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

DRAFT
SITE-SPECIFIC ENVIRONMENTAL ASSESSMENT
No. U-575A

Exploratory Activity
Garden Banks Blocks 95, 96, 139, and 140
Leases OCS-G 6332, 6333, 6347, and 6348

February 1989
Commodity __Oil and Gas__  

United States Department of the Interior  
Minerals Management Service  
Gulf of Mexico OCS Region  
New Orleans, Louisiana  

OCS SITE-SPECIFIC ENVIRONMENTAL ASSESSMENT  

February 1989  

Operator __Sun Exploration and Production Company__  
Plan Type __Unit Plan of Exploration__  
Area __Garden Parks Area__, Blocks 95, 96, 139, and 140  
Leases OCS-G 6332, 6333, 6347, and 6348  
Submitted __November 18, 1988__  
Plan Commencement Date __March 15, 1989__  

Prepared by __Ted Stechmann__  

Related Environmental Documents:  
Final EIS for OCS Lease Sale Nos. 81, 84, 94, 98, 102, and 104, 105, 110, 112  
EA Nos. 500, 504, 505, 506, 507, N-1730, N-1798, N-1845, N-1883, N-1917, N-2188, N-2200, N-2201, N-2624, S-1924, N-2758, and N-3306  

Area-wide EA for Exploration and Production Activities  
within the Four-Mile Zone of the East and West Flower Garden Banks
FINDING OF NO SIGNIFICANT IMPACT

I have considered the Unit Plan of Exploration for Sun Exploration and Production Company, (OCS-G 6332, 6333, 6347, and 6348), SEA No. U-575A, and based on the environmental analysis contained in the site-specific environmental assessment and any mitigation measures contained therein, find that there is no evidence to indicate that the proposed actions will significantly (40 CFR 1508.27) affect the quality of the human environment, and the preparation of an environmental impact statement is not required.

[Signature]
Regional Supervisor
Leasing and Environment
Gulf of Mexico OCS Region

2/23/89 Date
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<th>Description</th>
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<td>Areawide Environmental Assessment for Exploration and Production Activities within the Four-Mile Zone of the East and West Flower Garden Banks</td>
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<tr>
<td>CGA</td>
<td>Clean Gulf Associates</td>
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<tr>
<td>COE</td>
<td>Corps of Engineers</td>
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<tr>
<td>FWS</td>
<td>U.S. Fish and Wildlife Service</td>
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<td>GOM</td>
<td>Gulf of Mexico</td>
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<tr>
<td>$H_2S$</td>
<td>Hydrogen Sulfide</td>
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<td>Minerals Management Service</td>
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<td>NCSC</td>
<td>Naval Coastal Systems Center</td>
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<td>NEPA</td>
<td>National Environmental Policy Act</td>
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<td>NPDES</td>
<td>National Pollutant Discharge Elimination System</td>
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<td>NTL</td>
<td>Notice to Lessees and Operators</td>
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<td>OCS</td>
<td>Outer Continental Shelf</td>
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<td>POE</td>
<td>Plan of Exploration</td>
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<td>SEA</td>
<td>Site-Specific Environmental Assessment</td>
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<td>SER</td>
<td>Site-Specific Environmental Report</td>
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<td>USEPA</td>
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INTRODUCTION

This Site-Specific environmental Assessment (SEA), submitted in support of an Area-wide Environmental Assessment (AEA), is written for exploration activity proposed for Garden Banks, Blocks 95, 96, 139, and 140. The SEA contains site-specific and updated information for the proposed action in the subject Blocks that is not contained in the AEA. The SEA was prepared using the AEA dated October 1984, entitled "Area-Wide Environmental Assessment for Exploration and Production Activities within the Four-Mile Zone of the East and West Flower Garden Banks" as a base document. This base document can be obtained through the Public Records office of the Minerals Management Service, Gulf of Mexico Region, Outer Continental Shelf Office. Those sections of the AEA that are referenced in the SEA are indicated throughout the text.

In compliance with the National Environmental Policy Act, this AEA/SEA concept implements the tiering process outlined in 40 CFR 1502.20 which encourages agencies to tier environmental documents to eliminate repetitive discussions of the same issue. By use of reference to the AEA, the SEA concentrates on the issues specific to the proposed action. The SEA conforms to the guidelines for preparing environmental assessments in compliance with the requirements of 30 CFR 250.34 and NEPA using information presented in the AEA.

I. DESCRIPTION OF PROPOSED ACTION
A. GENERAL

A Unit Plan of Exploration for activity in Garden Banks Blocks 95, 96, 139, and 140, Leases OCS-G 6332, 6333, 6347, and 6348 was filed by Sun Exploration and Production Company, on November 18, 1988. The area of the proposal is located approximately 196 km (122 mi) southeast of the nearest coastline in Texas. The average water depth in the four blocks is approximately 134-201 m (440-660 ft). The designated operator of OCS-G 6347 is Sun Exploration and Production Company.

The objective of the proposed action is to explore for oil and gas reserves in Garden Banks, Blocks 95, 96, 139, and 140. A semi-submersible drilling rig, such as the "Ocean S" used to conduct the exploratory drilling of six locations, Wells A, B, C, D, E, and F in Block 140, Well B in Block 95, Well C in Block 139, and Wells E and F (Figure 1). Well A commencement date is scheduled about April 15, 1988. Drilling of Well A is scheduled to end on July 1, 1989. Additional drilling in the area of the proposal is dependant on the results of Well A. This action is considered routine for the Gulf of Mexico. For additional information concerning the proposed action, refer to Sun's POE.

B. EQUIPMENT AND SUPPORT SYSTEMS

The equipment associated with the proposed drilling rig is described in the operator's plan. The rig is required to be equipped with safety and monitoring systems so as to comply with all regulations and OCS Orders. No H2S is expected based on previous drilling experience near this area (Appendix B).
Figure 1 Location of the Proposed Drill Sites
The rig used would be equipped with all safety and pollution-prevention equipment and standards required by MMS OCS Operating Regulations, COE, USCG, OSHA, and EPA (Sun Exploration and Production Company, 1988).

The onshore support facilities are located in Sabine Pass, Texas. The proposed activity would not require any new construction (Sun, 1988).

C. SCHEDULE OF ACTIVITIES

Six exploratory wells are proposed. Drilling for the wells are planned to start April 15, 1989. The proposed drilling schedule for the wells is 75 days each. Should the wells prove productive, Sun would be required to submit a Development Operations Coordination Document to cover production.

D. TRANSPORTATION ROUTES

Helicopters and boats would be used to transport personnel and equipment between The Garden Banks Area and Sabine Pass, Texas. The helicopters and boats would make daily round trips using the most direct route feasible from Sabine Pass (Sun, 1988).

E. PERSONNEL REQUIREMENTS

The operator estimates that approximately 80 to 100 total workers would be needed for drilling and related support operations.

Normal contract crews would be used for the proposed work. There would be minimal additional personnel (Sun, 1988).

F. TECHNOLOGY

No new or unusual technology would be used in the proposed drilling activities (Sun, 1988).

G. CONTINGENCY PLANS

Sun Exploration and Production Company has filed an Oil Spill Contingency Plan with the MMS. Sun, a member of Clean Gulf Associates, would use the CGA equipment in the event of an oil spill. All personnel are instructed to immediately report any discharge of oil to their supervisor. All reports would follow the proper procedure and if a spill occurs, the Oil Spill and Emergency Contingency Plan would go into effect (Sun, 1988).

The cleanup equipment available to Sun Exploration and Production Company is the entire equipment inventories of Clean Gulf Associates. There are eight equipment stockyards on the Texas/Louisiana Gulf Coast. Response time for the major pieces of oil spill containment equipment to the area of the proposal in Garden Banks is 18 hours. All equipment, including beach protection equipment and bird cleaning stations, is available within a few hours notice (Sun, 1988).
Additionally, Sun shall comply with their site-specific oil spill plan as stated in their POE.

H. DISCHARGES AND EMISSIONS

1. General

Solid and liquid discharges and gaseous emissions would be generated by offshore and onshore activities and transportation operations resulting from the proposed plan of operation. At the drill site, all discharges to the GOM would be under a National Pollutant Discharge Elimination System (NPDES) permit regulated by the U.S. Environmental Protection Agency (USEPA).

2. Solid Wastes

Drill Cuttings - Approximately 2,046 barrels of drill cuttings would be generated. These cuttings would consist of natural subsurface sediments. The estimated volume was determined from the hole geometry. Drill cuttings would be disposed of by shunting (Sun, 1988).

Other Solid Wastes - Other solid wastes generated both offshore and at the supply base can be classed as: (1) combustibles (mud sacks, plastic containers, rags, miscellaneous timber, and paper from the office and galley) and (2) metals (casing protector, used drill bits, cut drill line, and metal scraps from the machine/welding shop). The combustibles which would average about 100 lb/day would be compacted and/or collected in metal trash containers and shipped periodically to the Surfside supply base for disposal by a commercial service. Some metal, such as casing protectors and used bits, would be reused or reworked. The remaining metal wastes would be sold as scrap iron (Sun, 1988).

3. Liquid Waste

Treatment of liquid waste effluents would be in compliance with the NPDES permit. No free oil would be discharged into the Gulf. It would be stored and then transported to shore for disposal at an appropriate dump site. The estimated daily quantity, content, and description of the discharges are given below. The quantity of discharged drill muds was calculated using hole geometry assuming a straight hole (Sun, 1988).

Drilling Muds - Sun estimates that 13,955 bbls of muds would be discharged. The muds proposed for use are listed in Sun's POE. If any oil based mud were to be used, it would be hauled to shore for disposal. Otherwise the muds would be discharged by shunting as directed in the lease stipulation (Sun, 1988).

Sewage - Approximately 5,100 gallons-per-day of treated waste would be discharged overboard. These wastes would be treated by aerobic digestion (Sun, 1988).

Domestic Wastes - Domestic wastes consist of shower, wash, and galley water and sewage. Approximately 5,000 gallons-per-day would be discharged overboard (Sun, 1988).
**Water Distillation Units** - This saltwater discharge consists of seawater that has had fresh water osmotically removed. The only change is an increase in total dissolved solids. The rate of discharge would be approximately 53,000 gallons-per-day (Sun, 1988).

**Deck Drain Waste** - Deck drain waste consists of rig wash water, rain water and other substances that are washed from the floor of the rig. On a typical semi-submersible rig, approximately 400 gallons-per-day of deck drain would be discharged. Deck drain waste is treated in a sump to remove any oil and grease prior to overboard discharge (Sun, 1988).

**Ballast Water** - Ballast water consists of seawater that has been pumped into a ballast tank. Approximately 6,000 gallons-per-day of seawater ballast would be discharged from a typical semi-submersible rig. This water is stored in dedicated tanks and is not exposed to any contamination (Sun, 1988).

**Blowout Preventer Solution** - The Operator proposes a discharge of 125 gallons-per-day of BOP non-polluting soluble solution (Sun, 1988).

**Cooling Water** - A quantity of 126,000 gallons-per-day of seawater is estimated for discharge overboard from a typical semi-submersible rig (CSA, 1982).

4. **Gaseous Wastes**

The POE indicates that the six wells will be drilled in an average of 75 days each. Gaseous wastes generated from the proposed activity both onshore and offshore would come from helicopters, boats, and the drilling rig. Sun proposes using a semi-submersible drilling rig. The total emissions expected at the lease site and from transportation both on a daily and lifetime basis are given in Table I-1.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Maximum Daily Emission Rate (lbs/day)</th>
<th>Project Life Emissions (tons/75 days)</th>
</tr>
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<tbody>
<tr>
<td>Total Suspended Particulates (TSP)</td>
<td>2.47</td>
<td>53.00</td>
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<tr>
<td>Sulfur Dioxides (SO₂)</td>
<td>1.97</td>
<td>50.00</td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>5.21</td>
<td>162.00</td>
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<tr>
<td>Hydrocarbons/Volatile</td>
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<td>60.00</td>
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<tr>
<td>Organic Compounds (VOC)</td>
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<tr>
<td>Nitrogen Oxides (NOₓ)</td>
<td>26.42</td>
<td>746.00</td>
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Source: Sun Exploration and Production Company's Air Quality Report (Sun, 1988).
The operator calculated the values for pollutants from the boat and air traffic using the USEPA publication: AP-42 "Compilation of Air Pollutant Emission Factors". The calculations were made using the typical fuel consumption of a semi-submersible drilling rig (Sun, 1988).

I. STATE CERTIFICATION

A shorebase located in Texas is proposed; therefore, a Certificate of Coastal Zone Consistency is not required for the proposed activities.

J. MEASURES FOR COMPLIANCE

No special monitoring programs, over and above those required by OCS Operating Regulations, Notices to Lessees and Operators, and applicable regulations, are required for the proposed action. These regulations provide for training of employees and the design, installation, operation, and maintenance of equipment in a manner which conserves and protects other resources or activities. Inspections are conducted regularly by MMS personnel to enforce all OCS Operating Regulations, Notices to Lessees and Operators, etc.

Compliance with OCS Operating Regulations for these wells compared to other OCS wells is not different. The OCS Operating Regulations do require pollution prevention equipment such as drip pans. Pollution control equipment and materials are available to Sun through its membership in Clean Gulf Associates. Through Clean Gulf Associates, training sessions for familiarization with the pollution prevention and control requirements are all part of the standard procedure for compliance with the OCS Operating Regulations for any OCS well.

No special requirements for NPDES permits are involved for these blocks. The general NPDES permit is applicable to these blocks. There will be activities within the four-mile shunt zone. All drilling fluid and drill cutting discharges will be disposed of through a shunt that will end within 10 m (33 ft) of the ocean floor. Sun will not dispose of well fluids containing free oil in the OCS. Any such fluid will be brought to shore for proper disposal. Sun has stated its intended compliance with all applicable regulations of the MMS, USEPA, and U.S. Coast Guard (Sun, 1988).

K. NEARBY PENDING ACTIONS

Presently in the AEA area there are several proposed actions. CNG Producing Company has an approved plan to drill four exploratory wells in High Island Blocks A-383, A-377 and A-364. Mobil Producing Texas and New Mexico Incorporated has an approved exploration plan for five wells in High Island Block A-374. Union Oil Company of California has an approved plan of development/production for a platform and six wells in High Island Block A-384.

Sun Exploration and Production Company has an approved plan for five wells in High Island, E.A., S.E., Blocks A-388 and A-400. Union Oil Company of California has an approved plan of exploration for three wells in High Island, E.A., S.E. Block A-401. Amoco Production Company has an approved plan of exploration for eleven wells in Garden Banks Block 135 and High Island A-399.
II. ALTERNATIVES TO THE PROPOSED ACTION

Alternatives including approval of the proposal as originally submitted are:

Nonapproval of the Proposal - Sun Exploration and Production Company, would not be allowed to undertake the proposed exploration activities in Garden Banks Blocks 95, 96, 139, and 140. This alternative could prevent discovery and development of much needed hydrocarbon resources and would result in loss of royalty income for the United States. Considering this aspect and the fact that minimal impacts are anticipated, this alternative was not deemed necessary.

Approval with Existing Mitigation - Due to the location of the wells within the four-mile zone, shunting of all drill cuttings to within 10 m (33 ft) of the ocean floor is required. Other measures which Sun proposes to implement to limit pollution effects are discussed in the plan. Outer Continental Shelf Operating Regulations, Notices to Lessees and Operators, and Sale 74 Lease Stipulations Nos. 1 and 2 were identified throughout this assessment as existing mitigation for potential environmental impacts associated with the proposed POE.

III. DESCRIPTION OF THE AFFECTED ENVIRONMENT

A. PHYSICAL ENVIRONMENT

1. Environmental Geology and Hazards

a. General Description of Geology

The water depths in the four blocks range from 134-201 m (440-660 ft) (Figure I-1). The blocks lie in the southern continental shelf structural province which is characterized by an interconnected mass of salt mounds which form semi-continuous diapiric uplifts. The seafloor is smooth and slopes to the southeast at an angle of 0.7 degrees. A high-resolution geophysical survey conducted over the blocks indicated no evidence of surface faulting or shallow gas pockets at the proposed locations. The proposed well sites appear to be clear of shallow hazards. (Sun, 1988).

Seafloor sediments in the blocks are composed of sand, silt, silty clay, and clay of late Pleistocene age (USDOI, 1983a, Visual No. 2).

The stratigraphy of the area is associated with salt mounds which form semi-continuous diapiric uplifts. Growth faults, diapiric uplifts, and intervening synclines are developing presently. Additional information is included in Section III.A.1.a of the AEA.

b. Potential Geologic Hazards

Probable active faulting, and possible shallow gas pockets are potential hazards or constraints of a local geologic nature. There are no indications that such features exist in the area of the proposal. Additional information is included in Section III.A.1.b of the AEA.
c. Petroleum Geology

Information on this section is included in Section III.A.1.c of the AEA. Additional site-specific information provided by Sun and the MMS is considered proprietary.

2. Meteorological Conditions

Information in the following sections is included in Section III.A.2 of the AEA.

a. Temperature
b. Cloudiness and Visibility
c. Wind
d. Precipitation
e. Severe Weather

3. Physical Oceanography

Information in the following sections is included in Section III.A.3 of the AEA.

a. Sea Temperature and Salinity
b. Currents
c. Tides and Sea State

4. Water Quality

Information in this section is included in Section III.A.4 of the AEA.

5. Air Quality

**Onshore** - The onshore area affected by this proposed activity would include the support base area at Sabin Pass in Jefferson County, Texas. The nearest coastal area to the offshore operations is located in Brazoria County, Texas. This coastal area is in Air Quality Control Region No. 216. Brazoria County does not meet the primary standard for \( \text{O}_3 \) established by the National Ambient Air Quality Standards and is therefore classified as a nonattainment area for these pollutants. Otherwise, the county is classified as better than national standards or cannot be classified for the criteria established by NAAQS for: TSP, \( \text{SO}_2 \), CO, and \( \text{No}_2 \). Neither area is designated as a Prevention of Significant Deterioration (Class I) Area (40 CFR 81). Additional information is included in Section III.A.5 of the AEA.
Offshore - The air quality of the offshore area is considered better than the national standards for all air pollutants; however, due to the lack of data the area is unclassified.

B. BIOLOGICAL ENVIRONMENT

1. Coastal Habitats
   Information in this section is included in Section III.B.1 of the AEA.

2. Offshore Habitats
   a. Pelagic Environment
      Information in this section is included in Section III.B.2.a of the AEA.
   b. Benthic Environment
      Information in this section is included in Section III.B.2.b of the AEA.
   c. Sensitive Underwater Features

   Locations A through E are within the four-mile zone of the West Flower Garden Bank. The biota and importance of the Bank are discussed in Section III.B.2.c of the AEA.

3. Endangered or Threatened Species
   Information in this section is included in Section III.B.3. of the AEA.

4. Breeding Habitats and Migration Routes
   Information in this section is included in Section III.B.4. of the AEA.

5. Protected Areas of Biological Concern
   Information in this section is included in Section III.B.5 of the AEA.

C. SOCIOECONOMIC CONDITIONS AND CONCERNS

1. Economic and Demographic Conditions

   Sun does not propose to hire additional employees for the proposed exploratory activities. Information in this section is included in Section III.C.1 of the AEA.

2. Land Use

   Information in this section is included in Section III.C.2 of the AEA.
3. Onshore Support Facilities

Sun's support base for the proposed activity will be in Sabine Pass, Texas (see Figure B of AEA). Sun's support terminal includes a boat dock and a helicopter base (Sun, 1988).

4. Public Opinion

A public hearing was held concerning the proposed OCS Oil and Gas Lease Sale No. 74, which included the 4 subject blocks in the Garden Banks Area. Official transcripts of the hearing are available for public review at the Minerals Management Service Gulf of Mexico OCS Regional Office, New Orleans, Louisiana, and MMS in Washington, D.C.

5. Navigation

The subject blocks in the Garden Banks Area are located approximately 3 km (2 St N) north of a shipping fairway. Additional information is included in section III.C.5 of the AEA.

6. Military Warning/Use Areas

The subject blocks are not located within a designated military warning or use area. Boat and air traffic associated with the proposed plan is not expected to enter any military areas. Additional information is included in Section III.C.6 of the AEA.

7. Commercial Fishing

Information in this section is included in Section III.C.7 of the AEA.

8. Recreation

Information in this section is included in Section III.C.8 of the AEA.

9. Cultural Resources

Information in this section is included in Section III.C.9 of the AEA.

10. Other Commercial Uses

Information in this section is included in Section III.C.10 of the AEA.

11. Other Mineral Uses

Information in this section is included in Section III.C.11 of the AEA.
12. Pipelines and Cables

There are no pipelines or cables in any of the 4 subject blocks. Since the proposed operations are exploratory, there would be no pipelines constructed as a result of this activity. Additional information is included in section III.C.12 of the AEA.

13. Ocean Dumping

Information in this section is included in Section III.C.13 of the AEA.

IV. ENVIRONMENTAL CONSEQUENCES

A. ACCIDENTAL HYDROCARBON DISCHARGES

1. Oil Spill Accidents

A complete discussion of the causes of both major and minor oil spills resulting from exploration activity in the Gulf of Mexico is included in section IV.A.1. of the AEA.

2. Vulnerability of Coastal Land Segments to Oil Spills

A Summary of the trajectory analysis (for 10 days) simulated as a part of the Oil Spill Risk Analysis is presented in Table IV-3 of the AEA. Refer to Section IV.A.2. of the AEA for background information concerning these hypothetical oil spill trajectories. Garden Banks Blocks 95, 96, 139, and 140 fall within oil spill Area 28 (see Figure A of the AEA). An oil spill occurring within this area has little or no chance of contacting Jefferson, Galveston or Chambers Counties, Texas. (Figure B of the AEA), within ten days. Impacts from an oil spill occurring in this oil spill area are discussed in the AEA. An oil spill in Area 28 would have a 45% chance of passing over the Flower Garden Banks. Potential impacts from an accidental spill or blowout at this location are discussed in Section IV.A.3 of the AEA. Refer to Section IV.B.3.d. of the Final Regional Environmental Impact Statement (USDI, MMS, 1983b) for a discussion of the factors affecting the severity of an oil spill.

The prospect of there being an oil spill is guarded against through utilization of state-of-the-art drilling and blowout prevention equipment and through the use of best possible drilling practices by thoroughly trained personnel. These safeguards would be reinforced by operators curtailment programs enforced whenever sea state and weather conditions require. In the unexpected event that an accidental oil spill should occur, Sun would conduct an emergency response to contain and cleanup the spilled oil. General resource mobilization and response plans are outlined in Sun's approved Oil Spill Contingency Plan for the Gulf of Mexico, along with the CGA spill plan, and in SUN's POE (Sun, 1988).

In summary, the risk due to the proposed activity appears small. Most spills would be naturally dispersed within 60 days. In addition, most spills would be subjected to containment and cleanup efforts. The operator is a member
of CGA which has spill containment and cleaning equipment strategically located along the Gulf Coast. Details of Sun's alert, reporting, and cleanup procedures are contained in the POE (Sun, 1988) and Sun's Oil Spill Contingency Plan. In addition, MMS conducts reviews of the various applications for compliance with OCS Orders, Notices to Lessees, etc. to insure safe drilling operations.

3. Assumptions about the Characteristics and Fates of an Accidental Oil or Gas Discharge at the Flower Garden Banks.

Information is included in Section IV.A.3 of the AEA.

4. Effects of Oil Spills on the Environment

Refer to Section IV.A.3. of the AEA for discussions of oil spill impacts to coastal habitats, benthic communities, endangered or threatened species, other wildlife including migratory waterfowl, commercial fishing, recreation/tourism, cultural resources, water quality, and air quality.

5. Oil Spill Containment/Cleanup Capabilities and Effectiveness

Information is included in Section IV.A.5 of the AEA and in Section I.G. of the SEA.

B. IMPACTS CONCERNING THE PHYSICAL ENVIRONMENT

1. Impacts Concerning Geology

All well locations are clear of any of the potential geologic hazards mentioned in Section III.A.1.b (SUN, 1988).

In order to identify potential geological hazards, the available geological and geophysical data for Garden Banks Blocks 95, 96, 139, and 140 were reviewed by the Lake Jackson District staff which resulted in a recommendation of approval (Appendix B). The Lake Jackson District indicated that no shallow hazards were expected and did not recommend that further measures be implemented concerning geology.

2. Impacts Concerning Meteorology

Mitigation to be taken during hurricanes, is discussed in Section IV.B.3. of this SEA. In conditions of high winds and reduced visibility due to fog or rain, helicopter traffic and/or boat traffic between the rig and shorebase would be temporarily suspended.

Interferences due to weather conditions are expected to be short-term and infrequent, producing only an insignificant effect on the movement of supplies and personnel to and from the facilities. The effect on offshore operations should be minimal. Additional information is included in Section IV.B.2 of the AEA.
3. Impacts Concerning Physical Oceanography

Oceanographic conditions which could adversely affect the operation have been taken into consideration during the planning and designing of the proposed action. However, although drilling rigs are designed to operate in rough sea conditions, precautions would be taken by Sun if a hurricane approached the area of the proposal. Activities would be halted, protective measures taken, and facilities secured. No significant impacts from normal physical oceanographic conditions would be expected during the implementation of this exploration plan.

4. Impacts on Water Quality

Because water quality is expected to quickly return to normal in the area after drilling operations have been completed, no significant impacts to the water quality of the area are expected as a result of the proposed activities. As discussed in Section I.J., all discharges are required to adhere to the standards imposed by the NPDES Permit. Refer to Section IV.A. of this SEA and the corresponding section of the AEA for a discussion of oil spill impacts to water quality. Additional information is included in Section IV.A.4 of the AEA.

5. Impacts on Air Quality

Onshore - The effects of the air emissions onshore would be negligible due to the distance of the drill sites to the coast. The percent increases in ambient concentrations contributed by the onshore secondary emissions from the proposed activities would be insignificant. Additional information is included in Section IV.B.5 of the AEA and in the operator's plan.

Offshore - Data presented in Table I-1 of this SEA and in the operator's plan indicate that the total emissions expected from the proposed activities in the subject blocks would be well below the calculated exemption levels, qualifying these activities for exemption from further air quality review. The site-specific air quality review conducted by MMS as a part of this environmental analysis concluded that there could be no significant effect on air quality from the proposed action. The emissions exemption calculations used in this analysis are given in the Air Quality Review (Appendix B). Additional information is included in Section IV.B.5 AEA and in the operator's plan.

C. IMPACTS ON THE BIOLOGICAL ENVIRONMENT

Due to the distance of the subject blocks from shore [196 km (122 mi)] and the use of an established onshore support base requiring no new construction, dredging, or filling, impacts other than those from oil spills on the area's biological environment would be insignificant. Further site-specific discussion of potential impacts to the benthos and sensitive underwater features are included under their respective headings. Refer to Section IV.A. of this SEA and the corresponding Section in the AEA for a discussion of oil spill impacts to the biological environment.
1. Impacts on Coastal Habitats

No significant impact is expected on coastal habitats.
Additional information is included in Section IV.C.1 of the AEA.

2. Impacts on Offshore Habitats

a. Impacts on the Pelagic Environment.

No significant impact is expected on the Pelagic Environment
Additional information is included in Section IV.C.2.a. of the AEA.

b. Impacts on the Benthic Environment

The impacts to the benthic environment are generally discussed in Section IV.C.2.b of the AEA. Impacts to the benthos of the Flower Garden Banks are discussed in the Impacts to Sensitive Underwater Features, Section IV.C.2.c of this SEA.

c. Impacts on Sensitive Underwater Features

The biota of the East and West Flower Garden Banks have been determined to be worthy of protection. MMS has attached a special lease stipulation to Leases OCS-G 6332, 6333, 6347, and 6348 in order to insure protection (Appendix A). The proposed well locations are within the four-mile zone established by the stipulation. This stipulation requires that all drill cuttings and fluids generated within the four-mile zone be disposed of by shunting them to within 10 m (33 ft) of the seafloor. Sun has outlined its methods in the POE of complying with the stipulation regarding disposal of drill cuttings and drilling fluids by shunting (Sun, 1988).

The National Research Council (1983) concluded that most of the drilling discharge deposition is limited to within 1,000 m (3,300 ft) of the drill site. The proposed well locations are approximately 5486 m (18,000 ft) from the 100 m (330 ft) isobath of the East Flower Garden Bank. Shunting has been found to be an effective mitigative measure in areas near topographic highs since the effluent is generally confined to depths greater than where the sensitive organisms lie (Ibid). Water (and the shunted effluent) cannot flow from the base of the bank to the level of the living reef (USDI, MMS, 1983b). Sun proposes using a semi-submersible drilling rig. A diagram showing anchor patterns indicates that no anchoring impacts are expected. Therefore, impacts to the East Flower Gardens are not expected to be significant. Fish and Wildlife Service has reviewed the proposed activity in Garden Banks Blocks 95, 96, 139, and 140. Their comments are included in Appendix C. A discussion of their comments is included in Section V of this SEA. Additional information in this section is included in Section IV.C.2.c of the AEA.
3. Impacts on Endangered or Threatened Species
No significant impact is expected on endangered or threatened species. Additional information is included in Section IV.C.3 of the AEA.

4. Impacts on Breeding Habitats and Migration Routes
No significant impact is expected on breeding habitats or migration routes. Additional information is included in Section IV.C.4 of the AEA.

5. Impacts on Protected Areas of Biological Concern
No significant impacts are expected on protected areas of biological concern. Additional information is included in Section IV.C.5 of the AEA.

D. IMPACTS ON SOCIOECONOMIC CONDITIONS AND CONCERNS
1. Impacts to Economic and Demographic Conditions
No significant impacts are expected to economic and demographic conditions. Information in this section is included in Section IV.D.1. of the AEA and in Sun's POE (Sun, 1988).

2. Impacts on Land Use
No significant impact is expected on land use. Information in this section is included in Section IV.D.2 of the AEA.

3. Impacts of Construction of Onshore Support Facilities
No impacts of construction of onshore support facilities can be expected since Sun proposes using existing facilities (Sun, 1988).

4. Impacts of Public Opinion
No significant public opposition to the planned operation has surfaced to date.

5. Impacts on Navigation
Exploratory activities in Blocks 95, 96, 139, and 140 should have a insignificant effect on shipping. The blocks are located 196 km (122 mi) offshore and lie outside of any major shipping lanes or anchorage areas in the Gulf of Mexico (USDI, MMS, 1983a Visual No. 11). Marine traffic in support of the proposed activities is not expected to significantly affect shipping.
activities in the Sabine Pass area, in part, because of the established port facilities already in existence and the temporary nature of the proposed activities. The impacts of the drilling rig on marine transportation (fishing and pleasure boating) could be both adverse and beneficial. Stationary structures could represent obstacles to navigation, but they also could serve as navigational aids. The operator is required to comply with U.S. Coast Guard regulations related to the safety of personnel and the display of prescribed navigational lights and signals for the safety of navigation. Sun is also required to obtain permits from the U.S. Army Corps of Engineers to prevent obstructions to navigation. Additional information is included in Section IV.D.5 of the AEA.

6. Impacts Concerning Military Use

No impacts to or from military use of the Gulf are expected since the drilling operations and associated traffic are not expected in any of the designed military warning areas.

7. Impacts on Commercial Fishing

Direct effects of exploratory operations on commercial fishing in the subject blocks would be the removal of a limited area of seafloor from use and the temporary degradation of water quality at the immediate area of each drill site. Although some commercial fishing could occur within the vicinity of the proposed activities, no significant conflict of use is expected to develop in the area of the proposed action due to the distance from shore. Refer to Section IV.A. of this SEA and the corresponding section of the AEA for a discussion of oil spill impacts to commercial fishing. Additional information is included in Section IV.D.7 of the AEA.

8. Impacts on Recreation/Tourism

Due to the distance offshore and the temporary nature of the proposed activities, impacts to the aesthetics and recreational resources of the coastal and offshore area would be insignificant. Refer to Section IV.A. of this SEA and the corresponding section of the AEA for a discussion of oil spill impacts to recreation/tourism. Additional information is included in Section IV.D.8 of the AEA.

9. Impacts on Cultural Resources

The operator states that existing onshore support facilities would be utilized; therefore, no impacts to onshore cultural resources are anticipated. Stipulation No. 1 of Lease Sale 74 (Appendix A) provides further safeguards for the protection of presently unknown cultural resources. The operator is required to report, upon discovery of any site, structure or object of historical or archaeological significance, to the Regional Director, MMS, and to make every reasonable effort to preserve and protect that cultural resource. Additional information is included in Section IV.D.9 of the AEA.
10. Impacts on Other Commercial Uses

There are no other commercial uses in the area of the proposal to be affected by the exploration activity.

11. Impacts on Other Mineral Uses

There are no plans or proposals for mining other mineral resources other than oil and gas in the subject blocks; therefore, no conflict of use is expected.

12. Impacts Concerning Pipelines and Cables

No conflict of use is expected because there are no known existing pipelines in any of the 4 subject blocks, and because pipelines cannot be proposed as a part of this exploration activity.

13. Impacts of Ocean Dumping

No conflict of use is expected because there are no existing ocean dumping areas designated in the area of the Flower Gardens. The operator has stated that compliance with the USEPA NPDES permit will be maintained. Additionally, OCS Operating Regulations require that the operator locate and retrieve any large debris lost overboard as a result of the proposed activities.

E. UNAVOIDABLE ADVERSE IMPACTS

Information in this section is included in Section 5E of the AEA.

V. CONSULTATION AND COORDINATION

In accordance with provisions of DM 655, copies of the proposed permit were forwarded to the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. A copy of the comments of these agencies is included in Appendix C. No controversial issues were identified relative to Sun's proposed activity in Blocks 95, 96, 139, and 140.
VI. BIBLIOGRAPHY


VII. PREPARERS

Author
Ted Stechmann - Biologist

Typist
Joan L. Boiteaux
VIII. APPENDICES

APPENDIX A - LEASE STIPULATIONS
APPENDIX B - REVIEWS FROM MMS
APPENDIX C - REVIEWS FROM OTHER AGENCIES
APPENDIX A
LEASE STIPULATIONS
STIPULATION NO. 1 - CULTURAL RESOURCE

(a) “Cultural resource” means any site, structure, or object of historic or prehistoric archaeological significance. “Operations” means any drilling, mining, or construction or placement of any structure for exploration, development, or production of the kinds.

(b) If the Regional Manager (RM) believes a cultural resource may exist in the lease area, the RM will notify the lessee in writing. The lessee shall then comply with subparagraphs (1) through (3).

(1) Prior to commencing any operations, the lessee shall prepare a report as specified by the RM, to determine the potential existence of any cultural resource that may be affected by operations. The report, prepared by an archaeologist and geophysicist, shall be based on an assessment of data from remote-sensing surveys and other pertinent cultural and environmental information. The lessee shall submit this report to the RM for review.

(2) If the evidence suggests that a cultural resource may be present, the lessee shall either:

(i) Locate the site of any operation so as not to adversely affect the area where the cultural resource may be.

(ii) Establish to the satisfaction of the RM that a cultural resource does not exist or will not be adversely affected by operations. This shall be done by further archaeological investigations, conducted by an archaeologist and a geophysicist, using survey equipment and techniques deemed necessary by the RM. A report on the investigation shall be submitted to the RM for review.

(3) If the RM determines that a cultural resource is likely to be present on the lease and may be adversely affected by operations, he will notify the lessee immediately. The lessee shall take no action that may adversely affect the cultural resource until the RM has told the lessee how to protect it.

(c) If the lessee discovers any cultural resource while conducting operations on the lease area, the lessee shall report the discovery immediately to the RM. The lessee shall make every reasonable effort to preserve the cultural resource until the RM has told the lessee how to protect it.

STIPULATION NO. 2 - BIOLOGICAL

<table>
<thead>
<tr>
<th>Bank Name</th>
<th>Isobath (meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mysterious Bank</td>
<td>78, 70, 68, 64</td>
</tr>
<tr>
<td>Blackfish Ridge</td>
<td>70</td>
</tr>
<tr>
<td>Dream Bank</td>
<td>73, 62</td>
</tr>
<tr>
<td>Southern Bank</td>
<td>89</td>
</tr>
<tr>
<td>Hospital Bank</td>
<td>79</td>
</tr>
<tr>
<td>North Hospital Bank</td>
<td>78</td>
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<tr>
<td>Arkansas Bank</td>
<td>78</td>
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<tr>
<td>South Baker Bank</td>
<td>79</td>
</tr>
<tr>
<td>Baker-RESEEH</td>
<td>706</td>
</tr>
<tr>
<td>Big Dune Bar</td>
<td>65</td>
</tr>
<tr>
<td>Small Dune Bar</td>
<td>65</td>
</tr>
<tr>
<td>32 Fathoms Bank</td>
<td>52</td>
</tr>
<tr>
<td>Stovin Bank</td>
<td>52</td>
</tr>
<tr>
<td>Claypile Bank</td>
<td>50</td>
</tr>
<tr>
<td>Applebaum Bank</td>
<td>85</td>
</tr>
<tr>
<td>Coffee Lumps</td>
<td>Various - see map</td>
</tr>
<tr>
<td>West Flower Garden Bank</td>
<td>100 (defined by WMA system)</td>
</tr>
</tbody>
</table>
East Flower Garden Bank 100 (defined by W% system)
(85 m on west side of Block A-375)
MacNeil Bank 62
29 Fathom Bank 64
28 Fathom Bank 65
Geyer Bank 65
Elvers Bank 65
Bright Bank 65
18 Fathom Lumps 65
Bank Bank 65
Sidney Bank 65
Parker Bank 65

1 Low Relief Banks - only subparagraph (a) of the stipulation applies.
Other South Texas Banks - subparagraph (c) of the stipulation shall not apply to exploration, development, and production
operations: subparagraph (b) shall apply in both the "1 Mile Zone" and the "3 Mile Zone" during development and produc-
tion operations.
2 Flower Garden Banks - has a "4 Mile Zone" vice "3 Mile Zone" - in the "1 Mile Zone", subparagraph (c) (2) of the
stipulation shall apply in addition to subparagraph (b); in the "4 Mile Zone," only subparagraph (b) shall apply.
3 The 85 m isobath will be the boundary of the "No Activity Zone" on the west side of High Island, East Addition, South
Extension, Block A-375. Leases granted for this block will have an additional subparagraph (d) added to the Biological
Stipulation indicated.
4 Central Gulf of Mexico banks with "1 Mile Zone" and/or "3 Mile Zone" in Western Gulf of Mexico.

(a) No structures, drilling rigs, pipelines, or anchoring will be allowed within the isobaths of the
banks listed above.

(b) Operations within the area shown as "1 Mile Zone" 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 "3 Mile Zone" shall be restricted as specified in
either (1) or (2) below at the option of the lessee.

(1) All drill cuttings and drilling fluids must be disposed of by shunting the
material to the bottom through a downpipe that terminates an appropriate
distance, but no more than 10 meters, from the bottom.

(2) The operator (lessee) shall submit a monitoring plan. The monitoring plan
will be designed to assess the effects of oil and gas exploration and develop-
ment operations on the biotic communities of the nearby banks.

The monitoring program shall indicate that the monitoring investigations will
be conducted by qualified, independent scientific personnel and that these
personnel and all required equipment will be available at the time of opera-
tions. The monitoring team will submit its findings to the RM on a schedule
established by the RM, or immediately in case of imminent danger to the
biota of the bank premium directly from drilling or other operations. If it is
decided that surface disposal of drilling fluids or cuttings presents no danger
to the bank, no further monitoring of that particular well or platform will be
required. If, however, the monitoring program indicates that the biota of the
bank are being harmed, or if there is a great likelihood that operation of that
particular well or platform may cause harm to the biota of the bank, the RM
shall require shunting as specified in subparagraph (1) above or other appro-
priate operational restrictions.

(d) Prior to undertaking any onsite post-lease activities, including the placing of structures,
the operator (lessee) shall consult with the RM to ensure that the proposed
activity would, to the extent possible, avoid direct contact with any identified coral and
algal sponge communities in the vicinity.
APPENDIX B

REVIEWS FROM MMS
To: Unit Supervisor, (FO-2-1)

From: Unit Supervisor, (FO-1-2)

Subject: Review of Plan of Exploration/DOCD, Control No. 1375

Lease(s) OCS-G 626 333 347 6146, Operator Sun

Area(s) Cameron Block(s) 95 96 137 146

Recommendation/Comment

☑ Approval recommended. Normal precautions will be adequate while conducting activities proposed in this plan.

☐ Approval recommended with the following conditions:

☐ Modification recommended as follows:

☐ Disapproval recommended for the following reason(s):

☐ Comments:

Enclosed are the following reviews as per your request:

☑ Hazards Review ☐ Geophysical ☐ Geological

Enclosures
To: Supervisor, Unitization (PD-3-2)

From: Supervisor, Exploration/Development Plans Unit (FO-2-1)

Subject: Unit POE Sun

Lease(s) OCS-66332, 6333, 6347, 6348 Block(s) 95, 96, 139.

--- Garden Banks Area, Well(s) Arthur F.

Platform(s) 


Attached are the remaining copies of the subject plan along with the NEPA document, PipelinePIPELINE comments; Environmental Report Completeness Review, Preliminary Location Review by Leasing, Fish and Wildlife Review, State Governor comments, CJ comment, and MMS District comments. In addition we have the following comments to offer:

The proposed locations of wells B, C, E, and F, are within the "4 Mile Zone" of East Flower Garden Bank. Drilling operations for these wells are restricted by Lease Stipulation No. 2 which requires that all drill cuttings and drilling fluids be disposed of by shunting the materials to the bottom through a downpipe that terminates an appropriate distance, but no more than 10 meters, from the bottom.

Department of Defense Comments

Other Comments Approval is recommended

Michael Tollbert for Unit Supervisor
UNITED STATES GOVERNMENT

MEMORANDUM

Date 4/2/79

To: Chief, Plans, Platform, and Pipeline Section, Offshore Field Operations, GOM OCS Region (PO-2-1)

From: Chief, Environmental Operations Section, Leasing and Environment, GOM OCS Region (LE-5)

Subject: Preliminary Review of Plan/Application No. 61-575

CULTURAL RESOURCES

There is ___ is not ___ a Cultural Resource problem requiring modification of the proposed location(s).

The problem is ____________________________________________________________

The problem can be resolved by ____________________________________________

BIological RESOURCES

There is ___ is not ___ a Biological Resource problem requiring modification of the proposed location(s).

The problem is ____________________________________________________________

The problem can be resolved by ____________________________________________

cc: CEA File (LE-5)

Jerry Braucher
HAZARDS REVIEW

Plan of Exploration/OEE:

Area(s) ____________________________

Block(s) 95, 56, 79, 40

Lease(s) 6612, 6613, 6-6257, 6-6358

Operator ___________________________

Control No. _______________________

The subject proposal includes __________________ platforms and __________________ wells.

Seafloor Hazards: _______________________

Subsurface Hazards: ____________________

Other Hazards (Pipelines, Sunken Ships, Cables, etc.) ____________________

Preparers(s): _________________________
AIR QUALITY REVIEW

CER/EA No. _______ Due Date _________ Lease(s) OCS-G 6333, 6345, 6356
Block(s) 140, 96, 139, 96 Area Garden Banks

Onshore Emissions

Onshore Base: Sabine Pass, TX. New or Revised: Yes _ No X
Onshore Emissions Calculations (If onshore base is new or revised): NR

NO_x ___ tons/yr; CO ___ tons/yr; VOC ___ tons/yr;
TSP ___ tons/yr; SO_2 ___ tons/yr

Offshore Emissions

Major Sources - Offshore Emissions Calculations:

NO_x 100 tons/yr; CO 100 tons/yr; VOC 50 tons/yr;
TSP 50 tons/yr; SO_2 48 tons/yr

Minor Sources - Offshore Emissions Calculations:

NO_x 46 tons/yr; CO 62 tons/yr; VOC 10 tons/yr;
TSP 3 tons/yr; SO_2 2 tons/yr

Total Offshore Emissions:

NO_x 146 tons/yr; CO 162 tons/yr; VOC 60 tons/yr;
TSP 53 tons/yr; SO_2 50 tons/yr

Emissions Exemption Calculations

Distance to Nearest Land in Statute Miles: 124

Exemption: For CO; E = 3400 D^{2/3} = 84,560 tons/yr

For NO_x, VOC, TSP, SO_2; E = 33.3D = 4129 tons/yr

There will be significant effect on air quality from the proposed action:

Yes _ No X

Information Source(s): Raw

Comments/Recommendations: Raw

__________________________
Meteorologist 6-2+89 Date
To: Unit Supervisor, Exploration/Development Plans Unit, Plans, Platform, and Pipeline Section, Field Operations, GOM OCS Region (FO-2-1)

From: Unit Supervisor, Unitization Unit, Development and Unitization Section, Production and Development, GOM OCS Region (PD-3-2)

Subject: Plan of Exploration, Garden Banks Block 95 unit, AUKS 16, 134 and 140, Agreement No. 754382030, offshore

The Unitization Unit has reviewed the Plan of Exploration for reasonable and timely operations and has found it to be acceptable. Enclosed are nine copies of the subject plan and associated attachments. Pursuant to 30 CFR 250.34, please review this plan and provide a written report to the Unitization Unit (PD-3-2).

Sun plans to drill locations A and E to target horizon at approx -13000'. They anticipate January 20, 1989, spud date for first well.

Enclosures

cc: 1703-C2(a)(1) - Pending File (PD-3-2)

R. Bonfiglianni, X2650

Unit Supervisor
APPENDIX C

REVIEWS FROM OTHER AGENCIES
MEMORANDUM

TO: Regional Director, Attn: Field Operations (FC-2-I), Gulf of Mexico
OCS Region, New Orleans, LA

FROM: Field Supervisor, Ecological Services, Houston, TX

SUBJECT: Review of Unit Plan of Exploration by Sun Exploration and Production
Company - Blocks 96, 139, and 140, Garden Banks Area

We have reviewed the Oil Spill Trajectory Analysis, Lease Stipulations, and
environmental and safety information for the subject plan of exploration (POE).

They appear to fulfill the requirements for POE's under 30 CFR 250.33 and
applicable environmental protection laws. We have no comments to make.

Mr. Frederick T. Werner is the new OCS coordinator for the Western Planning Area.
He can be contacted at FTS 526-6700.

[Signature]

FTW: pi
Mr. J. Rogers Pearcy, Regional Director  
U.S. Department of the Interior  
Minerals Management Service, FO-2-1  
1201 Elmwood Park Blvd.  
New Orleans, LA 70123-2394

Dear Mr. Pearcy:

The National Marine Fisheries Service (NMFS) has reviewed the Unit Plan of Exploration prepared by Sun Exploration and Production Company (Sun) for Leases OCS-6 6332, 6333, 6347, 6348, Blocks 95, 96, 139, 140, Garden Banks Area (Control No. U-575).

According to the Plan of Exploration (Revised 1/23/89 version), Sun proposes to drill 5 surface locations, all of which are located within the 4-mile zone of the East Flower Garden Bank, and therefore, are subject to Minerals Management Services topographic features stipulations. However, the leasee has not indicated that drilling operations within the 4-mile zone would be restricted by shunting all drill cuttings and drilling fluids to within 10 meters of the seafloor through a downpipe. Accordingly, the NMFS would have no changes to recommend if the above mentioned stipulation is included in the Unit Plan of Exploration.

Thank you for this review opportunity.

Sincerely yours,

[Signature]

Andres Mager, Jr.
Acting Assistant Regional Director
Habitat Conservation Division

* Not Correct - 4 of the 6 wells are within the 4 mile zone - Checked by E. Simoneaux 2/3/89