coastal Western and Central Gulf of Mexico*, is nearing completion. This study, jointly funded by the MMS and USGS, is currently in scientific peer review. It assesses the types and severity of potential impacts caused by OCS-related pipeline and canal projects, and the effectiveness of mitigation methods. By quantifying potential landloss associated with oil- and gas-related pipelines and navigation canals and by quantifying the relationship among landloss, environmental factors, and construction and mitigation techniques, State and Federal agencies and industry can work to minimize any negative impacts for future oil- and gas-related pipeline and navigation canal construction. As described in **Chapter 4.2.1.1**, preliminary information indicates that Hurricanes Katrina and Rita caused the loss of about 118 mi² of wetlands. The vast majority of this loss occurred in the CPA; wetland losses in the WPA were far less. Impacts to wetlands as a result of WPA Lease Sale 200 are expected to be minor.

Offshore oil spills resulting from the proposed action are not expected to significantly damage inland wetlands because of their distant and sheltered location. The greatest threat from oil spills to wetland habitat is from an inland vessel accident or pipeline rupture. Equipment and personnel used to clean up a slick over the impacted area may generate the greatest direct impacts to the area.

Normal OCS activities are expected to have little adverse impact on seagrass communities. Inshore spills from vessel collisions or pipeline ruptures pose the greatest potential threat to seagrass communities.

Coastal and Marine Birds: Adverse impacts on endangered/threatened and nonendangered/nonthreatened coastal and marine birds are expected to be sublethal. Oil spills pose the greatest potential direct and indirect impacts to coastal and marine birds. Low levels of oil could stress birds by interfering with food detection, feeding impulses, predator avoidance, territory definition, homing of migratory species, susceptibility to physiological disorders, disease resistance, growth rates, reproduction, and respiration. Indirect effects occur by fouling of nesting habitat, and displacement of individuals, breeding pairs, or populations to less favorable habitats. Dispersants can have toxic effects similar to oil on the reproductive success of coastal and marine birds. The air, vehicle, and foot traffic that takes place during shoreline cleanup activity can disturb nesting populations and degrade or destroy habitat. After Hurricane Rita, the Chenier Plain in western Louisiana was sampled for plant and animal food for neotropical migrant birds. Invertebrate food for these birds (mostly insects and spiders) was sampled. Saltwater intrusion killed almost all crawfish being raised in ponds and killed freshwater vegetation there also;

reptiles and especially amphibians were also killed by flooding saltwater moving inland. Brown pelican blood samples were taken immediately after Hurricane Katrina. Follow-up samples for contaminants that could impact reproductive function for other coastal and marine birds are planned pending funding (Fuller, personal communication, 2006; Harris, personal communication, 2006; and Burrow, personal communication, 2006). Based on the information available at this time, the conclusions in the multisale EIS regarding the potential impacts of Lease Sale 200 on coastal and marine birds remain valid.

Water Quality: Because of hurricane Katrina, 80 percent of New Orleans was submerged for 2-3 weeks. Contaminated flood waters were pumped into Lake Pontchartrain. The U.S. Environmental Protection Agency (USEPA) and Louisiana officials collected nearly 400 samples and elevated bacterial levels were found (USEPA, 2005a). Low dissolved oxygen and copper and zinc concentrations were at levels that could adversely affect aquatic life when using the USEPA aquatic life criteria (Pardue et al., 2005). The Louisiana Department of Health and Hospitals collected water samples to determine if oyster beds were contaminated with bacteria. Results showed that fish and shellfish in coastal waters were safe to eat (USEPA, 2005b). The loss of wetlands as the result of the 2005 hurricanes removes the potential to improve water quality through filtering out suspended solids and nutrients. The hurricanes winds and wave action acted to break up the hypoxic zone. The introduction of excess nutrients from hurricane runoff could contribute to the formation of the hypoxic zone in 2006. The length of time between the hurricanes and the formation of the hypoxic zone will work favorably to minimize the contribution of the hurricane runoff to hypoxia. Despite the hurricane-related impacts to coastal water quality, the impacts to coastal water quality from the proposed action are expected to be minimal.

Air Quality: Emissions of pollutants into the atmosphere from the activities associated with the proposed action are not projected to have significant impacts on onshore air quality and concentrations would not change onshore air-quality classifications. The Offshore and Coastal Dispersion (OCD) modeling results show that increases in onshore annual average concentrations of NO_x, SO_x, and PM₁₀ are estimated to be less than the maximum increases allowed in the PSD Class I or II areas. Air quality must comply with the new 8-hour ozone standard.

Recreational Beaches: The impact from the proposed action on Gulf Coast recreational beaches is expected to be minimal. The proposed action may result in an incremental increase in noise and some increases in beached debris. Impacts from oil spills are expected to be short-term and localized; a large volume of oil contacting a recreational beach could close the area to recreational use for up to 30 days.

Archaeological Resources: Routine activities associated with the proposed action are not expected to impact coastal historic archaeological resources. The major effect from an oil-spill impact would be visual contamination of a historic coastal site. These impacts would be temporary and reversible. The proposed action is not expected to result in impacts to coastal prehistoric archaeological sites; however, should an impact occur, unique or significant archaeological information could be lost. Previously unrecorded sites could be impacted by oil-spill cleanup operations on beaches. No new information on impacts to archaeological resources as a result of Hurricanes Katrina and Rita was found during a recent search of articles and reports. The MMS has proposed a study to evaluate the impacts of these storms on historic shipwrecks in shallow water and may be able to evaluate a few sites in the summer of 2006 as part of the MMS's Seafloor Monitoring Program.

Socioeconomic Conditions: Some economic indicators in the GOM Region have changed significantly since the multisale EIS. Both oil and natural gas prices have increased substantially, with natural gas prices more than tripling and oil prices nearly tripling. As of January 6, 2006, Henry Hub Natural Gas closed at \$9.260 per million British thermal unit (Btu) and West Texas Intermediate at \$64.22 per barrel (Oilenergy, 2006). These higher prices have led to increased activities in the Gulf of Mexico OCS. Offshore service vessel (OSV) day rates have also increased. Following Hurricanes Katrina and Rita, operators of large anchor-handling tug/supply vessels (AHTS) posted dramatic day rate increases as they were used to recover and tow semisubmersibles. Day rates for large supply vessels and large crewboats also increased as companies assessed and repaired damages to offshore rigs and platforms. The average day rates in October 2005 for anchor-handling tug/supply vessel (AHTS) ranged from \$12,500 for under 6,000-hp vessels to \$60,000 for over 6,000-hp vessels; supply boat average day rates ranged from \$8,675 for boats up to 200 ft and \$16,875 for boats 200 ft and over; and crewboat average day rates ranged from \$3,625 for boats under 125 ft to \$7,325 for boats 125 ft and over (Greenberg, 2005). In contrast, the July 2001 average day rates for AHTS's ranged from \$10,500 for under 6,000-hp vessels to \$12,500 for over 6,000-hp vessels; supply boat average day rates ranged from

\$7,718 for boats up to 200 ft and \$10,950 for boats 200 ft and over; and crewboat average day rates ranged from \$2,928 for boats under 125 ft to \$3,775 for boats 125 ft and over.

Hurricanes Katrina and Rita damaged much of the shore-based infrastructure in the Gulf of Mexico. In addition, many of the demographic and economic factors (employment, income and wealth, etc.) for individual counties and economic areas (LA1, LA2, etc.) have changed as a result of the 2005 hurricane season. It will be some time before the full extent of these changes is known. The MMS is working with Louisiana State University's (LSU) Coastal Marine Institute (CMI) to design and fund two studies to gather information on these hurricane-related issues. Information on these studies is provided in **Chapter 5.3**. Information from these studies will be incorporated into future MMS NEPA documents. Available information on some key infrastructure categories is provided below, showing that these categories are returning to near pre-storm conditions. This is followed by information on demographic and economic factors.

Thirty-three of the Gulf Coast's 41 refineries were impacted by the hurricanes and 9 sustained damage (4 of Louisiana's 17, 3 of Texas' 17, 1 of Alabama's 3, and 1 of Mississippi's 4) (USDOE, OE, 2006; USDOE, EIA, 2005). These damaged facilities resulted in a total loss of capacity of 2.3 million barrels per day, which represented 31 percent of GOM refining capacity and 14 percent of U.S. capacity. Two refineries (BP in Texas City, Texas and Murphy Oil in Meraux, Louisiana) remain shut down with a combined 557,000 barrels per day (bpd) refining capacity, but both are expected to restart the end of March 2006 (USDOE, OE, 2006). All other refineries that suffered damage from the hurricanes are now almost fully operational. ConocoPhillips in West Lake and Belle Chasse, Louisiana, still reports reduced runs.

The storms also initially shut down 12.6 billion cubic feet per day, or 78 percent, of the Gulf Coast's capacity for gas processing (10.8 in Louisiana's and 1.8 in Mississippi) (Worldwide Gas Processing Report, 2003). A small number of gas processing plants in Louisiana with capacities equal to or greater than 100 million cubic feet per day are still not active, with an aggregate capacity of 3.25 billion cubic feet per day (Bcf/d) (USDOE OE, 2006).

Most of the U.S. Gulf Coast seaports impacted have returned their operations up to at or near what they were before the storms hit in August and September, 2005, including the Texas port of Beaumont, the Louisiana Ports of Lake Charles and Fourchon, and the Alabama State Port Authority at Mobile (AAPA, 2006). The petroleum-handling facilities at Port Fourchon are about 90 percent back to normal (AAPA, 2006). Louisiana's Port of New Orleans and Mississippi's Ports in Pascagoula and Gulfport received significant damage but have made significant progress to date. The Port of Pascagoula and the Port of New Orleans are expected to be at 70 to 80 percent of pre-Katrina activity by March 2006. The petroleum service bases of Venice and Cameron received major damage and are still not operational; however, Morgan City is nearly fully operational (Dismukes, personal communication, 2006).

Population, Labor, and Employment: The widespread destruction caused by Hurricanes Katrina and Rita will have both short- and long-term employment consequences. In October, 2005, the Congressional Budget Office (CBO) estimated that between 280,000 and 400,000 people lost jobs directly because of Hurricane Katrina and an additional 12,600 to 80,000 lost jobs directly because of Hurricane Rita (CBO, 2005). However, the storms' initial adverse impacts will likely fade over time as many employees return to their former jobs or find new ones. Furthermore, the total employment impact in the region will include the positive employment impacts that accompany cleanup and rebuilding as well as the direct negative effects. Over the long term, the total employment in the GOM Region may return to levels similar to what it would have been if the hurricanes had not occurred. However, the types of jobs may change and unemployment levels may persist in individual counties and parishes for a long time. The MMS will continue to monitor U.S. Department of Labor, Bureau of Labor Statistics, and individual state data to track these changes over time.

The greatest hurricane employment impacts in the region are likely to be in Louisiana and Mississippi, particularly in the metropolitan statistical areas (MSA's) of New Orleans, Biloxi-Gulfport, and Pascagoula, largely due to the loss of available housing. According to the Louisiana Economic Outlook: 2006-2007 (LEO), over 267,000 housing units were lost in the state, 75 percent of which were in the New Orleans area (Wall, 2006). An additional 61,000 were rendered uninhabitable in Biloxi-Gulfport and 41,000 in Pascagoula (Scott, 2006). The LEO also says that non-farm employment for the State is now expected to decrease by 59,700 in 2005, fall an additional 158,900 in 2006, and increase by 47,700 in 2007 as reconstruction efforts begin to make housing more available in the New Orleans area.

In the New Orleans area, the Outlook predicts employment will decrease in 2006 by 304,290 jobs over 2004 levels, but will add an additional 31,000 in 2007.

The Congressional Research Service (CRS) estimates that 700,000 or more people may have been directly impacted by Hurricane Katrina as a result of residing in areas that flooded or sustained significant structural damage. This estimate is based on a geographical analysis of Federal Emergency Management Agency (FEMA) flood and damage assessments and 2000 Census data. The analysis shows that the Louisiana parishes of Orleans and St. Bernard were especially hard hit by flooding, with an estimated 77 percent of Orleans' population affected and nearly all residents of St. Bernard. In Mississippi, 55 percent of Hancock County's population is estimated to have been affected by flooding and/or structural damage, and in the more populous Harrison County, about 19 percent of its population. In Louisiana, an estimated 645,000 people may have been displaced by the hurricane and 66,000 in Mississippi (based on 2000 Census data) (Congressional Research Service, 2005).

Hurricane Katrina had varying impacts on the population. The CRS estimates that, of the people most likely to have been displaced by the hurricane, about half lived in New Orleans. Because of the city's social and economic composition, the storm significantly impacted the poor and African-Americans. The CRS estimates that one-fifth of those displaced by the storm were likely to have been poor, and 30 percent had incomes that were below 1.5 times the poverty line. African-Americans are estimated to have accounted for approximately 44 percent of storm victims. An estimated 88,000 elderly persons (aged 65 and older), many with strong community ties, may have been displaced, along with 183,000 children, many of whom were just starting the school year when the storm struck (Congressional Research Service, 2005). An estimated 4,500 American Indians living along the southeast Louisiana coast lost everything to Hurricane Katrina, according to State officials and tribal leaders. Officials estimate that 5,000-6,000 American Indians lost their homes or possessions due to Hurricane Rita. The Louisiana tribes most affected by the two hurricanes are the United Houma nation, the Pointe-au-Chien Tribe, the Isle de Jean Charles Indian band of Biloxi-Chitimasha, the Grand Caillou-Dulac Band, and the Biloxi-Chitimasha Confederation of Muskogeans (Democracy Now, 2005).

Between December 2005 and February 2006, estimates show that the city of New Orleans and the New Orleans metropolitan region experienced a measurable increase in its population size. However, more than 300,000 residents still have not returned to the city. Over those two months, approximately 19,000 residents and 33,000 residents returned to the city and region, respectively. These include returnees as well as new migrants employed in the region. Despite the population increase, New Orleans' population is still quite small—156,140 residents, which is far lower than its pre-Katrina population of 458,393 residents (Brookings Institution Metropolitan Policy Program, 2006). Despite the hurricane impacts and the changes to baseline conditions discussed above, activities resulting from the proposed action are expected to affect minimally the analysis area's land use, infrastructure, or demographic characteristics of the Gulf coastal communities. The proposed action is expected to generate less than a 1 percent increase in employment in the Texas, Louisiana, Mississippi, and Alabama subareas. Nowhere would these impacts be significant because demand will be met primarily with the existing population and available labor force. Any accidental spills associated with the proposed action would have minimal effects on land use or demographics; coastal or nearshore spills could have short-term adverse effects on coastal infrastructure requiring cleanup of any oil or chemicals spilled.

Environmental Justice: Environmental justice policy requires Federal agencies to determine whether their proposed actions will result in disproportionately high and adverse environmental effects on minority and low-income populations. Because of the presence of an existing extensive and widespread support system for the OCS-related industry and associated labor force, the effects of the proposed action are expected to be widely distributed and little felt. Impacts related to a proposed action are expected to be economic and have a limited but positive effect on low-income and minority populations. The proposed action is not expected to have disproportionate high/adverse environmental or health effects on minority or low-income people.

New MMS research indicates that minority populations throughout Lafourche Parish, Louisiana, could sustain disproportionate effects should a major accident involving onshore activities occur (Hemmerling and Colten, 2003). The majority of OCS-related infrastructure is located in south Lafourche Parish where the Houma Indian population is concentrated. Proposed WPA Lease Sale 200 would not significantly alter this preexisting situation where onshore cumulative effects already exist. Therefore, the preexisting situation would not be significantly altered.

4.3.1.2. Impacts on Offshore Environments

Topographic Resources: Adverse impacts to topographic features from routine activities resulting from the proposed action are not expected because the Topographic Features Stipulations establishes requirements for setbacks from these features. Adverse impacts from accidental seafloor oil releases or blowouts are expected to be rare. Since drilling and pipeline operations are not permitted in the vicinity of topographic features and because topographic features are small in size and dispersed within the areas that they occur, no community-wide impacts are expected.

Chemosynthetic Communities: No adverse impacts to the ecological function or biological productivity of the widespread, low-density chemosynthetic communities or to the widespread, typical, deep-sea benthic communities are expected to occur as a result of routine activities or accidental events resulting from the proposed action. The potential for adverse impacts to the rarer, widely scattered, high-density, Bush Hill-type chemosynthetic communities are expected to be greatly reduced by the requirement for OCS activities to avoid potential chemosynthetic communities by a minimum of 1,500 ft (457 m) (NTL 2000-G20). High-density chemosynthetic communities could experience minor impacts from drilling discharges or resuspended sediments located more than 1,500 ft (457 m) away. These unique habitats do not exist any shallower than 290 m (951 ft) and none occur on the continental shelf where direct impacts of hurricanes impacts could occur. The impacts from hurricanes on deepwater habitats would be limited to the movement of anchors and pipelines in contact with the seabed because of surface winds, waves, or currents caused by the storms. There are very few instances of deepwater structure anchors being near known chemosynthetic communities. There are no known instances of anchor movements in the vicinity of chemosynthetic communities. For nonchemosynthetic deepwater benthic communities, any movement of anchors, pipelines, or other structures contacting the seabed caused by hurricane winds and waves could cause additional, minor impacts to the animal communities living within the soft mud bottoms where these structures are emplaced. Similar to the impact analysis presented in the multisale EIS, any additional disturbance would be minimal and cause little additional damage to ecological function or productivity of the widespread, typical deep-sea benthic communities. Recolonization of any disturbed area would be expected over a relatively short time for all size ranges of infaunal animals from populations in neighboring undisturbed soft-bottom communities. Hard-bottom substrate in deepwater areas, including coral habitats, would be more sensitive to physical impacts from dragging anchors or similar physical contact from displaced infrastructure. However, similar to chemosynthetic communities, there are no known hard-bottom nonchemosynthetic communities located in the vicinity of any hurricane-impacted deepwater facility. The conclusion presented in the multisale EIS regarding impacts of the proposed action on deepwater benthic communities remains unchanged.

Water Quality: Impacts to marine water quality occur from discharges of drilling fluids and cuttings during exploration and produced water during production; these impacts are expected to be minimal as long as all regulatory requirements are met. Spills <1,000 bbl are not expected to significantly impact marine water quality. Larger spills, however, could impact marine water quality. Chemical spills, the accidental release of synthetic-based drilling fluids (SBF), and blowouts are expected to have temporary localized impacts on marine water quality. The USEPA National Pollution Discharge Elimination System (NPDES) general permit for Region 6, which covers the WPA and most of the CPA, expired November 3, 2003, and the reissued permit became effective on November 6, 2004 (*Federal Register*, 2004) for a 3-year term. During that 3-year term, more information is to be collected about concentrations of conventional pollutants in produced water and their potential contribution to the hypoxic zone. A study of 50 platforms determined that produced water discharged into the hypoxic zone contributes less than two-tenths of a percent of the nitrogen and phosphorus transported by the Mississippi and Atchafalaya Rivers (Veil et al., 2005).

Air Quality: Based on air quality impact analysis of the proposed action, emissions from offshore facilities are not expected to significantly impact offshore air quality. Accidents involving high concentrations of H₂S could result in deaths as well as environmental damage. Other emissions of pollutants into the atmosphere from accidental events as a result of the proposed action are not projected to have significant impacts.

Marine Mammals: The routine activities related to the proposed action are not expected to have long-term adverse effects on the size and productivity of any marine mammal species or population stock endemic to the northern GOM. Routine OCS activities are expected to have impacts that are sublethal. The MMS and NOAA Fisheries have established mitigation measures as a precaution to reduce the potential for injury to protected species. Populations of marine mammals in the northern Gulf are

expected to be exposed to residuals of oils spilled as a result of the proposed action during their lifetimes. Chronic or acute exposure may result in the harassment, harm, or mortality to marine mammals occurring in the northern Gulf. In most foreseeable cases, exposure to hydrocarbons persisting in the sea following the dispersal of an oil slick will result in sublethal impacts to marine mammals. However, in the case of all offshore marine mammals, which are of the greatest concern for possible oil and gas industry impacts, there is no documentation that the recent hurricanes caused a change in the baseline. Any effects to the offshore marine mammal community would be very difficult to detect. As the hurricanes were "natural events" in the offshore environment (with the possible exception of spilled oil and other substances from offshore structures), the marine mammal populations are not expected to have been directly impacted. Recent findings by NOAA that indicate fish are not contaminated reduce the concern that mammals may be indirectly affected by ingesting tainted prey.

Sea Turtles: The routine activities resulting from the proposed action are unlikely to have significant adverse effects on the size and recovery of any sea turtle species or population in the GOM. Routine activities are expected to have sublethal impacts. Adverse impacts are localized degradation of water quality from operational discharges near platforms; noise from helicopters, service vessels, platform, and drillship operations; and hatchling disorientation caused by brightly-lit platforms. Sea turtles could be harmed or killed from chance collisions with service vessels and from eating floating debris from proposed-action-related activities. Lethal "takes" because of explosive removals of OCS facilities are expected to be rare because of established mitigation measures (e.g., NOAA Fisheries Observer Program). Accidental blowouts, oil spills, and spill-response activities resulting from the proposed action have the potential to impact small to large numbers of sea turtles in the GOM. Populations of sea turtles in the northern Gulf will be exposed to residuals of oils spilled as a result of the proposed action during their lifetimes. Chronic or acute exposure may result in the harassment, harm, or mortality to sea turtles occurring in the northern Gulf. In most foreseeable cases, exposure to hydrocarbons persisting in the sea following the dispersal of an oil slick will result in sublethal impacts to sea turtles. Death would likely occur to sea turtle hatchlings exposed to, becoming fouled by, or consuming tarballs. The NOAA conducted a post-hurricane flight over coastal areas and is expected to release a report of finding that will include information on sea turtle and nearshore marine mammal (dolphin) impacts. It is apparent that some of the sea turtle nesting beaches were impacted by the hurricanes. Impacts could range from accumulation of debris on the beach that would prevent the female from moving onto the beach to total loss of nesting habitat in particular areas. The conclusion presented in the multisale EIS regarding impacts of the proposed action on sea turtles remains unchanged.

Fish Resources: A less than 1-percent decrease in fish resources and/or standing stocks or in essential fish habitat (EFH) would be expected as a result of the proposed action. Coastal and marine environmental degradation resulting from the proposed action is expected to have little effect on fish resources or EFH. Recovery of fish resources and EFH can occur from more than 99 percent, but not all, of the expected coastal and marine environmental degradation. Fish populations, if left undisturbed, would regenerate in one generation, but any loss of wetlands as EFH would be permanent. Impacts are expected to result in less than a 1-percent change in commercial fishing "pounds landed" or in the value of landings. Oil spills estimated to result from the proposed action would cause less than a 1-percent decrease in standing stocks of any population, commercial fishing efforts, landings, or value of those landings. The resultant impact on fish populations and commercial fishing activities within the WPA would be negligible and indistinguishable from variations due to natural causes. Any affected commercial fishing activity would recover within 6 months. It was initially believed that the 2005 hurricanes would have devastating effects on the health and numbers of offshore fish stocks in the GOM because of oil spills and contaminated floodwaters that were pumped out of New Orleans. Research results from NOAA Fisheries have indicated that these expectations did not occur. Preliminary results of this survey indicate that shrimp and bottomfish abundance was the same or slightly higher than in the fall of 2004, with shrimp and other valuable species relatively abundant and widely distributed. Post-hurricane studies conducted in Barataria Bay also indicated shrimp and fish abundance at near normal levels and water temperatures and salinities near normal. NOAA's annual survey of shrimp and bottomfish completed in November 2005 shows some species, such as the commercially-valuable and overfished red snapper, had a higher population in 2005 than in 2004. The survey also found that the Atlantic croaker population doubled in 2005. It appears that shrimp and finfish resources of the northern Gulf fared much better during and after the hurricanes than did the fishing infrastructure that uses them (Hogarth, 2005). Fish mortality likely occurred in nearshore and estuary habitats. The same NOAA

sampling effort indicated normal levels of shrimp and fish in shallow coastal waters as well as offshore. By far, the worst fishery-resource devastation occurred to oyster populations.

According to Mississippi Department of Marine Resources estimates, approximately 90 percent of Mississippi's oyster beds were damaged and disrupted by Hurricane Katrina (Hogarth, 2005). Currently, 100 percent of Mississippi's oyster fleet is out of work because of Hurricane Katrina. Oyster populations were similarly affected in parts of Louisiana. Commercial fisheries landings of the central Gulf Coast were drastically impacted by Hurricanes Katrina and Rita because of the severe impacts on coastal fishing port facilities and fishing vessels. There is no conclusive estimate of the number of fishing vessels sunk or driven ashore, but the USCG estimates the number to be between 3,500 and 5,000. This estimate includes nearly 2,400 commercial vessels and 1,200 recreational boats (Hogarth, 2005). For western Florida, Mississippi, Alabama, Louisiana, and Texas, based on figures obtained for September 2005, there was a 97 percent reduction in shrimp landings and a 94 percent reduction in oyster landings, representing a combined loss of over \$62 million for the month of September alone. Catches of a number of finfish and shellfish species were essentially zero in September 2005, including menhaden, blue crab, spiny lobster, stone crab, yellowfin tuna, mullet, and freshwater crawfish. Reef fish catches declined by 44 percent regionwide. These reductions in commercial catches have persisted in most affected areas since September 2005 (Hogarth 2005). Despite initial concerns about contamination of sediments and fish and shrimp tissue resulting from pollution caused by the hurricanes, NOAA studies found no evidence of hydrocarbons, persistent organic pollutants, or bacterial contamination (Hogarth, 2005; USDOC, NOAA, 2005). The survey results are consistent with similar findings recently announced by the Food and Drug Administration, USEPA, and the States of Mississippi, Louisiana, and Alabama, which concluded Gulf seafood was deemed safe for human consumption. The conclusion presented in the multisale EIS regarding impacts of the proposed action on fish resources and commercial fishing remains unchanged.

Archaeological Resources: Routine activities associated with the proposed action are not expected to impact offshore historic or prehistoric archaeological resources because of the surveys that are required in areas having potential for archaeological resources prior to MMS approval of any bottom-disturbing activities. However, because of incomplete knowledge on the location of historic shipwrecks and inundated prehistoric sites in the Gulf, it is possible that offshore oil and gas activities resulting from the proposed action could contact a site. Should this happen, unique or significant archaeological information could be lost. Under Section 110(g) of the National Historic Preservation Act (16 U.S.C. 470h-2[g]), MMS may charge Federal permittees for costs related to historic preservation activities as a condition of the issuance of their permit.

4.3.2. Updated Impact Analysis for the Proposed Action

The potential impacts on marine mammal resources are discussed and analyzed in the Lease Sale 196 EA because there was new information that was unavailable during the preparation of the multisale EIS. **Chapter 4.2.1** of this EA includes a discussion of this new information. The new information updated the abundance of cetaceans in the northern GOM (**Table 1**). The new information on marine mammals does not change the conclusions disclosed in the multisale EIS or the Lease Sale 196 EA. It was determined that the incremental contribution of impacts stemming from the proposed action is expected to be small and primarily sublethal and the cumulative conclusions for marine mammals remain unchanged (USDOJ, MMS, 2005a).

4.3.2.1. Marine Mammals

The Protected Species Stipulation and the three related NTL's were not analyzed in the multisale EIS because they were not in place at the time the EIS was completed. They were analyzed in the Lease sale 196 EA and are incorporated by reference (USDOJ, MMS, 2005a). The purpose of the Protected Species Stipulation is to reduce the potential taking of federally protected species, while the three NTL's serve to provide detailed guidance relative to the requirements of the Protected Species Stipulation. These mitigation measures are precautionary and are intended to further reduce the potential for any impacts related to the proposed action to occur. The environmental impacts of the proposed action on marine mammals, given the Protected Species Stipulation and NTL's, remain the same as presented in the multisale EIS. The more exact abundance estimates for cetaceans in the northern GOM (**Chapter 4.2.1**) are in agreement with the relative occurrence estimates presented in the multisale EIS and the

environmental impacts of the proposed action on marine mammals given the new estimates remain the same as presented in the multisale EIS.

The multisale EIS stated that small numbers of marine mammals could potentially be killed or injured by chance collision with service vessels and by eating indigestible debris, particularly plastic items, lost from service vessels, drilling rigs, and fixed and floating platforms. Deaths as a result of structure removals are not expected because of existing mitigation measures or those being developed for structures placed in oceanic waters. There is no conclusive evidence whether anthropogenic noise has or has not caused long-term displacements of, or reductions in, marine mammal populations. Contaminants in waste discharges and drilling muds might indirectly affect marine mammals through food-chain biomagnification, although the scope of effects and their magnitude are not known. The routine activities of the proposed action are not expected to have long-term adverse effects on the size and productivity of any marine mammal species or population stock endemic to the northern GOM.

Accidental blowouts, oil spills, and spill-response activities resulting from the proposed action have the potential to impact marine mammals in the GOM. Characteristics of impacts (i.e., acute vs. chronic impacts) depend on the magnitude, frequency, location, and date of accidents; characteristics of spilled oil; spill-response capabilities and timing; and various meteorological and hydrological factors. Populations of marine mammals in the northern GOM will be exposed to residuals of oils spilled as a result of the proposed action during their lifetimes. Chronic or acute exposure may result in the harassment, harm, or mortality to marine mammals occurring in the northern GOM. In most foreseeable cases, exposure to hydrocarbons persisting in the sea following the dispersal of an oil slick will potentially result in sublethal impacts (e.g., decreased health, reproductive fitness, and longevity; and increased vulnerability to disease) to marine mammals.

4.4. ALTERNATIVE B—THE PROPOSED ACTION EXCLUDING THE BLOCKS NEAR BIOLOGICALLY SENSITIVE TOPOGRAPHIC FEATURES

Alternative B would offer for lease all unleased blocks in the WPA, as described for the proposed action, with the exception of any unleased blocks within the 200 blocks in the WPA that are subject to the Topographic Features Stipulation. All the assumptions, including the potential mitigating measures and resource estimates, remain the same as in the proposed action. The environmental impacts of this alternative remain the same as presented in the multisale EIS (**Chapter 4.3.2**).

4.5. ALTERNATIVE C—NO ACTION

Alternative C is equivalent to cancellation of the proposed lease sale. The opportunity for development of the estimated 0.136-0.262 BBO and 0.810-1.440 Tcf of natural gas that could have resulted from the proposed action would be precluded or postponed, and any potential environmental impacts resulting from the proposed action would not occur or would be postponed.

Canceling the proposed lease sale would eliminate the effects described for Alternative A (the proposed action). However, other sources of energy would substitute for the lost production. Principal substitutes would be additional imports, conservation, additional domestic production, and switching to other fuels. These alternatives, except conservation, would have substantial negative environmental impacts of their own. These substitutes and the effects are discussed in the multisale EIS (USDOJ, MMS, 2002b) and *Energy Alternatives and the Environment* (USDOJ, MMS, 2001), and are incorporated by reference. The environmental impacts of this alternative remain the same as presented in the multisale EIS (**Chapter 4.3.3**).

4.6. CUMULATIVE ANALYSIS

The cumulative analysis considers the effects of impact-producing factors related to the proposed action, prior and future OCS sales, State oil and gas activities, other governmental and private projects and activities, and pertinent natural processes and events that may occur and adversely affect environmental and socioeconomic resources. Descriptions of these activities and the analysis of the cumulative effects are included in **Chapter 4.5** of the multisale EIS and are incorporated by reference in this EA. New information on the marine mammal resource (i.e., abundance of cetaceans in the northern

GOM) has been included within this EA (**Chapter 4.3.2.1**). The marine mammal resource was updated and reevaluated; however, the new information does not alter the conclusions of the multisale EIS.

Hurricanes and other severe storm events impact coastal wetlands, barrier beaches, and dunes through increased wave action and intensity that results in increased erosion of wetland substrates, conversion of coastal wetlands to open water, changes in beach and dune topography, and loss of habitat. Hurricanes and tropical storms are inherent components of the Gulf ecosystem that have long influenced coastal habitats and are expected to be continuing sources of impacts. Impacts to wetlands as a result of human activities, such as those that create marsh openings that enhance tidal and storm-driven water movements, may be amplified by severe storm events such as hurricanes. A major factor that has contributed to the ongoing loss of coastal wetlands, particularly in the Mississippi Delta region of Louisiana, is the reduction in sediments provided to coastal marshes. Considerable private and commercial development has occurred on many barrier islands in the Gulf, resulting in losses of beach and dune habitat.

The increasing focus of OCS activities in deep and ultra-deep water depths, and the continuing use of the coastal areas of the Gulf of Mexico, particularly in Louisiana and Texas, for staging, processing and support facilities will continue to promote changes in ethnic composition, self-identity, and cultural persistence of groups in coastal areas of states adjacent to the WPA. Non-OCS activities and processes with the potential for affecting sociocultural systems that are ongoing and are expected to continue into the foreseeable future include non-OCS oil and gas development, coastal habitat changes, coastal land loss, regional economic changes, and recovery from storms. These activities and processes can lead to changes in social organization by being a catalyst for population change, job creation and cessation, community development strategies, and overall changes in social institutions such as family, government, politics, education, and religion. Storm events, in particular, can have significant sociocultural effects, causing populations to move, families to reorganize, and communities to reconsider their development strategies.

Accidental oil and other chemical releases may occur as a result of both OCS and non-OCS activities, as well as from natural oil seeps. The magnitude of impacts of such releases depends on their location, size, and timing, but they are expected to have only temporary physical or economic effects.

As stated in the preceding paragraphs, the cumulative analysis includes the effects of natural processes and events that may occur and adversely affect environmental and socioeconomic resources. Included in this EA are the environmental and socioeconomic effects caused by Hurricanes Katrina and Rita. Recent information on these effects has been incorporated throughout this EA. The devastating effects of these hurricanes have increased the potential level of non-OCS related impacts on some resources, especially wetlands, barrier beaches, and socioeconomic resources. However, based on the information available at this time, the overall conclusions regarding cumulative effects of OCS impacts presented in the multisale EIS remain unchanged. The impacts of proposed WPA Lease Sale 200 would generally represent a relatively small contribution relative to other impacts, and the incremental effects are not expected to be significant.

5. CONSULTATION AND COORDINATION

5.1. SCOPING FOR THE ENVIRONMENTAL ASSESSMENT FOR THE WESTERN PLANNING AREA'S PROPOSED LEASE SALE 200

The MMS performs ongoing external and internal scoping in order to determine the breadth and depth necessary for environmental analysis.

External Scoping: The scoping process for this EA was formally initiated on November 22, 2005, with the *Federal Register* notice announcing the preparation of an EA. In the notice, MMS requested that interested parties submit comments regarding any new information or issues that should be addressed in the EA. The comment period closed on December 21, 2005. Responses were received from Louisiana's Department of Natural Resources (LDNR) and Department of Environmental Quality. These comments were considered in the preparation of this EA. The LDNR provided a number of comments regarding the impacts of Hurricanes Katrina and Rita. These included comments on safety considerations for offshore and onshore workers during hurricanes, impacts to coastal infrastructure, stability of offshore drilling rigs and structures, and impacts of OCS hurricane-related debris to other users such as fishermen. Information has been included in this EA regarding efforts to gather information on these issues (see **Chapter 5.3** below). A number of studies have been developed. As research occurs and information evolves,

additional baseline and impact information will be incorporated into future MMS EIS's and EA's. The LDNR also provided a number of comments that were programmatic in nature and not conducive to response in this particular EA. The MMS has responded to these via a letter to the Louisiana Department of Natural Resources.

Internal Scoping: Internal scoping is an ongoing activity for all environmental projects and NEPA documents. Part of internal scoping involves reviewing resource estimates and oil-spill modeling results used in the preparation of the multisale EIS to determine if they are still valid. The MMS GOM Region's Office of Resource Evaluation reviewed the oil and gas resource projections and associated activities for WPA Lease Sale 200 and confirmed that they remain within the range of those projected by MMS for a "typical WPA lease sale." The MMS Headquarters' Oil-Spill Risk Analysis (OSRA) group confirmed that results from the OSRA model summarized in the multisale EIS and presented in a separate MMS report (USDOJ, MMS, 2002d) are still valid for the proposed lease sale.

Internal scoping also requires MMS subject matter experts/analysts and NEPA coordinators to continuously update their knowledge base and incorporate three primary informational components into their analyses:

- (1) recent studies/reports;
- (2) monitoring results; and
- (3) related cumulative-impact data.

The MMS's analysts and coordinators take an active role in the preparation, execution, and peer review of studies and reports developed under MMS's Environmental Studies Program. In addition, some analysts provide expertise and are involved in additional studies and analyses conducted by other Federal/State agencies and universities concerning GOM issues and interests. The information obtained from these studies, as well as other relevant, non-MMS research, was considered by each subject matter expert in their assessment for this EA. **Appendix C** of this EA lists the GOM Region's studies published from 1999 to the present. Technical summaries and reports for these studies are available on the MMS Internet website (http://www.gomr.mms.gov/homepg/regulate/regs/ntls/ntl_lst.html).

In addition to hindcasting projections and estimates, MMS compliance monitoring tracks the status of mitigation and other conditions applied to approved-OCS activities. The monitoring information received from field inspections, office auditing, and/or mandatory reporting is reviewed by MMS analysts. Knowledge gained through environmental compliance monitoring forms a basis for mitigation revision and future mitigation development, and was ultimately incorporated by analysts into this EA.

Cumulative analyses are prepared by MMS subject matter experts who consider activities that could occur and may adversely affect GOM resources, including proposed WPA Lease Sale 200, prior and future OCS lease sales, State oil and gas activities, and other governmental and private projects and activities. The MMS analysts are often responsible for reviewing GOM activities not associated with oil and gas operations. All information gained from cumulative analyses was considered by MMS analysts in their assessments for this EA.

5.2. CONSULTATION AND COORDINATION CALENDAR

A complete description of all consultation and coordination activities and meetings is included in **Chapter 5** of the multisale EIS. A brief summary of these events follows:

Multisale EIS Process

September 12, 2001 The Call for Information/Notice of Intent (Call/NOI) for the proposed 2003-2007 CPA and WPA lease sales was published in the *Federal Register*. The required 30-day comment period closed on October 12, 2001. Additional public notices were distributed via newspaper notices, mailed notices, and the Internet. The MMS received four comment letters in response to the Call. Ten written scoping letters were received in response to the NOI.

- October 25-22, 2001* The MMS held scoping meetings in Galveston and Houston, Texas; New Orleans, Louisiana; and Mobile, Alabama, to receive comments on the Draft EIS for the proposed 2003-2007 CPA and WPA lease sales. A summary of comments presented at the scoping meetings is provided in **Chapter 5.3.** of the multisale EIS.
- April 15, 2002 and April 17, 2002* The MMS, by memorandum to FWS (April 15, 2002) and NOAA Fisheries (April 17, 2002), requested formal Section 7 consultation for CPA Lease Sales 185, 190, 194, 198, and 201, and WPA Lease Sales 187, 192, 196, and 200. The consultation included all aspects of oil and gas exploration, development, production, and abandonment activities. The FWS concluded that the proposed actions are not likely to jeopardize the continued existence of listed species under FWS jurisdiction (whooping crane, Gulf sturgeon, brown pelican, Alabama beach mouse, Perdido Key beach mouse, loggerhead sea turtle, piping plover, and Kemp's ridley sea turtle) and are not likely to destroy or adversely modify their designated critical habitat, if any. For each species with designated critical habitat, the adverse effects that may occur to critical habitat would be temporary in nature and of low probability. The NOAA Fisheries concluded that implementation of the proposed actions will adversely affect, but not likely jeopardize, the continued existence of the sperm whale; leatherback, green, hawksbill, Kemp's ridley, and loggerhead sea turtles; and the Gulf sturgeon.
- April 30—May 2, 2002* The MMS held public hearings in Houston, Texas; New Orleans, Louisiana; and Mobile, Alabama, to receive comments on the multisale EIS for CPA Lease Sales 185, 190, 194, 198, and 201, and WPA Lease Sales 187, 192, 196, and 200. One person attended the Houston hearing, but no comments were presented. Seven people attended the New Orleans hearing. Three individuals presented comments, which are summarized in **Chapter 5.5.** of the multisale EIS. There were no attendees at the Mobile hearing.
- November 2002* The MMS completed and filed the Final EIS for CPA Lease Sales 185, 190, 194, 198, and 201, and WPA Lease Sales 187, 192, 196, and 200 (multisale EIS) with USEPA. The MMS revised the document using information presented at the hearings and as a result of comments received on the Draft EIS (See **Chapter 5.7.** of the multisale EIS for a complete discussion of comments and responses).
- January 19, 2005* The MMS published a Notice of Preparation of an EA on proposed Lease Sale 196. In the notice, MMS requested interested parties to submit comments regarding any new information or issues that should be addressed in the EA. Two comment letters were received.

WPA Lease Sale 200 EA Process

- November 22, 2005* The MMS published in the *Federal Register* a Notice of Preparation of an EA for proposed Outer Continental Shelf Oil and Gas Lease Sale 200 in the Western Gulf of Mexico 2006. In the notice, MMS requested interested parties to submit comments regarding any new information or issues that should be addressed in the EA. In addition, a special information request was mailed to all affected agencies. Two comment letters were received.

5.3. RESPONSE TO LOUISIANA'S COMMENTS REGARDING HURRICANE IMPACTS

Hurricanes Katrina and Rita, in August and September 2005, respectively, as well as past hurricanes (e.g., Ivan) caused significant impacts to coastal and onshore oil and gas infrastructure. As discussed in **Chapter 5.1**, the State of Louisiana expressed concerns regarding the impacts of these hurricanes and stated that the EA should include information on these issues. The MMS shares these concerns and is working with Louisiana State University's Coastal Management Institute to design and fund the following two studies to gather information on the impacts of hurricanes on onshore infrastructure, employment, community structure, etc. It is expected that these studies will be awarded in February 2006.

Spatial Restructuring and Fiscal Impacts in the Wake of Disaster: The Case of the Oil and Gas Industry Following Hurricanes Katrina and Rita. This two-year study will examine the role that offshore oil and gas plays in providing employment stability in the GOM region in the aftermath of the storms, and how this may change over time. This study will examine the spatial shift of employment in response to the storms and determine which communities could benefit or suffer from these changes. Ethnographic data will be gathered regarding changes in residence and commuting patterns of offshore oil and gas workers. The study will also examine the fiscal effects that the industry will have on hurricane-impacted communities, Gulf States, and the Gulf region as a whole.

Post Hurricane Assessment of OCS-Related Infrastructure and Communities in the Gulf Of Mexico Region. This 18-month study will examine the impact of Hurricanes Katrina and Rita on existing OCS-related onshore infrastructure and future infrastructure development. It will determine which types of infrastructure will be rehabilitated, expanded, or moved to other regions along the Gulf, or even out of the region. These changes, in turn, have important impacts on the economies and communities of the region. The study will investigate how the past year's tropical activity will affect future onshore infrastructure development trends.

The study will also include an analysis of select communities with a high concentration of OCS-related infrastructure. The analysis will use existing GIS infrastructure information, as well as additional data developed during the project, to identify communities of interest. The resulting community profiles will specifically describe the social impacts of hurricane-related damages in communities with extensive onshore infrastructure. This study will provide the most current, up-to-date information about onshore infrastructure in the region and how it and their surrounding communities have been affected by hurricane activity. Updating the data associated with this infrastructure will also assist in highlighting future challenges in upcoming tropical seasons.

With regard to stability of offshore oil and gas structures, following Hurricane Ivan, a number of studies were awarded by MMS to determine the impact of that hurricane on the offshore oil and gas structures of the Gulf of Mexico. These studies were designed to analyze and assess the consequential damage to structures and pipelines, determine the effectiveness of current design standards and pollution-prevention systems, and develop recommendations for changes to industry standards and MMS regulations, if needed. Much of the information derived from these studies will be applicable to Hurricanes Katrina and Rita as well. These studies will address short- and long-term adjustments in MMS's technical, engineering, and geologic standards and regulations to ensure that offshore oil and gas production remains safe, environmentally friendly, and less susceptible to interruption. The following is a list of these studies and their status.

- *Assessment of Drilling and Workover Rig Storm Sea Fastenings on Offshore Floating Platforms during Hurricane Ivan.* This study was awarded to Texas A&M University, Offshore Technology Research Center; it is scheduled for completion in November 2006.
- *Examination and Review MODU Loss of Stationkeeping Ability During Hurricane Ivan and Assess Mooring Standards and Criteria to Prevent Similar Failures.* This study was awarded to Offshore Risk & Technology Consulting, Inc.; it is scheduled for completion in March 2006.
- *Pipeline Damage Assessment from Hurricane Ivan in the Gulf of Mexico.* This study was awarded to Det Norske Veritas; the draft report is expected in March 2006.

- *Assessment of Fixed Offshore Platform Performance in Hurricanes Ivan, Andrew, and Lili.* This study was awarded to Energo Engineering, Inc.; comments are being applied to the final report.
- *Mudflows and Mudslides during Hurricane Ivan.* This study was awarded to Texas A&M University, Offshore Technology Research Center; it is scheduled for completion in September 2006.
- *A Pilot Study for Regionally-Consistent Hazard Susceptibility Mapping of Submarine Mudslides.* This study was awarded to William Lettis & Associates, Inc.; comments are being applied to the final report.

Additionally, in July 2005, the Offshore Hurricane Readiness and Recovery Conference was held in Houston, Texas. This conference was co-sponsored by MMS, Offshore Operators Committee, U.S. Coast Guard, Office of Pipeline Safety, National Ocean Industries Association, and the Offshore Marine Service Association. The purpose of this conference was to share lessons learned regarding the effects of hurricanes on drilling rigs, production facilities, pipelines, and other infrastructure.

With regard to the impacts of OCS-related debris in the Gulf resulting from hurricanes, MMS acknowledges that this debris could cause damage to commercial or recreational vessels or fishing gear (primarily commercial fishing gear). Such damages or losses because of OCS oil and gas activities can be mitigated by the Fishermen's Contingency Fund. Final regulations for the implementation of Title IV of the OCS Lands Act (OCSLA), as amended (43 U.S.C. 1841-1846), were published in the *Federal Register* on January 24, 1980 (50 CFR 296). The OCSLA, as amended, established the Fishermen's Contingency Fund to compensate commercial fishermen for actual and consequential damages, including loss of profit because of damage or loss of fishing gear by various materials and items associated with oil and gas exploration, development, or production on the OCS. This Fund, administered by the Financial Services Division of NOAA Fisheries, mitigates most losses suffered by commercial fishermen because of OCS oil and gas activities. Once an obstruction site has been identified, it is added to the Department of Commerce's National Oceanic and Atmospheric Administration, National Ocean Service (NOAA/NOS) nautical charts or weekly USCG Notice to Mariners. A detailed discussion of the Fishermen's Contingency Fund can be found on pages I-14 and I-15 of the most recent multisale EIS (USDOJ MMS, 2002b).

6. REFERENCES

- American Association of Port Authorities (AAPA). 2005. Hurricane-affected U.S. Gulf Coast ports coming back strong. December 21, 2005, press release. Internet website: <http://www.aapa-ports.org/pressroom/dec2105.htm>. Accessed on February 22, 2006.
- Brookings Institution Metropolitan Policy Program. 2006. Katrina index tracking variables of post-Katrina reconstruction by Bruce Katz, Matt Fellowes, and Mia Mabanta, March 1, 2006. Internet Website: http://www.brook.edu/metro/pubs/200512_katrinaindex.htm. Accessed on March 2, 2006.
- Burrow W. 2006. Personal communication. U.S. Dept. of the Interior, Geological Survey, National Wetlands Research Center, Lafayette, LA. February, 2006.
- Caffey, R. 2005. Louisiana hurricane recovery resources. Barrier islands & wetlands. Louisiana sea grant college program/LSU AgCenter 9/21/05. (<http://www.laseagrant.org/hurricane/wetlands.htm>) Accessed on March 1, 2006.
- Congressional Budget Office. 2005. Testimony on the macroeconomic and budgetary effects of Hurricanes Katrina and Rita. Statement of Douglas Holtz-Eakin, Director, October 6, 2005. Internet Website: <http://www.cbo.gov/publications/collections/hurricanes> accessed on February 24, 2006.
- Congressional Research Service (CBO). 2005. November 4, 2005. Hurricane Katrina: Social-demographic characteristics of impacted areas by Thomas Gabe, Gene Falk, Maggie McCarty, and Virginia W. Mason, November 4, 2005. Internet Website: <http://www.gnocdc.org/reports/crsrept.pdf>. Accessed on March 2, 2006.

- Democracy Now. 2005. Indian tribes and Hurricane Katrina: Overlooked by the Federal Government. Relief organizations and the corporate media, October 10, 2005. Internet Website: <http://www.democracynow.org/article.pl?sid=05/10/10/1335220>. Accessed on March 2, 2006.
- Dimarco, S.F., M.K. Howard, W.D. Nowlin, Jr., and R.O. Reid. 2004. Subsurface, high-speed current jets in the deepwater region of the Gulf of Mexico. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study MMS 2004-022. 98 pp.
- Dismukes, D. 2006. Personal communication. Associate Professor & Associate Director, Center for Energy Studies, Louisiana State University, Baton Rouge, LA.
- Federal Register*. 2004. Notice of Final NPDES General Permit for New and Existing Sources and New Dischargers in the Offshore Subcategory of the Oil and Gas Extraction Category for the Western Portion of the Outer Continental Shelf of the Gulf of Mexico (GMG290000). 69 FR 194, pp. 60,150-60,151.
- Fuller, D. 2006. Personal communication. U.S. Dept. of the Interior, Fish and Wildlife Service, Region 4 Ecological Services, Lafayette, LA. February 2006.
- Greenberg, J. 2005. OSV day rates. *Workboat* 62(12):12, December.
- Hamilton, P., J.J. Singer, E. Waddell, and K. Donahue. 2003. Deepwater observations in the Northern Gulf of Mexico from in-situ current meters and PIES: Final report. Volume II: Technical report. U.S. Dept of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study MMS 2003-049. 95 pp.
- Harris, J. 2006. Personal communication. U.S. Dept. of the Interior, Fish and Wildlife Service, Region 4 Refuges, Lacombe, LA. February 2006.
- Hemmerling, S.A. and C.E. Colten. 2003. Environmental justice considerations in Lafourche Parish, Louisiana. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study MMS 2003-038.
- Hogarth, W. 2005. Testimony of Dr. William Hogarth, Assistant Administrator, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce on Effects of Hurricanes Katrina and Rita on the Fishing Industry and Fishing Communities in the Gulf of Mexico. Before the Subcommittee on Fisheries and Oceans, Committee on Resources, United States House of Representatives, December 12, 2005. 10 pp. Internet website: http://www.st.nmfs.gov/hurricane_katrina/press_releases/Hurricane_Testimony_12-15_SERO_input-1_V5.pdf
- Lore G.L., D.A. Marin, E.C. Batchelder, W.C. Courtwright, R.P. Desselles, and R.J. Klazynski. 2001. 2000 assessment of conventionally recoverable hydrocarbon resources of the Gulf of Mexico and Atlantic Outer Continental Shelf as of January 1, 1999. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS Report MMS 2001-087.
- Oilnergy. 2006. Internet website: <http://www.oilnergy.com>. Accessed on January 9, 2006.
- Pardue, J.H., W.M. Moe, D. McInnis, L.J. Thibodeaux, K.T. Valsaraj, E. Maciasz, I. Van Heerden, N. Korevec, and Q.Z. Yuan. 2005. Chemical and microbiological parameters in New Orleans floodwater following Hurricane Katrina. *Environmental Science and Technology* 39:8,591-8,599.
- Powers, J. 2006. Region Six Region Response Team Winter Meeting, New Orleans, LA.
- Scott, L. 2006. Advancing in the aftermath: Tracking the recovery from Katrina and Rita. Internet website: <http://www.Lorencscottassociates.com>. Accessed on March 02, 2006.
- U.S. Dept. of Commerce. National Oceanic and Atmospheric Administration. 2005. National Oceanic and Atmospheric Administration Release NOAA05-127. Internet website: <http://www.publicaffairs.noaa.gov/releases2005/oct05/noaa05-127.html> Accessed on October 11, 2005.
- U.S. Dept. of Energy. Energy Information Administration. 2005. Petroleum supply annual 2004, Volume 1, Table 36. Number and capacity of operable petroleum refineries by PAD District and State as of January 1, 2005.

- U.S. Dept. of Energy. Office of Electricity Delivery and Energy Reliability. 2006. Gulf Coast hurricanes situation report. Reports 1 through 46. Internet website: <http://www.electricity.doe.gov>.
- U.S. Dept. of the Interior. Geological Survey. 2005. Internet website: <http://www.nwrc.usgs.gov/hurricane/katrina-post-hurricane-flights.htm>. Accessed on September 1, 2005.
- U.S. Dept. of the Interior. Geological Survey. 2006. February 2006 Report. Internet website: http://www.nwrc.usgs.gov/hurricane/hurricane_land_change.htm.
- U.S. Dept. of the Interior. Minerals Management Service. 2001. Energy alternatives and the environment. U.S. Dept. of the Interior, Minerals Management Service, Herndon, VA. OCS Report MMS 2001-096.
- U.S. Dept. of the Interior. Minerals Management Service. 2002a. Outer continental shelf oil and gas leasing program: 2002-2007—final environmental impact statement; Volumes I and II. U.S. Dept. of the Interior, Minerals Management Service, Washington, DC. OCS EIS/EA MMS 2002-006.
- U.S. Dept. of the Interior. Minerals Management Service. 2002b. Gulf of Mexico OCS oil and gas lease sales: 2003-2007; Central Planning Area Sales 185, 190, 194, 198, and 201; Western Planning Area Sales 187, 192, 196, and 200—final environmental impact statement; Volumes I and II. 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. 2002c. News Release: MMS preliminary report finds most facilities withstood Hurricane Lili; 6 platforms out of 800 with severe damage; MMS buoy provides important data. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. October 16, 2002.
- U.S. Dept. of the Interior. Minerals Management Service. 2002d. Oil-spill risk analysis: Gulf of Mexico Outer Continental Shelf (OCS) lease sales, Central Planning Area and Western Planning Area, 2003-2007 and Gulfwide OCS Program, 2003-2042. U.S. Dept. of the Interior, Minerals Management Service, Washington, DC. OCS Report MMS 2002-032.
- U.S. Dept. of the Interior. Minerals Management Service. 2003a. Outer Continental Shelf oil spill during Hurricane Lili, Ship Shoal Block 119: Responses, fate, and effects. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS Report MMS 2003-039.
- U.S. Dept. of the Interior. Minerals Management Service. 2004. Proposed OCS Lease Sale 192, Western Gulf of Mexico—environmental assessment. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS EIS/EA MMS 2004-007.
- U.S. Dept. of the Interior. Minerals Management Service. 2005a. Proposed OCS Lease Sale 196, Western Gulf of Mexico—environmental assessment. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS EIS/EA MMS 2005-010.
- U.S. Dept. of the Interior. Minerals Management Service. 2005b. Structure-removal operations on the Gulf of Mexico Outer Continental Shelf—programmatic environmental assessment. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS EIS/EA MMS 2005-013.
- U.S. Environmental Protection Agency. 2005a. Water quality study of bays in coastal Mississippi: water quality report. Internet website: <http://www.epa.gov/region4/sesd/reports/2005-0926.html>. Accessed on February 24, 2006.
- U.S. Environmental Protection Agency. 2005b. Environmental assessment summary for areas of Jefferson, Orleans, St. Bernard, and Plaquemines Parishes flooded as a result of Hurricane Katrina. Internet website: http://www.epa.gov/katrina/testresults/katrina_env_assessment_summary.htm. Accessed on February 24, 2006.

- U.S. Environmental Protection Agency. 2005c. Summary of assessments at superfund national priority list sites. Internet website: <http://www.epa.gov/enviro/katrina/emkatrina.html#superfund>. Accessed on February 24, 2006
- Veil, J., T.A. Kimmell, and A.C. Rechner. 2005. Characteristics of produced water discharged to the Gulf of Mexico hypoxic zone. U.S. Dept. of Energy, National Energy Technology Laboratory. Prepared under contract W-31-109-Eng-38.
- Wall, K. 2006. Louisiana forecast 2006. Louisiana Contractor, cover story. Internet website: http://louisiana.construction.com/features/archive/0601_cover.asp. Accessed on February 24, 2006.
- Waring, G. T., R. M. Pace, J. M. Quintal, C. P. Fairfield and K. Maze-Foley. (Eds.) 2004. U.S. Atlantic and Gulf of Mexico marine mammal stock assessments – 2003. NOAA Tech. Memo. NMFS-NE-182, 287 pp.
- Worldwide Gas Processing Report. 2003. Oil and Gas Journal. June 30, 2003.
- Würsig, B., T. Jefferson, and D. Schmidly. 2000. The marine mammals of the Gulf of Mexico. College Station, TX: Texas A&M University Press.

APPENDIX A. PROPOSED LEASE STIPULATIONS

One or more of five lease stipulations will be applied to leases resulting from this lease sale (WPA Lease Sale 200) on blocks shown on the map “Stipulations and Deferred Blocks, Sale 200, Proposed,” included in the Proposed Notice of Sale 200 Package (PNOS 200 Package). In addition, the “List of Blocks Available for Leasing” contained in the Final Notice of Sale 200 Package (FNOS 200 Package) identifies for each block listed the lease stipulations applicable to that block. These lease stipulations are

- Stipulation No. 1—Topographic Features
- Stipulation No. 2—Military Areas
- Stipulation No. 3—Operations in the Naval Mine Warfare Area
- Stipulation No. 4—Law of the Sea Convention Royalty Payment
- Stipulation No. 5—Protected Species

STIPULATION NO. 1—TOPOGRAPHIC FEATURES

This stipulation will be included only in leases on blocks within the areas so indicated in the Biological Stipulation Map Package for the Western Gulf of Mexico which is available from the MMS Gulf of Mexico Region’s Public Information Unit. Please see the PNOS 200 Package for the address and telephone numbers.

The stipulation provides for protection of the following banks:

Bank Name	No Activity Zone Defined by Isobath (meters)
Shelf Edge Banks	
West Flower Garden Bank	100 (defined by 1/4 1/4 1/4 system)
East Flower Garden Bank	100 (defined by 1/4 1/4 1/4 system)
MacNeil Bank	82
29 Fathom Bank	64
Rankin Bank	85
Geyer Bank	85
Elvers Bank	85
Bright Bank[1]	85
McGrail Bank[1]	85
Rezak Bank[1]	85
Sidner Bank[1]	85
Parker Bank[1]	85
Stetson Bank	52
Appelbaum Bank	85
Low Relief Banks[2]	
Mysterious Bank	74,76,78,80,84
Coffee Lump	Various
Blackfish Ridge	70
Big Dunn Bar	65
Small Dunn Bar	65
32 Fathom Bank	52

Bank Name	No Activity Zone Defined by Isobath (meters)
Claypile Bank[3]	50
South Texas Banks[4]	
Dream Bank	78,82
Southern Bank	80
Hospital Bank	70
North Hospital Bank	68
Aransas Bank	70
South Baker Bank	70
Baker Bank	70

[1] Central Gulf of Mexico bank with a portion of its “1-Mile Zone” and/or “3-Mile Zone” in the Western Gulf of Mexico.

[2] Low Relief Banks--Only paragraph (a) applies.

[3] Claypile Bank--Paragraphs (a) and (b) apply. In paragraph (b), monitoring of the effluent to determine the effect on the biota of Claypile Bank shall be required rather than shunting.

[4] South Texas Banks--Only paragraphs (a) and (b) apply.

- (a) No activity including structures, drilling rigs, pipelines, or anchoring will be allowed within the listed isobath (“No Activity Zone” as shown in the aforementioned Biological Stipulation Map Package) of the banks as listed above.
- (b) Operations within the area shown as “1,000-Meter Zone” in the aforementioned Biological Stipulation Map Package shall be restricted by shunting all drill cuttings and drilling fluids to the bottom through a downpipe that terminates an appropriate distance, but no more than 10 meters, from the bottom.
- (c) Operations within the area shown as “1-Mile Zone” in the aforementioned Biological Stipulation Map Package shall be restricted by shunting all drill cuttings and drilling fluids to the bottom through a downpipe that terminates an appropriate distance, but no more than 10 meters, from the bottom. (Where there is a “1-Mile Zone” designated, the “1,000-Meter Zone” in paragraph (b) is not designated.) This restriction on operations also applies to areas surrounding the Flower Garden Banks National Marine Sanctuary, namely the “4-Mile Zone” surrounding the East Flower Garden Bank and the West Flower Garden Bank.
- (d) Operations within the area shown as “3-Mile Zone” in the aforementioned Biological Stipulation Map Package shall be restricted by shunting all drill cuttings and drilling fluids from development operations to the bottom through a downpipe that terminates an appropriate distance, but no more than 10 meters, from the bottom.

STIPULATION NO. 2—MILITARY AREAS

This stipulation will be included in leases located within the Warning Areas as shown on the map “Stipulations and Deferred Blocks, Sale 200, Proposed” included in the PNOS 200 Package.

- (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 who are agents, employees, or invitees of

the lessee, its agents, independent contractors, or subcontractors doing business with the lessee 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 and 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 sustained by the lessee, or to indemnify and save harmless the United States against all claims for loss, damage, or injury sustained by the agents, employees, or invitees of the lessee, its agents, or any independent contractors or subcontractors doing business with the lessee in connection with the programs and 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 areas in accordance with requirements specified by the commander of the command headquarters listed in the following table 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 areas. Necessary monitoring control, and coordination with the lessee, its agents, employees, invitees, independent contractors or subcontractors, will be effected by the commander of the appropriate onshore military installation conducting operations in the particular warning area; provided, however, that control of such electromagnetic emissions shall in no instance prohibit all manner of electromagnetic communication during any period of time between a lessee, its agents, employees, invitees, independent contractors or subcontractors and onshore facilities.

(c) Operational

The lessee, when operating or causing to be operated on its behalf, boat, ship, or aircraft traffic into the individual designated warning areas, shall enter into an agreement with the commander of the individual command headquarters listed in the following list, upon utilizing an individual designated warning area prior to commencing such traffic. Such an agreement will provide for positive control of boats, ships, and aircraft operating into the warning areas at all times.

W-59 Naval Air Station—JRB 159 Fighter Wing
 400 Russell Avenue
 Building 285
 New Orleans, Louisiana 70143-0027
 Telephone: (504) 391-8696/8687; (504) 391-8671 (fax)

- W-147 147 OG/DOV
14657 Sneider Street
Houston, Texas 77034-5586
Telephone: (281) 929-2141/2391
- W-228 Chief, Naval Air Training
Attn: Code N332 (ATC & Space Mgt)
Naval Air Station
Corpus Christi, Texas 78419-5100,
Telephone: (361) 961-2550/3229
- W-602 VQ-4
7791 Mercury Rd.
Tinker AFB, Oklahoma 73145-8704
Telephone: (402) 294-2334

STIPULATION NO. 3—OPERATIONS IN THE NAVAL MINE WARFARE AREA

This stipulation will apply to Mustang Island Area Blocks 768, 769, 775, 777, 778, 790, 791, 793, 798, 799, 815, 816, 821, and 822; and Mustang Island Area East Addition Blocks 732, 733, and 734.

1. The provisions of this paragraph shall apply to all of Mustang Island Area East Addition Blocks 732, 733, and 734; and to those portions of Mustang Island Area Blocks 768, 769, 777, 778, 790 and 791 which are in Naval Mine Warfare Command Operational Area D as shown on the attached map and specified on the attached coordinates list.
 - (a) Exploration: The placement, location, and planned periods of operation of surface structures on this lease (or portion as specified above) during the exploration stage are subject to approval by the Regional Director (RD), MMS Gulf of Mexico Region, after the review of the operator's Exploration Plan (EP). Prior to the submission of the EP, the lessee will consult with the Commander, Mine Warfare Command, in order to determine the EP's compatibility with scheduled military operations. The EP shall contain a statement certifying the consultation and indicating whether the Commander, Mine Warfare Command has any objection to activities and schedule of the EP. No permanent structures nor debris of any kind shall be allowed in the area covered by this lease during exploration operations.
 - (b) Development: Any above-seafloor development operations within the area covered by this lease (or portion as specified above) must be compatible with scheduled military operations as determined by the Commander, Mine Warfare Command. The lessee will consult with and coordinate plans for above-seafloor development activities (including abandonment) with the Commander, Mine Warfare Command. The Development Operations Coordination Document (DOCD) must contain the locations of any permanent structures, fixed platforms, pipelines, or anchors planned to be constructed or placed in the area covered by this lease (or portion as specified above) as part of such development operations. The DOCD must also contain the written comments of the Commander, Mine Warfare Command on the proposed activities. If the Commander, Mine Warfare Command determines that activities are incompatible, the RD will consult with him to resolve the matter. If no resolution can be reached, then development operations must be conducted from outside the Naval Mine Warfare Command Operational Area.
2. The provisions of this paragraph shall apply to those portions of Mustang Island Area Blocks 775, 798, 815, 821, and 822 which are in the Naval Mine Warfare Command

operational transit lanes QJR 101, QJR 102, and QJR 105 as shown on the attached map and specified on the attached coordinates list.

- (a) Exploration and Development: No operations, exploratory or development activities shall take place, nor will structures of any kind be placed, in Naval Mine Warfare Command operational transit lanes QJR 101, QJR 102, and QJR 105.
3. The provisions of this paragraph shall apply to all of Mustang Island Area Blocks 793, 799, and 816.
 - (a) Exploration and Development: The lessee agrees that no activity including, but not limited to, construction and use of structures, operation of drilling rigs, laying of pipelines, and/or anchoring will occur or be located on the seabed or in the water column above or within any portion of this lease. All exploration, development, and production activities or operations must take place from outside the lease by the use of directional drilling or other techniques.
 - (b) Prior to the submission of Exploration Plans (EP) and Development Operations Coordination Documents (DOCD) for this lease, Lessee will consult with the Commander, Mine Warfare Command, in order to determine the compatibility of Lessee's plans with scheduled military operations. The EP and DOCD shall contain a statement certifying the consultation and indicating whether the Commander, Mine Warfare Command has any objection to activities and schedule of the EP or DOCD.
4. For more information, consultation, and coordination, the lessee must contact:

Commander, Mine Warfare Command
325 Fifth Street, S.E.
Corpus Christi, Texas 78419-5032
Phone: (361) 961-4869/4870

MAP FOR NAVAL MINE WARFARE AREA STIPULATION




NOTE: This stipulation applies to all or portions of Mustang Island Area Blocks 768, 769, 775, 777, 778, 790, 791, 793, 798, 799, 815, 816, 821, and 822.

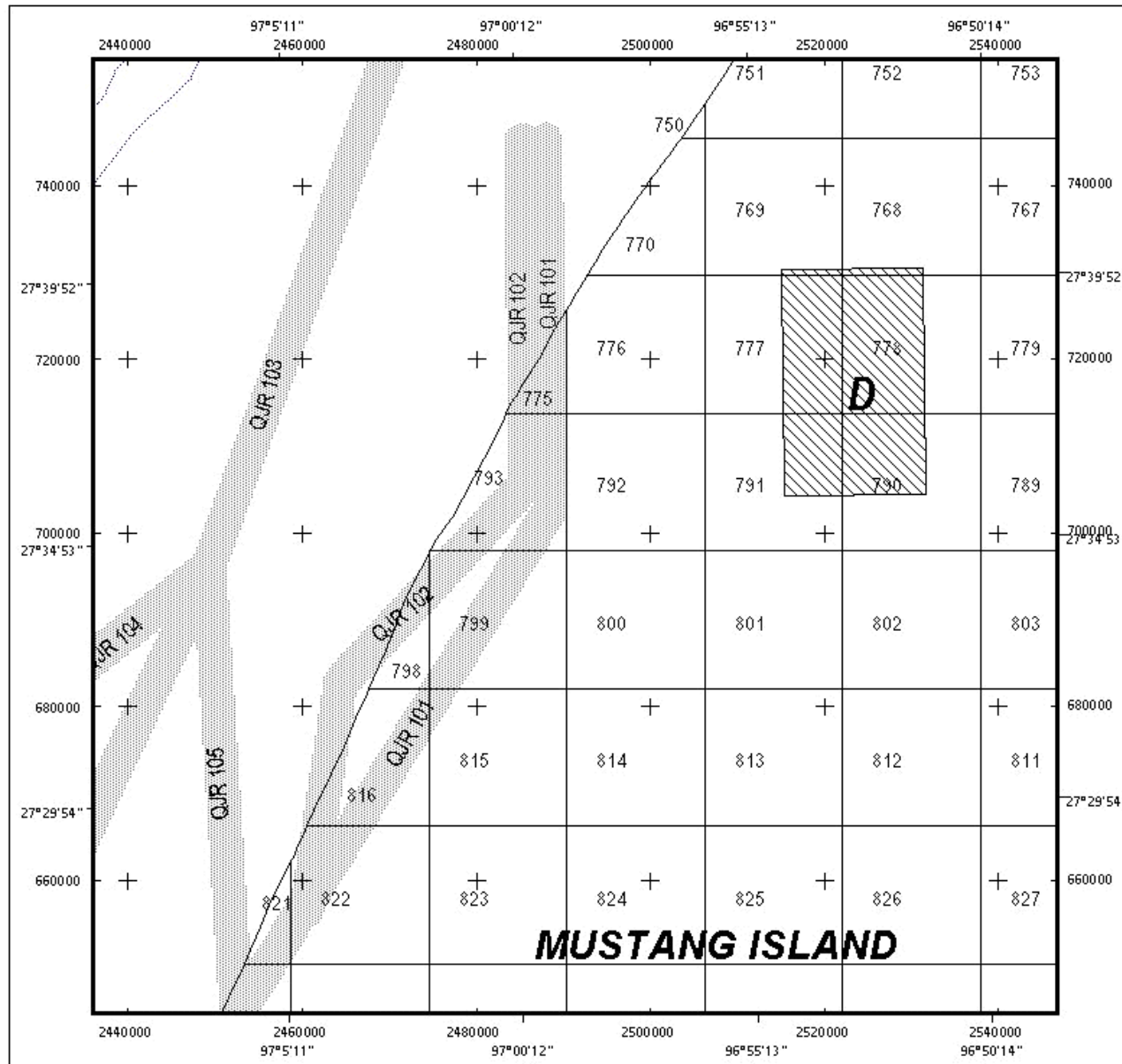
Although not shown here, this stipulation also applies to all of Mustang Island Area East Addition Blocks 732, 733, and 734.

31



LEGEND

-  Blocks
-  Operational Area D
-  Operational Transit Lanes



Coordinates for Stipulation No. 3--Operations in the Naval Mine Warfare Area

Coordinates of Operational Areas for
Naval Training off Corpus Christi, Texas

SITE - CORNER	WGS - 84 LATITUDE	WGS - 84 LONGITUDE	WGS - 84 X(M)	WGS - 84 Y(M)	LAMBERT X (FT)	LAMBERT Y (FT)
D - NW	27°40' 00"	96°54' 30"	706313.566	3062027.331	2515275.590	730113.200
D - SW	27°35' 42"	96°54' 30"	706448.081	3054085.836	2515604.230	704061.290
D - NE	27°40' 00"	96°51' 30"	711246.664	3062111.991	2531458.820	730320.550
DSE	27°35' 42"	96°51' 30"	711384.401	3054170.348	2531797.780	704268.780

Coordinates of Operational Transit Lanes for
Naval Training off Corpus Christi, Texas

TRANSIT LANE	WAYPOINT	LATITUDE	LONGITUDE
QJR 101	A	27° 42.50' N	096° 59.50' W
	B	27° 35.50' N	096° 59.50' W
	C	27° 26.00' N	097° 06.25' W
QJR 102	A	27° 42.50' N	097° 00.00' W
	B	27° 36.00' N	097° 00.00' W
	C	27° 32.25' N	097° 04.00' W
	D	27° 28.00' N	097° 04.75' W
QJR 105	A	27° 34.50' N	097° 06.75' W
	B	27° 25.50' N	097° 06.25' W

Note: All transit lanes are 1,500 yards wide.

STIPULATION NO. 4—LAW OF THE SEA CONVENTION ROYALTY PAYMENT

This stipulation will be included in leases beyond the United States (U.S.) Exclusive Economic Zone (EEZ) in the area formerly known as the Western Gap, as shown on the map "Stipulations and Deferred Blocks, Sale 200, Proposed" included in the PNOS 200 Package.

If the U.S. becomes a party to the 1982 Law of the Sea Convention (Convention) prior to or during the life of a lease issued by the U.S. on a block or portion of a block located beyond the U.S. EEZ and subject to such conditions that the Senate may impose through its constitutional role of advice and consent, then the following royalty payment lease provisions will apply to the lease so issued, consistent with Article 82 of the Convention:

1. The Convention requires payments annually by coastal States party to the Convention with respect to all production at a site after the first five years of production at that site. Any such payments will be made by the U.S. government and not the lessee.
2. For the purpose of this stipulation regarding payments by the lessee to the U.S., a site is defined as an individual lease whether or not the lease is located in a unit.

3. For the purpose of this stipulation, the first production year begins on the first day of commercial production (excluding test production). Once a production year begins it shall run for a period of 365 days whether or not the lease produces continuously in commercial quantities. Subsequent production years shall begin on the anniversary date of first production.
4. If total lease production during the first five years following first production exceeds the total royalty suspension volume(s) provided in the lease terms, or through application and approval of relief from royalties, the following provisions of this stipulation will not apply. If after the first five years of production but prior to termination of this lease, production exceeds the total royalty suspension volume(s) provided in the lease terms, or through application and approval of relief from royalties, the following provisions of this stipulation will no longer apply effective the day after the suspension volumes have been produced.
5. If, in any production year after the first five years of lease production, due to lease royalty suspension provisions or through application and approval of relief from royalties, no lease production royalty is due or payable by the lessee to the U.S., then the lessee will be required to pay, as stipulated in paragraph 9 below, Convention-related royalty in the following amount so that the required Convention payments may be made by the U. S. government as provided under the Convention:
 - a. In the sixth year of production, one percent of the value of the sixth year's lease production saved, removed, or sold from the leased area;
 - b. After the sixth year of production, the Convention-related royalty payment rate shall increase by one percent for each subsequent year until the twelfth year and shall remain at seven percent thereafter until lease termination.
6. If the U.S. becomes a party to the Convention after the fifth year of production from the lease, and a lessee is required, as provided herein, to pay Convention-related royalty, the amount of the royalty due will be based on the above payment schedule as determined from first production. For example, U.S. accession to the Convention in the tenth year of lease production would result in a Convention-related royalty payment of five percent of the value of the tenth year's lease production, saved, removed, or sold from the lease. The following year, a payment of six percent would be due, and so forth as stated above, up to a maximum of seven percent per year.
7. If, in any production year after the first five years of lease production, due to lease royalty suspension provisions or through application and approval of relief from royalties, lease production royalty is paid but is less than the payment provided for by the Convention, then the lessee will be required to pay to the U.S. government the Convention-related royalty in the amount of the shortfall.
8. In determining the value of production from the lease if a payment of Convention-related royalty is to be made, the provisions of the lease and applicable regulations shall apply.
9. The Convention-related royalty payment(s) required under paragraphs 5 through 7 of this stipulation, if any, shall not be paid monthly but shall be due and payable to MMS on or before 30 days after the expiration of the relevant production lease year.
10. The lessee will receive royalty credit in the amount of the Convention-related royalty payment required under paragraphs 5 through 7 of this stipulation, which will apply to royalties due under the lease for which the Convention-related royalty accrued in subsequent periods as non-Convention related royalty payments become due.
11. Any lease production for which the lessee pays no royalty other than a Convention-related requirement, due to lease royalty suspension provisions or through application and approval of relief from royalties, will count against the lease's applicable royalty suspension or relief volume.

12. The lessee will not be allowed to apply or recoup any unused Convention-related credit(s) associated with a lease that has been relinquished or terminated.

STIPULATION NO. 5—PROTECTED SPECIES

This stipulation will apply to all leases resulting from this sale (WPA Lease Sale 200).

To reduce the potential taking of Federally protected species (e.g., sea turtles, marine mammals, Gulf sturgeon, and other listed species):

- (a) The MMS will condition all permits issued to lessees and their operators to require them to collect and remove flotsam resulting from activities related to exploration, development, and production of this lease.
- (b) The MMS will condition all permits issued to lessees and their operators to require 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) The MMS will require that vessel operators and crews watch for marine mammals and sea turtles, reduce vessel speed to 10 knots or less when assemblages of cetaceans are observed and maintain a distance of 90 meters or greater from whales, and a distance of 45 meters or greater from small cetaceans and sea turtles.
- (d) The MMS will require that all seismic surveys employ mandatory mitigation measures including the use of a 500-meter “exclusion zone” based upon the appropriate water depth, ramp-up and shut-down procedures, visual monitoring and reporting. Seismic operations must immediately cease when certain marine mammals are detected within the 500-meter exclusion zone. Ramp-up procedures and seismic surveys may be initiated only during daylight unless alternate monitoring methods approved by MMS are used.
- (e) The MMS will require lessees and operators to instruct offshore personnel to immediately report all sightings and locations of injured or dead protected species (marine mammals and sea turtles) to the appropriate stranding network. If oil and gas industry activity is responsible for the injured or dead animals (e.g. because of a vessel strike), the responsible parties should remain available to assist the stranding network. If the injury or death was caused by a collision with your vessel, you must notify MMS within 24 hours of the strike.
- (f) The MMS will require oil spill contingency planning to identify important habitats, including designated critical habitat, used by listed species (e.g. sea turtle nesting beaches, piping plover critical habitat), and require the strategic placement of spill cleanup equipment to be used only by personnel trained in less-intrusive cleanup techniques on beach and bay shores.

Lessees and operators will be instructed how to implement these mitigation measures in Notices To Lessees.

APPENDIX B. NOTICES TO LESSEES AND OPERATORS (NOVEMBER 2002—PRESENT)

NTL Number	Effective Date	Title
2005-G23	November 8, 2005	Amended-Gulf of Mexico Regional Office Operations
2005-G22	November 2, 2005	Resumption of Submission of Well Records to the MMS Gulf of Mexico Regional Office
2005-G21	October 25, 2005	Lake Charles District Operations
2005-G20	October 24, 2005	Damage Caused by Hurricanes Katrina and Rita
2005-G19	October 18, 2005	Gulf of Mexico Region Adjudication Office Open for Business
2005-G15	September 21, 2005	Hurricane and Tropical Storm Evacuation and Production Curtailment Statistics
2005-G10	July 1, 2005	Revisions to the List of OCS Lease Blocks Requiring Archaeological Resource Surveys and Reports
2005-G09	June 1, 2005	Static Casing Pressures Less than 100 psig
2005-G08	May 31, 2005	Contact with District Offices and the Pipeline Section Outside Regular Work Hours
2005-G07	July 1, 2005	Archaeological Resource Surveys and Reports
2005-G05	April 30, 2005	Deepwater Ocean Current Monitoring on Floating Facilities
2005-G04	March 1, 2005	Flaring and Venting Regulations
2005-N03	January 3, 2006	Payment Method for New and Certain Existing Cost Recovery Fees
2005-G03	January 25, 2005	Lease Extension Because of Hurricane Ivan
2005-N02	March 2, 2005	Performance Measures for OCS Operators and Form MMS-131
2005-G01	January 6, 2005	Monitoring Bypassed Safety Devices
2004-G22	December 1, 2004	Drilling Windows, Eastern Gulf of Mexico
2004-G17	September 10, 2004	Production Activities Information Collection and Reporting for Calculations of Air Emissions in the Western Gulf of Mexico
2004-G16	August 19, 2004	Suspensions of Operations (SOO's) for Drilling Ultra-Deep Wells Under Salt Sheets
2004-G13	June 22, 2004	Replacing Deep Gas Royalty Relief Provisions in Lease Instrument With Regulatory Deep Gas Royalty Relief Provisions
2004-G12	June 21, 2004	Clarification of Deep Gas Royalty Suspension Provision in Lease Instrument Relating to Sidetrack Completions
2004-G11	May 3, 2004	Clarification of Deep Gas Royalty Relief Regulation Regarding Natural Gas Liquids and Pipeline (Retrograde) Condensate
2004-G10	June 1, 2004	Implementation of the eWell Permitting and Reporting System
2004-G09	May 17, 2004	Policies for Shutting-In Producing Wells During Rig Moves
2004-G08	April 21, 2004	Flaring and Venting Approval Guidelines
2004-G07 Addendum 1	June 1, 2004	Change of MMS Contractor Receiving Digital Well Log Drilling Records and Additional Well Log Curves to Submit
2004-G07	April 20, 2004	Well Records Submittal
2004-G06	April 5, 2004	Structure Removal Operations
2004-G05	April 1, 2004	Biologically Sensitive Areas of the Gulf of Mexico
2004-N04	June 25, 2004	Data and Information to be Made Available to the Public
2004-G04	March 7, 2004	Standard Reporting Period for the Well Activity Report
2004-N03	July 26, 2004	Directional and Inclination Survey Data Submission Requirements
2004-G03	February 6, 2004	Notification and Confirmation of Deep Gas Royalty Relief
2004-G02	January 27, 2004	Military Warning and Water Test Areas
2004-N01	January 12, 2004	Revised Assessment Matrix

2004-G01	March 1, 2004	Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program
2003-G20	January 1, 2004	Gas Volume Statement Requirements
2003-G17	August 27, 2003	Guidance for Submitting Exploration Plans and Development Operations Coordination Documents
2003-G16	August 15, 2003	Assessment of Existing OCS Platforms
2003-G11	June 19, 2003	Marine Trash and Debris Awareness and Elimination
2003-G10	June 19, 2003	Vessel Strike Avoidance and Injured/Dead Protected Species Reporting
2003-N06	June 17, 2003	Supplemental Bond Procedures
2003-G05	February 15, 2003	Procedures for Submission, Inspection and Selection of Geophysical Data and Information Collected Under a Permit and Processed or Reprocessed by a Permittee or a Third Party
2003-N04	May 9, 2003	Extension of Lease Terms by Production in Paying Quantities
2003-G03	January 23, 2003	Remotely Operated Vehicle Surveys in Deepwater
2003-G02	March 3, 2003	Ultimate Recovery Abandonment and Bypassing of Zones
2002-G15	December 20, 2002	Coastal Zone Management Program Requirements for OCS ROW Pipeline Applications
2002-N13	November 1, 2002	Drilling and Well Permit and Reporting Forms
2002-G12	November 4, 2002	Revised North American Datum 83 Implementation Plan for the Gulf of Mexico

APPENDIX C. RECENT PUBLICATIONS OF THE ENVIRONMENTAL STUDIES PROGRAM, GULF OF MEXICO REGION, 1999-PRESENT

Study Number	Title
2005-067	<i>Mapping Areas of Hard Bottom and Other Important Bottom Types: Outer Continental Shelf and Upper Continental Slope</i>
2005-044	<i>Relative Contribution of Produced Water Discharge Oxygen Demand in the Development of Hypoxia</i>
2005-039	<i>Aspects of the Louisiana Coastal Current</i>
2005-038	<i>Characterization of Algal-Invertebrate Mats at Offshore Platforms and the Assessment of Methods for Artificial Substrate Studies</i>
2005-032	<i>Understanding the Processes that Maintain the Oxygen Levels in the Deep Gulf of Mexico: Synthesis Report</i>
2005-031	<i>Climatology of Ocean Features in the Gulf of Mexico</i>
2005-029	<i>Modeling Structure Removal Processes in the Gulf of Mexico</i>
2005-019	<i>Effects of Oil and Gas Development: A Current Awareness Bibliography 2000-2004</i>
2005-016	<i>Workshop on Socioeconomic Research Issues for the Gulf of Mexico OCS Region, February 2004</i>
2005-012	<i>Potential Spatial and Temporal Vulnerability of Pelagic Fish Assemblages in the Gulf of Mexico to Surface Oil Spills Associated with Deepwater Petroleum Development</i>
2005-009	<i>Interactions Between Migrating Birds and Offshore Oil and Gas Platforms in the Northern Gulf of Mexico: Final Report</i>
2005-008	<i>Visibility and Atmospheric Dispersion Capability over the Northern Gulf of Mexico: Estimates and Observations of Boundary Layer Parameters</i>
2004-072	<i>Gulfwide Emission Inventory for the Regional Haze and Ozone Modeling Effort</i>
2004-071	<i>Data Quality Control and Emissions Inventories of OCS Oil and Gas Production Activities in the Breton Area of the Gulf of Mexico</i>
2004-070	<i>User's Guide for the 2005 Gulfwide Offshore Activities Data System (GOADS-2005): Final Report</i>
2004-067	<i>Sperm Whale Seismic Study in the Gulf of Mexico; Annual Report: Year 2</i>
2004-063	<i>High-Resolution Integrated Hydrology-Hydrodynamic Model: Development and Application to Barataria Basin, Louisiana</i>
2004-060	<i>Boundary Layer Study in the Western and Central Gulf of Mexico</i>
2004-057	<i>Labor Migration and the Deepwater Oil Industry</i>
2004-052	<i>Effects of Changes in Oil and Gas Prices and State Offshore Petroleum Production on the Louisiana Economy, 1969-1999</i>
2004-049	<i>History of the Offshore Oil and Gas Industry in Southern Louisiana: Interim Report Volume I: Papers on the Evolving Offshore Industry</i>
2004-050	<i>Volume II: Bayou Lafourche—An Oral History of the Development of the Oil and Gas Industry</i>
2004-051	<i>Volume III: Samples of Interviews and Ethnographic Preferences</i>
2004-047	<i>Supply Network for Deepwater Oil and Gas Development in the Gulf of Mexico: An Empirical Analysis of Demand for Port Services; Final Report</i>
2004-041	<i>Economic Impact in the U.S. of Deepwater Projects: A Survey of Five Projects</i>

Study Number	Title
2004-040	<i>Strong Mid-Depth Currents and a Deep Cyclonic Gyre in the Gulf of Mexico</i>
2004-036	<i>Observational and Predictive Study of Inner Shelf Currents over the Louisiana-Texas Shelf</i>
2004-027	<i>Deepwater Program: OCS-Related Infrastructure in the Gulf of Mexico Fact Book</i>
2004-022	<i>Subsurface, High-Speed Current Jets in the Deepwater Region of the Gulf of Mexico: Final Report</i>
2004-017	<i>Cross-Shelf Exchange Processes and the Deepwater Circulation of the Gulf of Mexico: Dynamical Effects of Submarine Canyons and Interactions of Loop Current Eddies with Topography: Final Report</i>
2004-016	<i>Fiscal System Analysis: Concessionary and Contractual Systems Used in Offshore Petroleum Arrangements</i>
2004-015	<i>Minerals Management Service Environmental Studies Program: A History of Biological Investigations in the Gulf of Mexico, 1973-2000</i>
2004-013	<i>Intermediate Depth Circulation in the Gulf of Mexico: PALACE Float Results for the Gulf of Mexico Between April 1998 and March 2002</i>
2004-009	<i>Long-Term Oil and Gas Structure Installation and Removal Forecasting in the Gulf of Mexico: A Decision- and Resource-Based Approach</i>
2003-074	<i>Modeling and Data Analyses of Circulation Processes in the Gulf of Mexico: Final Report</i>
2003-073	<i>Proceedings: Twenty-Second Annual Gulf of Mexico Information Transfer Meeting, January 2003</i>
2003-072	<i>Selected Aspects of the Ecology of the Continental Slope Fauna of the Gulf of Mexico: A Synopsis of the Northern Gulf of Mexico Continental Slope Study, 1983-1988</i>
2003-069	<i>Sperm Whale Seismic Study in the Gulf of Mexico, Annual Report: Year 1</i>
2003-065	<i>Preparation of an Interactive Key for Northern Gulf of Mexico Polychaete Taxonomy Employing the DELTA/INTKEY System: Final Report</i>
2003-063	<i>Historical Reconstruction of the Contaminant Loading and Biological Responses in the Central Gulf of Mexico Shelf Sediments</i>
2003-060	<i>Refining and Revising the Gulf of Mexico Outer Continental Shelf Region High-Probability Model for Historic Shipwrecks: Final Report</i>
2003-061	<i>Volume I: Executive Summary</i>
2003-062	<i>Volume II: Technical Narrative</i>
	<i>Volume III: Appendices</i>
2003-048	<i>Deepwater Observations in the Northern Gulf of Mexico from In-situ Current Meters and PIES</i>
2003-049	<i>Volume I: Executive Summary</i>
	<i>Volume II: Technical Report</i>
2003-041	<i>Changing Patterns of Ownership and Control in the Petroleum Industry: Implications on the Market for Oil and Gas Leases in the Gulf of Mexico OCS Region, 1983-1999</i>
2003-040	<i>Marine and Coastal Fishes Subject to Impingement by Cooling-Water Intake Systems in the Northern Gulf of Mexico: An Annotated Bibliography</i>
2003-038	<i>Environmental Justice Considerations in Lafourche Parish, Louisiana</i>
2003-031	<i>Long-Term Monitoring at the East and West Flower Garden Banks National Marine Sanctuary, 1998-2001: Final Report</i>
2003-030	<i>Workshop on Deepwater Environmental Studies Strategy: A Five-Year Follow-Up and Planning for the Future; May 29-31, 2002</i>
2003-029	<i>Importance of Zooplankton in the Diets of Blue Runner (<i>Caranx crysos</i>) Near Offshore Petroleum Platforms in the Northern Gulf of Mexico</i>

Study Number	Title
2003-022	<i>Labor Demand in the Offshore Oil and Gas Industry in the 1990's: The Louisiana Case</i>
2003-018	<i>Modeling the Economic Impacts of Offshore Oil and Gas Activities in the Gulf of Mexico: Methods and Applications</i>
2003-009	<i>Rigs and Reefs: A Comparison of the Fish Communities at Two Artificial Reefs, a Production Platform, and a Natural Reef in the Northern Gulf of Mexico: Final Report</i>
2003-005	<i>Proceedings: Twenty-first Annual Gulf of Mexico Information Transfer Meeting, January 2002</i>
2003-004	<i>Dynamics of the Oil and Gas Industry in the Gulf of Mexico: 1980-2000; Final Report</i>
2002-078	<i>Deepwater Program: Bluewater Fishing and OCS Activity, Interactions Between the Fishing and Petroleum Industries in Deepwaters of the Gulf of Mexico; Final Report</i>
2002-077	<i>Offshore Petroleum Platforms: Functional Significance for Larval Fish Across Longitudinal and Latitudinal Gradients</i>
2002-073	<i>Emissions Inventories of OCS Production and Development Activities in the Gulf of Mexico: Final Report</i>
2002-072	<i>Effects of the Oil and Gas Industry on Commuting and Migration Patterns in Louisiana: 1960-1990</i>
2002-064	<i>Lagrangian Study of Circulation, Transport, and Vertical Exchange in the Gulf of Mexico</i>
2002-063	<i>Deepwater Program: Northern Gulf of Mexico Continental Slope Habitats and Benthic Ecology; Year 2: Interim Report</i>
2002-055	<i>Northeastern Gulf of Mexico Chemical Oceanography and Hydrography Study: Synthesis Report</i>
2002-054	<i>Socioeconomic Baseline Study for the Gulf of Mexico; Final Report: Description of the Dataset, 1930-1990</i>
2002-044	<i>Boating Uses, Economic Significance, and Information Inventory for North Carolina's Offshore Area, "The Point"</i>
2002-045	<i>Volume I: Characterization of Recreational and Commercial Fisheries</i>
2002-046	<i>Volume II: Economic Analysis of "The Point" and Adjacent Counties – Baseline Information, Valuation, and Potential Impacts</i>
2002-038	<i>Volume III: Data Inventory Related to the Hatteras Middle Slope Area Bibliography</i>
2002-038	<i>Outer Continental Shelf Pipelines Crossing the Louisiana Coastal Zone: A Geographic Information System Approach; Final Report</i>
2002-035	<i>Stability and Change in Gulf of Mexico Chemosynthetic Communities</i>
2002-036	<i>Volume I: Executive Summary</i>
2002-028	<i>Volume II: Technical Report</i>
2002-028	<i>Observation of the Atmospheric Boundary Layer in the Western and Central Gulf of Mexico: Final Performance Report</i>
2002-024	<i>Socioeconomic Baseline and Projections of the Impact of an OCS Onshore Base for Selected Florida Panhandle Communities</i>
2002-025	<i>Volume I: Final Report</i>
2002-026	<i>Volume II: Technical Description of the MMS Florida Panhandle Model</i>
2002-022	<i>Volume III: User's Guide for the Model</i>
2002-022	<i>Social and Economic Impacts of Outer Continental Shelf Activity on Individuals and Families</i>
2002-023	<i>Volume I: Final Report</i>
2002-011	<i>Volume II: Case Studies of Morgan City and New Iberia, Louisiana</i>
2002-011	<i>Socioeconomic and Environmental Issues Analysis of Oil and Gas Activity on the Outer Continental Shelf of the Western Gulf of Mexico: Final Report</i>

Study Number	Title
2002-010	<i>Economic Impact of Recreational Fishing and Diving Associated with Offshore Oil and Gas Structures in the Gulf of Mexico: Final Report</i>
2002-009	<i>Effects of Simultaneous Exposure to Petroleum Hydrocarbons, Hypoxia, and Prior Exposure on the Tolerance and Sublethal Responses of Marine Animals: Blue Crabs and Killifish; Final Report</i>
2002-004	<i>Proceedings: Gulf of Mexico Fish and Fisheries; Bringing Together New and Recent Research, October 2000</i>
2001-102	<i>Surface Circulation and the Transport of the Loop Current in the Northeastern Gulf of Mexico: Final Report</i>
2001-101	<i>Long-term Monitoring at the East and West Flower Garden Banks National Marine Sanctuary, 1998-1999</i>
2001-095	<i>Management Applicability of Contemporary Deep-Sea Ecology and Reevaluation of Gulf of Mexico Studies</i>
2001-094	<i>Survival of a Hydrocarbon-Utilizing Bacterium when Introduced into Native and Foreign Environments</i>
2001-093	<i>Velocity and Transport Characteristics of the Louisiana-Texas Coastal Current during 1994</i>
2001-091	<i>Deepwater Program: Northern Gulf of Mexico Continental Slope Habitats and Benthic Ecology; Year 1: Interim Report</i>
2001-082	<i>Proceedings: Twentieth Annual Gulf of Mexico Information Transfer Meeting, December 2000</i>
2001-081	<i>Proceedings: Nineteenth Annual Gulf of Mexico Information Transfer Meeting, November 30–December 2, 1999</i>
2001-080	<i>Mississippi/Alabama Pinnacle Trend Ecosystem Monitoring: Final Synthesis Report</i>
2001-078	<i>How Does Produced Water Cause a Reduction in the Genetic Diversity of Harpacticoid Copepods?: Final Report</i>
2001-077	<i>Across-Shelf Larval, Postlarval, and Juvenile Fish Collected at Offshore Oil and Gas Platforms and a Coastal Rock Jetty West of the Mississippi River Delta</i>
2001-066	<i>Chemistry in the Gulf of Mexico—An Informative Poster and Teacher’s Companion</i>
2001-065	<i>The Deep Sea Gulf of Mexico: An Overview and Guide</i>
2001-064	<i>Deepwater Physical Oceanography Reanalysis and Synthesis of Historical Data: Synthesis Report</i>
2001-063	<i>Spatial and Temporal Variability of Plankton Stocks on the Basis of Acoustic Backscatter Intensity and Direct Measurements in the Northeastern Gulf of Mexico: Final Report</i>
2001-062	<i>Management of the MMS-LSU Coastal Marine Institute: A Report of the First Six Years, 1992-1998</i>
2001-057	<i>Investigation of Pressure and Pressure Gradients along the Louisiana/Texas Inner Shelf and Their Relationships to Wind Forcing and Current Variability</i>
2001-054	<i>Dispersion in Broad, Shallow Estuaries: A Model Study</i>
2001-052	<i>Air Quality: User’s Guide for the Gulfwide Offshore Activities Data System (GOADS); Final Report</i>
2001-050	<i>Improved Geohazards and Benthic Habitat Evaluations: Digital Acoustic Data with Ground Truth Calibrations; Final Report</i>
2001-039	<i>Gulf of Mexico Marine Protected Species Workshop, June 1999</i>

Study Number	Title
2001-026 2001-027	<i>Assessment of Historical, Social, and Economic Impacts of OCS Development on Gulf Coast Communities</i> <i>Volume I: Executive Summary</i> <i>Volume II: Narrative Report</i>
2001-025	<i>Wind and Eddy-Related Circulation on the Louisiana/Texas Shelf and Slope Determined from Satellite and In-Situ Measurements: October 1993-August 1994</i>
2001-021	<i>Workshop on the Physical Oceanography Slope and Rise of the Gulf of Mexico, September 2000</i>
2001-020	<i>Lafourche Parish and Port Fourchon, Louisiana: Effects of the Outer Continental Shelf Petroleum Industry on the Economy and Public Services, Part 2</i>
2001-019	<i>Lafourche Parish and Port Fourchon, Louisiana: Effects of the Outer Continental Shelf Petroleum Industry on the Economy and Public Services, Part 1</i>
2001-013	<i>Forecasting the Number of Offshore Platforms on the Gulf of Mexico OCS to the Year 2023</i>
2001-012 2001-011	<i>Deepwater Program: Literature Review, Environmental Risk of Chemical Products Used in Gulf of Mexico Deepwater Oil and Gas Operations</i> <i>Volume I: Technical Report</i> <i>Volume II: Appendices</i>
2001-004	<i>Fate and Effects of Barium and Radium-Rich Fluid Emissions from Hydrocarbon Seeps on the Benthic Habitats of the Gulf of Mexico Offshore Louisiana</i>
2000-087	<i>Estimation of Fisheries Impacts due to Underwater Explosions Used to Sever and Salvage Oil and Gas Platforms in the U.S. Gulf of Mexico: Final Report</i>
2000-086	<i>Studying and Verifying the Use of Chemical Biomarkers for Identifying and Quantitating Oil Residues in the Environment</i>
2000-083	<i>Effects of Oil and Gas Development: A Current Awareness Bibliography</i>
2000-081	<i>User's Guide for the Breton Offshore Activities Data System (BOADS) for Air Quality: Final Report</i>
2000-079 2000-080	<i>DeSoto Canyon Eddy Intrusion: Final Report</i> <i>Volume I: Executive Summary</i> <i>Volume II: Technical Report</i>
2000-078	<i>Northeastern Gulf of Mexico Chemical Oceanography and Hydrography Study; Annual Report: Year 3</i>
2000-075	<i>Meteorology of the Northeastern Gulf of Mexico: Data from 1995 to 1997; Final Report</i>
2000-074	<i>Physical/Biological Oceanographic Integration Workshop for the DeSoto Canyon and Adjacent Shelf, October 19-21, 1999</i>
2000-065	<i>Coastal Alabama Offshore Natural Gas Economic Projection Model</i>
2000-064	<i>Environmental Impacts of Synthetic-Based Drilling Fluids</i>
2000-060	<i>Biodegradation of Aromatic Heterocycles from Petroleum-Produced Water and Pyrogenic Sources in Marine Sediments: Final Report</i>
2000-053	<i>Wave Climate and Bottom Boundary Layer Dynamics with Implications for Offshore Sand Mining and Barrier Island Replenishment in South-Central Louisiana</i>
2000-049 2000-050	<i>Deepwater Gulf of Mexico Environmental and Socioeconomic Data Search and Literature Synthesis</i> <i>Volume I: Technical Narrative</i> <i>Volume II: Annotated Bibliography</i>

Study Number	Title
2000-045	<i>Dynamic Height and Seawater Transport across the Texas-Louisiana Shelf Break: Final Report</i>
2000-044	<i>Economic Effects of Coastal Alabama and Destin Dome Offshore Natural Gas Exploration, Development, and Production</i>
2000-042	<i>Potential for Accelerated Bioremediation and Restoration of Oil-Impacted Marshes through the Selection of Superior Oil-Tolerant Vegetation</i>
2000-030	<i>Proceedings: Eighteenth Annual Gulf of Mexico Information Transfer Meeting, December 1998</i>
2000-028	<i>Remote Sensing Study of Upwelling in the Northeastern Gulf of Mexico and the Effects of Hurricanes Earl and Georges; Annual Report: Year 2</i>
2000-027	<i>Gulf-wide Information System (GWIS)</i>
2000-017	<i>Oceanic Gas Hydrate Research and Activities Review</i>
2000-014	<i>Air Quality and Dispersion Meteorology over the Northeastern Gulf of Mexico: Measurements, Analyses, and Syntheses</i>
2000-009	<i>Observation of the Atmospheric Boundary Layer in the Western and Central Gulf of Mexico: Second Annual Report</i>
2000-005	<i>Seasonal and Spatial Variation in the Biomass and Size Frequency Distribution of Fish Associated with Oil and Gas Platforms in the Northern Gulf of Mexico</i>
2000-002	<i>Cetaceans, Sea Turtles, and Seabirds in the Northern Gulf of Mexico: Distribution, Abundance, and Habitat Associations</i>
2000-003	<i>Volume I: Executive Summary</i>
2000-004	<i>Volume II: Technical Report</i>
	<i>Volume III: Data Appendix</i>
99-0063	<i>Stakeholders' Issues in the Eastern Gulf of Mexico</i>
99-0064	<i>Volume I: Technical Report</i>
	<i>Volume II: Annotated Bibliography</i>
99-0060	<i>Effect of Produced-Water Discharge on Bottom Sediment Chemistry: Final Report</i>
99-0055	<i>Northeastern Gulf of Mexico Coastal and Marine Ecosystem Program Ecosystem Monitoring, Mississippi/Alabama Shelf: Third Annual Interim Report</i>
99-0054	<i>Northeastern Gulf of Mexico Chemical Oceanography and Hydrography; Annual Report: Year 2</i>
99-0051	<i>DeSoto Canyon Eddy Intrusion Study; Annual Report: Year 3</i>
99-0050	<i>Northeastern Gulf of Mexico Coastal Characterization and Data Information Management System</i>
99-0049	<i>Coastal Upwelling and Mass Mortalities of Fishes and Invertebrates in the Northeastern Gulf of Mexico during Spring and Summer 1998: Final Report</i>
99-0042	<i>Proceedings: Seventeenth Annual Gulf of Mexico Information Transfer Meeting, December 1997</i>
99-0037	<i>Development and Characterization of Sea Anemones as Bioindicators of Offshore Resource Exploitation and Environmental Impact</i>
99-0033	<i>User's Guide for the Breton Offshore Activities Data System (BOADS) for Air Quality: Interim Report</i>
99-0031	<i>History of Coastal Alabama Natural Gas Exploration and Development: Final Report</i>
99-0028	<i>Economic and Social Consequences of the Oil Spill in Lake Barre, Louisiana</i>

Study Number	Title
99-0005	<i>Long-Term Monitoring at the East and West Flower Garden Banks, 1996-1997</i>
99-0004	<i>Ecology of Live Bottom Habitats of the Northeastern Gulf of Mexico: A Community Profile</i>
99-0001	<i>Development and Application of the Sublethal Toxicity Test to PAH Using Marine Harpacticoid Copepods</i>



The Department of the Interior Mission

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.



The Minerals Management Service Mission

As a bureau of the Department of the Interior, the Minerals Management Service's (MMS) primary responsibilities are to manage the mineral resources located on the Nation's Outer Continental Shelf (OCS), collect revenue from the Federal OCS and onshore Federal and Indian lands, and distribute those revenues.

Moreover, in working to meet its responsibilities, the **Offshore Minerals Management Program** administers the OCS competitive leasing program and oversees the safe and environmentally sound exploration and production of our Nation's offshore natural gas, oil and other mineral resources. The MMS **Minerals Revenue Management** meets its responsibilities by ensuring the efficient, timely and accurate collection and disbursement of revenue from mineral leasing and production due to Indian tribes and allottees, States and the U.S. Treasury.

The MMS strives to fulfill its responsibilities through the general guiding principles of: (1) being responsive to the public's concerns and interests by maintaining a dialogue with all potentially affected parties and (2) carrying out its programs with an emphasis on working to enhance the quality of life for all Americans by lending MMS assistance and expertise to economic development and environmental protection.

MMS *Securing Ocean Energy & Economic Value for America*