

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

FINAL
SITE-SPECIFIC ENVIRONMENTAL ASSESSMENT
No. U-0642

Exploratory Activity
Garden Banks Area
Block 96
Lease OCS-G 6333

January 1990

02534

Commodity Oil and Gas

SEA No.U-0642

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

OCS SITE-SPECIFIC ENVIRONMENTAL ASSESSMENT

January 1990

Operator Oryx Energy Company
Plan Type Revised Exploration Plan
Area Garden Banks Area
Block 96
Lease OCS-G 6333
Date Submitted November 14, 1989
Plan Commencement Date Upon approval

Prepared by Gary Rutherford

Related Environmental Documents:

Final EIS for OCS Lease Sale Nos. 110, 112, 123, 125

EA Nos. U-0642

Areawide 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 Revised Plan of Exploration for Oryx Energy Company, (OCS-G 6333), SEA No. U-0642, 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 action will significantly (40 CFR 1508.27) affect the quality of the human environment, and the preparation of an environmental impact statement is not required.

JB

Regional Supervisor
Leasing and Environment
Gulf of Mexico OCS Region

Date

TABLE OF CONTENTS

	PAGE
FINDING OF NO SIGNIFICANT IMPACTS	ii
ABBREVIATIONS AND ACRONYMS	iii
INTRODUCTION	1
I. DESCRIPTION OF PROPOSED ACTION	1
A. GENERAL	1
B. EQUIPMENT AND SUPPORT SYSTEMS	1
C. SCHEDULE OF ACTIVITIES	2
D. TRANSPORTATION ROUTES	2
E. PERSONNEL REQUIREMENTS	2
F. TECHNOLOGY	2
G. CONTINGENCY PLANS	2
H. DISCHARGES AND EMISSIONS	2
1. General	2
2. Solid Wastes	3
3. Liquid Wastes	3
4. Gaseous Wastes	4
I. STATE CERTIFICATION	4
J. MEASURES FOR COMPLIANCE	5
K. NEARBY PENDING ACTIONS	5
II. ALTERNATIVES TO THE PROPOSED ACTION	5

	PAGE
III. DESCRIPTION OF AFFECTED ENVIRONMENT	6
A. PHYSICAL ENVIRONMENT	6
1. Environmental Geology and Hazards	6
a. General Description of Geology	5
b. Potential Geologic Hazards	6
c. Petroleum Geology	6
2. Meteorological Conditions	6
a. Temperature	6
b. Cloudiness and Visibility	6
c. Wind	6
d. Precipitation	6
e. Severe Weather	6
3. Physical Oceanography	6
a. Sea Temperature and Salinity	7
b. Currents	7
c. Tides and Sea State	7
4. Water Quality	7
5. Air Quality	7
B. BIOLOGICAL ENVIRONMENT	7
1. Coastal Habitats	7
2. Offshore Habitats	7
a. Pelagic Environment	7
b. Benthic Environment	7
c. Sensitive Underwater Features	7
3. Endangered or Threatened Species	7
4. Breeding Habitats and Migration Routes	8
5. Protected Areas of Biological Concerns	8
C. SOCIOECONOMIC CONDITIONS AND CONCERNS	8
1. Economic and Demographic Conditions	8
2. Land Use	8
3. Onshore Support Facilities	8
4. Public Opinion	8

	PAGE
5. Navigation	8
6. Military Warning/Use Areas	8
7. Commercial Fishing	8
8. Recreation	8
9. Cultural Resources	9
10. Other Commercial Uses	9
11. Other Minerals Uses	9
12. Pipelines and Cables	9
13. Ocean Dumping	9
IV. ENVIRONMENTAL CONSEQUENCES	9
A. OIL SPILL ACCIDENTS	9
1. Oil Spill Accidents	9
2. Vulnerability of Coastal Land Segments to Oil Spills	9
3. Assumptions about the Characteristics and Fates of an Accidental Oil or Gas Discharge at the Flower Garden Banks	10
4. Effects of Oil Spills on the Environment	10
5. Oil Spill Containment/Cleanup Capabilities and Effectiveness	10
B. IMPACTS CONCERNING THE PHYSICAL ENVIRONMENT	10
1. Impacts Concerning Geology	10
2. Impacts Concerning Meteorology	10
3. Impacts Concerning Physical Oceanography	11
4. Impacts on Water Quality	11
5. Impacts on Air Quality	11

	PAGE
C. IMPACTS ON THE BIOLOGICAL ENVIRONMENT	11
1. Impacts on Coastal Habitats	12
2. Impacts on Offshore Habitats	12
a. Impacts on the Pelagic Environment	12
b. Impacts on the Benthic Environment	12
c. Impacts on Sensitive Underwater Features	12
3. Impacts on Endangered or Threatened Species	12
4. Impacts on Breeding Habitats and Migration Routes	13
5. Impacts on Protected Areas of Biological Concern	13
D. IMPACTS ON SOCIOECONOMIC CONDITIONS AND CONCERNS	13
1. Impacts to Economic and Demographic Conditions	13
2. Impacts on Land Use	13
3. Impacts of Construction of Onshore Support Facilities	13
4. Impacts of Public Opinion	13
5. Impacts on Navigation	13
6. Impacts Concerning Military Use	14
7. Impacts on Commercial Fishing	14
8. Impacts on Recreation/Tourism	14
9. Impacts on Cultural Resources	14
10. Impacts on Other Commercial Uses	14
11. Impacts on Other Mineral Uses	14
12. Impacts Concerning Pipelines and Cables	14
13. Impacts of Ocean Dumping	15
E. UNAVOIDABLE ADVERSE IMPACTS	15
V. CONSULTATION AND COORDINATION	15

	PAGE
VI. BIBLIOGRAPHY	16
VII. PREPARERS	17
VIII. APPENDICES	18
A. LEASE STIPULATIONS	19
B. REVIEWS FROM MMS	22
C. REVIEWS FROM OTHER AGENCIES	28
TABLE	4
I- Gaseous Emissions	32
FIGURES	
I-1A Location of the Proposed Drill Sites and Bathymetry Map	33
I-1B	34

ABBREVIATIONS AND ACRONYMS

AEA	Areawide Environmental Assessment for Exploration and Production Activities within the Four-Mile Zone of the East and West Flower Garden Banks
CGA	Clean Gulf Associates
COE	Corps of Engineers
EP	EXPLORATION PLAN
FWS	U.S. Fish and Wildlife Service
GOM	Gulf of Mexico
H ₂ S	Hydrogen Sulfide
MMS	Minerals Management Service
NCSC	Naval Coastal Systems Center
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NTL	Notice to Lessees and Operators
OCS	Outer Continental Shelf
POE	Plan of Exploration
SEA	Site-Specific Environmental Assessment
SER	Site-Specific Environmental Report
USEPA	U.S. Environmental Protection Agency

INTRODUCTION

This Site Specific Environmental Assessment (SEA), submitted in support of an Area-Wide Environmental Assessment (AEA), is written for exploration activities proposed for Garden Banks Block 96. The SEA contains site-specific and updated information for the proposed action in Block 96 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 (NEPA), 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 MMS and other appropriate guidelines for preparing environmental assessments in compliance with the requirements NEPA, using information presented in the AEA.

I. DESCRIPTION OF PROPOSED ACTION

A. GENERAL

A Revised Exploration Plan (EP) for activities in Garden Banks Block 96, Lease OCS-G 6333 was filed by Oryx Energy Company, on November 14, 1989. Block 96 is located approximately 212 km (127 mi) southeast of the nearest coastline in Texas. The water depth in the block is approximately 160m (525 ft). The lease holder and designated operator of OCS-G 6333 is Oryx Energy Company.

The objective of the proposed activities is to explore for oil and gas reserves in Garden Banks Block 96. A semi-submersible drilling rig, such as the Sedco 706 would be used to conduct the exploratory drilling of well location E in Block 96. Location E is proposed at 100' FSL and 1200' FWL. (Figure I-1). Well E commencement date is scheduled upon approval of the environmental assessment. This action is considered routine for the Gulf of Mexico. For additional information concerning the proposed action, refer to Oryx's revised EP.

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 OCS regulations. No H₂S is expected based on previous drilling experience near this area (Appendix B).

The rig used will be equipped with all safety and pollution-prevention equipment and standards required by MMS OCS Operating Regulations, COE, USCG, OSHA, and EPA (Oryx, 1989).

The onshore support facilities is located in Sabine Pass, Texas. The proposed activities would not require any new construction (Oryx, 1989).

C. SCHEDULE OF ACTIVITIES

One exploratory well is proposed. Drilling for the well is planned to start upon approval of the environmental assessment. The proposed drilling schedule for the well is 35 days. Should the well prove productive, Oryx would be required to submit a Development Operations Coordination Document to explain their production scenario.

D. TRANSPORTATION ROUTES

Helicopters and boats will be used to transport personnel and equipment between Garden Banks Block 96 and Sabine Pass, Texas. The helicopters would make an estimated 7 round trips/week using the most direct route feasible from Sabine Pass. (Oryx, 1989).

E. PERSONNEL REQUIREMENTS

Normal contract crews would be used for the proposed work. There would be minimal additional personnel (Oryx, 1989).

F. TECHNOLOGY

No new or unusual technology would be used in the proposed drilling activities (Oryx, 1989).

G. CONTINGENCY PLANS

Oryx has filed an Oil Spill Contingency Plan with the MMS. Oryx, as 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 (Oryx, 1989).

The cleanup equipment available to Oryx 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 Garden Banks Block 96 is 22 hours. All equipment, including beach protection equipment and bird cleaning station, is available within a few hours notice (Oryx, 1989).

Additionally, Oryx shall comply with their site-specific oil spill plan as stated in their EP.

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, Garden Banks Block 96, 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 2057 gallons per day 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 (Oryx, 1989).

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 protectors, 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 M 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 (Oryx, 1982).

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 (Oryx, 1989).

Drilling Muds - Oryx estimates that a maximum of 1,000 bbls of muds per hour would be discharged. The muds proposed for use are listed in Oryx's EP. 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 (Oryx, 1989).

Sewage - Approximately 7,650 gallons per day of treated waste would be discharged overboard. These wastes would be treated by aerobic digestion. (Oryx, 1989).

Domestic Wastes - Domestic wastes consist of shower, wash, and galley water. Approximately 7,500 gallons per day would be discharged overboard (Oryx, 1989).

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 90,000 gallons per day (Oryx, 1982).

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 600 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 (Oryx, 1989).

Ballast Water - Ballast water consists of seawater that has been pumped into a ballast tank. No ballast water volumes were reported. The type of platform from which the drilling will be done does not require in/out transfer of seawater for purposes of stability. (Oryx, 1982).

Blowout Preventer Solution - A discharge rate of 125 gallons per day of non-polluting soluble solution is expected.

Cooling Water - A quantity of 4,214,000 gallons-per-day of sea water is estimated for discharge overboard from a typical semi-submersible rig (CSA, 1982).

4. Gaseous Wastes

The revised EP indicates that the well will be drilled in 35 days. Gaseous wastes generated from the proposed activity both onshore and offshore would come from helicopters, boats, and the drilling rig. Oryx 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 I-1

Gaseous Emissions

Pollutant	Maximum Daily Emission Rate (lbs/day)	Project Life Emissions (tons/30 days)
Total Suspended Particulates (TSP)	14.67	0.22
Sulfur Dioxides (SO ₂)	13.33	0.20
Carbon Monoxide (CO)	146.67	2.20
Hydrocarbons/Volatile	15.33	0.23
Organic Compounds (VOC)		
Nitrogen Oxides (NO _x)	666.67	10.00

Source: Oryx's Air Quality Report (Oryx, 1989).

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 (Oryx, 1989).

I. STATE CERTIFICATION

The state of Texas does not have an approved Coastal Zone Management Program; 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 this well 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 Oryx 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 this block. The general NPDES permit is applicable to this block. 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. Oryx will not dispose of well fluids containing free oil in the GOM. Any such fluid will be brought to shore for proper disposal. Oryx has stated its intended compliance with all applicable regulations of the MMS, USEPA, and U.S. Coast Guard (Oryx, 1989).

K. NEARBY PENDING ACTIONS

Presently in the AEA area there are several proposed actions. Sun Exploration has an approved plan to drill one exploratory well in Garden Banks Block 96, one well in Garden Banks Block 139, and 2 wells in Garden Banks Block 140.

II. ALTERNATIVES TO THE PROPOSED ACTION

Alternatives including approval of the proposal as originally submitted are:

Nonapproval of the Proposal - Oryx Energy Company would not be allowed to undertake the proposed plan of exploration activities in Garden Banks Block 96. 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 well 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 Oryx 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 EP.

III. DESCRIPTION OF THE AFFECTED ENVIRONMENT

A. PHYSICAL ENVIRONMENT

1. Environmental Geology and Hazards

a. General Description of Geology

The water depths in Block 96 range from 140-180m (460-590ft) (Figure I-1). The block lies in the southern continental shelf structural province which is characterized by an interconnected mass of salt mastifs which form semi-continuous diapiric uplifts. The seafloor is smooth and slopes downward toward the northwest about 3.6 feet per 1,000 feet. Magnetometer results indicate isolated small anomalies, randomly distributed (Oryx, 1989).

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

The stratigraphy of Block 96 is associated with salt mastifs 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. 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 Oryx and the Lake Jackson District of 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 Sabine Pass in Jefferson County, Texas. The nearest coastal area to the offshore operations is located in Galveston county, Texas. This coastal area is in Air Quality Control Region No. 216. Galveston county does not meet the primary standard for 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, SO_2 , CO, and 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, B, and C are within the four-mile zone of the East 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

Oryx does not propose to hire additional employees for the proposed activities in Block 96. 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

Oryx's support base for the proposed activity will be in Sabine Pass, Texas (see Figure B of AEA). Oryx's support terminal includes a boat dock and a helicopter base (Oryx, 1989).

4. Public Opinion

A public hearing was held concerning the proposed OCS Oil and Gas Lease Sale No. 74, which included Garden Banks Block 96. No adverse testimony was received at the hearing.

5. Navigation

Garden Banks Block 96 is located approximately 5.2km (3 St M) north of a shipping fairway. Additional information is included in Section III.C.5. of the AEA.

6. Military Warning/Use Areas

Garden Banks Block 96 is 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 Block 96. 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 Block 96 falls within oil spill Area 29 (see Figure A of the AEA). An oil spill occurring within this area has a 3% chance of contacting Galveston and Chambers Counties, Texas, and a 1.1% chance of contacting Jefferson County, 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 29 would have a 34% 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 minimized 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, Oryx would conduct an emergency response to contain and cleanup the spilled oil. General resource mobilization and response plans are outlined in Oryx's approved Oil Spill Contingency Plan for the Gulf of Mexico, along with the Oryx spill plan, and in Oryx's POE (Oryx, 1989).

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 Oryx's alert, reporting, and cleanup procedures are contained in the POE (Oryx, 1989) and Oryx's Oil Spill Contingency Plan. In addition, MMS conducts reviews of the various applications for compliance with OCS operating regulations, 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.I.b (Oryx, 1989).

In order to identify potential geological hazards, the available geological and geophysical data for Garden Banks Block 96 were reviewed by the Technical Assessment and Operations Support Section in Field Operations which resulted in a recommendation of approval (Appendix B). The Operations Support Unit 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. Drilling rigs are designed to operate in rough sea conditions, and precautions would be taken by Oryx if a hurricane approached Block 96. 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

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 Block 96 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 Block 96 from shore [212km (127mi)] 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 Flower Garden Bank has been determined to be worthy of protection. MMS has attached a special lease stipulation to Lease OCS-G 6333 in order to insure protection (Appendix A). The proposed well location is 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. Oryx has outlined its methods in the EP of complying with the stipulation regarding disposal of drill cuttings and drilling fluids by shunting (Oryx, 1989).

The National Research Council (1983) concluded that most of the drilling discharge deposition is limited to within 1,000m (3,300 ft) of the drill site. The proposed well location is approximately 4,880 m (16,000 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). Oryx 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. The Fish and Wildlife Service and the National Marine Fisheries Service have reviewed the proposed activity in Garden Banks Block 96. 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 Oryx's EP (Oryx, 1989).

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 Oryx proposes using existing facilities (Oryx, 1989).

4. Impacts of Public Opinion

No significant public opposition to the planned operation has surfaced to date.

5. Impacts on Navigation

Exploratory activities in Block 96 should have an insignificant effect on shipping. The blocks are located 212 km (127 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. Oryx 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 Block 96 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 Block A-96, 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 Block 96 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 Block 96; 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 Block 96, 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.

5. UNAVOIDABLE ADVERSE IMPACTS

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

V. CONSULTATION AND COORDINATION

In accordance with provisions of DM 655, copies of the plan 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 Oryx's proposed activity in Block 96.

VI. BIBLIOGRAPHY

Oryx Energy Company. Plan of Exploration. Garden Banks Area, Block 96, Lease OCS-G 6333. Houston, Texas. 1989

National Research Council. Drilling Discharges in the Marine Environment. Washington, D.C.: National Academy Press. 1983.

U.S. Department of the Interior. Minerals Management Service. Final Environmental Impact Statement. Proposed OCS Oil and Gas Lease Sales 81 and 84 (Central and Western Gulf of Mexico). Washington, D.C.: Available from NTIS, Springfield, VA. 1983a.

U.S. Department of the Interior. Minerals Management Service. Final Regional Environmental Impact Statement. Proposed OCS Oil And Gas Lease Sales 94, 98, and 102 (Central, Western, and Eastern Gulf of Mexico). Washington, D.C.: Available from NTIS, Springfield, VA. 1983b.

U.S. Department of the Interior. Minerals Management Service. Final Regional Environmental Impact Statement. Proposed OCS Oil And Gas Lease Sales 104 and 105 (Central and Western Gulf of Mexico). Washington, DC.: Available from NTIS, Springfield, VA. 1984.

U.S. Department of the Interior. Minerals Management Service. Final Regional Environmental Impact Statement. Proposed OCS Oil And Gas Lease Sales 118 and 122 (Central and Western Gulf of Mexico). Washington, D.C.: Available from NTIS, Springfield, VA. 1988.

U.S. Environmental Protection Agency. Compilation of Air Pollutant Emission Factors, 2d ed. AP-42. 1976.

VII. PREPARERS

Author

Gary Rutherford - Geologist

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
MINERALS MANAGEMENT SERVICE

Outer Continental Shelf, Western Gulf of Mexico
Oil and Gas Lease Offering (August 1983)

STIPULATION NO. 1 - CULTURAL RESOURCE

OCS-G 6323

- (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 lease.
- (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; or
- (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 investigation, 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. 3 - WARNING AREA W-602

(a) Hold Harmless

Whether compensation for such damage or injury might be due under a theory of strict or absolute liability or otherwise, the lessee assumes all risks of damage or injury to persons or property, which occur in, on, or above the Outer Continental Shelf, to any persons or to any property of any person or persons who are agents, employees, or invitees of the lessee, its agents, independent contractors, or subcontractors doing business with the lessee in connection with any activities being performed by the lessee in, on, or above the Outer Continental Shelf, if such injury or damage to such person or property occurs by reason of the activities of any agency of the United States Government, its contractors or subcontractors, or any of their officers, agents, or employees, being conducted as a part of, or in connection with, the programs and activities of the Director of Training, Deputy Chief of Staff, Operations, Headquarters Strategic Air Command Offutt AFB, Nebraska.

Notwithstanding any limitation of the lessee's liability in section 14 of the Lease, the lessee assumes this risk whether such injury or damage is caused in whole or in part by any act or omission, regardless of negligence or fault, of the United States, its contractors or subcontractors, or any of its officers, agents, or employees. The lessee further agrees to indemnify and save harmless the United States against all claims for loss, damage, or injury sustained by the lessee.

and to indemnify and save harmless the United States against all claims for loss, damage, or injury sustained by the agents, employees, or invitees of the lessee, its agents, or any independent contractors or subcontractors doing business with the lessee in connection with the programs and activities of the aforementioned military installations, whether the same be caused in whole or in part by the negligence or fault of the United States, its contractors, or subcontractors, or any of its officers, agents, or employees and whether such claims might be sustained under a theory of strict or absolute liability or otherwise.

(b) **Electromagnetic Emissions**

The lessee agrees to control his own electromagnetic emissions and those of his agents, employees, invitees, independent contractors, or subcontractors emanating from individual designated defense warning areas in accordance with requirements specified by the commander of the command headquarters listed in the first paragraph under (a) above to the degree necessary to prevent damage to, or unacceptable interference with, DOD flight, testing, or operational activities, conducted within individual designated warning areas. Necessary monitoring control and coordination with the lessee, his agents, employees, invitees, independent contractors or subcontractors, will be effected by the commander of the appropriate onshore military installation conducting operations in the particular warning area; provided, however, that control of such electromagnetic emission shall in no instance prohibit all manner of electromagnetic communication during any period of time between a lessee, its agents, employees, invitees, independent contractors, or subcontractors and onshore facilities.

(c) **Operational**

The lessee, when operating or causing to be operated on its behalf, boat or aircraft traffic into the individual designated warning areas, shall enter into an agreement with the commander of the individual command headquarters listed in the first paragraph under (a) above, prior to commencing such traffic. Such an agreement will provide for positive control of boats and aircraft operating into the warning areas at all times.

APPENDIX B
REVIEWS FROM MMS

OIL SPILL REVIEW

Company Name- _____

CER/EA No. - _____

Lease OCS-U _____

Area and Block- _____

Primary oil spill equipment base- _____

Response time- _____

Trajectory analysis submitted Yes ___ No ___

The operators response time/ trajectory analysis is adequate
Yes ___ No ___

Information Sources- Visual, EIS, Staff, plan

Comments/ Recommendations- _____

Reviewer

Date

AIR QUALITY REVIEW

CER/EA No. 11-0042 Due Date _____ Lease(s) OCS-G 225
 Block(s) 90 Area Graben Basin

Onshore Emissions

Onshore Base: _____ New or Revised: Yes ___ No

Onshore Emissions Calculations (If onshore base is new or revised):

NO_x _____ tons/yr; CO _____ tons/yr; VOC _____ tons/yr; N/R
 TSP _____ tons/yr; SO₂ _____ tons/yr

Offshore Emissions

Major Sources - Offshore Emissions Calculations:

NO_x 9.20 tons/yr; CO 2.00 tons/yr; VOC .21 tons/yr;
 TSP .20 tons/yr; SO₂ .18 tons/yr

Minor Sources - Offshore Emissions Calculations:

NO_x .80 tons/yr; CO .20 tons/yr; VOC .02 tons/yr;
 TSP .02 tons/yr; SO₂ .02 tons/yr

Total Offshore Emissions:

NO_x 10.00 tons/yr; CO 2.20 tons/yr; VOC .23 tons/yr;
 TSP .22 tons/yr; SO₂ .20 tons/yr

Emissions Exemption Calculations

Distance to Nearest Land in Statute Miles: 12.4

Exemption: For CO; $E = 3400E^{2/3} = \underline{84,680} tons/yr$

For NO_x, VOC, TSP, SO₂; $E = 33.3D = \underline{4133} tons/yr$

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

Yes ___ No

Information Source(s): Plan

Comments/Recommendations: None

Elizavinda Landry
 Meteorologist

12-14-89
 Date

UNITED STATES GOVERNMENT
MEMORANDUM

Re: [Signature]
RECEIVED
NOV 27 1989

Oil Management Ser
vicing & Environment

To: Environmental Operations Section (LE-5)
From: Exploration/Development Plans Unit (FO-2-1)
Subject: Plan of Exploration/~~DOCS~~, Lease OCS-G 60533
Block 9th, Coos Bay Bents Area, 30 CFR 250.34
Control No. 60643

Enclosed is a copy of the comments from:

- Operations Support Unit (FO-1-2) ()
- Platform/Pipeline Unit (FO-2-2) ()
- FWS ()
- NMF ()
- States ()
- _____ ()
- _____ ()
- _____ ()
- _____ ()

Remarks: _____

Commence Up date: _____

60643
Unit Supervisor

PROPRIETARY

UNITED STATES GOVERNMENT
MEMORANDUM

11/20/89

To: Supervisor, Exploration/Development Plans Unit, Plans, Platform and Pipeline Section, Field Operations, Gulf of Mexico OCS Region (FO-2-1)

From: Supervisor, Platform/Pipeline Unit, Plans, Platform and Pipeline Section, Field Operations, Gulf of Mexico OCS Region (FO-2-2)

Subject: ^{Revised} Plan of Exploration for Oryx Energy Co.,
Gordon Banks Area, Block 96, Lease OCS-G 6333
30 CFR 250.34 Control No. 26-0642

Proposed Well/Platform:

Identification and Location

Existing Pipelines Within 500 Feet

GB 96 ^{WELL} E 100 FSL, 1000 FWL

NONE

REMARKS:

for K. [Signature]
[Signature]



Date: 11-21-89

To: Unit Supervisor, (FO-2-1)
From: Unit Supervisor, (FO-1-2)
Subject: Review of POE/DOCD, Control No. 17-0642
Lease(s) OCS-G 6333, Operator C-2
Area(s) Golden Bunker, Block(s) 96

Classification of Area per 250.67(c)

- Zone(s) known to contain H2S
- Zone(s) where the presence of H2S is unknown
- Zone(s) where the absence of H2S has been confirmed



Recommendation/Comments

- 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

[Signature]
Unit Supervisor

Enclosures

APPENDIX C
REVIEWS FROM OTHER AGENCIES

UNITED STATES DEPARTMENT OF THE INTERIOR
MINERAL MANAGEMENT SERVICE
LAKE JACKSON DISTRICT

Date 10/2/85

To: District Supervisor, Lake Jackson District
From: Staff Geophysicist, _____ District
Subject: Geophysical Review Purpose: POE DCID Appl. to Drill Restr. Lic
 Plat. Appl. Field Rules Other _____

OCN-3 1337 Area _____ Blk. 22 Operator JK Depth 1000

Well/Well. E S. Loc. _____ F.S.L. 200 F.C.L. BH Loc. _____ F.L. _____

High Resolution: Data Reviewed Echo Sounder Subbottom Profiler Minisparker
 Magnetometer Side-Scan Sonar Fathometer
 CDP USGS Prospect Reports Other _____

Data Source and References Field notes

Proximity 40 SW Line No. 13 Shot Pt. No. 67 Line Spacing 675 x 2.5

Interpretation (Bathymetry, Shallow Gas, Shallow Faulting):

SP \approx 540'. Bottom has occasional porphyry. \approx 100' \pm \approx 0.6' \pm . No shallow fault cuts or fault spots are apparent. Shallow sedimentary appear 900' \pm .

Deep Seismic: Data Source and References Log 30, Peter

Proximity 50 SW Line No. 1 Shot Pt. No. 182 Line Spacing 200 x 50

Interpretation (Base of Sand Section or Top of Dolomitic Material, Faulting, Bright Spots, Abnormal Pressure Zones):

Base of sand \approx 0400'ss. Possible abnormal pressure \approx 5400' is at base of sand. Bright spots are apparent. Target is possible. No gas observed. No H₂S observed, down to 1000'.

BEST AVAILABLE COPY

HAZARDS REVIEW

Plan of Exploration/DOCS

Area(s) Point Barre

Block(s) 46

Lease(s) 6333

Operator OMX

Control No. U-6642

The subject proposal includes _____ platforms and
12 wells.

Seafloor Hazards: None reported

Subsurface Hazards: _____

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

AVAILABLE COPY

Insurer's: _____

To: District Supervisor, LAKE JACKSON District Date: 11/21/89
From: Staff Geologist _____ District U-06412
Subject: Geological Review Purpose: POE DOCD Appl. to Drill Restr. L
 Plat. Appl. Field Rules Other _____

OCS-G6333 Area Kinderhook Blk. 96 Operator Onyx
Well/Plat. No. E Depth 10,000' Water Depth 535' Rig Lecher 706 Semi
S. Loc. 100 ' F 5 L, 1200 ' F W L BH Loc. _____ ' F _____ L, _____ ' F _____ L Elev. _____

Anticipated Depths and Thickness of:

- (a) Potential Oil and/or Gas Bearing Horizons and Shallow Hazards:
(a) Upper Pleistocene gas sands below 8000'
(b) Gas-saturated bottom sediments
- Fresh Water Sands: None
- Domal Material (Cap Rock, False Cap Rock, Salt, Shale)
None
- Possible Lost Circulation Zones
None known
- Possible Abnormal Pressure Zones
about 7500' (if operator's pore pressure graph)
- Horizons which may need Special Mud, Casing or Cementing Program
of Nos 1 & 5 above

Distance from nearest well or platform:
4800' SE of Block 95 G 6332 #1

Relationship of surface location to geological structures:
Parallel south flank of a large piercement salt dome

Remarks:

BEST AVAILABLE COPY

Additional Data Needed: None

Data Reviewed: F&A Map, Application, Review

Recommendation: Approval

R. L. Oulatt

NOTE

DATE 11/17/81

Plan of Exploration/DOCD

Company UKR P & E

Control No. 100042 DM 655-_____

Lease(s) C 333 Block(s) C 1

Cowardin Bank Area Well(s) F

Platform(s) _____

Per telephone conversation of this date, I received a verbal statement regarding the subject plan from: David Dale

- Fish and Wildlife Service
 - National Marine Fisheries
 - Operations Support Unit (FO-1-2)
 - Platform/Pipeline Unit (FO-2-2)
 - Environmental Operations Section (LE-5)
 - State of _____
- UKR P & E

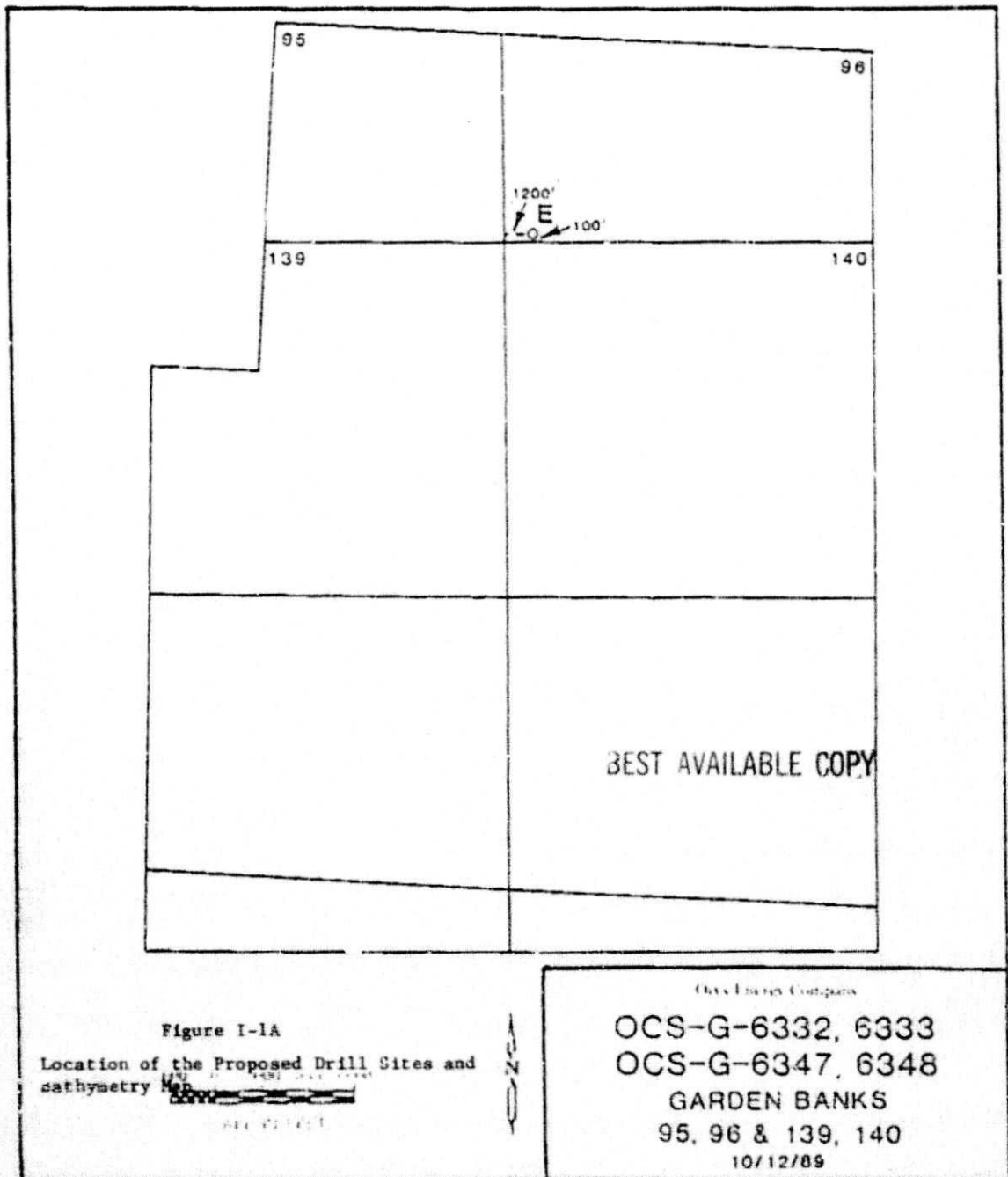
The following comments were offered:

Company shall comply w/ lease stipulation -> 4 mile zone E of Cowardin Bank -> Required to shut 10 meters from seabottom

ABLE COPY

X2576

David Dale
Signature



11/09 11:58

33

804

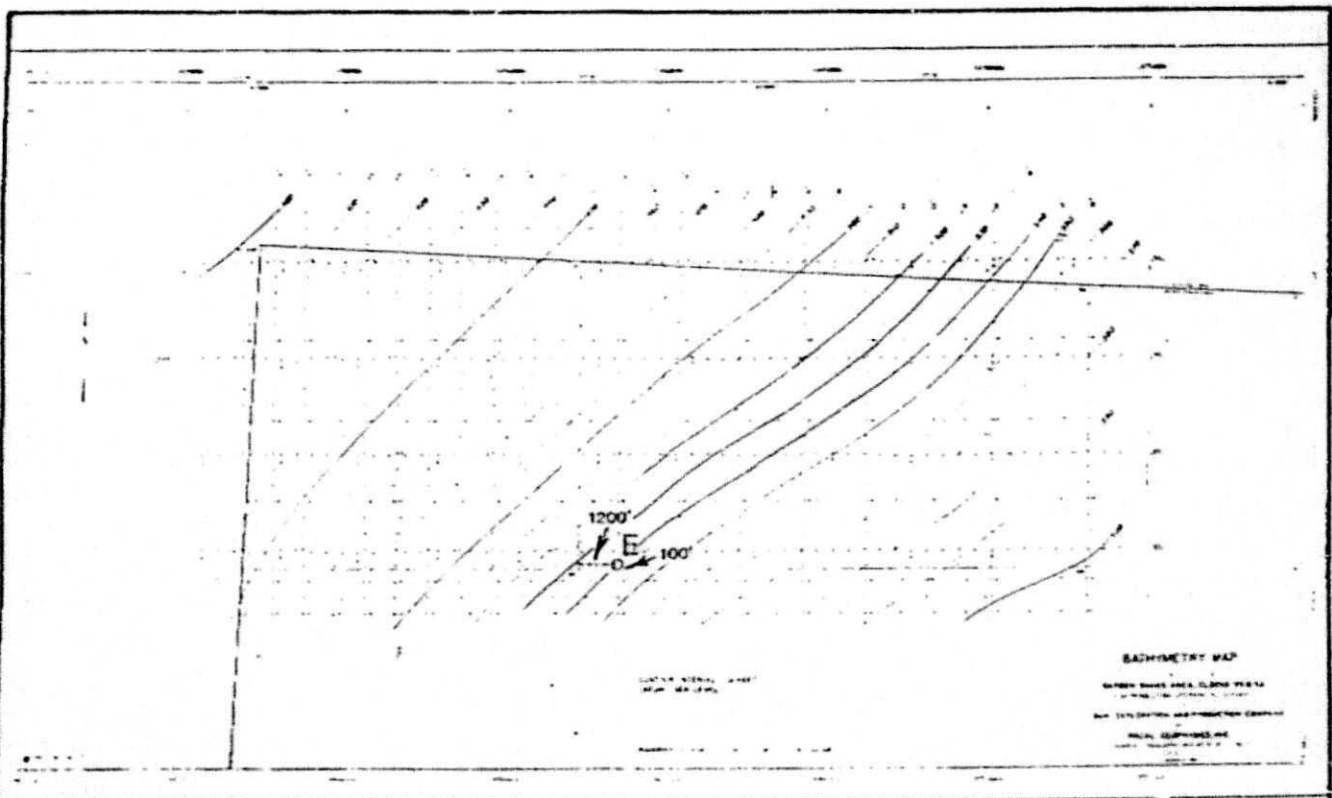


Figure 1-B

BEST AVAILABLE COPY

02

OCS-G-6332
OCS-G-6333
GARDEN BANKS 95, '96