Commodity is gas and condensate SEA No. N-7665 and P-14094

UNITED STATES DEPARTMENT OF THE INTERIOR
MINERALS MANAGEMENT SERVICE
Gulf of Mexico OCS Region
New Orleans, Louisiana

SITE-SPECIFIC ENVIRONMENTAL ASSESSMENT

RIDGELAKE ENERGY, INC.

INITIAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENTS AND LEASE-TERM PIPELINE APPLICATION

IN

HIGH ISLAND AREA BLOCK A-352, LEASE OCS-G 24424

March 13, 2003

RIDGELAKE ENERGY, INC.

INITIAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENTS
(CONTROL NO. N-7665)

LEASE-TERM PIPELINE APPLICATION
(SEGMENT NUMBER P-14094)

SITE-SPECIFIC ENVIRONMENTAL ASSESSMENT (SEA) DETERMINATION FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Ridgelake Energy, Inc.'s Initial Development Operations Coordination Documents (DOCD) to install a platform and drill, complete, and produce three wells (Control Number N-7665) and a Lease-Term Pipeline Application (Segment Number P-14094) to install an 6 5/8-inch gas and condensate pipeline to connect the production platform with an existing pipeline, all in High Island Area Block A-352, Lease OCS-G 24424, have been reviewed. Our Site-Specific Environmental Assessment (SEA) on the subject actions is complete and results in a Finding of No Significant Impact. Based on this SEA, we have concluded that the proposed actions will not significantly (40 CFR 1508.27) affect the quality of the human environment. Preparation of an environmental impact statement is not required. Mitigation is recommended to ensure environmental protection, consistent environmental policy, and safety as required by the National Environmental Policy Act, as amended; or as needed for compliance with 40 CFR 1500.2(f) regarding the requirement for Federal agencies to avoid or minimize any possible adverse effects of their actions upon the quality of the human environment.

MITIGATION

1. Please be reminded that the requirement of 15 CFR 922.122(a)(3)(ii) (which prohibits discharging or depositing, from beyond the boundaries of the Sanctuary, any material or other matter, except those listed in paragraphs (a)(3)(i) (A) through (D) of this section, that subsequently enters the Sanctuary and injures a Sanctuary resource or quality) applies to an accidental liquid hydrocarbon or gas discharge that may occur as a result of your proposed activities. In that event, you could be subject to civil penalties outlined at 15 CFR 922.45(a) and response costs and damages as outlined at 15 CFR 922.46. (7.1)

2. Please be advised that you must notify the Manager of the Flower Garden Banks National Marine Sanctuary (FGBNMS) in the event an accidental hydrocarbon discharge occurs during the proposed activities; Mr. G. P. Schmahl can be reached at (979) 779-2705 [office], 1-800-715-3271 [pager], or (479) 229-6542 [cell phone]. If Mr. Schmahl cannot be reached immediately, you must contact the Sanctuaries and Reserves Division in Silver Spring, Maryland at 1-800-218-1232 (Ms. Lisa Symons). In addition, you must keep Mr. Schmahl informed of any ongoing response efforts that may affect the FGBNMS. (7.2)

3. Please be advised that, in order to ensure reduced risk to the environment, the provisions of Notice to Lessees and Operators No. 98-13 regarding the minimization of structures will be strictly observed for any future development activities. (7.5).

4. Please be advised that pursuant to 30 CFR 250.1000(b), no modification of the pipeline, including change of service or an increase in the maximum anticipated liquid hydrocarbon flow may commence until an application has been submitted to and approved by this office. The application may require submittal of an updated analysis of liquid hydrocarbon exposure to the Flower Garden Banks National Marine Sanctuary. (7.8)

5. Please be advised that the high- and low-pressure sensors protecting the proposed pipeline will be tested at least once bi-weekly with no more than three weeks elapsing between each test. (7.9)

6. In accordance with 30 CFR 250.1005(a), please be advised that the pipeline route will be inspected weekly for indication of pipeline leakage. (7.11)

7. The proposed location of Wells No. 1, No. 2, and No. 3 are within the "4-Mile Zone" of the East Flower Garden Bank. Please be advised that drilling operations for these wells are restricted by Lease Stipulation No. 1, which requires that you dispose of all drill cuttings and drilling fluids by shunting the materials to the bottom through a downpipe that terminates an appropriate distance, but no more than 10 meters, from the bottom. Please be advised that any bottom-disturbing activities associated with the activities proposed in your plan must avoid the "No Activity Zone" by a distance of at least 500 ft. Furthermore, if any of these activities require the use of anchors, you will submit plats, at a scale of 1 inch=1,000 ft with DGPS accuracy, to this office within 60 days after completion of operations which depict the "as-placed" location of all anchors, anchor chains, and wire ropes, and demonstrate that the "No Activity Zone" was not physically impacted by the anchoring activities. (16.2)

Joe Perryman
Supervisor, Mapping and Automation Unit
Leasing and Environment, GOM OCS Region

3/14/03
Date

Dennis Chew
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SITE-SPECIFIC ENVIRONMENTAL ASSESSMENT PREPARED FOR INITIAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENTS (N-7665) AND LEASE-TERM PIPELINE APPLICATION (P-14094), LEASE OCS-G 24424, HIGH ISLAND AREA BLOCK A-352

1. PURPOSE AND NEED FOR THE ACTION

Introduction

Under the Outer Continental Shelf Lands Act (OCSLA), as amended, the U.S. Department of the Interior (DOI) is required to manage the leasing, exploration, development, and production of oil and gas resources on the Federal OCS. The Secretary of the Interior oversees the OCS oil and gas program and is required to balance orderly resource development with protection of the human, marine, and coastal environments while simultaneously ensuring that the public receives an equitable return for these resources and that free market competition is maintained. This Site-Specific Environmental Assessment (SEA) was undertaken to help assure the protection of the marine and coastal environment.

The purpose of this SEA is to assess specific environmental impacts associated with the proposed oil and gas drilling, completion, production, and pipeline installation activities. The action proposed in the Initial Development Operations Coordination Documents (DOCD) and the lease-term pipeline applications would normally be categorically excluded per 516 DM Chapter 6, Appendix 10.4, C (10) and C (15). However, the SEA has been prepared because the proposed activities would occur near the Flower Garden Banks National Marine Sanctuary.

This SEA implements the tiering process outlined in 40 CFR 1502.20, which encourages agencies to tier environmental documents and eliminates repetitive discussions of the same issue. By tiering to the most recent Final Environmental Impact Statement (EIS) for the Gulf of Mexico (GOM) Central Planning Area (CPA) Lease Sales 185, 190, 194, 198, and 201; Western Planning Area (WPA) Lease Sales 187, 192, 196, and 200 (USDOI, MMS, 2002) and by use of reference to related environmental documents, this SEA concentrates on environmental issues specific to the proposed action.

1.1. THE PROPOSED ACTION

The proposed action consists of drilling, completion, and production of three wells (1, 2, and 3) from a jack-up drilling rig (all drilled from a common surface location), installation of platform and production facility, and installation of a 6 5/8-in gas and condensate pipeline to connect the production facility with an existing pipeline (all in High Island Area Block A-352, Lease OCS-G 24424). The water depth at the proposed location is 275 ft and the maximum water depth along the proposed pipeline route is 279 ft. The proposed activities would be located approximately 114.5 mi from the nearest Texas shoreline and approximately 120 mi from the onshore support base in Pelican Island, Texas (Figure A-1). No onshore expansion or construction is anticipated with respect to the proposed activities (Ridgelake Energy, Inc., 2003a and b). The proposed activities are located entirely within the "4-Mile Zone" of the East Flower Garden Banks National Marine Sanctuary and the "3-Mile Zone" of MacNeil Bank (Figure A-2). A bathymetry map is included as Figure A-3. The following is a summarized chronology of correspondence and activity schedule related to Ridgelake Energy, Inc's Initial DOCD (N-7665) and lease-term pipeline application (P-14094) for High Island Area Block A-352.

01/24/03 – Lease-term pipeline application received.
02/04/03 – Initial DOCD received.

Activity Schedule for High Island Area Block A-352 (OCS-G 24424)

Activity	Estimated Start Date
Commence drilling Well No. 1	03/01/03
Suspend Well No. 1	03/15/03
Commence installation of platform A and facilities	05/30/03
Commence completion of Well No. 1	06/30/03
Commence laying pipeline	07/01/03
Finish completion of Well No. 1 Commence drilling and completion of Well No. 2 and Well No. 3	07/15/03
Commence production of Well No. 1	07/30/03
Complete drilling and completion activities on Well No. 2 and Well No. 3	09/15/03
Commence production of Well No. 2 and Well No. 3	10/01/03

1.2. ISSUES

What impacts would an accidental hydrocarbon spill have on the Flower Garden Banks or MacNeil Bank?

What impacts would the proposed activity have on the biota of the Flower Garden Banks or MacNeil Bank?

1.3. THE DECISION TO BE MADE ON THIS ANALYSIS

Should Ridgelake Energy, Inc. be permitted to drill and complete three wells, install a platform and production facility, and install a 6 5/8-in lease-term gas and condensate pipeline to connect the production facility with an existing pipeline, all in High Island Area Block A-352, Lease OCS-G 24424?

2. THE ALTERNATIVES CONSIDERED

2.1. NONAPPROVAL OF THE PROPOSAL

Ridgelake Energy, Inc. would not be allowed to undertake the proposed activities. This alternative could prevent the development, production, and transportation of much needed hydrocarbon resources, thereby resulting in loss of royalty income for the United States and increasing the United States' dependence on foreign oil. Considering these aspects and the fact that minimal impacts are anticipated, this alternative was not judged to be acceptable.

2.2. APPROVAL WITH EXISTING AND/OR ADDITIONAL MITIGATION

Measures that Ridgelake Energy, Inc. proposes to implement to limit potential environmental effects are discussed in their Initial DOCD and the lease-term pipeline application. The OCS Operating Regulations, Notice to Lessees and Operators, and other regulations and laws were identified throughout this assessment as existing mitigation to minimize potential environmental effects associated with the proposed action. Additional information can be found in the Final EIS for the GOM CPA Lease Sales 185, 190, 194, 198, and 201; WPA Lease Sales 187, 192, 196, and 200 (USDOI, MMS, 2002). The following mitigation measures, as they appear to the applicant, will be included in MMS's approval of the proposed action to ensure environmental protection, consistent environmental policy, and safety by the National Environmental Policy Act (NEPA) of 1969, as amended.

Mitigation

1. Please be reminded that the requirement of 15 CFR 922.122(a)(3)(ii) (which prohibits discharging or depositing, from beyond the boundaries of the Sanctuary,

any material or other matter, except those listed in paragraphs (a)(3)(i) (A) through (D) of this section, that subsequently enters the Sanctuary and injures a Sanctuary resource or quality) applies to an accidental liquid hydrocarbon or gas discharge that may occur as a result of your proposed activities. In that event, you could be subject to civil penalties outlined at 15 CFR 922.45(a) and response costs and damages as outlined at 15 CFR 922.46. (7.1)

2. Please be advised that you must notify the Manager of the Flower Garden Banks National Marine Sanctuary (FGBNMS) in the event an accidental hydrocarbon discharge occurs during the proposed activities; Mr. G. P. Schmahl can be reached at (979) 779-2705 [office], 1-800-715-3271 [pager], or (479) 229-6542 [cell phone]. If Mr. Schmahl cannot be reached immediately, you must contact the Sanctuaries and Reserves Division in Silver Spring, Maryland, at 1-800-218-1232 (Ms. Lisa Symons). In addition, you must keep Mr. Schmahl informed of any ongoing response efforts that may affect the FGBNMS. (7.2)

3. Please be advised that, in order to ensure reduced risk to the environment, the provisions of Notice to Lessees and Operators No. 98-13 regarding the minimization of structures will be strictly observed for any future development activities. (7.5)

4. Please be advised that pursuant to 30 CFR 250.1000(b), no modification of the pipeline, including change of service or an increase in the maximum anticipated liquid hydrocarbon flow may commence until an application has been submitted to and approved by this office. The application may require submittal of an updated analysis of liquid hydrocarbon exposure to the Flower Garden Banks National Marine Sanctuary. (7.8)

5. Please be advised that the high- and low-pressure sensors protecting the proposed pipeline will be tested at least once bi-weekly with no more than three weeks elapsing between each test. (7.9)

6. In accordance with 30 CFR 250.1005(a), please be advised that the pipeline route will be inspected weekly for indication of pipeline leakage. (7.11)

7. The proposed location of Wells No. 1, No. 2, and No. 3 are within the "4-Mile Zone" of the East Flower Garden Bank. Please be advised that drilling operations for these wells are restricted by Lease Stipulation No. 1, which requires that you dispose of all drill cuttings and drilling fluids by shunting the materials to the bottom through a downpipe that terminates an appropriate distance, but no more than 10 meters, from the bottom. Please be advised that any bottom-disturbing activities associated with the activities proposed in your plan must avoid the "No Activity Zone" by a distance of at least 500 ft. Furthermore, if any of these activities require the use of anchors, you will submit plats, at a scale of 1 inch=1,000 ft with DGPS accuracy, to this office within 60 days after completion of operations which depict the "as-placed" location of all anchors, anchor chains, and wire ropes, and demonstrate that the "No Activity Zone" was not physically impacted by the anchoring activities. (16.2)

2.3. APPROVAL AS SUBMITTED

Under this alternative, MMS would approve Ridgelake Energy, Inc.'s Initial DOCD and lease-term pipeline application including to their reference to mitigative measures to restrict operations within the

block by shunting all drill cuttings and drilling fluids to the bottom through a downpipe that terminates at an appropriate distance, but no more than 10 meters, from the seafloor.

3. ENVIRONMENTAL EFFECTS

Introduction

In accordance with NEPA, as amended (P.L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by P.L. 94-52, July 3, 1975, P.L. 94-83, August 9, 1975, and P.L. 97-258, 4(b), September 13, 1982) and the Council on Environmental Quality (CEQ) implementing regulations 40 CFR 1502.15, Affected Environment, the following potential environmental effects were identified from the proposed action. Mitigative measures are included to eliminate or reduce the potential effect from the proposed activities to a level of insignificance as described in 40 CFR 1508.27. Specific environmental comments, reviews, and analyses of the proposed action are attached as appendices, i.e., Hydrocarbon Spills Review and Biological Review.

In addition to their unique status as thriving northern Gulf of Mexico coral reef habitats, recent observations have shown the importance of the Flower Garden Banks as habitats supporting the feeding, reproduction, and nursing of biota, and their significance as schooling grounds and as migratory stopovers. The summer months (June-October) are a time of active reproduction by fish and benthic invertebrates at the Flower Gardens. One major reproduction event at the Flower Gardens is the late July through early September annual mass spawning by corals (primary event date varies).

Operators of permitted oil and gas activities should take into consideration the documented importance of the Flower Garden Banks as coral habitats supporting the feeding, reproduction, and nursing of biota, and their significance as schooling grounds and as migratory stopovers. The timing of industrial activities that would impact the surrounding environment may be critical in achieving an optimal coexistence between conservation and development. The summer reproduction of biota at the Flower Gardens seems to stand out as one of the more impact-sensitive time periods (June-October). In addition to the care with which industrial operations are run throughout the year, particular caution should be applied during operations in the June-October period so as to ensure the successful replenishment and continuity of species at the Flower Gardens. Further information is needed about what elasmobranches do as they congregate at the Flower Gardens during winter months, and what mechanisms and cues draw the elasmobranches to the Banks. Special precautions should be applied so as not to disturb sharks and rays from schooling at the Flower Gardens. Disturbances most likely to affect these animals include water quality alteration and noise production.

3.1. HYDROCARBON SPILLS

In its review of proposed oil and gas activities, MMS considers the potential for an accidental oil spill to occur. Potential sources of hydrocarbon spills from the proposed activity would include the loss of hydrocarbons as a result of a pipeline break, a blowout of hydrocarbons, or the loss of diesel from a storage tank on the drill rig or from a supply vessel. The potential for such spills is minimized by the extensive engineering and safety regulations and requirements MMS has in place for offshore oil and gas activities. The MMS also conducts inspections and emergency response drills to further review an operator's spill prevention and preparedness.

Based on the small amount of condensate that could be released from a worst-case discharge and the API of the condensate, MMS determined that no further review or analysis of an accidental hydrocarbon spill or its potential impact to environmental resources was warranted.

Further information on oil-spill effects, including assumptions about the characteristics and fate of an accidental hydrocarbon spill and hydrocarbon impacts in the event that oil from a subsea blowout did reach the biota of concern on a topographic feature, is provided in Appendix B.

3.2. BIOLOGICAL RESOURCES

The potential impact-producing factors on northern Gulf topographic features in general are anchoring (see Chapter 4.1.1.3.3.1 in USDOI, MMS, 2002), seismic surveys (see Chapter 4.1.1.2.1 in

USDOI, MMS, 2002), effluent discharges (see Chapter 4.1.1.3.4 in USDOI, MMS, 2002), oil spills (see Chapter 3.1 above, Appendix B, and Chapter 4.1.3.4.2 in USDOI, MMS, 2002), blowouts (see Chapter 3.1 above and Appendix B), structure removal (see Chapter 4.1.1.4 in USDOI, MMS, 2002), and structure emplacement (see Chapter 4.1.1.3.2 in USDOI, MMS, 2002). These disturbances have the potential to disrupt and alter the environmental, commercial, recreational, scientific, and aesthetic values of the Flower Garden Banks.

The discharge of drilling muds and cuttings could impact biological resources of the Flower Garden Banks. Potential impacts include increased water column turbidity and local accumulations of contaminants. However, the impacts would be restrained by discharge limitations set forth by the Topographic Features Stipulations (shunting of discharges).

Produced water could impact the biota of the topographic features. The U.S. Environmental Protection Agency (USEPA) general NPDES permit's restriction on the discharge of produced water limit the impacts on biological resources of topographic features.

For further information on potential effects to the environmental, commercial fishery, recreational, scientific, and aesthetic values of the Flower Garden Banks, please see Appendix C.

4. CONSULTATION AND COORDINATION

In accordance with 30 CFR 250, 15 CFR 930, and various Memoranda of Understanding and Agreement(s), copies of this plan and supporting environmental information were forwarded to the Flower Garden Banks National Marine Sanctuary (FGBNMS). The agency completed its review of Ridgelake Energy, Inc.'s supporting environmental information and has indicated that the proposed action is consistent with the regulations and criteria related to FGBNMS. As a result, FGBNMS has no objection with the proposed action.

5. REFERENCES

Ridgelake Energy, Inc. 2003a. Lease-Term Pipeline Application (Pipeline Permit No. P-14094).

Ridgelake Energy, Inc. 2003b. Initial Development Operations Coordination Document: High Island Area Block A-352, Lease OCS-G24424 (Control No. N-7665).

U.S. Dept. of the Interior. Minerals Management Service. 2002. 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. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS EIS/EA MMS 2002-015. 2 vols.

6. PREPARERS

Coordinator: Quazi T. Islam – NEPA Coordinator

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Dave Moran – Biologist

Reviewer: Joe Perryman – Project Supervisor
Dennis Chew – Supervisor, NEPA/CZM Unit

7. APPENDICES

A – Figures
B – Hydrocarbon Spills Review
C – Biological Review

APPENDIX A

Figures

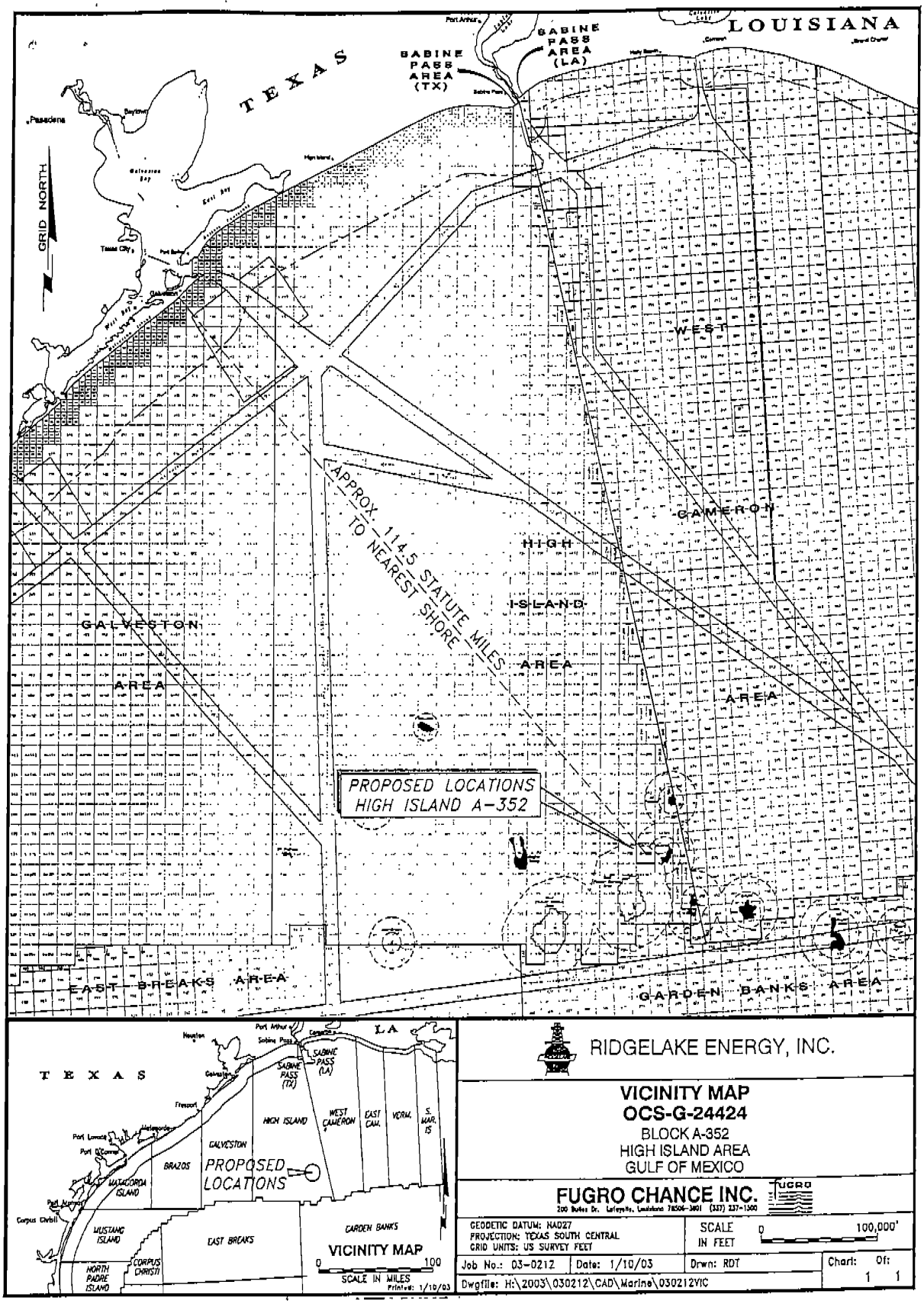

Figure A-1. Location Map Showing High Island Area Block A-352 Relative to Shoreline and Onshore Base.

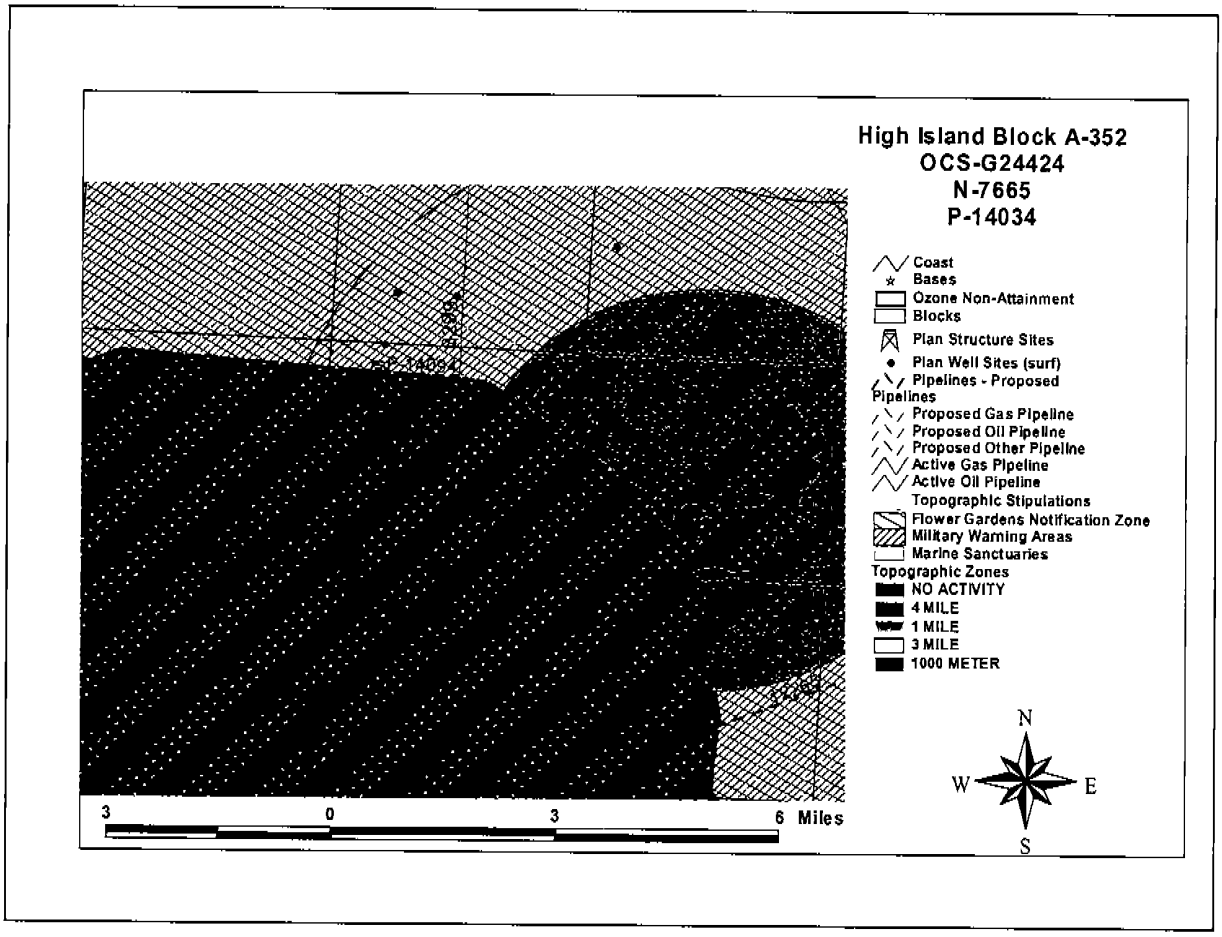

Figure A-2. Map Showing Location of the Proposed Platform and Pipeline Relative to the Boundary of East Flower Garden Banks Marine Sanctuary and MacNeil Bank.

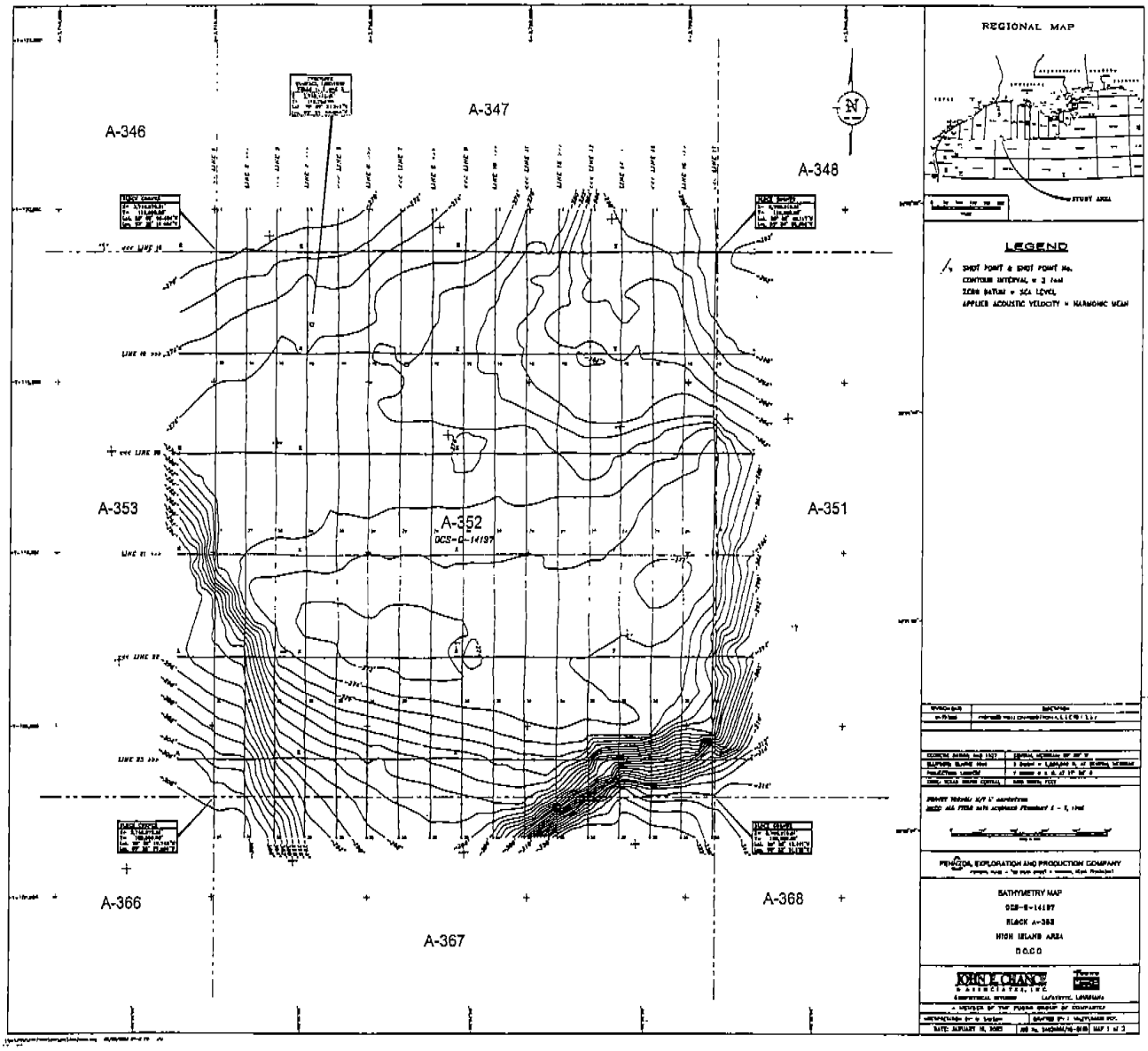

Figure A-3. Bathymetry Map of High Island Area Block A-352.

APPENDIX B

Hydrocarbon Spills Review

HYDROCARBON SPILLS REVIEW

In its review of proposed oil and gas activities, MMS considers the potential for an accidental oil spill to occur. Potential sources of hydrocarbon spills from the proposed activity would include the loss of hydrocarbons as a result of a pipeline break, a blowout of hydrocarbons, or the loss of diesel from a storage tank on the drill rig or from a supply vessel. The potential for such spills is minimized by the extensive engineering and safety regulations and requirements MMS has in place for offshore oil and gas activities. The MMS also conducts inspections and emergency response drills to further review an operator's spill prevention and preparedness.

The subject proposed activity was reviewed for the potential for accidental hydrocarbon spillage. Ridgelake Energy, Inc. proposes to drill, complete, and produce three wells and to install a platform and a 6 5/8-in pipeline. The proposed 6 5/8-in pipeline will transport bulk gas and condensate. Per 30 CFR 254, Ridgelake calculated their worst-case discharge volume for a blowout to be approximately 70 bbl/day of 48.6 API condensate. The design capacity for the pipeline is limited to 300 bbl/day of condensate, and the largest capacity tank on the drill rig is estimated to hold 1,049 bbl of diesel. The worst-case discharge scenario Ridgelake provided for the proposed drilling activity represents a new worst-case discharge for drilling for their Regional Oil Spill Response Plan (ROSRP). These revisions were filed under separate cover with MMS.

Based on the small amount of condensate that could be released from a worst-case discharge and the API of the condensate, MMS determined that no further review or analysis of an accidental hydrocarbon spill or its potential impact to environmental resources was warranted.

The following additional mitigations will be applied:

Mitigation 7.1 (Reminder)

Please be reminded that the requirement of 15 CFR 922.122(a)(3)(ii) (which prohibits discharging or depositing, from beyond the boundaries of the Sanctuary, any material or other matter, except those listed in paragraphs (a)(3)(i) (A) through (D) of this section, that subsequently enters the Sanctuary and injures a Sanctuary resource or quality) applies to an accidental liquid hydrocarbon or gas discharge that may occur as a result of your proposed activities. In that event, you could be subject to civil penalties outlined at 15 CFR 922.45(a) and response costs and damages as outlined at 15 CFR 922.46.

Mitigation 7.2 (Advisory)

Please be advised that you must notify the manager of the Flower Garden Banks National Marine Sanctuary (FGBNMS) in the event an accidental hydrocarbon discharge occurs during the proposed activities. Mr. G. P. Schmahl can be reached at (979) 779-2705 [office], 1-800-715-3271 [pager] or (479) 229-6542 [cell phone]. If Mr. Schmahl cannot be reached immediately, you must contact the Sanctuaries and Reserves Division in Silver Spring, Maryland at 1-800-218-1232 (Ms. Lisa Symons). In addition, you must keep Mr. Schmahl informed of any ongoing response efforts that may affect the FGBNMS.

Mitigation 7.5 (Advisory)

Please be advised that in order to ensure reduced risk to the environment, the provisions of Notice to Lessees and Operators No. 98-13 regarding the minimization of structures will be strictly observed for any future development activities.

Mitigation 7.8 (Advisory)

Please be advised that pursuant to 30 CFR 250.1000(b), no modification of the pipeline, including change of service or an increase in the maximum anticipated liquid hydrocarbon flow may commence until an application has been submitted to and

approved by this office. The application may require submittal of an updated analysis of liquid hydrocarbon exposure to the Flower Garden Banks National Marine Sanctuary.

Mitigation 7.9 (Advisory)

Please be advised that the high- and low-pressure sensors protecting the proposed pipeline will be tested at least once bi-weekly with no more than three weeks elapsing between each test.

Mitigation 7.11 (Advisory)

In accordance with 30 CFR 250.1005(a), please be advised that the pipeline route will be inspected weekly for indication of pipeline leakage.

APPENDIX C
Biological Review

BIOLOGICAL REVIEW

General Description

The potential impact-producing factors from oil- and gas-related activities on the northern Gulf topographic features are anchoring, seismic surveys, effluent discharges, oil spills, blowouts, structure removal, and structure emplacement. These disturbances have the potential to disrupt and alter the environmental (biological diversity, animal migration), commercial, recreational, scientific, and aesthetic values of the Flower Garden Banks (Deslarzes, 1998). The proposed production in High Island Area Block A-352, however, would not impact the Flower Garden Banks or its sensitive resources given the depth of the operations and distance from the Flower Garden Banks. Exploratory drilling would occur in water depths exceeding 270 ft (82 m) and at a location at least 3.8 mi (6.1 km) away from the nearest part of the Sanctuary boundary surrounding each bank. The boundary is also the border of the No Activity Zone surrounding each bank. The proposed activity would essentially be conducted on a soft-bottom substrate.

Following is a review of the potential impacts, other than oil spills and blowouts, on the Flower Garden Banks that could result from oil- and gas-related activities: anchoring, effluent discharges, structure removal, and structure emplacement. Impacts on threatened and endangered species, special ecological functions, commercial fishing, and recreation are also discussed.

Anchoring: The anchoring of pipeline lay barges, drilling rigs, or service vessels, as well as the emplacement of structures, would potentially result in mechanical disturbances of the benthic environment at the Flower Garden Banks. Anchor damage has been shown to be a significant threat to the biota of the offshore banks in the Gulf (Rezak et al., 1985). Such anchoring damage, however, would be prevented within a No Activity Zone by compliance with the Topographic Features Stipulation. In the case of the Flower Garden Banks Sanctuary, regulations would prevent impacts within the Sanctuary boundary.

Effluent Discharges: The discharge of drilling muds and cuttings could impact biological resources of the Flower Gardens. Potential impacts include increased water column turbidity and local accumulations of contaminants, causing the smothering of sessile benthic invertebrates, the short-term and local mortality of planktonic organisms, reduced primary productivity, and the clogging of the filter-feeding mechanisms or the respiratory surfaces of zooplankton. However, the degree of such impacts would be restrained by discharge limitations set by the Topographic Features Stipulation (namely the shunting requirement within the 4-Mile Zone) and the special restrictions imposed by the USEPA general NPDES permit.

Produced waters could also represent a significant potential source of impact on the biota of topographic features, considering that they constitute the largest single discharge during routine oil and gas operations. The USEPA general NPDES permit limits the impacts on biological resources of topographic features. A detailed description of the impacts of produced waters on water quality and seafloor sediments is presented in Chapters 4.1.1.3.4 and 4.2.1.3 in the Final EIS for the GOM CPA Lease Sales 185, 190, 194, 198, and 201; WPA Lease Sales 187, 192, 196, and 200 (USDOI, MMS, 2002).

Structure Emplacement: Structure emplacement is an oil- and gas-related activity that could resuspend sediments. The Topographic Features Stipulation prohibits bottom disturbing actions within the No Activity Zone, thus preventing these resuspended sediments from reaching the biota of the banks.

Impacts on Endangered or Threatened Species: Federally designated threatened species that have been observed within the 4-Mile Zone at the Flower Garden Banks include the loggerhead (*C. caretta*), hawksbill (*Eretmochelys imbricata*), and leatherback sea turtles (*Dermochelys coriacea*) (Dr. Stephen Gittings, NOAA/NOS/SRD, pers. comm., 1997). Twenty-eight species of whales and dolphins have been reported in the northern Gulf (Davis and Fargion, 1996), but only two have been seen with regularity at the Flower Garden Banks: the Atlantic spotted dolphin (*Stenella frontalis*) and the bottlenose dolphin (*Tursiops truncatus*). Whales are rarely sighted at the Flower Garden Banks. All marine mammals are considered threatened and are protected by the Marine Mammal Protection Act. Six species are currently on the Federal Endangered Species List.

Impacts on sea turtles from oil and gas operations at the Flower Garden Banks could result from effluent discharges, offshore traffic-generated noise, lights on structures, vessel collisions, structure removals, seismic operations, marine trash and debris, and oil spills. In addition to the impacts from oiling itself, oil-spill response activities could adversely affect sea turtles. Impacting factors might include artificial lighting from night operations, booms, and machine and human activity. Some of the impacts resulting from cleanup could include entanglement in booms (Newell, 1995; Lutcavage et al., 1997).

The 4-Mile Zone could be impacted by the degradation of water quality resulting from operational discharges, helicopter and vessel traffic and noise, platform noise, explosive platform removals, oil spills, oil-spill response activities, accidental loss of debris from service vessels and OCS structures, commercial fishing, capture and removal, and pathogens. The long-term result of these exposures could be a number of chronic and sporadic sublethal effects (behavioral effects and nonfatal exposure to or intake of OCS-related contaminants or discarded debris) that may serve to stress and/or weaken individuals of a local group or population and make them more susceptible to infection from natural or anthropogenic sources.

Few deaths of cetaceans would probably result from oil- and gas-related activities within the 4-Mile Zone. Lethal effects, if any, could result from oil spills greater than 1,000 bbl, chance collisions with OCS service vessels, ingestion of plastic material, commercial fishing, and pathogens. Oil spills of any size would be irregular events that might be expected to contact cetaceans. Disturbance (noise from ship traffic and drilling operations, etc.) and/or exposure to sublethal levels of biotoxins and anthropogenic contaminants may stress animals, weaken their immune systems, and make them more vulnerable to parasites and diseases that normally would not be fatal. The net result of any disturbance would be dependent upon the size and percentage of the population likely to be affected, and environmental sensitivity to disturbance and stress (Geraci and St. Aubin, 1980). Collisions between cetaceans and ships, though expected to be rare events, could cause serious injury or even be fatal.

Special Ecological Functions: Recent investigations suggest that sharks and rays use the areas of major reef-building at the Flower Garden Banks as feeding and nursery habitants, and perhaps a migratory stopover. During winter months, the Atlantic manta ray (*Manta birostris*), the Caribbean reef shark *(Caracharhinus perezi*), and the silky shark (*Carcharhinus falciformis*) have been seen using the Flower Garden Banks as nursery habitats. The scalloped hammerhead shark (*Sphyrna lweini*), the spotted eagle ray (*Aetobatus narinari*), the tiger shark (*Galeocerdo cuvieri*), and the sandbar shark (*Carcharhinus plumbeeus*) appear to use the Flower Garden Banks as a winter feeding habitat. The scalloped hammerheads will form large schools at the Flower Garden Banks during winter months. The whale shark (*Rhincodon typus*) seems to use the Flower Garden Banks as summer feeding grounds (July-October). The lesser devil ray (*Mobula hypostoma*) is thought to use the Flower Garden Banks as a springtime migratory stopover.

Therefore, operators of permitted oil and gas activities within the general Flower Garden Banks area should take into consideration the documented importance of the Flower Garden Banks as habitats supporting the feeding, reproduction, and nursing of biota, and their significance as schooling grounds and as migratory stopovers.

Impacts on Commercial Fishing: Fishermen have longlined at the East and West Flower Garden Banks since the late 1800's. Although there are a number of economically important demersal and pelagic species associated with the Flower Garden Banks, the commercial fish harvest from the area has generally consisted of snappers and groupers. Commercial fishing with bottom longlines, traps, nets, bottom trawls, or any other gear other than conventional hook and line is no longer allowed within the Sanctuary boundaries. Effects on commercial fisheries from activities associated with oil and gas exploration and production in the vicinity of the Flower Garden Banks could come from emplacement of the production platform, underwater OCS obstructions, oil spills, and discharges of drilling muds and produced waters. The emplacement of a production platform, with a surrounding 100-m (328-ft) navigation safety zone, in water depths less than 152 m (500 ft) results in the loss of approximately 6 ha of bottom trawling area to commercial fishermen and causes space-use conflicts. Underwater OCS obstructions, such as pipelines, cause gear conflicts that result in losses of trawls and shrimp catch, business downtime, and vessel damage. Nearly 97 percent of trawl fishing in the OCS occurs in water depths less than 61 m and certainly not in the vicinity of such hard-bottom areas as the Flower Garden Banks. Although Gulf fishermen are experiencing some economic loss from gear conflicts, lessees are

required to remove all structures and underwater obstructions from their leases in the Federal OCS within one year of the lease relinquishment or termination of production. However, doing so by means of explosive charges, the traditional means of removal, would produce concussive forces that are lethal to fish with internal air chambers (swim bladders). The explosive removal would be particularly lethal to the demersal fish or those in close association with the platform being removed (Young, 1991; Scarborough-Bull and Kendall, 1992).

Adult fish are likely to actively avoid an oil spill, thereby limiting the effects and lessening the extent of damage (Baker et al., 1991a and b; Malins et al., 1982). Due to their limited mobility and metabolism, floating eggs and larvae and most juvenile fish are killed when contacted by spilled oil (Linden et al., 1979). Ordinary environmental stresses may increase the sensitivity of fish to oil toxicity. These stresses may include changes in salinity, temperature, and food abundance (Evans and Rice, 1974). For OCS-related oil spills to have an effect on commercial fishery resources in the vicinity of the Flower Garden Banks, eggs and larvae would have to be abnormally concentrated in the immediate spill area. Oil components also would have to be present in highly toxic concentrations when both eggs and larvae are in the pelagic stage (Longwell, 1977).

Drilling muds contain material toxic to commercial fishery resources only at unusually large doses. The plume disperses rapidly and is usually undetectable at distances greater than 3,000 m (9,483 ft) (Kennicutt et al., 1996). In addition to hydrocarbons and trace elements toxic at high levels in produced waters, there are additional components and properties, such as hypersalinity and organic acids, that have a potential to affect commercial fishery resources adversely. Produced waters that are discharged offshore are diluted, dispersed, and undetectable at a distance of 3,000 m (9,843 ft) from the discharge point, and no detectable effects on water column organisms are encountered (Harper, 1986; Rabalais et al., 1991).

Impacts on Recreation: Fishermen discovered the Flower Garden Banks and named the banks after the colorful tropical fauna they saw and caught. There are over 175 tropical reef fish species that reside within the high-diversity zone at the Flower Garden Banks (Dennis and Bright, 1998; Pattengill, 1998.). By 1950, navigational charts clearly located the banks, and thereafter, the Flower Garden Banks gained in popularity as fishermen, scientists, journalists, boaters, and industry increasingly visited the banks. Recreational divers and hook-and-line sports fishermen are the primary users of banks today. The number of recreational and commercial fishing boats per year within the 4-Mile Zone could well increase as they use fishing opportunities created by an increasing number of structures (platforms) emplaced nearby.

4-Mile Zone Surrounding the Flower Garden Banks No Activity Zone

The MMS conducted a review for impacts of the proposed activities in Garden Banks Block 139 on sensitive biological communities associated with the protected Flower Garden Banks. The proposed production in High Island Area Block A-352 (Well No. 1, DOCD Control No. N-7665) using a jack-up rig should not impact the protected biological communities of the East and West Flower Garden Banks. No impacts from the lease-term pipeline (Segment P-14094), also analyzed in this EA, are expected either. The proposed activity would occur approximately 3.8 mi (6.1 km) away from the nearest Sanctuary boundary. The boundary is also the border of the No Activity Zone surrounding each bank. Because the drilling would occur within the 4-mile shunting zone surrounding the Flower Garden Banks, physical impacts caused by drilling discharges would be limited to the seafloor immediately surrounding the discharge location, and chemical impacts could possibly extend to 1 km from the discharge location.

An accidental blowout caused by the proposed exploratory drilling could cause the resuspension of sediments, causing sediment smothering, exposure to resuspended toxic contaminants, and light attenuation. Should oil or condensate be expelled during the blowout, liquid hydrocarbons could be an added negative impacting factor on the surrounding environment. It is predicted that most of the blowout materials would be redeposited within a few thousand meters of the blowout site. The coarse fraction of the resuspended sediments (including sands) would be redeposited within 400 m (1,312 m). Considering the distance separating the proposed drill site and the nearest sanctuary boundary (approximately 3.8 mi or 6.1 km), an accidental blowout during exploratory drilling would not impact the protected biological communities at the Flower Garden Banks.

The sessile, demersal, and pelagic constituents of the biological communities at the Flower Garden Banks should not be affected by discharges associated with the proposed activity, including drilling fluids, cuttings, and associated wastes as regulated by MMS, USEPA, and the U.S. Coast Guard (USCG). All other solid and liquid discharges would be either transported to shore or disposed of following regulated protocols (e.g., USCG approved marine sanitation devices).

The emplacement of pipelines and anchoring of pipeline lay barges are oil- and gas-related activities that can mechanically impact topographic features. Such disturbances have the potential to disrupt and alter the environmental (e.g., biological diversity), commercial, recreational, scientific, and aesthetic values of topographic features in the northern Gulf of Mexico (Deslarzes, 1998). Rezak et al. (1985) showed that anchor damage is a significant threat to the biota of the offshore banks in the Gulf.

The proposed pipeline route is just inside the 4-mile shunting zone surrounding the Flower Garden Banks. It is in the 3-mile shunting zone but outside the 1-mile zone for MacNeil Bank. The proposed pipeline should not impact the Flower Gardens or MacNeil Bank.

Mitigation

16.2 (Advisory) – Shunting Single Wells (Plans)

The proposed location of Well No. 1 is within the "4-Mile Zone" of the East Flower Garden Bank. Please be advised that drilling operations for this well are restricted by Lease Stipulation No. 1, which requires that you dispose of all drill cuttings and drilling fluids by shunting the materials to the bottom through a downpipe that terminates an appropriate distance, but no more than 10 meters, from the bottom. Please be advised that any bottom-disturbing activities associated with the activities proposed in your plan must avoid the "No Activity Zone" by a distance of at least 500 ft. Furthermore, if any of these activities require the use of anchors, you will submit plats, at a scale of 1 inch=1,000 ft with DGPS accuracy, to this office within 60 days after completion of operations which depict the "as-placed" location of all anchors, anchor chains, and wire ropes, and demonstrate that the "No Activity Zone" was not physically impacted by the anchoring activities.

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